PSJXMP-15-0028
WHALEBACK LLC/RUNSTAD

FOSTER PEPPER PLLC

June 9, 2015

San Juan County
Community Development & Planning
135 Rhone Street
P.O. Box 947
Friday Harbor, WA 98250

RE: ***Shoreline Exemption Determination Request, Runstad Bank Stabilization***

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

TEL 206.447.4400 FAX 206.447.9700 1111 THIRD AVENUE, SUITE 3400 SEATTLE, WASHINGTON 98101-3299 WWW.FOSTER.COM
SEATTLE WASHINGTON SPOKANE WASHINGTON

PSJXMP-15-0028
WHALEBACK LLC/RUNSTAD

San Juan County
COMMUNITY DEVELOPMENT & PLANNING
135 Rhone Street, P.O. Box 947, Friday Harbor, WA. 98250
(360) 378-2354 | (360) 378-2116 | Fax (360) 378-3922
cdp@sanjuanco.com | www.sanjuanco.com

Land Use Project Permit Application

APPLICATION AND PROPERTY INFORMATION

Application Type:	Shoreline Exemption for bulkhead to protect apurtenances (the primary access road, stormwater systems, and utilities) to an existing single family residence						
Tax Parcel Number(s):	)151024002, 151024003						
Land Use Designation:	RFF	Shoreline Designation:	RR			Density:	5
Island:	Blakely	Water Body:	Thatcher Pass	Subdivision:	Syre Exception	Lot Number:	Parcel A
Property Size:	11.8 ac.	Existing and Proposed Use:	Residential				

OWNER AND AGENT INFORMATION:

Name of Owners:	Whaleback LLC	Name of Agent:	Joseph A. Brogan
Address	1201 Third Avenue, Suite 2700	Address	1111 Third Avenue, Suite 3400
City, State, Zip	Seattle, WA 98101	City, State, Zip	Seattle, WA 98101
Phone Number	204-447-6407	Phone Number	204-447-6407
Email	brogj@foster.com	E-mail	brogj@foster.com

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PERMIT CERTIFICATION (Must be signed by all property owners of record or a notarized agent signature provided.)
I have examined this application and attachments and know the same to be true and correct, and certify that this application is being made with the full knowledge and consent of all owners of the affected property.

[signature]	H Jon Runstad	4/29/15
Signature of Property Owner (or Agent with notarized authorization attached.)	*Printed Name*	*Date*
Signature of Property Owner (or Authorized Agent with notarized authorization attached.)	*Printed Name*	*Date*
Signature of Property Owner (or Authorized Agent with notarized authorization attached.)	*Printed Name*	*Date*

For CD&P Use Only
Amt. Paid: 1,200.00 Date Received: 6/10/15 Receipt Number: 00009595

Note: The Application Submittal Checklist for Land Use Review is a separate form that must be completed and attached to all applications. This checklist, along with fees and other forms that might be needed are available at: http://sanjuanco.com/permitcenter/applicationforms.aspx

FOSTER PEPPER PLLC

Direct Phone (206) 447-6407
Direct Facsimile (206) 749-1935
E-Mail brogj@foster.com

June 9, 2015

VIA MESSENGER

S.J.C. COMMUNI
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San Juan County
Community Development & Planning
135 Rhone Street
P.O. Box 947
Friday Harbor, WA 98250

RE: *Shoreline Exemption Determination Request, Runstad Bank Stabilization*

To Whom it May Concern:

This firm represents Jon and Judith Runstad with respect to a normal protective bulkhead installed on their property located on Blakely Island. Please find attached a Request for Shoreline Exemption Determination.

Please contact me at (206) 447-6407, or Stephanie Weir at (206) 447-6236, if you have any questions regarding the attached Request for Shoreline Exemption Determination.

Sincerely,

Joseph A. Brogan
Stephanie G. Weir

Attachments

cc: Randall K. Gaylord, San Juan County Prosecuting Attorney

RUNSTAD BANK STABILIZATION

Introduction

This is an after-the-fact application for a Shoreline Exemption determination for bank stabilization construction (the "Project") that was necessary due to emergency conditions arising from strong storm damage in late December 2010 and January 2011. The Project was necessary to stabilize an over-steepened and rapidly eroding bank that threatened a single-family home and its appurtenant structures.

The Applicant has commissioned a number of studies to ensure compliance with conditions imposed by the Washington State Department of Fish and Wildlife ("WDFW"), the State Shoreline Management Act, the local Shoreline Master Program, and local Critical Areas Standards, which are attached to this Application. The Exhibits referenced in this narrative, and attached to this Application, are as follows:

- Exhibit A – Topographic Survey; San Juan Surveying (June 3, 2015)
- Exhibit B – Site Photographs
- Exhibit C – Riparian Enhancement Plan, Hart Crowser (August 8, 2014)
- Exhibit D – Technical Memorandum re: Shoreline Erosion Protection; Coast & Harbor Engineering (November 26, 2012)
- Exhibit E – Beach Nourishment Technical Memorandum, Coast & Harbor Engineering (April 23, 2015)
- Exhibit F – Technical Memorandum re: Summary of Site Reconnaissance, Runstad Residence, Blakely Island, Hart Crowser (November 26, 2012)
- Exhibit G – Technical Memorandum re: Ordinary High Water at Runstad Property on Blakely Island, Hart Crowser (November 8, 2013)
- Exhibit H – Forage Fish Spawning Surveys; Hart Crowser (December 11, 2013; May 14, 2013; January 14, 2014; February 13, 2014)
- Exhibit I – WDFW and U.S. Army Corps Correspondence
- Exhibit J – Blakely Island Macrovegetation Monitoring Plan, Hart Crowser (December 30, 2013)

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Summary of the Project

Storm conditions in Thatcher Pass in late December 2010 and January 2011, combined with heavy rainfall, caused shoreline erosion and three significant scarps to form and incise several feet into the bank on the subject property. *See* Exhibit B (photographs); Exhibit D (Coast & Harbor Engineering Technical Memorandum, November 26, 2012). The Project was constructed to stabilize the over-steepened and rapidly eroding bank, to prevent further shoreline erosion, and to protect a slope that supports the primary access road, drainage systems, and utilities serving the existing single-family home.

The Project Qualifies as a Development Exempt from the Substantial Development Permit Requirement.

At the request of San Juan County, the Applicant submitted an application for an after-the-fact Shoreline Substantial Development permit on November 28, 2012. However, after correspondence with several agencies and conducting further investigations, the Applicant has determined that the Project should be exempted from the Substantial Development Permit requirements and hereby requests a Statement of Exemption. *See* SJCC 18.20.190; SJCC 18.50.020(F)(2)(c);WAC 173-27-030(7); Chapter 173-27-040 WAC. (The original application includes a statement by the Applicant that they reserved the right to apply for this exemption during the pendency of the Shoreline Substantial Development permit application.)

San Juan County Code Chapter 18.50 sets forth the County's Shoreline Master Program and Section 18.50.020(F) sets forth the exemptions from Substantial Development Permit requirements. Specifically, SJCC 18.50.020(F)(2)(c) states that "[t]he following, as defined in WAC 173-27-040, are not considered to be substantial developments: . . . (c) Construction of the normal protective bulkhead common to single-family residences subject to WAC 173-27-040-(2)(c)." WAC 173-27-040(2)(c) provides, in relevant part, that "[a] "normal protective" bulkhead includes those structural and nonstructural developments installed at or near, and parallel to, the ordinary high water mark for the sole purpose of protecting an existing single-family residence[1] and appurtenant structures[2] from loss or damage by erosion."

The Project consists of a normal protective bulkhead that was installed "at or near, and parallel to, the ordinary high water mark" solely for the purpose of protecting existing appurtenant structures to a single-family residence from loss and damage caused by significant erosion. The Project is depicted on the attached topographic survey (Exhibit A). As confirmed by WDFW, the toe of the normal protective bulkhead was installed at or above, and parallel to, the ordinary high water mark.[3] The normal protective bulkhead was installed for the sole purpose of protecting the existing primary access driveway, drainage systems, and utilities to the single-family home on the adjacent property (also owned by Whaleback LLC). Exhibit B contains photographs that show some of the storm damage and erosion that necessitated immediate installation of protective measures.

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[1] "Single-family residence" means a detached dwelling designed for and occupied by one family including those structures and developments within a contiguous ownership which are normal appurtenance. SJCC 18.50.020(g)

[2] An "Appurtenance" is necessarily connected to the use and enjoyment of a single-family residence and is located landward of the ordinary high water mark . . . On a statewide basis, normal appurtenances include garage; deck; **driveway**; **utilities**; fences; installation of a septic tank and drainfield . . ." SJCC 18.50.020(g) (emphasis added)

[3] *See* Exhibit G for the Hart Crowser Ordinary High Water Report and Exhibit I for correspondence with Washington Department of Fish and Wildlife concurring with Hart Crowser's Ordinary High Water determination.

San Juan County Community Development and Planning issued a Determination of Non-significance (DNS) for the Project which was referenced in a public notice posted by the Applicant. (Permit PSJ000-12-0019; DNS dated 5/8/2013).

WDFW has recommended two restoration measures – shoreline plantings and beach nourishment – for the Project, which the Applicant has agreed to implement. *See* Exhibit C (riparian enhancement plan); Exhibit E (beach nourishment plan). WDFW is also requiring monitoring of the offshore eel grass bed. The Applicant has prepared a macrovegetation monitoring plan to address this issue. *See* Exhibit J. WDFW also required monitoring of the beach for forage fish spawning. This monitoring was conducted in 2013-2014. No forage fish spawning was documented by Hart Crowser. *See* Exhibit H.

The U.S. Army Corps of Engineers (the "Corps") determined that bulkhead is outside the Corps' jurisdiction and, therefore, the bulkhead did not require a Corps permit.[4] Exhibit I, Correspondence, email from Susan Powell (August 19, 2013).

<u>The Project is consistent with the policies of the Shoreline Management Act and its implementing regulations, Chapter 90.58 RCW and Chapter 173-27 WAC, as amended.</u>

The State Shoreline Management Act (Chapter 90.58 RCW) provides that it is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. RCW 90.58.020. Alterations of the natural conditions of the shorelines of the state, in those limited circumstances where authorized, shall be given priority for single family residences and their appurtenant structures. RCW 90.58.020. The Act goes as far as exempting construction of normal protective bulkheads common to single-family residences.

SJCC acknowledges that the provisions of the SJC Shoreline Master Program are adopted pursuant to RCW 90.58.200, which specifies that local governments are authorized to adopt such rules as are necessary and appropriate to carry out the provisions of Chapter 90.58 RCW. As provided in RCW 90.58.900 and SJCC 18.50.010(C)(2), both the Act and the County's SMP shall be liberally construed to give the full effect to the purposes, goals, objectives and policies for which the Act and the County's SMA were enacted and adopted, respectively. *See* SJCC 18.50.010(C)(2). The County's SMP is adopted pursuant to Chapter 173-27 WAC. *See* SJCC 18.50.010(C)(1).

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The Project is a reasonable and appropriate exempt use under the County's SMP. SJCC 18.50.020(F)(2)(c); WAC 173-27-040(2)(c). Thus, the Project may be allowed under the policies and regulations of the Act and the County SMP. The purpose of the Project is to stabilize an oversteepened and eroding bank that is adjacent to a single-family home and its appurtenant structures, specifically a primary access road, stormwater systems, and utilities. Serious erosion is threatening an established use and the Applicant's experts have

[4] WDFW has informed the applicant that a Hydraulic Project Approval ("HPA") Permit will be required to implement the Beach Nourishment Plan. The Applicant will obtain the HPA Permit prior to placing any beach nourishment material at the site.

demonstrated that the bulkhead is the most reasonable method of stabilizing the existing beach and slope condition. *See* Exhibits E and F.

The Project is consistent with the policies and standards of the Shoreline Master Program in Chapter 18.50 SJCC.

Element 3 - Applicable Polices:

3.2. Shoreline Goals And Policies

Policy 3.2.A

Response: The Project is consistent with the Policy Goal of supporting single-family residential uses.

3.3C. Rural Residential Environment

Management Policies include protection and enhancement of the residential character of shoreline development.

Response: The Project is designed to protect residential development.

3.4B. Clearing and Grading

3.4B(1) Limit clearing and grading to the minimum necessary to accommodate shoreline development and minimize adverse impacts to water quality and wildlife habitat by means which include but are not limited to site planning, bank stabilization and erosion, sedimentation and drainage control.

Response: The Project is consistent with this policy as it employs bank stabilization and erosion control to address a dynamic slope and beach condition which threatens shoreline development.

3.6B Bulkheads

3.6B(1) Locate, design, and construct bulkheads in a manner which will not result in adverse effects on nearby beaches or the shore process corridor and its operating systems, and which will minimize alterations of the natural shoreline.

Response: The Project is "located designed, and constructed with an understanding of how they affect and are affected by wave action." *See* Exhibit D, Coast & Harbor Engineering Technical Memorandum (November 26, 2012).

3.6B(2) Locate, design, and construct bulkheads in a manner which will minimize damage to fish and shellfish habitats.

Response: The Project will have minimal impact on fish and shellfish habitats. Mitigation measures will include the following: beach nourishment (importing gravels); spawning surveys (although WDFW confirms no beach spawning is documented at the site) (Source: WDFW April 11, 2011); shoreline native plantings; and monitoring of the offshore eelgrass bed. Exhibit E; Exhibit H; Exhibit I; Exhibit J.

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3.6B(3) Design and locate bulkheads so as to minimize their impact on the scenic quality of the shorelines.

Response: The bulkhead follows only the contours necessary to provide slope stabilization and thus, minimizes any impacts on scenic quality.

3.6B(4) Consider the impact of a proposed bulkhead on public access to publicly owned shorelines.

Response: This is not a publicly owned shoreline property.

3.6B(5) The Shoreline Management Act provides a specific exemption from substantial development permit requirements for bulkheads associated with existing single-family houses and their accessories (RCW 90.58.030(e)(ii)). However, exempt bulkheads must be consistent with state regulations (173-27-042(2)(c) WAC) and the policies and regulations of the Shoreline Master Program.

Response: The Applicant has submitted an application for a Shoreline Exemption determination for the Project, to stabilize an over-steepened and rapidly eroding bank that is adjacent to a single-family home and its appurtenant structures, that is consistent with the policies and regulations of the Shoreline Master Program (*See* this Narrative).

3.6D Shoreline Stabilization

3.6(D)(1) Locate and design all new development to prevent the need for shoreline stabilization measures and flood protection works. New development that requires shoreline stabilization should not be allowed.

Response: The single-family home was permitted in 2010 without shoreline stabilization measures. The conditions warranting emergency bank stabilization occurred to the east and below the primary access road beginning in early January 2011.

3.6(D)(2) Bank stabilization should be allowed for prevention of damage to existing development.

Response: The Project is designed to protect a slope that supports primary access, drainage systems, and utilities to a single-family home.

