



ENVIRONMENTAL TECHNICAL
ADVISORY COMMITTEE
SPECIAL MEETING
THURSDAY, NOVEMBER 1, 2018
3:00 PM – 5:00 PM
COUNCIL CONFERENCE ROOM
280 MADISON AVENUE NORTH
BAINBRIDGE ISLAND, WA 98110

AGENDA

CALL TO ORDER / ROLL CALL / ACCEPT OR MODIFY AGENDA / CONFLICT OF
INTEREST DISCLOSURE
3:00 PM

MEMBERS:	JASON FLOWERS	JUAN ROVALO
	DYLAN FRAZER	STEVE SAEPOFF
	MELANIE KENNAN	CASEY SCHMIDT
	CHARLIE KRATZER	KARL SHEARER

COUNCIL LIAISON: RASHAM NASSAR

COBI STAFF: ANNE HILLIER, PLANNER

APPROVAL OF MINUTES – OCTOBER 18, 2018 (5 MIN)

COUNCIL LIAISON REPORT – RASHAM NASSAR (5 MIN)

HABITAT MANAGEMENT PLAN : MARKS & MAIONE - HILLIER (40 MIN)

DISCUSSION ON GROUNDWATER MANAGEMENT PLAN (GWMP) DOCUMENT –
ALL (20 MIN)

VOTE ON SENDING GWMP DOCUMENT TO CITY COUNCIL – ALL (10 MIN)

DISCUSSION ON PROPOSED BUDGET AND SCOPE FOR GWMP – ALL (30 MIN)

PUBLIC COMMENT (10 MIN)

ADJOURNMENT
5:00 PM

MINUTES

Call to Order at 3:06 p.m.

Member Attendees: Melanie Keenan Casey Schmidt
 Charlie Kratzer Steve Saepoff
 Juan Rovalo (arrived at 4:00 p.m.)

Members Absent: Jason Flowers, Dylan Frazer, Karl Shearer

Council Liaison: Rasham Nassar

COBI Staff: Robbie Sepler

Guests: None

The minutes from the September 20, 2018 meeting were approved.

During the Council Liaison report, there was a discussion of the COBI Water Resources Specialist position and whether it should be eliminated. There was no vote, but all those present spoke in favor of retaining the position.

Robbie Sepler shared a PowerPoint and led a discussion of the OPMA and the Public Records Act. Much of the discussion centered around our ability to edit and revise working documents.

There was a discussion of the three pending Habitat Management Plans (HMP). A sub-committee was formed to complete ETAC's assessment of the HMPs by the middle of November. The sub-committee consists of Casey Schmidt, Juan Rovalo, Karl Shearer, and Steve Saepoff.

The membership status of Steve Saepoff was discussed. Steve is no longer living on Bainbridge Island. However, since his ETAC appointment is not contingent on place of residence, Steve will remain on the committee.

There was a lengthy discussion on the status of the Groundwater Management Plan (GWMP) that included the following topics:

- o The necessity of water use estimates by category (e.g. industrial, indoor vs outdoor, commercial vs residential). This was discussed in the context of water use projections that reflect population growth, but not necessarily water use. For instance, high density growth may have lower water use because there are less lawns.
- o Some of the significant revisions that Charlie Kratzer added were discussed. This discussion wasn't finished, and ETAC members are advised to send Charlie an e-mail with comments.



CITY OF
BAINBRIDGE ISLAND

ENVIRONMENTAL TECHNICAL ADVISORY COMMITTEE
THURSDAY, OCTOBER 18, 2018
280 MADISON AVENUE NORTH
BAINBRIDGE ISLAND, WA 98110

-
- 0 There was a discussion of a special meeting in early November to vote on the plan. This is due to a concern with the timing of the city's budget process, and the need to include funds for the plan in this budget process.
 - 0 There was a discussion on the necessity of a liaison at the city, to work on and guide consultants on a pending GWMP. Concern was expressed that if the Water Resources Specialist position was terminated there would be nobody to fill that role.

Meeting adjourned about 5:00 PM.

Charlie Kratzer, Chair

11/1/18

**BIOLOGICAL EVALUATION
FEMA FLOODPLAIN HABITAT ASSESSMENT
SHORELINE FUNCTIONS EVALUATION
HABITAT MANAGEMENT PLAN**

**MARKS & MAIONE
MARINE SHORELINE RESIDENCE**

**11000 NE Country Club Road
Bainbridge Island, Washington**

Prepared for:
Brian Marks and Carol Maione
2000 First Avenue, Suite 2700
Seattle, Washington 98121

Prepared by:
Cedarock Consultants, Inc.
19609 244th Avenue NE
Woodinville, Washington 98077

August 16, 2018

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APPENDIX

Mitigation Plan drawings including shoreline restoration and upland planting plans

REPORT AUTHOR

This report was prepared by Carl Hadley, a professional aquatic biologist with 30 years of experience evaluating effects of changing land use on aquatic habitat. Mr. Hadley is the principal biologist with Cedarock Consultants, Inc.

1. Proposed Activity

A 3.33-acre site along the marine shoreline on Bainbridge Island will be redeveloped into a private residence (Figure 1). The site was the historic location of a commercial cannery including marine dock and loading facilities. A past residence was also located near the shoreline. Currently the site has a 4 to 8-foot high concrete bulkhead running the entire length of the property. Mean Higher High Water (MHHW) and Ordinary High Water (OHW) are located along the face of the bulkhead. The upland area consists almost entirely of bare ground and non-native grasses. Patches of mature native trees are found near both property lines.

Under the proposed action a new house will be built just outside of the 75-foot shoreline setback. All non-native plants will be removed (2.05 acres), the land graded into a more natural undulating surface, and native vegetation (2.43 acres) planted in a mix of planted uplands, shore grasses, and emergent wetlands. Over half of the 300-foot long bulkhead will be removed and replaced with a new natural sand and gravel beach. The remainder, which is needed to protect the stands of native trees and a steep slope along the property boundaries, will be removed and replaced with rockery, some of which will be reconfigured into a more natural organic shape to reduce reflected wave energy. The concrete groins and staircase will be removed from the beach.

2. Drawings: See appendix.

3. Date: August 16, 2018

4. Applicant: Brian Marks and Carol Maione
2000 First Avenue, Suite 2700
Seattle, Washington 98121

5. Agent: Chris Haddad
Suyama Peterson Deguchi
8601 8th Avenue S
Seattle Washington 98108

6. Project Name: Marks & Maione Residence

7. Location of Activity

Address: 10950 & 11000 NE Country Club Rd, Bainbridge Island WA 98110
Parcel #: 112402-1-045-2008
Section: NE¼ Sec 11 Township: 24N Range: 02E
Latitude: 47.593N Longitude: -122.503W
Waterbody: Blakely Harbor, Puget Sound County: Kitsap



Figure 1. Aerial photo of existing site (Google May 2017).

8. Description of Work

Bulkhead Removal and Replacement

Work on the bulkhead will be the first action taken as the site is redeveloped and will occur during low tides between August 1 and February 15. Because the upland area is currently vacant and relatively unvegetated, all work on the bulkhead can be completed by equipment operating upland of OHW. Access, staging, stockpiling, and laydown areas can be located so as not to disturb any native vegetation or habitat. Only minimal beach access will be required.

Heavy equipment including excavators, loaders, and dump trucks will be brought to the site on existing roads. The excavator will first remove a minimum of several feet of soil from behind the bulkhead. After the tide drops below the work area, a ten to fifteen-foot segment of bulkhead and any adjacent groins or staircases will then be sawcut and lifted out in sections. Spoils will be stockpiled on-site, trucked off-site to a landfill, or used for other projects. As each section is removed, a second excavator will begin constructing the replacement bulkhead with large (2-4 man) rock located no further waterward than the existing concrete bulkhead. Filter fabric and drain rock will be placed behind the rockery for stability and the area backfilled.

Work to remove a bulkhead section will not be started if a storm is expected. If for some reason a section of bulkhead has been removed and the hole can't be filled with rock during that work session, the hole will be filled with sand bags containing beach gravel to prevent fish from becoming entrapped during the next high tide. Backfilling all trenches, depressions, or holes created waterward of OHW prior to tidal inundation will be standard operating procedure as the tide returns during each work session.

Roughly 169 feet of the 300-foot bulkhead will be removed and not replaced (see design sheets in appendix). A portion of the property will be over-excavated to create a slope consistent with the existing beach up past OHWM but 3 to 4 feet lower than final grade. Beach gravel and sand will be imported to finish the slope. Gravel size will be determined in conjunction with WDFW. Large habitat rocks will be sprinkled randomly on the beach. The design is further discussed in the Coastal Geologic Services report (2018).