3.6(D)(3) Use stabilization and protection works which are more natural in appearance, more compatible with on-going shore processes, and more flexible for long-term streamway management, such as protective berms or vegetative stabilization, over structural means such as bulkheads, concrete revetments or extensive riprap.

Response: The Coast & Harbor Engineering and Hart Crowser technical memoranda (Exhibits D and F) respond to the issue of the ineffectiveness of soft stabilization methods at the site. *See also* Exhibit B.

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3.6(D)(4) Permit structural solutions to reduce shoreline damage only after it is demonstrated that non-structural solutions would not achieve the same protective purpose.

Response: *See* above.

3.6(D)(5) Sloping revetments are preferred to vertical bulkheads due to the destructive scouring impact of bulkheads on beaches unless it is demonstrated as infeasible.

Response: The Coast & Harbor Engineering and Hart Crowser technical memoranda (Exhibits D and F) respond to the issue of the appropriateness of the bulkhead's design. Sloping revetments would damage sensitive shoreline vegetation and occur on unstable colluvium.

3.6(D)(6) Publicly financed or subsidized shoreline stabilization projects should provide for long term multiple use and shoreline public access. These works should also consider providing public, pedestrian shoreline access for low-intensity recreation.

Response: This is not a publicly financed project.

3.6(D)(7) Natural features such as snags, stumps or uprooted trees which support fish and other aquatic systems, and which do not intrude on the navigational channel or threaten other permitted uses should be left undisturbed.

Response: The Project did not involve removal of trees, snags or stumps. The Project is designed to stabilize these desirable features on the adjoining slope.

3.6(D)(8) Ensure that aquatic habitats, existing water quality levels and flood holding capacities are maintained in all beach enhancement projects.

Response: The Project includes mitigation measures to address any impacts to aquatic habitat. Exhibit C; Exhibit E.

3.6(D)(9) Use naturally regenerating enhancement systems if:

(a) The length and configuration of the beach will accommodate such systems;
(b) Such protection is a reasonable solution to the needs of the specific site; and
(c) Shoreline Restoration/Enhancement will accomplish one or more of the following objectives:
(1) recreate or enhance natural conditions;
(2) create or enhance natural habitat;
(3) mitigate erosion;
(4) enhance public access to the shoreline.

Response: The Coast & Harbor Engineering and Hart Crowser technical memoranda (Exhibits D and F) address why a naturally regenerating enhancement system would not be effective at this location.

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3.6(D)(10) Encourage supplementary beach nourishment where existing shoreline stabilization is likely to increase impoverishment of existing beach materials at or down drift from the project site.

Response: Supplementary beach nourishment is proposed as a mitigation measure. Exhibit E.

3.6(D)(11) Analysis of off-site and cumulative impacts should be conducted for all proposed bank stabilization, restoration and enhancement, and flood protection activities. Such activities should be prohibited if they would result in beach or bank erosion along nearby shorelines.

Response: The Project is not anticipated to result in beach or bank erosion along nearby shorelines. Several other bulkheads are known to exist off-site on Blakely Island. This project mitigates any contribution to any cumulative impacts through provision of beach nourishment and restoration of the nearshore area with native vegetation. In 2011, WDFW did not document surf smelt or sand lance spawning at the site, nor has any been observed at the site during periodic monitoring that has been conducted at the request of WDFW. *See* Exhibit H. The Applicant is also committed to continue monitoring the offshore eelgrass bed.

The Project is compliant with Critical Areas Standards for Fish and Wildlife Habitat Conservation Areas- SJC 18.30.160.

(1)a. *Mitigation:* The Project includes implementation of mitigation recommendations of the WDFW, as noted in the Brian Williams communication (2012). Mitigation includes beach nourishment, shoreline plantings, spawning surveys, and monitoring of offshore eelgrass beds.

(1)a. *Preferred Sequence.* Because this is an after-the-fact permit, avoidance of taking any action whatsoever is inapplicable. The Project employed the minimum technical solution based on conditions at the site. Working with WDFW, the emphasis is on rectifying any impacts, repairing, rehabilitating, and restoring the effected environment, as is permitted under SJCC 18.30.160(B)(1)(a)(iii).

(1)b. As noted above, the Applicant is committed to implement "other appropriate mitigation actions in compliance with the intent, standards, and criteria of this section."

(1)c. Erosion control methods were employed on the slope above the bulkhead.

(1)d. No further grading is planned associated with the bulkhead. Any grading associated with beach nourishment will be as directed by WDFW.

(1)e. No hazardous substances were or will be introduced into the area. BMPs will be employed during mitigation actions.

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Exhibit A

SURVEYOR'S NOTES

1. THIS TOPOGRAPHIC SURVEY MEETS OR EXCEEDS THE REQUIREMENTS OF WAC 332-130-090.

2. THIS MAP REPRESENTS A TOPOGRAPHIC SURVEY WHICH LOCATED EXISTING MONUMENTS STAKES AND PHYSICAL FEATURES. NO BOUNDARY MARKERS OR STAKES WERE SET. ALL PARTIES ARE HEREBY ADVISED THAT THIS MAP DOES NOT CONSTITUTE A BOUNDARY SURVEY AND IS EXEMPT FROM THE REQUIREMENTS FOR FILING UNDER THE PROVISIONS OF THE WASHINGTON STATE SURVEY RECORDING ACT PER RCW 58.09.060(3)(D).

3. FOR MORE BOUNDARY INFORMATION SEE THE SIMPLE LAND DIVISION RECORDED UNDER AUDITOR'S FILE NUMBER 2010-1014014 AND VOLUME 5 OF LOND PLATS PAGES 13 AND 13A RECORDS OF SAN JUAN COUNTY.

4. MEAN LOWER LOW WATER PER ARRITAGE ISLAND TIDAL BENCHMARK STATION ID 9449932 IS 0.00 FEET. THE NAVD88 GEOID 03 ELEVATION FOR MEAN LOWER LOW WATER AT STATION ID 9449932 IS -0.50 FEET. MEAN HIGHER HIGH WATER PER ARRITAGE ISLAND TIDAL BENCHMARK STATION ID 9449932 IS 7.83 FEET. THE NAVD88 GEOID 03 ELEVATION FOR MEAN HIGHER HIGH WATER AT STATION ID 9449932 IS 7.33 FEET. BOTH LINES ARE DEPICTED HEREON FOR REFERENCE PURPOSES IN TIDAL DATUM MEAN LOWER LOW WATER = 0.00 FEET.

5. THE ORDINARY HIGH WATER MARK (OHWM) DEPICTED HEREON IS DESCRIBED IN HART CROWSER'S NOVEMBER 8, 2013 TECHNICAL MEMORANDUM, ORDINARY HIGH WATER AT RUNSTAD PROPERTY ON BLAKELY ISLAND. THE WASHINGTON DEPARTMENT OF FISH & WILDLIFE AGREED WITH HART CROWSER'S FINDINGS AND DETERMINATION OF THE OHWM IN HDPA CORRESPONDENCE DATED JANUARY 2, 2014.

EQUIPMENT AND PROCEDURES

EQUIPMENT: LEICA 1201+ (ONE SECOND THEODOLITE)
LEICA 1200 GPS
PROCEDURE: FIELD TRAVERSE

LEGEND

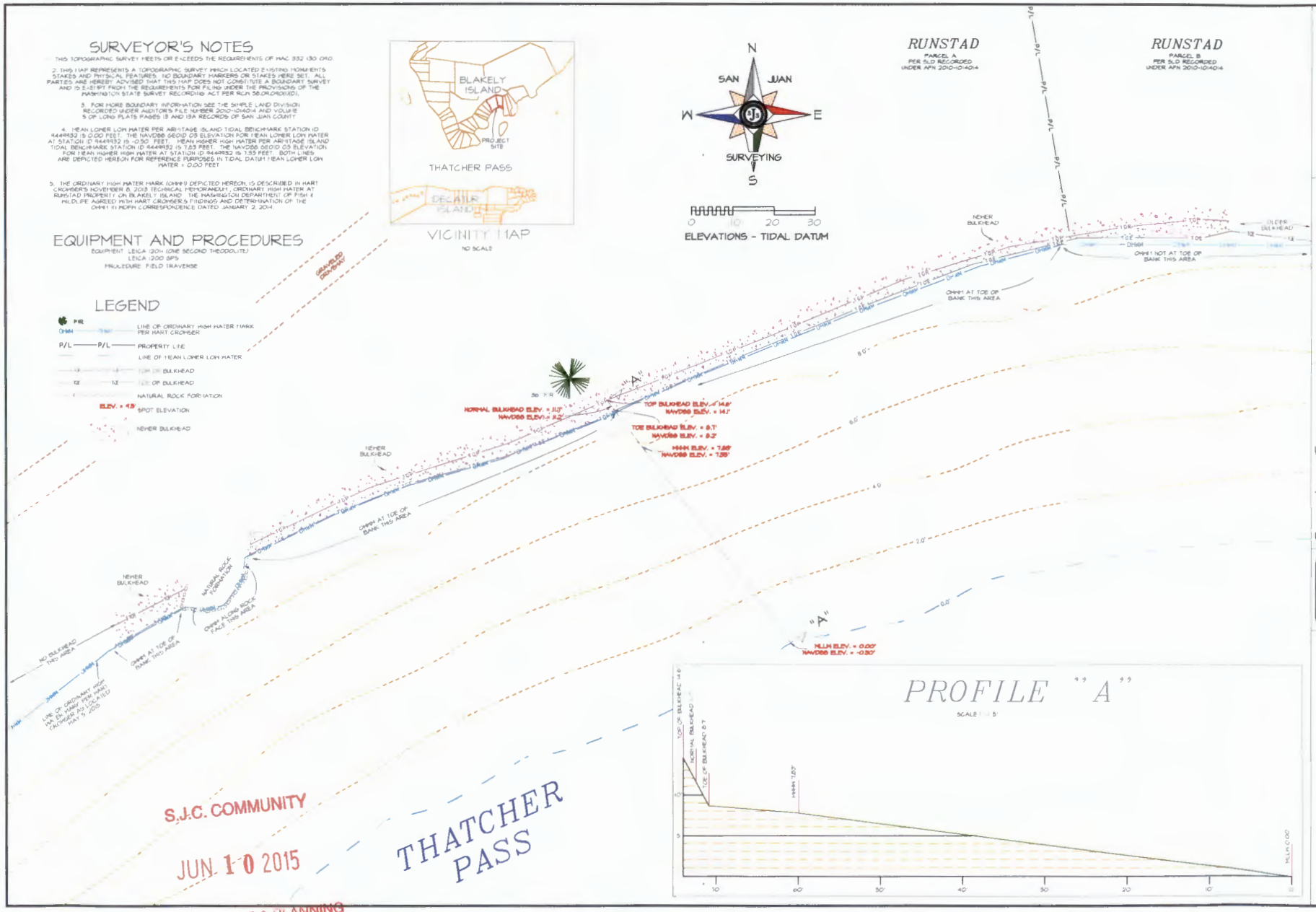
- PIR
- OHWM — LINE OF ORDINARY HIGH WATER MARK PER HART CROWSER
- P/L — P/L — PROPERTY LINE
- LINE OF MEAN LOWER LOW WATER
- BULKHEAD
- TZ — TZ — TOP BULKHEAD
- NATURAL ROCK FORMATION
- ELEV. = 4.9' — SPOT ELEVATION
- NEHER BULKHEAD

VICINITY MAP
NO SCALE

0 10 20 30
ELEVATIONS - TIDAL DATUM

RUNSTAD
PARCEL A
PER SLD RECORDED UNDER AFN 2010-1014014

RUNSTAD
PARCEL B
PER SLD RECORDED UNDER AFN 2010-1014014



S.J.C. COMMUNITY
JUN 10 2015
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THATCHER PASS

JON RUNSTAD
1201 THIRD AVE. SUITE 2700
SEATTLE, WA. 98101

TOPOGRAPHIC SURVEY
FOR
JON RUNSTAD
ON
BLAKELY ISLAND

SAN JUAN SURVEYING
P.O. BOX
FRIDAY HARBOR, WA 98250
(360) 378-5168 FAX (360) 378-5169

SECTION INDEXING DATA

QUARTER	SECTION	TOWNSHIP	RANGE
NW NE NE	10	35 N.	1 WEST

DRAWN BY: ADW
CHECKED BY: RJA
DATE: 6-2-15
PROJECT NO.: 11-002
SHEET: 1 OF 1

PROPERTY INFORMATION

SITE ADDRESS: SPENCER ROAD
TAX PARCEL NUMBER: 352-400-010-0003
DESCRIPTION: TOPOGRAPHIC SURVEY
MISC.

SURVEYOR'S NOTES

1. THIS TOPOGRAPHIC SURVEY MEETS OR EXCEEDS THE REQUIREMENTS OF WAC 332-130-090.

2. THIS MAP REPRESENTS A TOPOGRAPHIC SURVEY WHICH LOCATED EXISTING MONUMENTS, STAKES AND PHYSICAL FEATURES. NO BOUNDARY MARKERS OR STAKES WERE SET. ALL PARTIES ARE HEREBY ADVISED THAT THIS MAP DOES NOT CONSTITUTE A BOUNDARY SURVEY, AND IS EXEMPT FROM THE REQUIREMENTS FOR FILING UNDER THE PROVISIONS OF THE WASHINGTON STATE SURVEY RECORDING ACT PER RCW 58.09.090(1)(D).

3. FOR MORE BOUNDARY INFORMATION SEE THE SIMPLE LAND DIVISION RECORDED UNDER AUDITOR'S FILE NUMBER 2010-1014014 AND VOLUME 5 OF LONG PLATS PAGES 13 AND 13A RECORDS OF SAN JUAN COUNTY.

4. MEAN LOWER LOW WATER PER ARMITAGE ISLAND TIDAL BENCHMARK STATION ID 9444932 IS 0.00 FEET. THE NAVD88 GEOID 03 ELEVATION FOR MEAN LOWER LOW WATER AT STATION ID 9444932 IS -0.50 FEET. MEAN HIGHER HIGH WATER PER ARMITAGE ISLAND TIDAL BENCHMARK STATION ID 9444932 IS 7.88 FEET. THE NAVD88 GEOID 03 ELEVATION FOR MEAN HIGHER HIGH WATER AT STATION ID 9444932 IS 7.33 FEET. BOTH LINES ARE DEPICTED HEREON FOR REFERENCE PURPOSES IN TIDAL DATUM MEAN LOWER LOW WATER = 0.00 FEET.

5. THE ORDINARY HIGH WATER MARK (OHWM) DEPICTED HEREON, IS DESCRIBED IN HART CROWSER'S NOVEMBER 8, 2013 TECHNICAL MEMORANDUM, ORDINARY HIGH WATER AT RUNSTAD PROPERTY ON BLAKELY ISLAND. THE WASHINGTON DEPARTMENT OF FISH & WILDLIFE AGREED WITH HART CROWSER'S FINDINGS AND DETERMINATION OF THE OHWM IN WDFW CORRESPONDENCE DATED JANUARY 2, 2014.