Clean-up and mitigation actions will consist of grading the beach as needed to restore pre-existing contours and eliminate all significant evidence of work activity. This should only be required where the concrete groins and staircase were removed, and immediately adjacent to the toe of the new bulkhead. Any filling of depressions will be completed with a WDFW required beach gravel to be specified as part of the Hydraulic Project Approval. Dunegrass (*Leymus mollis*) will be planted on the newly created beach above OHW.

OHW is located on the face of the bulkhead so almost work will occur above OHW. Removal of the groins will be attempted by lifting using an excavator located on the upland. If this is not possible, the excavator will track out a short distance from the upland onto the beach as needed

to better access and lift the concrete chunks. Because work at and below OHW is required, the work will be done within work windows designated by the Washington Department of Fish and Wildlife (WDFW) and the Army Corps to protect salmon, bull trout, and forage fish species. The applicant will work with WDFW to identify appropriate measures for the protection of any forage fish species that might be in the work area.

Upland Construction

The site was surveyed for geotechnical issues (Aspect Consulting 2011, 2018) and wetlands with one small wetland identified within an area of significant trees (BGE Environmental 2017). The areas of native vegetation will be fenced at the drip line with orange construction fencing per standard tree protection BMPs. The wetland and 40-foot buffer will also be fenced to prevent intrusion. Standard TESC measures will be installed as required under City of Bainbridge Code and described in the construction plans.

Final Site Condition

The site will be regraded to a more natural undulating condition with lower areas to help trap and filter stormwater runoff, and higher areas to provide upland wildlife habitat and visual barriers. A complex mosaic of native plantings will be established in zones suitable for the microhabitat being created. These will include salt exposure, nearshore, wetland, upland-sun, upland-shade, and forest plantings (See Mitigation Planting Plans in Appendix).

Stormwater management will be designed to meet City of Bainbridge Island stormwater requirements (Stormwater Management Manual for Western Washington 2014 edition). Stormwater will be collected and distributed to support the new rain gardens, and native plantings. Some water is expected to infiltrate to groundwater and some will evaporate. Any excess will be tightlined to a dispersion system buried in drain rock behind the new rockery bulkhead where it will trickle through the rock onto the beach.

Water supply for the new house will be provided by Kitsap PUD #1's Island Utility water system. Sewage treatment will be provided by an onsite septic system.

9. Construction Techniques

A. Construction sequencing and timing of each stage: The overall project will take approximately two years to complete. The initial bulkhead replacement and beach creation work will occur during low tides over two to three months between August 1 and February 15.

B. Site preparation: No site is vacant and clear. No preparation other than establishment of TESC is needed for this project.

C. Equipment to be used: Equipment used during construction of the bulkhead will consist of large excavators, loaders, and dump trucks. Development of the upland will also include concrete mixers and pumps, grading equipment, and powered hand tools.

D. Construction materials to be used: For the bulkhead and beach: 2 to 4-man rock, drain rock, beach gravel, and topsoil. For upland work: topsoil, drain rock, asphalt/concrete, and standard house-building materials.

E. Work corridor: The work area consists of a shoreline property 300-feet wide along the beach and extending landward 500-feet. This includes beach property extending out about 40-feet waterward from OHW.

F. Staging areas and equipment wash outs: All equipment and material will be staged on the upland portion of the property currently consisting of bare dirt and weeds. No equipment will be washed on the site.

G. Stockpiling areas: Material removed from behind the bulkhead will be immediately transferred to the upland area or to a skip box for hauling off site. Stockpiling will take place in previously cleared parts of the upland where the future house will be located.

H. Running of equipment during construction: Mechanical equipment operation will be limited to daylight hours.

I. Soil stabilization needs / techniques: New topsoil delivered to the site will be mulched, seeded, and then planted.

J. Clean-up and re-vegetation: No native vegetation will be disturbed. Disturbed areas of the site, including the beach, will be planted with new native plantings as soon as development in that area is complete.

K. Storm water controls / management: Visqueen, sand bags, silt fence, and other water quality protection methods will be used to prevent surface water runoff from reaching natural waters as required by City of Bainbridge Code.