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LEICA 1200 GPS
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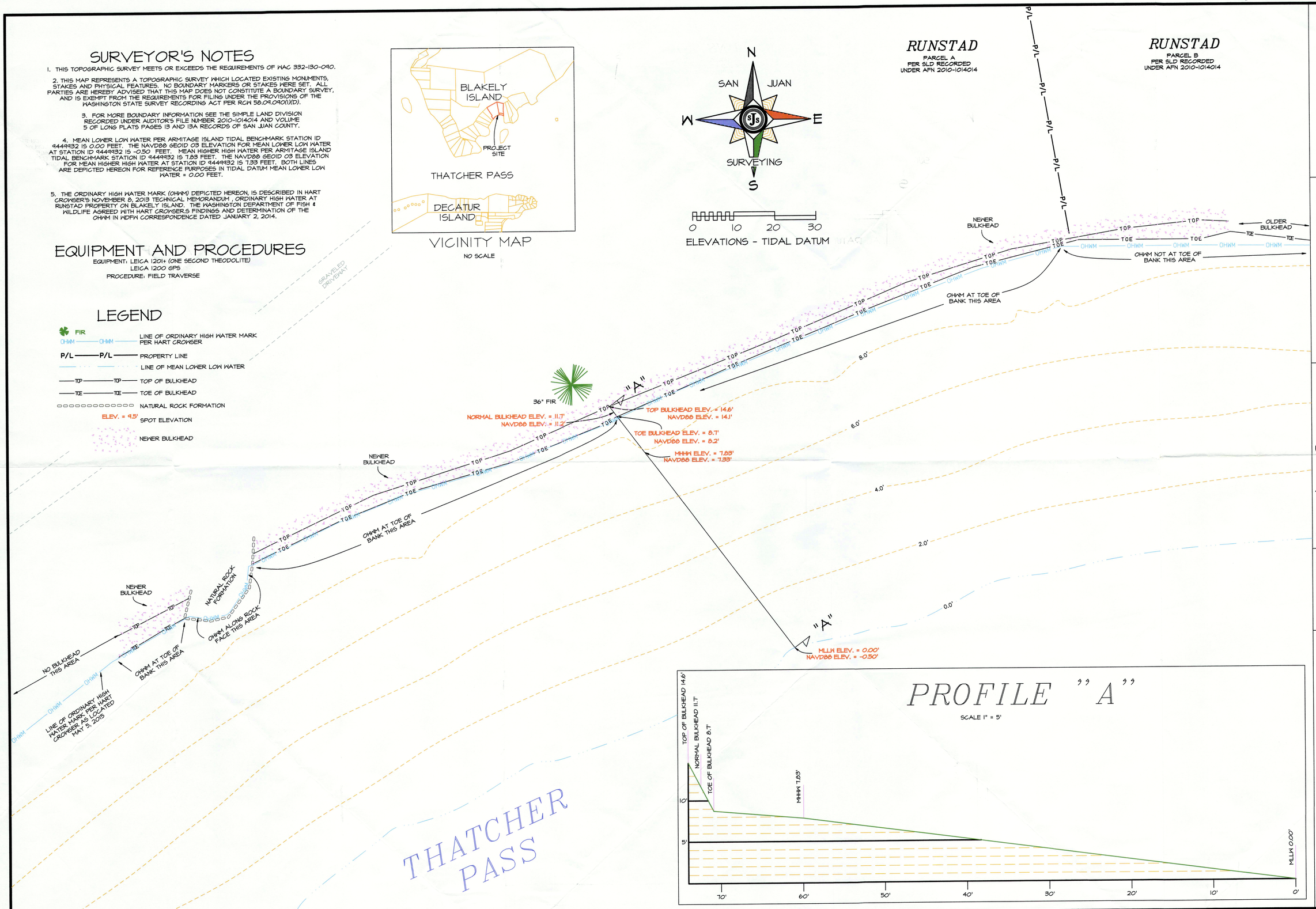
LEGEND

- FIR
- OHWM — LINE OF ORDINARY HIGH WATER MARK PER HART CROWSER
- P/L — PROPERTY LINE
- LINE OF MEAN LOWER LOW WATER
- TOP — TOP OF BULKHEAD
- TOE — TOE OF BULKHEAD
- NATURAL ROCK FORMATION
- ELEV. = 9.5' — SPOT ELEVATION
- NEWER BULKHEAD

VICINITY MAP
NO SCALE

ELEVATIONS - TIDAL DATUM



JON RUNSTAD
1201 THIRD AVE. SUITE 2700
SEATTLE, WA. 98101

TOPOGRAPHIC SURVEY
FOR
JON RUNSTAD
ON
BLAKELY ISLAND

DRAWN BY: ADH	COMP REF: 11-020 (TOPO)	JOB NO. 11-020	
CHECKED BY: RJW	DATE 6/3/15a	SHEET 1 OF 1	

SAN JUAN SURVEYING
P.O. BOX 611
FRIDAY HARBOR, WA 98250
360.378.2300
WWW.SANJUANSURVEYING.COM

SECTION INDEXING DATA

QUARTER	SECTION	TOWNSHIP	RANGE
NW/NE NE/NE GL 3	10	35 NORTH	1 WEST

ROBERT J. WILSON
STATE OF WASHINGTON
PROFESSIONAL LAND SURVEYOR

PROPERTY INFORMATION

SITE ADDRESS: SPENCER ROAD
TAX PARCEL NUMBER: 151024002-151024003
DESCRIPTION: TOPOGRAPHIC SURVEY
MISC.:

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Exhibit B

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02.09.2011 16:23

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Exhibit C

Riparian Enhancement Plan

Runstad Shoreline, Blakely Island

San Juan County, Washington

Prepared for

Foster Pepper

August 8, 2014
17921-00

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HARTCROWSER

HARTCROWSER

www.hartcrowser.com

Riparian Enhancement Plan

Runstad Shoreline, Blakely Island

San Juan County, Washington

Prepared for

Foster Pepper

August 8, 2014
17921-00

S.J.C. COMMUNITY
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Prepared by

Hart Crowser, Inc.

Diane Hennessey
Wetland Specialist

Jon Houghton
Principal; Marine Biologist

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

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Riparian Enhancement Plan

Runstad Shoreline, Blakely Island

San Juan County, Washington

INTRODUCTION

Background and Objectives

This riparian enhancement plan is provided to support the permitting of a shoreline armoring action that occurred in early 2011 on shoreline property that is owned by Jon and Judith Runstad. The site is located along the southeastern shoreline of Blakely Island adjacent to Thatcher Pass (Figure 1). The property is situated in Northwest 1/4 of Section 10, Township 35 North, Range 01 West.

During the winter of 2010–2011, following a period of heavy rain and shoreline erosion, a section of shoreline along the Runstad property was hardened without obtaining a Hydraulic Project Approval (HPA). A subsequent enforcement action by Washington Department of Fish and Wildlife (WDFW; Case # WA-11-001018) includes a mitigation requirement that the shoreline be re-vegetated with native vegetation. This plan has been prepared to define steps necessary to meet this requirement.

General Site Conditions

The project area riparian vegetation before construction was not documented. Based on conditions observed on the site from 2012 through the present, it appears that project construction was completed with considerable care to avoid destruction of existing riparian vegetation. No large trees appear to have been removed and several large (0.5 to over 2 feet diameter at breast height [dbh]). Douglas fir and red alder remain within 30 feet of the top of the riprap (Figure 2). Areas that were directly impacted, either by the slope erosion or by the wall construction, have been revegetated with grasses (Figure 3). An area of embankment farther to the west may have been disturbed during construction of a new house on the property and was used for beach access by equipment during the wall construction has been partially revegetated with native dunegrass (*Leymus mollis*) (Figure 4). No non-native invasive shrub or tree species have been identified in the riparian zone in previous site visits, although there are non-native grasses present on the site.

The soils are primarily sandy and are generally lacking in organic matter. The soils in the area may be low in nutrients for plant growth due to the low levels of organic matter. Species found along the shoreline are able to withstand the occasional salt spray.

Figure 1 – Vicinity Map

Figure 2 – Looking East Along New Central Wall Section

Figure 3 – New Central Wall Section Revegetated with Grasses

Figure 4 – Restored Barge Landing and Rounded Boulder Wall

PROJECT DESCRIPTION

Based on the WDFW (2011) site report, new rock wall/embankment protection was placed along approximately 500 linear feet of shoreline in areas delineated as Reaches 3, 4, and 6 by WDFW (Figure 5). The area identified by WDFW as Reach 6 lies directly in front of the new beach house and is bordered to the west by a 30-foot-wide piece of shoreline that was crossed by a ramp providing beach access for machinery used to build the new wall. While most of the construction was accomplished working from the beach during lower tides, the central and eastern portions of the new wall (approximately 275 linear feet; WDFW Reaches 3 and 4) were constructed by excavating back into the existing upland bluff slope. Thus, there is a band of upland ranging in width from about 5 to 10 feet above the top of the new wall where the primary vegetation is grass (Figure 3). Farther up the slope a number of native shrubs (e.g., oceanspray, snowberry, Nootka rose, and red currant) are present forming an understory under the larger trees referred to above (Figure 2). The property caretaker has

asserted that resident deer populations take a high toll on shrubs, perhaps explaining the relatively sparse nature of understory shrubs.

Figure 5 – Site Map With WDFW-Identified Reaches

PROPOSED ENHANCEMENT

Plantings described below will enhance existing riparian function by augmenting the functions provided by the existing vegetation on the site. No existing native shrub or tree species will be damaged by the proposed plantings. Prior to installing plants, hand-held mechanized or hand tools will be used to remove any non-native shrubs (if present) from the planting areas. No herbicides will be applied. Roots of the non-native vegetation will also be removed. The cleared vegetation will be hauled off site to an approved disposal site.

The owner or his agent will obtain plants from a reputable native plant nursery that carries healthy, disease-free plant stock. The owner will inspect plants prior to installation to determine that they are healthy and disease-free. Two areas of enhancement are proposed as described in the following sections (Figure 6).

A major constraint in establishing new plantings on this site is predation by the significant deer population on the island. Black-tailed deer have been known to eat nearly all vegetation that grows on Blakely Island (Canadian Capital Regional District Planning and Protective Services 2014). Therefore, predation can be difficult to control. However, there has been success with using odor and taste repellents in keeping deer browse down to manageable levels, if the repellents are applied properly and frequently (USFS 2001). We specify applying Deer Away Big Game Repellent manufactured by Woodstream within 24 hours of planting (see http://www.amazon.com/Woodstream-Corporation-Deer-Away-Deer-Repellent/dp/B0002K2IIK for availability). The repellent should be applied as specified by the manufacturer. Due to the expected heavy predation by deer, the repellent should be applied monthly for a year, until the plant roots have had a chance to become established. If the repellent is not effective, then wire fence will be installed around the plantings in consultation with a biologist.

Table 1 – Planting Schedule

Planting Area	Common Name	Scientific Name	Size	Planting Notes	Quantity
Central Wall	Shore Pine	*Pinus contorta var. contorta*	1 gallon	Plant at 25 feet apart	2
	Oceanspray	*Holodiscus discolor*	1 gallon	Plant in clusters of 2–3 at 10 to 15 feet on center	20
	Salal	*Gaultheria shallon*	1 gallon	Plant in clusters of 2–3 at 10 to 15 feet on center	30
	American dunegrass	*Leymus mollis*	10" plug	Plant between the spaces of the rock wall, where possible.	20
	Total Plants in Zone				**72**
West Slope	Oceanspray	*Holodiscus discolor*	1 gallon	Plant in clusters of 2–3 at 10 to 15 feet on center	10
	Salal	*Gaultheria shallon*	1 gallon	Plant in clusters of 2–3 at 10 to 15 feet on center	10
	American dunegrass	*Leymus mollis*	10" plug	Plant between the spaces of the rock wall or at top of wall, where possible	10
	Total Plants in Zone				**30**
Total Plants for Project Site					**102**

Central Wall

As noted above, there is a substantial large tree canopy over the central wall portion of the beach (WDFW Reaches 3 and 4; Figure 2). Based on our site visits to date, this area (approximately 275 feet along the shoreline) appears to be relatively dry with little evidence of ground water seepage. Because of this and the probability of some salt spray during storms, a limited group of species is suitable for growing in this area. The focus of vegetation establishment in this area will be to introduce a shrub understory where little is present, primarily immediately behind the new wall in areas that were disturbed by construction. In addition, perennial dunegrass will be planted where feasible in the top

and upper sections of the wall where spaces between the rocks can be filled with soil to support such plantings.

Shrub plantings will consist of rooted plants of two shore pine (*Pinus contorta var. contorta*), 20 oceanspray (*Holodiscus discolor*), and 30 salal (*Gaultheria shallon*) (see Table 1). Plants will be one gallon in size and will be irregularly placed in clusters of two to three on approximate 15-foot centers. Up to 20 rooted dunegrass plants will be placed just above the wall or within soil-filled cracks in the upper wall.

West Slope

The area of rounded boulders in front of the new beach house (WDFW Reach 6) and the adjacent former beach access ramp have been planted with well-established dunegrass and has canopy trees on both sides (Figure 4). Riparian function of this area will be enhanced by planting clusters of two to three oceanspray and salal at approximately 15 feet on center (Table 1). Dunegrass will be planted within areas along the shoreline where dunegrass is not already established.

Installation

Prior to planting new plants, non-native shrubs will be removed from the project area. Native shrubs and trees will be planted within areas specified on the planting plan (Figure 6). Native plant species, sizes, and spacing for the proposed planting areas are provided in Table 1. Since the soils may lack nutrients, compost will be mixed in with soils where potted plants will be installed. All plants will be watered directly after planting. A 4-inch-thick mulch layer will be added around the plantings as specified on the plans. The plants will be sprayed with Deer Away® Big Game Repellent (or Havahart® Deer Off®) directly after installation to thwart browsing by deer.

MONITORING

Plantings will be monitored in Years 1, 2, and 4 following planting to evaluate the success of the riparian enhancement. Site monitoring will be primarily qualitative to ensure plant survival and health and to gauge the success of the proposed enhancement activities.

Vegetation

The biologist conducting monitoring activities will make a number of qualitative and quantitative observations on vegetation during monitoring. Data on plant survival and naturally colonizing plants will be collected during the first year of monitoring. Plantings will be visually evaluated within each planting area to determine the rate of survival, health, and vigor. Plants will be recorded as live, stressed, or dead/dying. For Year 1 of monitoring, plant survival will be calculated by dividing the number of installed living plants by the number of initially installed plants. In addition, data on native and non-native plant coverage of shrubs, trees, and grass will be collected in monitoring Years 1, 2, and 4. For the entire site, the number of dead plants, if any, will be recorded in Years 2, and 4 and if possible the species will be identified.

The goal of the planting will be to establish an enhanced and diverse native shrub understory along the shoreline bank. The overall goal will be to have 60 percent cover of native shrubs by Year 4, and three of the installed species must be present. Non-native shrub species shall have 10 percent or less coverage in any year of monitoring. Additionally, plants that died after one year of installation will be replaced. If plant mortality in Year 2 is greater than 20 percent of the installed plant quantities (for those plants that can be identified as installed plants), then dead plants will be replaced.

Photographic Points

Permanent photographic points will be established within each planting area to supplement the qualitative data. Photo points will be established at locations that provide complete views of the enhancement area, where possible; two photo points will be established for each area. Photos will document relative changes in plant cover, density, and height. A global positioning system (GPS) unit waypoint or other marker will be recorded for each photo point so that it can be relocated each year. Also, the photo points will be added to the site monitoring map that will be included in the monitoring reports.

Monitoring Schedule

Following planting, an as-built site visit will be completed by the owner's biologist with the owner's landscaper. The biologist will provide the owner with an as-built plan within 45 days after planting has been completed and an as-built site visit has been conducted. The report will document the plantings in each planting area and their general conditions. Also, invasive species presence, and the presence of naturally recruited shrubs or small trees will be noted. This information will be used as a baseline for future monitoring events.

Monitoring of the enhancement area will be conducted for four years starting in the summer growing season following the planting (Year 1). Subsequent monitoring will occur once per year in Years 2 and 4. Monitoring will be conducted in late summer or early fall in order to assess the growth of the plants for the growing season and their survival during the summer.

Detailed monitoring reports will be submitted to WDFW by December 31 of each calendar year.

PERFORMANCE STANDARDS

Monitoring will be conducted for a four-year period to evaluate the success of the riparian enhancement. Goals and performance standards for the monitoring of the site are as listed below.

- Survival of planted native shrubs and trees will be as follows:
  - Year 1: 100 percent survival of installed plants.
  - Year 2: If mortality of installed plants is greater than 20 percent, then plants will be replaced.
- Native shrub and tree cover will be as follows:
  - Year 2: 30 percent cover of native shrubs and trees and three of the installed species must be present.

- Year 4: 50 percent cover of native shrubs and trees and three of the installed species must be present.

- Invasive plant areal coverage will be less than 10 percent for all years.
  - Years 1 through 4: 10 percent or less coverage of invasive plants.

MAINTENANCE AND CONTINGENCY PROCEDURES

The owner will be responsible for replacement of lost plants with healthy stock if survivorship is less than 100 percent in Year 1 and less than 80 percent in Years 2 and 4. The owner will also be responsible for maintenance of the planting areas for the four-year monitoring period until they have been approved as successful by WDFW. Maintenance and contingency actions shall include, but are not limited to, the following:

- Limited irrigation (during dry periods of longer than one week) in Years 1 and 2;
- Pruning;
- Replacement of dead/dying or undesirable plantings with the appropriate native vegetation;
- Substitution of more suitable native plant species in specific locations where initially planted species have failed to become established;
- Regular weeding and removal of noxious and invasive weeds; and
- Application of deer repellents on a monthly basis for at least the first year following plantings to reduce deer predation. If the repellents are not effective, then installation of protective devices for plants, such as fencing to prevent deer browsing.

No post-planting applications of fertilizer are anticipated. Contingency measures will be evaluated during each monitoring event to help ensure that the proposed project is successful. If the plantings are not on the trajectory for a successful enhancement of the site, such as 30 percent or more plants die, or other problems arise, the biologist monitoring the site will contact the owner and WDFW. The owner, WDFW, and the biologist will coordinate to develop a plan for the site to meet its performance standards and for the enhancement to be a success.

REFERENCES

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USFS. 2001. Comparison of Commercial Deer Repellents. Timber Tech Tips. USDA Forest Service Technology and Development Program. Publication # 0124-2331-MTDC. July 2001.

WDFW 2011. Washington State Department of Fish and Wildlife Incident Report. Case # WA-11-001018. Washington Department of Fish and Wildlife, La Conner, Washington.

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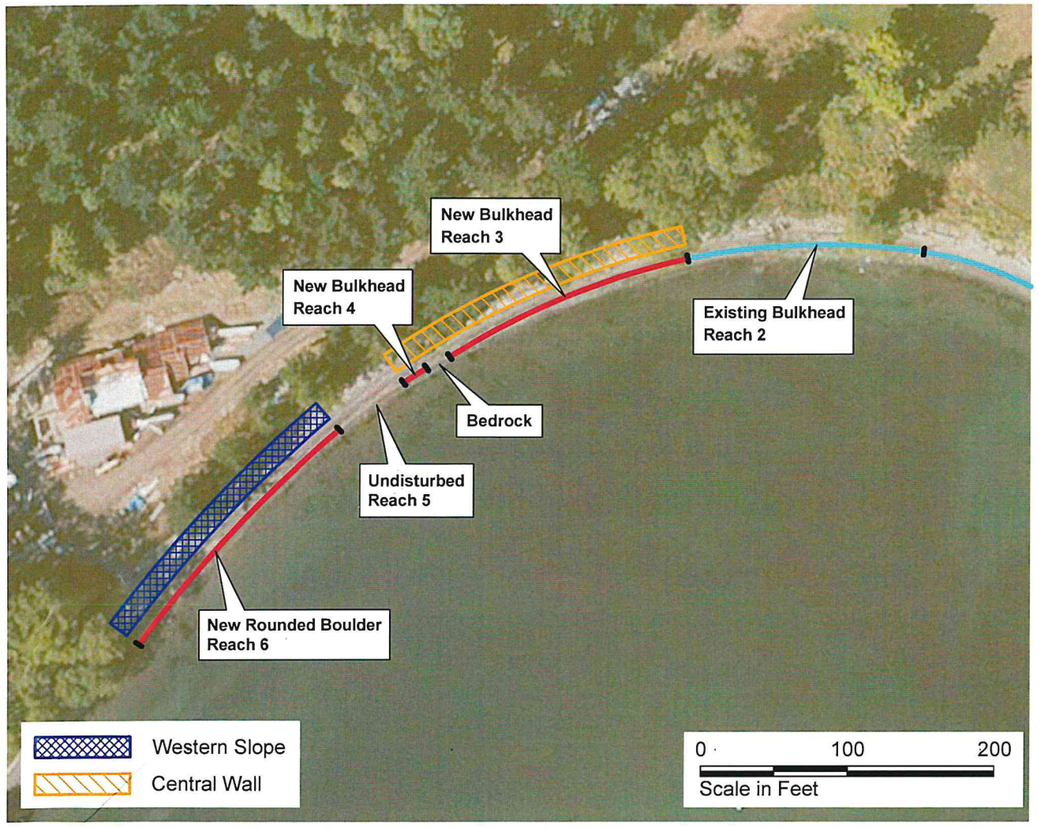
FIGURES



Planting Schedule

Planting Area	Common Name	*Scientific Name*	Size	Planting Notes	Quantity
Central Wall	Shore Pine	*Pinus contorta var. contorta*	1 gallon	Plant at 25 feet apart	2
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	Total Plants in Zone				**72**
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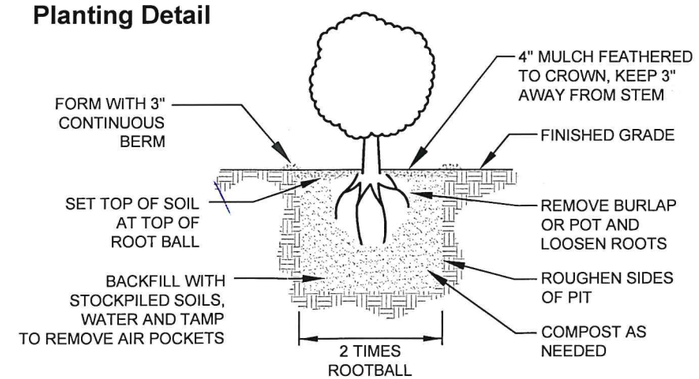
	American dunegrass	*Leymus mollis*	10" plug	Plant between the spaces of the rock wall or at top of wall, where possible	10
	Total Plants in Zone				**30**
Total of all Plants					**102**

Planting Detail



Detail1 - 1-Gallon Pot Planting Detail
NOT TO SCALE

Planting Specifications

1. The recommended time for plant installation is fall (October or later).
2. A pre-construction meeting shall be held with all participating parties prior to commencement of work in the planting areas to review the project goals, specification and planting details, site conditions, and planting placement.
3. Contractor shall remove non-native invasive species throughout the planting area, including but not limited to blackberry, bindweed, and specified non-native grasses using hand-held machinery or by hand. No pesticides shall be used for weed removal.
4. All plants and planting activities shall conform to landscape industry standards. Plant stock shall be free of defects, disease, infestations, and shall be healthy. The owner or owner's representative may require replacement or substitution of any unacceptable plants. Plant stock shall be obtained from a reputable nursery whenever possible; plant stock shall be locally grown in western Washington.
5. The contractor shall provide a 1-year guarantee of survival and replacement of all plant material installed at the project site.
6. An ecologist shall be present to inspect plants and planting locations before plants are installed in the restoration areas.
7. All plant stock shall be handled with care to ensure protection from injury. Plants shall be kept moist and stored in coolers until installation while they are on the project site.
8. Care will be taken not to harm or damage existing vegetation on the site during planting.
9. Before and after planting, soil in the planting pits shall be saturated with water All plants shall be soaked with water directly after planting. .
10. The plantings shall be installed per the species, quantities, sizes, grouping and spacing identified in the plant schedule and as specified on site by the ecologist.
11. Plants shall be installed in the locations shown on this plan.
12. A 3-foot wide mulch ring that is 4 inches thick shall be placed around each plant and shaped to form a well around the plant (see drawing detail 1). All soils and mulch shall be certified free of material toxic to plant growth and noxious weed seeds.
13. Within 24 hours of installation of the plants, spray plants with Woodstream brand Deer Away Big Game Repellent or Havahart® or Deer Off® (for ordering see text of planting plan).

Irrigation and Maintenance

1. Irrigation shall be provided as necessary for plant survival within the first two years.
2. At a minimum, for the 1-year guaranteed survival period, maintenance and contingency measures shall include, but are not limited to, irrigation, pruning, replacement of dead/dying or undesirable transplants with the appropriate vegetation, substitution of plant species, when a specified species is not available, weeding, and removal of noxious or invasive plant species throughout the project area.

Runstad Property Shoreline Planting Plan
Blakely Island, Washington

Planting Specifications and Details

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Figure 6

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Exhibit D

COAST & HARBOR
ENGINEERING

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Technical Memorandum
Runstad Property – Shoreline Erosion Protection

This technical memorandum is prepared to assist with preparation of a Shoreline Substantial Development Permit application for a shoreline erosion protection project at the Runstad property located at Blakely Island. Specifically, this technical memorandum provides technical information confirming that the shoreline erosion protection at the Runstad property meets the criteria of San Juan County Code 18.80.110(H) and standards specified in SJCC 18.50.210, Bulkheads. This technical memorandum is structured to address appropriate coastal engineering standards implicated in the County's regulations at SJCC 18.50.210(A)(2)(a), (b), A(3), A7(a), A7(c), and A(8).

A.2. "...nonstructural shoreline protection, restoration, or modification techniques have been shown to be ineffective and it can be shown that one or more of the following exists:"

a) Serious erosion is threatening an established use of the adjacent uplands

The shoreline along the Runstad property and Blakely Island has been subjected to long-term erosion related to multiple factors, including waves, tidal currents, sea level rise, sediment deficit, and other factors, including upland runoff. The evidence of shoreline erosion can be observed on multiple photographs that were taken during or prior to construction of the recent shoreline erosion protection project. For example, Figure 1 shows the shoreline at Runstad property prior to construction of shoreline erosion protection measure.

The figure shows the scarp at the toe of shoreline bluff that is clear evidence of shoreline erosion. Formation of the scarp here is most likely attributed to wave impact during high tide and instability of slope conditions. During high tide, when water depth at the shoreline is 2 to 4 feet or deeper, a significant amount of wave energy that enters the bay is delivered to the bank. This phenomenon was demonstrated by computer simulation of wave refraction/diffraction in the bay. Simulation (numerical modeling) of wave generation and transformation was conducted using the two-dimensional model SWAN (a standard tool produced by the Danish Hydraulic Institute). Two numerical modeling grids were constructed and used for simulation: Large Domain Grid and Nested Domain Grid. Numerical modeling grids were constructed using available bathymetric survey data from the Puget Sound Digital Elevation Model (Finlayson 2005) and NOAA surveys. Figure 2 shows the numerical modeling domains (nested and large) with depth shown in color format. For example a deep blue color indicates that water depth of 40 meters and deeper (130 feet and deeper) is located inside the bay in relatively close proximity to the shoreline.

Figure 1. Shoreline along Runstad property prior to construction of shoreline erosion protection measure

Figure 2. Numerical modeling domains (nested high resolution, and large-scale (inset)) in color format, based on DEM and NOAA data

Wave modeling requires depth data throughout the domain. Where depth data are lacking in the nearshore area (not colored in the figure) depth values were generated by interpolation between the NOAA bathymetric data and recent topographic survey data. Wind data that was used to drive the numerical wave model was developed from processing of measured long-term (total 60 years) wind data from Whidbey Island meteorological station at Ault Field. Extreme value analysis of these long-term measured data was performed. The design wind storm parameters

was determined as follows: Direction- 140 deg, Return period- 25 year, Speed-47 m.p.h. (41 knots).

Results of numerical modeling are shown in Figure 3 in color format. The figure shows spatial distribution (plan view) of significat wave height over the nested modeling domain. Reddish color indicates larger waves (higher wave height) and blueish color shows smaller wave heights or no waves. The figure shows that during this design storm a significant amount of wave energy penetrates into the bay and propagates to the shoreline[1]. Wave gauges were deployed in the model along the shoreline to extract energy spectra characteristics of waves directly at the Runstad property. Extracted output at the location of the revetted shoreine at the Runstad property during the design storm event is significant wave height of 2.2 ft with peak period of 3.7. We emphasize that this modeling is preliminary; with more detailed bathymetry and model refinement it is likely the wave energy shown to reach the bank could be greater than stated here.