L. Source location of any fill used: Fill used for this project will consist of native rock and clean topsoil from local sources.

M. Location of any spoil disposal: Any excess material will be trucked off-site to an approved upland disposal location or reused at other projects.

10. Action Area

The action area reviewed for potential impacts to listed species includes the project work area described above and Puget Sound within one mile of the site.

11. Species Information:

Information gathered from the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Washington State Department of Fish and Wildlife (WDFW) databases indicates twelve federally protected species may be present within the Action Area (Table 1).

Species descriptions are found in the individual listing documents and on the NMFS and USFWS web sites.

In addition, the following local and state sensitive species and habitat are located within the action area and could be affected: cutthroat trout, estuarine and marine wetlands, freshwater forested shrub wetlands, geoduck, surf smelt, purple martin, and surf smelt (WDFW 2018).

Table 1
Species of Concern

Common Name	Scientific Name	Federal Status
Humpback whale	<i>Megaptera novaeangeliae</i>	Endangered
Southern resident killer whale	<i>Orcinus orca</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Steller sea lion	<i>Eumetopias jubatus</i>	Threatened
Bull trout	<i>Salvelinus confluentus</i>	Threatened
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Threatened, EFH*
Steelhead trout	<i>Oncorhynchus mykiss</i>	Threatened
Bocaccio	<i>Sebastes paucispinis</i>	Endangered
Yelloweye rockfish	<i>Sebastes ruberrimus</i>	Threatened
Dolly Varden	<i>Salvelinus malma</i>	Proposed
Coho salmon	<i>Oncorhynchus kisutch</i>	EFH*
Pink salmon	<i>Oncorhynchus gorbuscha</i>	EFH*

* Essential Fish Habitat designated by the Pacific Fisheries Management Council

12. Existing Environmental Conditions:

The 3.33-acre site contains 300-feet of marine shoreline on Bainbridge Island located in Blakely Harbor. The site was the historic location of a commercial cannery including marine dock and loading facilities. A past residence was also located near the shoreline. The entire site has been heavily altered from natural conditions (Figure 1). Currently the site has a 4 to 8-foot high concrete bulkhead running the entire length of the property (Figure 2). OHW is located along the face of the bulkhead. Concrete groins run from the bulkhead out an additional 15-feet into the water. A concrete staircase and other concrete structures of unknown purpose are located in tidal waters.

The upland shoreline is for the most part is cleared and graded (Figure 3). Most (62%) of the land consists of non-native grasses and weeds with some horsetail closer to the water. Strips of native trees and shrubs are found along the property boundaries to the east and west. Together these areas total about 20 percent of the property. Ten percent of the property is covered with

impervious surface where the old driveway is located. The final 8 percent of the property is a gravel and cobble beach.



Figure 2. Existing bulkhead looking west (left) and east (right)



Figure 3. Upland site condition (January 2018)

A. Shoreline riparian vegetation and habitat features: A concrete bulkhead runs along the entire property at OHW (see photo in the appendix). With the exception of two strips of native trees and shrubs along the east and west property boundary, the rest of the shoreline consist of non-native grasses and weeds. The shoreline has been heavily impacted by past uses of the site. While all historic buildings have been removed, the landscape is pitted and rutted where foundations have been removed. Several large spoil piles also remain. Overall, the site is highly

degraded and contains little habitat of any significant value due to the fragmentation, disruption, and isolation of the valuable beach and forest patches that remain.

B. Aquatic substrate and vegetation: Surficial beach substrate is dominated by cobble with subdominant medium to large gravel and some underlying sand. Chunks of concrete from older projects and pieces broken off the of the existing wall are scattered on the beach. No vegetation was present on the beach when observed in January 2018. Coastal processes and shoreline conditions are described in more detail by Coastal Geologic Services (2018).

C. Surrounding land/water uses: Surrounding land use consists of low density single-family housing. Many of the large lots contain areas of natural habitat present as mature forest.

D. Level of development: Low density single-family housing is present throughout the vicinity.

E. Water quality: Section 303(d) of the 1972 Federal Clean Water Act (CWA) requires states to identify and list threatened and impaired water bodies. Puget Sound in the vicinity of the project is not listed as an impaired waterbody for any assessed variable (Ecology 2018).