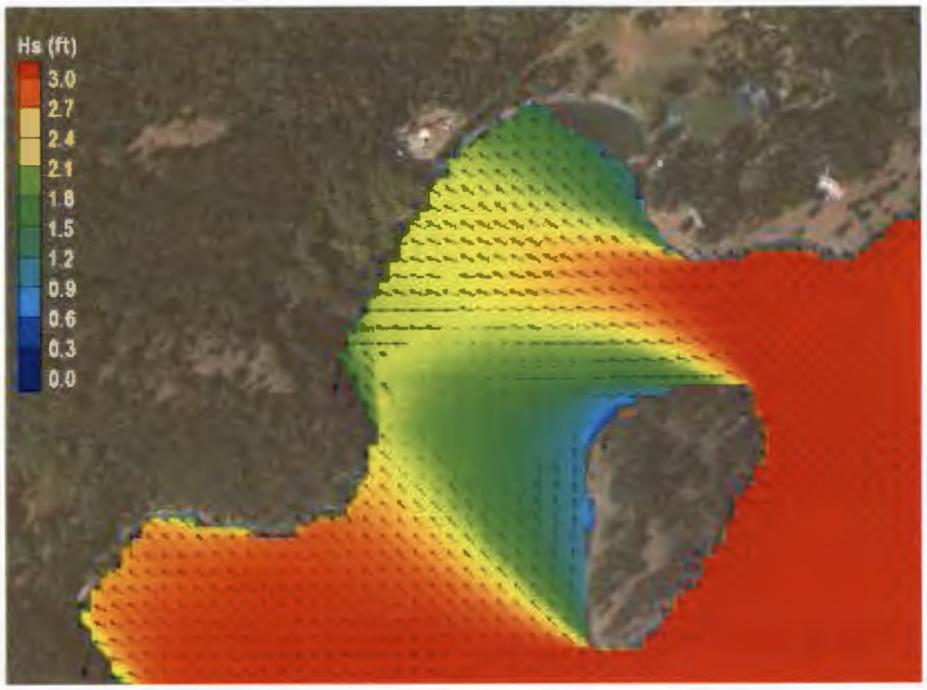

Figure 3. Model results of wave height in vicinity of Runstad property shoreline

The wave energy from these waves dissipates through exerting pressure, stresses, and generating wave runup velocities and other hydrodynamic factors that interact with the bank. Because a large part of the Runstad property shoreline is formed with poorly consolidated material, this material is mobilized by these hydrodynamic factors resulting in formation of the erosion scarp shown on Figure 1 and other possible scarps at this shoreline.

[1] The float at the Runstad property was destroyed during a wave storm on December 2009. It is one indicator of strong wave energy impact on the shoreline at this location.

What was demonstrated by this numerical model case is only one fragment of long-term, multiple, and random wave impacts on the Runstad property shoreline. These impacts have occurred and will occur in the future, and, if no action was taken the formation and growth of erosion scarps would have continued. The increase in extent of erosional scarps at the toe of the bluff was threatening an established use of the Runstad property and the bulkhead is required along the full length of damaged area to control bluff erosion. Therefore, the rock bulkhead meets this SMP requirement for shoreline erosion protection action.

b) The bulkhead is needed and is the most reasonable method of stabilizing an existing beach condition

As discussed above, the erosion problem at this property is due to a combination of various wave, currents and tidal hydrodynamic effects, including runup damage at the upper elevation of the profile and upland runoff. As shown below, wave parameters at the project site for the design storm event are very energetic and only a structural solution can protect against shoreline erosion. From the possible structural solutions, such as sheet-pile wall, revetment, breakwater, or other, a rock bulkhead appears to be the most reasonable method for stabilization of existing uplands at the Runstad property.

Our previous experience with similar projects indicates that use of non-structural measures would not be a reasonable solution for shoreline erosion protection at the Runstad Property. To demonstrate this statement let's consider two possible non-structural solutions: Large Woody Debris[2] (LWD) and open beach. LWD that are placed in a wave environment that exists at the Runstad property (significant wave height = 2.2 ft and peak period = 3.7 sec) will be impacted by frequent, dynamic wave forces that may exceed several thousand pounds. Unchained or unanchored LWD subjected to these forces would, at first, create certain damage to the shoreline bluff (due to LWD motions caused by waves and resulting pounding of the bluff) and, then migrate away by wave and tidal currents.

Even worse damage would occur if LWD is rod anchored or chained into the bluff. In this case, LWD would perform similar to a poorly-designed bulkhead structure (without toe protection and proper transition). Erosion would occur underneath and on the leeward side of the LWD, undermining the bluff and LWD itself. For example, the Indian Island shoreline is subjected to similar (or even smaller) wave conditions. The Indian Island shoreline was originally protected by LWD that were placed on the beach in an area of wave impacts. These LWD performed similar to a poorly designed bulkhead structure. Erosion had occurred underneath and on the back side of the LWD. It undermined the beach, exacerbated shoreline erosion, and eventually resulted in damage to the LWD anchoring system. Figure 4 shows the shoreline at Indian Island upon installation of LWD.

[2] Please note that LWD should be considered as a structural solution once LWD is anchored or chained.

Figure 4. Indian Island shoreline upon installation of LWD

Similar effects occurred at many other locations where LWD were placed on erodible material in an energetic wave environment. For example, Figure 5 below shows the results of installing LWD at the shoreline along the Tacoma Narrows.

Figure 5. Installation of LWD along Tacoma Narrows shoreline

Another example of a non-structural solution would be an open beach. For this purpose, the imported material (sand, gravel, cobbles, or mixture) would be brought on site and placed on the existing bottom slope starting from an elevation of at least 3 ft MLLW to ordinary high water. As shown below, the sediment transport (littoral drift) direction along the Runstad property shoreline is strictly from east to west. This implies that sediment from the soft solution - open beach - would migrate to the west under any type of wave conditions capable of moving beach particles. An open beach, if constructed at this location, should be expected to be replaced quite frequently, approximately every 5-10 years.

In addition, the close proximity of deep water (as shown in Figure 2 the depth of 100 ft would be just offshore of the beach) would result in additional losses of sediment. Finer sediment from the open beach would move across the slope and slide into the deep water, thus contributing to sediment loss and frequency of beach replacements.

Summarizing the above and based on previous experience and knowledge of coastal processes, it is our opinion that the rock bulkhead is the most reasonable method of stabilizing the beach condition at the Runstad property.

A.3 "Bulkheads shall not be permitted in conjunction with new projects or development when practical alternatives are available"

New construction was completed in 2011. At that time no bulkhead was part of the construction because the need for erosion protection was not recognized. Wave storms that occurred after construction eroded the back shore and upland so severely that the need for erosion protection was evident, to prevent more loss and more expensive repairs in the future. As discussed above, the most practical means of shore protection available is the rock bulkhead.

A.7 "...include at least the following information:"

a) Purpose of the proposed bulkhead

The purpose of the bulkhead is to protect the slope at the back of the beach and the edge of the uplands from erosion by wave runup and currents and forces caused by wave storms.

b) Direction of longshore transport

Sediment transport along the project shoreline is generated and controlled mostly by wave hydrodynamics. This means the direction of wave propagation coincides with the direction of longshore sediment transport. Major storms in the project area are due to southeast winds, similar to that analyzed with numerical modeling. Waves propagating from the southeast transport the available sediment from east to west along the shoreline. At the western end the transport direction may alternate westward and eastward, depending on the initial wave direction and the frequency-dependent refraction and diffraction process which determines the wave approach angle at the shore. The interpretation of sediment transport in the project area is shown in the figure below.

Figure 6. Interpreted directions of longshore transport at project site

A.8 "...prohibited for any purpose if it will cause significant erosion or beach starvation."

The shoreline in the project area is bounded by rocky headlands at the east and the west. My interpretation is that beach material located between the headlands remains in that reach, but might move eastward or westward in response to incident wave direction. Very little material currently making up the beach escapes the bounds of this pocket beach. The bulkhead is constructed high in the profile, not in response to retreat of the intertidal beach, but to protect the slope at the back of the beach from episodic erosion due to high storm waves combined with high water level. My opinion is that nature does not need to erode the upland to provide sediment to the beach so that it is not in a starved state. Therefore, the bulkhead neither interferes with predominant longshore processes nor causes erosion due to sediment starvation in the littoral cell defined by the two headlands.

References

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Exhibit E

COAST & HARBOR ENGINEERING
A Division of Hatch Mott MacDonald

Technical Memorandum

Runstad Property Beach Nourishment

1. Introduction

This technical memorandum presents the engineering recommendations for beach nourishment along the Runstad property, as requested by Washington Department of Fish and Wildlife (WDFW) in an e-mail from Laura Arber (WDFW) on Thursday, July 10, 2014. Please note that a previous Coast & Harbor Engineering (CHE) study had determined no benefits to implementing beach nourishment at the Runstad property shoreline. Beach nourishment material would migrate predominately across the shoreline, with minimal or no supply of sediment to the longshore sediment transport. It was also found that a beach nourishment action would lead to distortion of the existing dynamic equilibrium and alter the configuration of the shallow bench and composition of surface sediment.

In order to comply with WDFW's request and to minimize possible negative impacts on the coastal morphology at the project site, CHE conducted additional analysis and developed engineering recommendations for the beach nourishment project at the Runstad property. The analysis and recommendations are discussed below in two sections.

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2. Runstad Shoreline Erosion Rates and Volume of Beach Nourishment

2.1. Shoreline Erosion Rates

The first step in designing the Runstad property beach nourishment project was to determine rates of bluff erosion and volumes of sediment (from this bluff erosion) that contributes to the beach natural processes. Based on this knowledge and the composition (grain size) of sediment from the eroding bluff, an estimate of beach nourishment volumes and frequencies of placement were completed and are presented below.

There was no actual measured shoreline position data identified during CHE's study that potentially could be used for estimating the rates of bluff erosion at the Runstad property. In lieu of actual measurements (topographic survey) data, the typical industry approach would be to process and analyze historical aerial photographic data. For this purpose, CHE compiled and processed the available historical geo-referenced aerial photographs dated from 1942 to the present time. Figure 1 presents some of these aerials from 1942, 2005, 2011, and 2013.

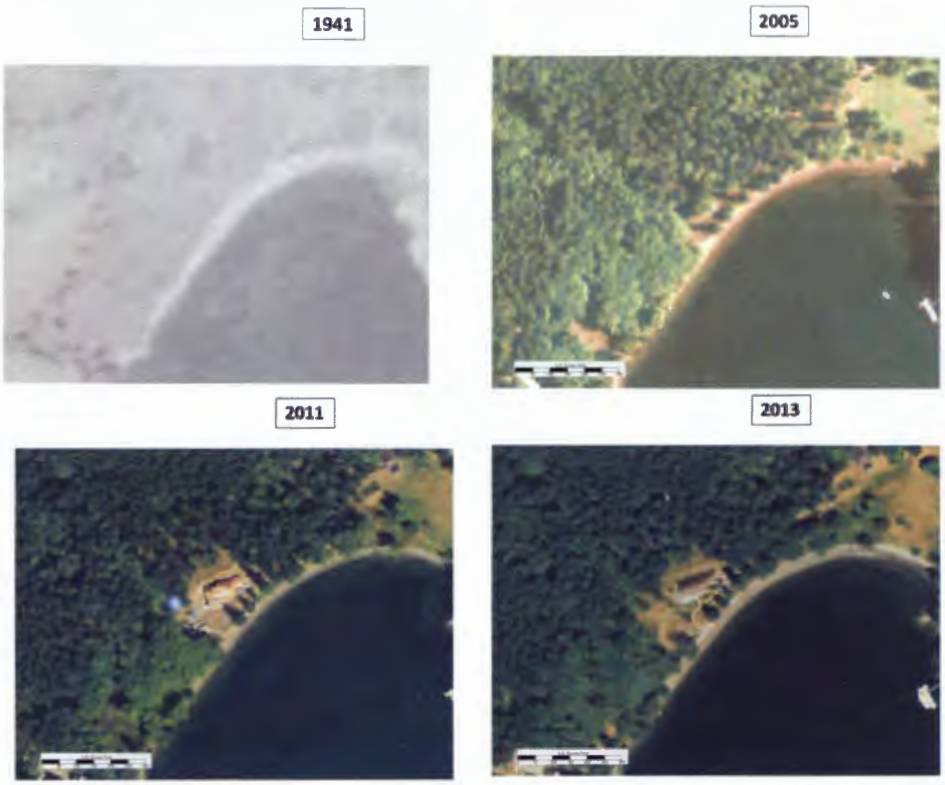


Figure 1. Aerial photographs of Runstad property from 1942 to 2013. Note: tide elevations are different for each photograph.

However, due to insufficient (coarse) resolution of the aerial photographs any meaningfully estimate of the rate of bluff erosion at the Runstad property shoreline was not feasible. In lieu of sufficient aerial data, for further analysis and engineering effort the rate of shoreline erosion at the Runstad property was estimated based on literature review and data from similar project-prototypes located in the nearby Puget Sound area. Compilation and review of relevant publications and project-prototypes revealed the following:

- Recession rates of the shoreline in Island County appear more commonly to be on the order of a few centimeters (~1") a year, or less. This assessment was made in the U.S. Geological Survey Professional Paper "Coastal Bluffs and Sea Cliffs on Puget Sound, Washington" by Hugh Shipman, dated 2004 (also found on the Washington State Ecology website).
- Jim Johannessen, in his 2011 technical memorandum "Site Enhancement Recommendations: Technical Memorandum for East Lopez Island Beach Nourishment Plan and Monitoring Plan" estimated that the average rate of bluff erosion at East Lopez Island is approximately 1.7" per year. The East Lopez shoreline may be considered as a prototype to the Runstad shoreline, with the understanding that the shoreline at East Lopez Island is open to direct wave impact. The shoreline at the Runstad property, however, is sheltered by Armitage Island which reduces direct wave impact and rate of erosion, respectively. The estimated rate of erosion (1.7" per year) measured at the East Lopez shoreline

most likely would be much smaller for the shoreline at the Runstad property, which is sheltered from direct waves.

Considering the published information above, the design rate of bluff erosion at the Runstad property shoreline is assumed to be approximately 1" per year. Please note that the estimated rate of erosion herein as well as the estimates of these rates developed by others (see above) present a time-space average estimate of rate of shoreline retreat. In reality, most of the time shoreline erosion is represented with localized retreats (slumps) occurring at various frequencies. For example:

Shoreline may be stable for 10-15 years, but retreats at 2-3 feet or a larger distance during one large storm event. During this storm event the retreat (slump) occurs along a localized length of the shoreline. Next, shoreline retreat that may happen in 10-15 years (during an extreme storm event) occurs at a different part of the shoreline. Integrating shoreline retreat for a long period of time (30-40 years) due to slumps occurring with a frequency of 10-15 years at localized locations, one may estimate the rate of erosion for the entire shoreline to be <1" per year.

Most likely, the same process of shoreline retreat has occurred along the Runstad property. The shoreline erosion that occurred during the 2011-2012 storm period (this erosion event is described in CHE's November 26, 2012 Technical Memorandum) was one of these large slump events at a localized area. During this event, the shoreline has retreated several feet landward.

2.2. Volume of Eroded Bluff with no Bulkhead

The volume of eroded bluff material with no bulkhead was estimated using the rate of bluff erosion from above, length of the bulkhead along the shoreline, and estimated height of the bluff. The length of the bulkhead along the shoreline was scaled from the available aerial photograph and is estimated at 150 ft. An estimate of the height of the eroding bluff was conducted using a topographic survey from March 2014 and available ground level photographs. Figure 2 shows (black line) a typical cross-section of shoreline in the area of the bulkhead, based on the topographic survey conducted in March 2014. The lower part of the cross-section in the figure corresponds to a relatively flat beach transiting to a steep bluff, protected by a revetment bulkhead. Based on the site visit and review of available ground level photographs, the lower and upper elevations of the eroding bluff were estimated at +8.5 ft and 13.5 ft MLLW, respectively. The locations of the estimated elevations of the bluff are approximately shown in the figure in red color. The estimated height of the bluff equal to 5.0 ft was further used for calculating beach nourishment volumes.

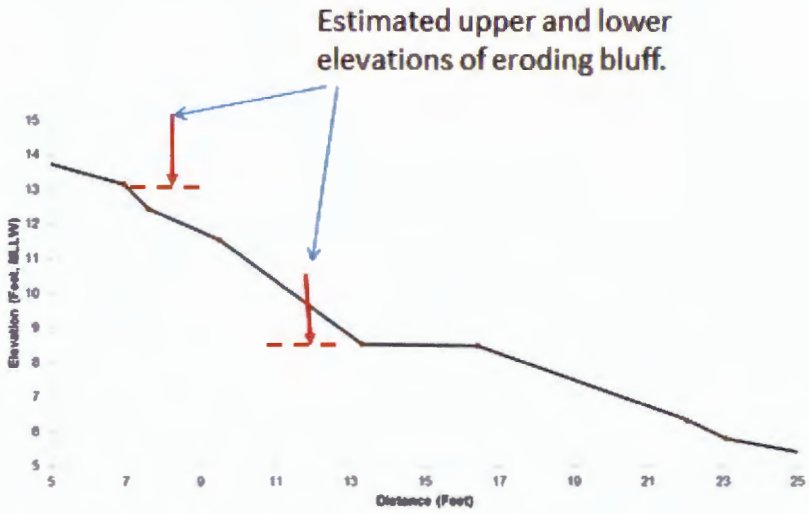


Figure 2. Survey data at bulkhead used for estimate of eroding bluff

Using the rate of bluff recession at 1" per year and length/height of the bluff as defined above, the volume of bluff erosion for no bulkhead conditions is estimated at 2.3 cubic yards (cy) per year total for the 150-ft length of beach.

Eroding bluffs in the Puget Sound area may be considered to consist of two major components: beach material such as sand, gravel, and cobbles; and non-beach material such as rock, silt, and clays. To convert the volume of the eroding bluff into the volume of beach material (that corresponds to the volume of beach nourishment), bluff sampling was required. Since the eroding bluff was protected by the rock bulkhead, a limited grain size analysis was conducted for the sediments near the waterline. Data was collected with the intent of a cursory review of the existing sediment at the site. Approximate locations of the sediment samples are shown in Figure 3.

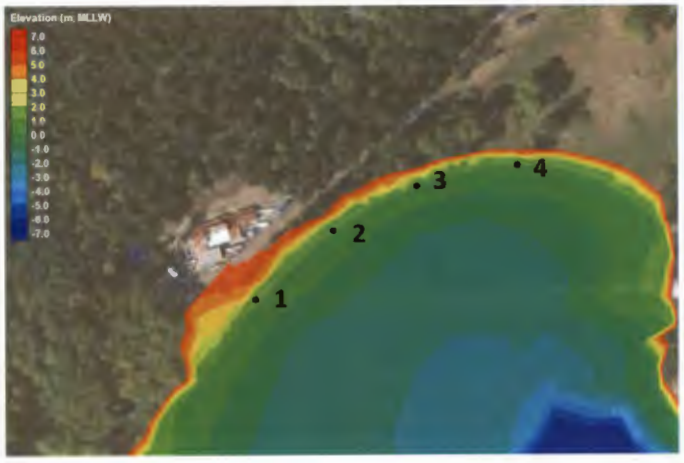
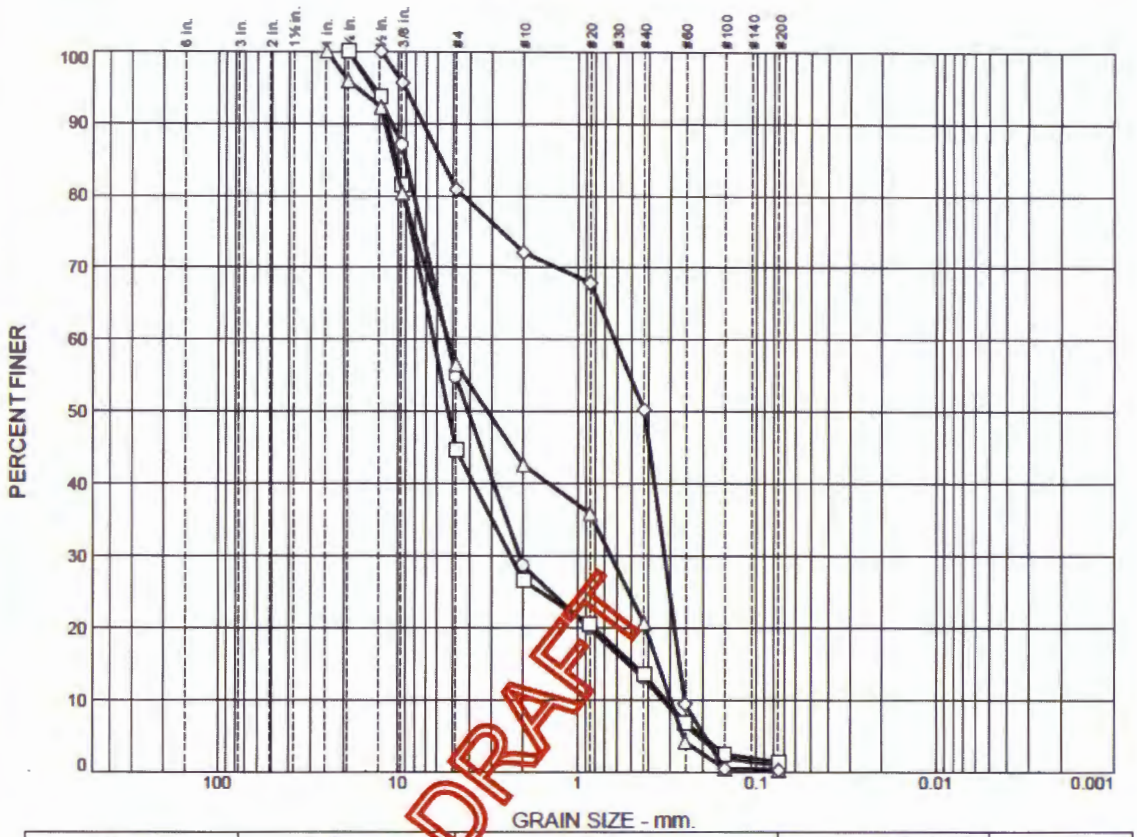


Figure 3. Approximate locations of sediment samples (1-4). Elevation data is shown in color format.

Based on the provided description all samples were located near the toe of the bluff, with some above the waterline, and some below. Grain size analysis of the samples was conducted and the results are shown in Figure 4. The figure shows that the sampled sediments are presented relatively uniform and made up of well sorted gravel-sandy material. The lack of silt/clay material in the samples indicates these sediments were likely sorted by wave action. This implies that the sampled sediment is more representative of beach material rather than bluff material. However, to conservatively represent the volume of beach nourishment, it was assumed that the sampled sediment was representative of bluff material that is applicable for supply of coastal sediment into the littoral system. Therefore, the beach nourishment volume to mitigate placement of the bulkhead was estimated at 2.3 cy per year.

Particle Size Distribution Report



	% +3"	% Gravel	% Sand	% Silt	% Clay
○	0.0	45.2	53.8	1.0	
□	0.0	55.2	43.4	1.4	
△	0.0	43.4	56.3	0.3	
◇	0.0	19.1	80.6	0.3	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	Whaleback	#1		very gravelly SAND, trace silt	SW
□	Whaleback	#2		very sandy GRAVEL, trace silt	GW
△	Whaleback	#3		very gravelly SAND	SP
◇	Whaleback	#4		gravelly SAND	SP

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Client:
Project: Runstad Blakely Island
Project No.: 17921-00 Figure

Figure 4. Preliminary grain size analysis for sample locations 1-4

3. Beach Nourishment Configuration

As discussed above, the placement of beach nourishment at the Runstad property shoreline may distort the existing dynamic equilibrium and configuration of the shallow bench with altering composition of surface sediment. In order to avoid or minimize these effects, the placement of beach nourishment is proposed directly at the toe of the bulkhead with partial coverage of the rock. Figure 5 is a schematic cross-section of the proposed placement of beach nourishment (yellow color).

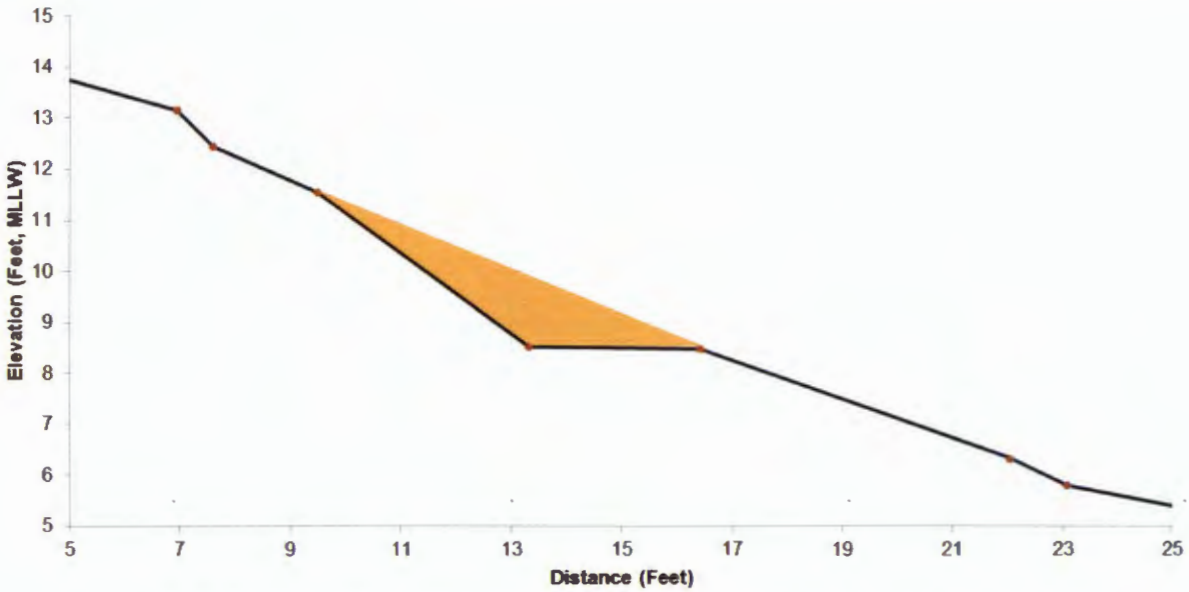

Figure 5. Schematic of cross-section for placement of beach nourishment

The proposed configuration of placement would mimic the eroding bluff that supports the natural coastal processes. In addition, the gravel/sandy material may fill (at least temporarily) the interstitial spaces between the armor rock and provide certain environmental benefits. The cross-sectional volume of the proposed beach nourishment configuration is approximately 7.5 square feet per lineal foot, which yields approximately 40 cy of material per 150 ft of the revetted shoreline. Considering the volume of bluff material erosion at a rate of 2.3 cy per year, the proposed 40 cy of beach nourishment material should be applied at a frequency of approximately every 15-18 years.

4. Summary-Recommendations

The estimated rate of bluff erosion provided in this memorandum was produced at the request of WDFW. This estimate does not address the acute conditions and shoreline retreat, i.e., bank failures/scarps that occurred during the 2011-2012 storm period preceding installation of the shoreline protective measures

The estimated rate of bluff erosion along the Runstad property shoreline is approximately <1" per year on average. The volume of eroding bluff, assuming no bulkhead construction, is estimated at approximately 2.3 cy per year. Using a conservative approach (bluff erosion

equals beach nourishment) the volume of beach nourishment is estimated at approximately 2.3 cy per year. Beach nourishment is recommended with gravel-sandy material similar to what was sampled along the shoreline.

Placement of beach nourishment is proposed directly at the toe of the bulkhead with partial coverage of the rock. Such placement of beach nourishment would minimize possible altering the configuration of the shallow bench and existing composition of surface sediment.

A total one-time placement volume of beach nourishment is estimated at 40 cy. The frequency of beach nourishment should be one time in 15-18 years. The actual frequency of beach nourishment shall be determined upon topographic surveys and beach nourishment site re-evaluation that should be conducted 1 time per 5-7 years.

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JUN 10 2015
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Exhibit F

MEMORANDUM

DATE: November 26, 2012

TO: Joe Brogan, Foster Pepper

FROM: Garry Horvitz, PE, Hart Crowser

RE: **Summary of Site Reconnaissance**
Runstad Residence, Blakeley Island
13-3-1100-011

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

CC:

Joe:

This memo summarizes our observations made during a recent site visit to the Runstad property on Blakeley Island and presents our conclusions and recommendations with respect to the current stability of the exposed bank and shoreline and general recommendations for stabilization of the area.

We visited the site with you on November 20, 2012 to observe conditions along the shoreline. We understand that emergency repairs had been made to the shoreline shortly after a severe storm event in 2011. Apparently, overland stormwater flow had eroded portions of the bank which resulted in an oversteepening of portions of the slope. Wave runup at high tide is also a likely cause for the distress to the slope. Repairs consisted of placement of riprap and other rock to stabilize the toe of the failed slopes just above the beach.

Based on our observations of soil conditions and public geologic mapping sources the site soils along this edge of Blakeley island consist of dense glacial till soils. The site slopes steeply from the beach upward toward the interior of the Island. We observed weathered till soils exposed in areas and it is likely that much of this material is slope debris which has washed down form higher elevation over the years. There are numerous signs of instability along the slope between the gravel road and the water's edge. This is evidenced by oversteepened scarps as well as leaning tress and "pistol-butted" trees which is a sign of long term instability.

It appeared that portions of the area that were washed away have now left an oversteepened condition which we feel needs to be stabilized. The stability of these soils is largely a function of

1700 Westlake Avenue North, Suite 200
Seattle, Washington 98109-6212
Fax 206.328.5581
Tel 206.324.9530

the slope angle. Although the major cause of the oversteepening is likely the storm event of early 2011 the resultant steep slopes have been reduced in their stability and it is our opinion that remedial measures are warranted at this time.

We understand that it would be most desirable to use "softer" measures to stabilize the otherwise unstable bank. However we do not feel that this will be appropriate. A significant amount of weight and strength has been removed from the toe of the oversteepened slopes and the contribution of this lost material needs to be replaced in order to maintain the long term stability of the slopes. In our opinion the use of heavy riprap at the base of the upland slope is the most appropriate way to accomplish this short of construction of a concrete seawall. The use of rip rap provides the necessary weight to "buttress" the toe of the slope and at the same time protects the exposed oversteepened slope from continued erosion. The use of a high strength material such as angular rock also adds passive resistance to the toe which enhances stability in the long term.

We trust that this memo provides you with the necessary preliminary information. Please call with any questions.

S.J.C. COMMUNITY
JUN 10 2015
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Exhibit G

MEMORANDUM

DATE: November 8, 2013

TO: Joe Brogan, Foster Pepper, PLLC

FROM: Jon Houghton, Diane Hennessey, Hart Crowser, Inc.

RE: **Ordinary High Water at Runstad Property on Blakely Island**
17921-00

This memo describes the results of a site visit to the Runstad property on Blakely Island, Washington on September 10, 2013. The purpose of this visit was to examine the upper shoreline on the property and to use the guidance of the Washington Department of Ecology (Olson and Stockdale 2010) to determine if the toe of a newly constructed reach of bulkhead is above or below the ordinary high water (OHW) line. The visit was conducted between 1200 and 1330 when the predicted tide (based on Thatcher Pass) ranged between +5.2 and +4.3 relative to mean lower low water (MLLW). The preceding lower high tide had been +6.6 feet MLLW at 0940 am, and the preceding higher high tide had been +7.6 MLLW at 1953 on September 9.

Primary factors used in our OHW determination were:

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JUN 10 2015
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- Presence and stability of drift wood below the wall;
- Wrack lines; and
- Nature of vegetation below the wall.

Definition of OHW

Per Olson and Stockdale (2010) the OHW mark, as used for administering the Shoreline Management Act: (SMA), taken from the SMA (RCW 90.58.030(2)(b) and WAC 173-22-030(11)) is as follows:

"**Ordinary high water mark** on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1,

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: PROVIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water."

Olson and Stockdale note further that "the OHW [mark] on any particular site is not a static line or level, such as a surveyed mean tide elevation or mean high water elevation, but rather is the dynamic edge of the waterbody under legal jurisdiction of the [SMA]. As such, the OHW [mark] may change over time due to natural events or as a result of permitted actions."

Field Results

Our field determination reflects the OHW line on the Runstad property as evidenced on the day of our visit and does not necessarily coincide with the spatial location of the line prior to construction of the new wall that is the subject of the present permitting action. Our field survey does, however, provide some evidence regarding the probable location of that pre-construction OHW line. Construction of the "new" wall was completed in early 2011providing three growing seasons for vegetation to become established below the wall.

A perspective of the beach in question is provided in Photographs 1 and 2, taken from near the top and bottom, respectively, of a pathway that leads to the beach east of the new wall area. In the foreground is a sandy patch of beach below previously existing "old" riprap. From the base of the path (lower two steps in the lower right corner of Photograph 2), a number of drift logs are evident at the base of the old wall, with several patches of dune grass (*Leymus mollis*) visible both among and in front of the logs. Based on the vegetation indicator species in Appendix B of Olson and Stockdale (2010), this species is expected to be found at or above OHW. Other species in this area include common velvetgrass (*Holcus lanatus*), Siberian wheatgrass (*Agropyron fragile*), and reed canarygrass (*Phalaris arundinacea*). This vegetation distribution, coupled with the highest wrack line visible, clearly indicate the location of the OHW line at this point on the beach.

The new wall section in question begins just beyond (west) of the patch of cobble upper beach that is evident in both Photographs 1 and 2. That transition area is shown in Photograph 3 (just in front of first clump of alders [*Alnus rubra*] above the wall). Closer views of the eastern most section of the new wall (Photographs 4 and 5) show multiple lines of drift logs and herbaceous vegetation that has grown since the wall was installed. Plants that were interspersed within the logs at the base of the new wall include dune grass, bedstraw (*Gallium sp.*), European searocket (*Cakile maritima*), trailing blackberry (*Rubus ursinus*), common velvetgrass (*Holcus lanatus*), Siberian wheatgrass, and reed canarygrass (*Phalaris arundinacea*). While a few of these plants (e.g., European searocket) may

also be found below OHW, the assemblage is dominated by species found at or above OHW. A complete list of species found on the upper beach below the new wall section is provided in Table 1, along with their respective distributions with relation to OHW, as reported by Olson and Stockdale (2010). The highest line of old wrack is also coincident with the outer most drift wood pieces. Again, this indicates that the OHW line is well below the toe of the new wall in this area.

Photograph 5 illustrates that there is a near-continuous line of drift logs along the base of the new section of the wall stretching to the west. Although the line of logs is narrower in the central part of the new wall (Photographs 6 through 8), dune grass, trailing blackberry, and Siberian wheatgrass continue to be found on the beach below the wall. Photographs 7 and 9 show the blackberry vines descending down the wall and trailing along the upper sand at the base of the wall in this area. Photograph 9A is a closeup showing green leaves on the vine at beach level; in other places, the tips of this species were blackened where they had extended down the beach to OHW. Photograph 8 shows a reach of beach (approximately 20 linear feet) that lacked embedded logs at the time of the survey, however, the highest line of old wrack is shown to lie out from the toe of the wall. We therefore conclude that the OHW line is this area, while closer to the toe of the wall than it is in the adjacent areas, remains below the toe of the wall.

In the area immediately east (Photograph 10) and west (Photograph 11) of the bedrock outcrop the toe of the new wall is approximately 1 foot above OHW as indicated by the multiple lines of embedded drift logs and the variety of vegetation species found among those logs. Vegetation observed in this area included most species listed above, plus salt grass (*Distichlis spicata*), lance-leaved plantain (*Plantago lanceolata*), maritime plantain (*Plantago maritima*), hawkweed (*Hieraceum sp.*), curley dock (*Rumex crispus*), and field horsetail (*Equisetum arvense*).

Apparent Wall Construction Approach

Nothing in our field results reported above or in our general observations of the riparian condition behind the new wall section suggests that the wall was constructed below the pre-project OHW line. The slope of the present riparian zone extending from the top of the wall, if extended at a similar angle, as it might have existed before construction, would intersect the present beach line, several feet in front of the present wall location; this is illustrated in Photograph 5 and other photographs. This would tend to suggest that the wall was constructed by cutting into the existing bank slope so that the toe rocks could be placed behind the then extant OHW.

Additional Observations

We have compared photographs provided in the WDFW Case # WA-11-001018 (identified as being provided by the contractor Needham) with those taken on January 15 and September 10,

2013. In several reaches of the central portion of the constructed wall, we can identify specific boulders incorporated into the wall in both photograph sets (compare Photograph 12 with Needham Photograph 2). In all such cases, the recent line of beach sediments is higher on the boulders in the more recent photographs. This again suggests that the wall was constructed behind the then extant OHW line and that ongoing natural processes have rebuilt the beach face and storm berm up to re-establish the OHW line in front of the wall.

Reference

Olson, P. and E. Stockdale, 2010. Determining the Ordinary High Water Mark on Streams in Washington State. Second Review Draft. Washington State Department of Ecology, Shorelands & Environmental Assistance Program, Lacey, WA. Ecology Publication # 08-06-001.

Attachments:
Table 1
Photographs 1 through 12

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Table 1 – Vegetation Species Observed on the Beach Below the New Wall and Typical Distribution As It Relates to the Ordinary High Water Mark

Plant Species – Common Name	Scientific Name	Below OHWM[1]	At/Straddle OHWM[1]	Above OHWM[1]
Bedstraw[2]	*Gallium sp.*			
Bull thistle	*Cirsium vulgare*			X
Colonial bentgrass	*Agrostis capillaries*		X	X
Common velvetgrass	*Holcus lanatus*		X	X
Curley dock	*Rumex crispus*		X	X
Dune grass	*Elymus mollis*		X	X
European searocket[2]	*Cakile maritime*			
Field horsetail	*Equisetum arvense*	X	X	X
Hawkweed[2]	*Hieraceum sp.*			
Lance-leaved plantain	*Plantago lanceolata*		X	X
Maritime plantain	*Plantago maritima*	X	X	
Reed canarygrass	*Phalaris arundinacea*	X	X	X
Saltgrass	*Distichlis spicata*	X	X	
Siberian wheatgrass[2]	*Agropyron fragile*			
Trailing blackberry	*Rubus ursinus*			X

[1]Based on the vegetation indicator species in Olson and Stockdale (2010) *Determining the Ordinary High Water Mark on Streams in Washington State*, Appendix B.
[2]Not on the Olson and Stockdale (2010) report Appendix B list.

Photograph 1 – Runstad Beach overview

Photograph 2 – Runstad Beach shoreline

Photograph 3 – Transition from old to new wall (at base of alders)

Photograph 4 – New wall east end (1)

Photograph 5 – New wall east end (2)

Photograph 6 – New wall center to east

Photograph 7 – New wall center to west

Photograph 8 – New wall center; farther west

Photograph 9 – New wall blackberry shoot

Photograph 9A – Blackberry shoot closeup

Photograph 10 – Toward west end bedrock

Photograph 11 – From bedrock to west

Photograph 12 – Center of new wall

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JUN 10 2015
DEVELOPMENT & PLANNING

Exhibit H

HARTCROWSER

MEMORANDUM

DATE: May 14, 2013

TO: Joseph Brogan, Attorney, Foster Pepper, PLLC

FROM: Hans Hurn, Hart Crowser, Inc.

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

RE: **Forage Fish Spawning Survey, Runstad Residence Beach Repair**
17921-00

CC: Jon Houghton, Judith Runstad

Hart Crower scientists conducted surveys for the presence of forage fish spawning activities along 500 linear feet of shoreline at the Runstad Residence project site, a beach on the Blakely Island shoreline. Surveys were conducted monthly from January 15 to April 15, 2013, in accordance with expressed interest on the part of the Washington Department of Fish and Wildlife (WDFW).

Forage fish spawning surveys were conducted using guidelines developed by the WDFW, by a scientist certified to conduct such surveys. Beach substrate samples were collected at five 100-foot transects throughout the project area, as well as at two 100-foot transects from a reference area to the west of the project area. Transects were placed to encompass the entire project area where potential affects to the intertidal zone may have occurred. Four project and one reference transect were surveyed between +8 feet and mean higher high water, and one project and one reference transect were surveyed at approximately +6 feet mean lower low water. Within each 100-foot transect, four to five subsamples were collected from the upper 1 to 2 inches of beach, at evenly spaced intervals, and composited for laboratory analysis. In the laboratory, composited samples were condensed and winnowed to separate and condense forage fish eggs, if any, from the beach substrate. All substrate samples were examined under a microscope for the presence of surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) eggs.

No eggs were observed at any of the seven transects during the January 15, February 11, March 15, and April 15 2013 forage fish spawn surveys at the Runstad Residence project site.

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

MEMORANDUM

DATE: December 11, 2013

TO: Joseph Brogan, Attorney, Foster Pepper, PLLC

FROM: Hans Hurn, Hart Crowser, Inc.

RE: **Forage Fish Spawning Survey, Runstad Residence Beach Repair**
17921-00

CC: Jon Houghton, Judith Runstad

On November 27, 2013, Hart Crower scientists surveyed for the presence of forage fish spawning activities along 500 linear feet of shoreline at the Runstad Residence project site, a beach on the Blakely Island shoreline. Surveys will be conducted monthly through the remainder of 2013, in accordance with the Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval Violation memo.

Forage fish spawning surveys were conducted using guidelines developed by the WDFW, by a scientist certified to conduct such surveys. Beach substrate samples were collected along five 100-foot transect locations: four in the disturbed project area and one at a reference area to the west of the project area. Transects were placed to encompass the entire project area where potential affects to the intertidal zone may have occurred. Four project and one reference transects were surveyed between +6 feet and +8.5 feet. Within each 100-foot transect, four to five subsamples were collected from within the upper 1 to 2 inches of beach substrate, at evenly spaced intervals, and composited for laboratory analysis. In the laboratory, composited samples were condensed and winnowed to separate and condense forage fish eggs, if any, from the beach substrate. All substrate samples were examined under a microscope to detect the presence of surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) eggs.

No eggs were observed at any of the five transects during the November 27, 2013 forage fish spawn surveys at the Runstad Residence project site.

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

MEMORANDUM

DATE: January 14, 2014

TO: Joseph Brogan, Attorney, Foster Pepper, PLLC

FROM: Hans Hurn, Hart Crowser, Inc.

RE: **Forage Fish Spawning Survey, Runstad Residence Beach Repair**
17921-00

CC: Jon Houghton, Judith Runstad

On December 26, 2013, Hart Crower scientists surveyed for the presence of forage fish spawning activities along 500 linear feet of shoreline at the Runstad Residence project site, a beach on the Blakely Island shoreline. Surveys will be conducted monthly, in accordance with the Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval Violation memo.

Forage fish spawning surveys were conducted using guidelines developed by the WDFW, by a scientist certified to conduct such surveys. Beach substrate samples were collected along seven 100-foot transect locations: five in the disturbed project area and two at a reference area to the west of the project area. Transects were placed to encompass the entire project area where potential affects to the intertidal zone may have occurred. Four project and one reference transect were surveyed between +8 feet and mean higher high water, and one project and one reference transect were surveyed at approximately +6 feet mean lower low water. Within each 100-foot transect, four to five subsamples were collected from within the upper 1 to 2 inches of beach substrate, at evenly spaced intervals, and composited for laboratory analysis. In the laboratory, composited samples were condensed and winnowed to separate and condense forage fish eggs, if any, from the beach substrate. All substrate samples were examined under a microscope to detect the presence of surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) eggs.

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

No eggs were observed at any of the seven transects during the December 26, 2013 forage fish spawn surveys at the Runstad Residence project site.

Sincerely,

Hans Hurn
Biologist
Hart Crowser, Inc.

\\seaalsdata\clients\7623-1000 Runstad SJ Bulkhead\To attach to Application\Ex H (fish surveys)\runstad forage fish memo 12-26-13.doc

MEMORANDUM

DATE: February 13, 2014

TO: Joseph Brogan, Attorney, Foster Pepper, PLLC

FROM: Hans Hurn, Hart Crowser, Inc.

RE: **Forage Fish Spawning Survey, Runstad Residence Beach Repair**
17921-00

CC: Jon Houghton, Judith Runstad

On January 30, 2013, Hart Crower scientists surveyed for the presence of forage fish spawning activities along 500 linear feet of shoreline at the Runstad Residence project site, a beach on the Blakely Island shoreline.

Forage fish spawning surveys were conducted using guidelines developed by the WDFW, by a scientist certified to conduct such surveys. Beach substrate samples were collected along seven 100-foot transect locations: five in the disturbed project area and two at a reference area to the west of the project area. Transects were placed to encompass the entire project area where potential affects to the intertidal zone may have occurred. Four project and one reference transect were surveyed between +8 feet and mean higher high water, and one project and one reference transect were surveyed at approximately +6 feet mean lower low water. Within each 100-foot transect, four to five subsamples were collected from within the upper 1 to 2 inches of beach substrate, at evenly spaced intervals, and composited for laboratory analysis. In the laboratory, composited samples were condensed and winnowed to separate and condense forage fish eggs, if any, from the beach substrate. All substrate samples were examined under a microscope to detect the presence of surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) eggs.

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

No eggs were observed at any of the seven transects during the January 30, 2014 forage fish spawn surveys at the Runstad Residence project site.

Similar surveys were conducted monthly, eight times between January and April 2013 and October 2013 and January 2014. Results from all surveys were similar; no forage fish eggs have been found.

Sincerely,

Hans Hurn
Biologist
Hart Crowser, Inc.

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S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

Exhibit I

San Juan County Community Development & Planning
135 Rhone Street, P. O. Box 947, Friday Harbor, WA. 98250
(360) 378-2354 (360) 3782116 Fax (360) 378-3922

Permits@co.san-juan.wa.us www.co-san-juan.wa.us

To: The Journal & Sounder

Please publish once on 5/22/2013 and bill Community Development & Planning

COMBINED NOTICE OF APPLICATIONS AND PUBLIC HEARINGS

Permit Number	Project Description	Tax Parcel Number, Project Location, and Island	Applicant/Agent Name and Address	Date of Application	Date Complete	Other Required Permits*	Existing Environmental Documents	SEPA Threshold Determination	End Date for SEPA Comments	Project Comments End Date**	Hearing Body	Hearing Place	Hearing Date
PSJ000-12-0019	After-the-fact bulkhead	151024002 and 151024003, (near Armitage Island) on Blakely Island	Jon Runstad, c/o Joe Brogan, 1111Third Ave Suite 3400, Seattle, WA 98101	-	-	-	-	-	-	-	Hearing Examiner	Islanders Bank	**Revised hearing date** 9/11/13

SEPA Determination: San Juan County has determined that the projects noted above with a DNS or MDNS will not have probable significant adverse impacts on the environment and has issued a Threshold Determination pursuant to Sections 197-11-310 and 197-11-340 WAC. An Environmental Impact Statement will not be required under Section 43.21C.030 (2)(c) RCW. This determination was made after review of the environmental checklist and other environmental information on file at Community Development and Planning (CD&P). The County has determined that the requirements for environmental analysis, protection, and mitigation measures have been adequately addressed in the development regulations and comprehensive plan adopted under Chapter 36.70A RCW, and in other applicable local, state, or federal laws or rules, as provided by Section 43.21C.240 RCW and Section 197-11-158 WAC, or as may be conditioned within any MDNS.

SEPA Comments: Anyone desiring to comment on the Threshold Determination can do so by submitting a written statement to CD&P, P. O. Box 947 (135 Rhone Street), Friday Harbor, WA. 98250 no later than the comment date specified above. The Threshold Determination may be appealed by submitting a written statement of appeal along with the basis for the appeal and a fee to CD&P within 21 days after the end of the SEPA comment period.

Application Comments: Any file may be examined by appointment during regular business hours at the San Juan County CD&P, Courthouse Annex, Friday Harbor. Anyone desiring to comment on the Notice of Application can do so by submitting a written statement to CD&P no later than the end date for project comments specified above. Anyone who desires to provide testimony in the public hearing or desires a copy of the decision for this project may do so by requesting such from CD&P. A copy of the staff report for this project may be obtained from CD&P generally 7 days prior to the public hearing.

NOTICE OF PUBLIC HEARINGS: Hearing Examiner meetings on San Juan Island start at 10:00 a.m., in the Islanders Bank Admin. Building downstairs meeting room, 225 Blair Street, Friday Harbor. Planning Commission meetings begin at 8:45 am. Any person desiring to comment prior to the hearing shall submit a statement in writing to CD&P, PO Box 947, Friday Harbor, WA. 98250. Written comments may also be submitted at the hearing. A copy of the staff report for this hearing may be obtained generally 7 days prior to the public hearing from CD&P at the address above.

* As directed by applicant, per UDC18.80.030.A.3.f
** Per UDC 18.80.030.B. (**Suggested**)

NOTICE OF DECISIONS: Hearing Examiner decisions are posted on the County website at: **sanjuanco.com/cdp/hearingexdecisions.aspx**

LEGAL NO.

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

Joe Brogan

From: Powell, Susan M NWS <Susan.M.Powell@usace.army.mil>
Sent: Monday, August 19, 2013 2:26 PM
To: Joe Brogan
Subject: Whaleback LLC (UNCLASSIFIED)

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

Classification: UNCLASSIFIED
Caveats: NONE

Hi Joseph, I've received this application and it's been assigned the reference number NWS-2013-764. I was informed of this unpermitted bulkhead a year or so ago and it was determined to be outside of Corps jurisdiction. Based on your survey, that determination appears to be correct so a Corps permit is not required for the bulkhead. The beach nourishment will likely need a Corps permit. Have the plans been finalized? I'll need a set of drawings as described below:

Please provide a set of the project drawings in black and white, on 8 ½- by 11-inch sheets showing the current and proposed features, current and proposed elevations, adjacent property ownership, location of adjacent structures, etc. Drawings should be originals and not reduced copies of large-scale plans. If you must reduce large drawings, make sure that the text and labels are legible at the smaller size and that the scale is adjusted to the reduction. We recommend the use of a graphic scale on all drawings.

Sheet 1 should be a site/vicinity map, which clearly shows the project in relation to nearby roads, waterways, and other landmarks. Include the boundaries of your property and the longitude and latitude of the project site on this sheet. Sheet 2 should be a plan view that shows the location and dimensions of the proposed work. This sheet should include the dimensions of the proposed work. Sheet 3 should show a cross sectional or elevation view of the proposed work. Additional sheets should be used if needed to clarify information.

The line of DA jurisdiction, Mean Higher High Water (MLLW=0) must be clearly and accurately drawn on all plan and section view drawings.

All of your drawings should include a title block listing the applicant, U.S. Army Corps of Engineers (Corps) reference number, location, project purpose, project description, date, and sheet number.

Please also submit a biological evaluation for the proposed spawning gravel.

If the plans have not been finalized yet, let me know and I'll cancel the application until they are available. If there are plans, please submit the requested information within 30 days or I will have to cancel the application.

Also, we can't issue a permit for 25 or 50 years. If a nationwide permit is issued, it would be good until March 2018 and then you'd have to get it re-verified every 5 years. An individual permit could be good for 10 years.

Thanks, Susan Powell

Classification: UNCLASSIFIED
Caveats: NONE

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

From: Arber, Laura (DFW) [mailto:Laura.Arber@dfw.wa.gov]
Sent: Thursday, January 02, 2014 12:10 PM
To: Jon Houghton
Cc: Diane Hennessey
Subject: RE: Blakely Island OHW

Hi Jon,

I did receive the report back in November whilst I was gone on vacation and then was of course back logged when I returned. Therefore my sincere apologies for not responding sooner. WDFW is in agreement with your findings of the current OHWM for the Runstad property on Blakely Island.

Good luck on your adventure to Ecuador and Happy New Year!

Best regards,

Laura Arber
Washington Dept. of Fish and Wildlife | Marine Habitat Biologist | 16018 Mill Creek Blvd, Mill Creek, WA 98012 | p. (425)379-2306 | Laura.Arber@dfw.wa.gov | Hours M-Th. 7:30-3:30

From: Jon Houghton [mailto:jon.houghton@hartcrowser.com]
Sent: Tuesday, December 31, 2013 1:53 PM
To: Arber, Laura (DFW)
Subject: Blakely Island OHW

Hi Laura, Happy New Year!! I believe I sent you the attached report of our OHW determination at the Runstad Blakely Island property some time ago (but for the life of me, I can't find the email, so maybe I didn't!!). In any case, I wonder if I could ask that you take a look and let us know if the Department is in agreement with our findings? The County is apparently scheduling a hearing that will include this memo but we don't want to submit it as is, if you don't believe it's accurate based on site conditions (as presented in the memo, or as understood by you or Brian). It would be great if you could get back to me before the 15th (when I leave for my next big adventure to Ecuador). Thanks and DO have a great New Year! - Jon

Jon Houghton, Ph.D.
Sr. Principal Marine and Fishery Biologist
jon.houghton@hartcrowser.com

HARTCROWSER
120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411

425.775.4682
425.329.1150 (direct)
206.601.0773 (cell)

nvironmental - Geotechnical - Natural Resources

S.J.C. COMMUNITY

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JUN 10 2015
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Exhibit J

Blakely Island Macrovegetation Monitoring Plan
San Juan County, Washington

Prepared for
Foster, Pepper PLLC

December 30, 2013
17921-00

S.J.C. COMMUNITY
JUN 10 2015
DEVELOPMENT & PLANNING

HARTCROWSER

Blakely Island Macrovegetation Monitoring Plan
San Juan County, Washington

Prepared for
Foster, Pepper PLLC

December 30, 2013
17921-00

Prepared by
Hart Crowser, Inc.

120 Third Avenue South, Suite 110
Edmonds, Washington 98020-8411
Fax 425.778.9417
Tel 425.775.4682

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BLAKELY ISLAND MACROVEGETATION MONITORING PLAN
SAN JUAN COUNTY, WASHINGTON

BACKGROUND AND OBJECTIVES

During the winter of 2010–2011, following a period of heavy rain and shoreline erosion, a section of shoreline along the Runstad property on southeast Blakely Island in San Juan County was hardened without obtaining a Hydraulic Project Approval (HPA). A subsequent enforcement action by Washington Department of Fish and Wildlife (WDFW; Case # WA-11-001018) includes a mitigation requirement to monitor the distribution and density of eelgrass adjacent to the new wall section for a period of 5 years. It is suggested that rates of pre-existing sediment delivery to the beach may have been altered by wall construction, or that nourishment of the beach to offset losses of sediment to the beach could alter sediment or sedimentation conditions in a manner that could affect eelgrass distribution or abundance.

This monitoring plan provides an approach and evaluation criteria to accomplish the following objectives:

- Delineate the shallow edge of eelgrass (*Zostera marina*) habitat below the new seawall section, which is the potential location of a beach nourishment action;
- Obtain similar data from a nearby reference site outside of the range of probable effects of the project;
- Develop data to track changes in eelgrass abundance for 5 years and test the null hypothesis that there is no difference in the health and distribution of eelgrass over time between the project area and reference site eelgrass beds.

The program will be under the direction of a qualified marine biologist/benthic ecologist with at least 5 years experience in sampling approaches in intertidal and subtidal habitats.

APPROACH

Monitoring Schedule

Pre-nourishment monitoring of eelgrass distribution in the vicinity of the new seawall will be completed during extreme low tides between May and July 2014. Post-nourishment monitoring will be conducted in Years 1, 3, and 5 following anticipated beach nourishment. Monitoring reports will be submitted to the WDFW and San Juan County by December 15 of each monitoring year.

Eelgrass Habitat Monitoring

A qualified biologist will conduct a survey of the upper portion of the existing eelgrass bed along the shoreline waterward of the new wall and approximately 300 feet to the west along a natural shoreline. The upper limit of distribution of eelgrass will be delineated during an extreme low tide by the biologist mapping the edge of the bed using a sub-meter GPS. Surveys will occur between June 1 and October 1 of any given survey year.

The biologist will record benthic condition and annotate eelgrass presence data. That data will then be compiled in GIS and a natural resources map will be generated to quantify areal coverage of eelgrass documented. In addition to the areal data, the biologist will note the relative abundance of the following:

- Physical habitat type(s);
- Dominant algal taxa (especially structural components such as kelp);
- Dominant visible invertebrates.

We will provide photo documentation to accompany the annotation.

In addition to eelgrass areal coverage, shoot density will be quantified using 0.25-square-meter (m^2) quadrat counts at randomly selected locations within the upper fringes of existing eelgrass beds. Because of the depth of the eelgrass in this bay, and because of the intent to conduct this work without the encumbrance of using divers, the following approach will be taken to identify a minimum of 20 quadrat locations in each of the project area and reference beds to satisfy the statistical criteria of $\alpha = 0.10$ and power $(1 - \beta) = 0.90$. This will ensure that any effects from the project (i.e., significant differences from the reference bed) can be detected statistically.

A tape measure will be laid along the beach at about MLLW, beginning at a fixed (and GPS'd) location waterward of the eastern end of the new wall. The

location along the tape for at least 20 quadrats will be randomly pre-selected. Once the distance along the tape has been located, the offset into the bed will be established down slope from the tape, as 2 feet from the upper edge of the bed; i.e., the upper edge of the quadrat will be placed 2 feet downslope from the upper edge of the bed, with the quadrat oriented to the west. The 2-foot distance was selected to characterize density in the upper portion of the bed, while ensuring that quadrat counts are only minimally influenced by minor shifts in eelgrass density along the edge of the bed where eelgrass existence is most tenuous. A similar layout will be sampled in the reference bed to the west.

Thus, this design will provide the following data for both the project and reference areas:

- A line showing the upper edge of the eelgrass bed; and
- A minimum of 20 counts of shoot (turion) density along the upper margin of each bed.

A visual comparison of the upper boundaries of the project area and reference beds over the years will be useful in qualitatively evaluating the potential that the project has had an impact on eelgrass distribution. The quadrat density data will be used to determine if the eelgrass density in the project area bed changes relative to any trend seen in density in the reference area; absent other factors, such changes may be attributed to the effects of the nourishment.

Because this monitoring will not commence until about 2 1/2 years after wall construction, it will not be possible to attribute any differences that may exist in 2014, between eelgrass in front of the new wall and that in the reference area, to wall construction or presence. If there is little difference between the apparent tidal elevation of the upper edge of the bed in the two areas in 2014, and if densities are similar in the upper portions of each bed, it can be assumed that the wall construction has not had a lasting adverse effect on eelgrass.

ANALYSIS AND REPORTING

Data Management and Analysis

Quadrat data gathered will be entered into standard spreadsheets and a geospatial database for archiving and analysis. All data entry will be subjected to 100 percent QC review. Data will be summarized in tabular and graphic forms. Data will be normalized for pre-construction differences between impact area and reference transects to establish the expectations for eelgrass productivity in the assessment area.

It is expected that null hypotheses of the form:

> H_O: "There is no significant difference between eelgrass coverage in the upper portion of beds in the project area and in the adjacent reference area"

will be accepted if all performance criteria are met in any given year.

This type of test will be used to confirm if ecological performance of the surveyed eelgrass habitat is meeting the overall criterion of no net loss of habitat productivity.

Reporting

A report will be prepared for submittal to WDFW and San Juan County by December 15 of each year within which sampling occurs. The report will clearly state the monitoring results and their implications. Results and conclusions will be drawn both from mapping, quantitative measures, and statistical testing and from qualitative descriptions of the assemblages and their probable ecological functions (i.e., relative habitat function).

SUCCESS CRITERIA AND CONTINGENCY PLANS

Evaluation Criterion

The evaluation criterion of the proposed eelgrass habitat monitoring effort is that there will be no net loss of existing eelgrass area or productivity due to beach nourishment, adjusted for changes in a reference area outside of project influence.

Contingency Plans

A documented loss of existing eelgrass in the vicinity of the nourishment may trigger a recommendation to curtail or modify the nourishment approach, or to extend the monitoring for some time following completion of the nourishment.

\\seaalsdata\clients\7623-1000 Runstad SJ Bulkhead\To attach to Application\Ex J (eel grass)\Blakely Eelgrass Mon Plan 123013.doc