F. Distance to nearest bull trout spawning / foraging / overwintering areas: The nearest bull trout spawning habitat is more than 40 miles away in the upper Cedar, White, and Snohomish Rivers. Bull trout forage in Puget Sound and it is reasonable to assume they may periodically forage within the Action Area.

G. Is the project located within designated / proposed bull trout critical habitat? No, Bainbridge Island has not been designated critical habitat for bull trout.

H. Is the project located within designated / proposed Pacific salmon critical habitat? Nearshore areas of Puget Sound, including the Project Area, have been designated critical habitat for Chinook salmon based on its use as a migration corridor.

I. Is the project located within designated steelhead critical habitat? No marine or freshwater habitat in the Action Area has been designated as critical habitat for steelhead.

J. Is the project located within designated / proposed killer whale critical habitat? Puget Sound, including the Project Area, has been designated critical habitat for killer whale.

K. Is the project located within designated / proposed rockfish critical habitat? Yes, Puget Sound, including the nearshore Project Area has been mapped for Bocaccio and Yelloweye rockfish

L. Has forage fish spawning been reported in the work area? Yes. WDFW records indicate that the nearest forage fish spawning habitat (surf smelt) is located approximately 1,300 feet (0.6 miles) west of the work area (WDFW 2018). No sand lance or herring activity has been reported in the Action Area.

M. Have wetlands been mapped within the project area?

Yes. A wetland delineation of the site conducted in 2017 found a small (< ¼ acre), depressional, PFO, Category IV wetland under mature conifers in the southeast corner of the site (BGE Environmental 2017). The wetland and a 40-foot buffer will be preserved.

N. Has other sensitive wildlife been mapped within the project area?

No (WDFW 2018).

13. Listed Species Effects Analysis

This section describes potential direct, indirect, and interrelated-interdependent effects of the proposed action on species listed under the ESA. Factors related to the proposed action potentially having an influence on properly functioning habitat conditions include: (1) physical loss or degradation of aquatic habitat features resulting from work within aquatic habitat or the adjacent riparian area; (2) the change in delivery of coarse sediment; (3) impacts to the functionality of riparian zones; (4) effects on water quality (including fine sediment); (5) changes in flow rates and volumes; 6) impacts to salmonid prey species availability; 7) construction related disturbance.

Direct Impacts

A total of 300 linear feet of beach will be disturbed as the existing bulkhead, buttresses, staircase, and miscellaneous concrete are removed; new bank protection installed, and the new beach created. Work will require activity along the shoreline for a short distance below OHW with minor disturbance due to personnel and equipment working in the upper intertidal area for a period of about two months. No inwater work is required and little to no equipment will access the beach itself. No pile-driving or blasting is required so work will be relatively quiet.

The work could result in some minor turbidity as tides rise each day during the activity. All work will be completed in the dry during periods of low tides and during the prescribed salmon and bull trout work windows for Tidal Reference Area #5 to help avoid impacts. The applicant will work with WDFW to identify appropriate measures for the protection of any species that might be in the work area.

The beach itself will be permanently changed. Several concrete groins and the staircase will be removed. The smooth concrete bulkhead wall will be removed in its entirety and replaced with a mix of natural beach and rough boulder bulkhead. These changes will alter the sediment transport characteristics of the shoreline back closer to a natural condition. Reflected wave energy will be reduced.

Long term changes will also take place above OHW as most (95%) of the nearshore area (within 35 feet of OHW) is restored to a functional beach and riparian buffer (see Riparian Function below).

Coarse Sediment Supply

There are no existing sources of coarse sediment on the site and none will be present after the proposed action. The project will have no effect on coarse sediment supply. Gravel

supplementation as part of the new beach construction will temporarily increase coarse sediment but the effects will likely be transient and temporary. Restoration of a more natural longshore sediment transport regime with removal of the groins and smooth bulkhead wall will likely have the biggest influence on beach sediments as the area is restored to a more natural condition.

Riparian Function

Shoreline condition is summarized in Tables 2 and 3. The shoreline out to 200-feet from OHW is currently dominated by non-native grasses and weeds left over after previous site improvements were razed. Strips of mostly native vegetation were left along the east and west property boundaries. This vegetation includes large native trees and a small wetland. None of the native vegetation is located near the shoreline which consists entirely of non-native grasses and forbs (Table 3).

Under the proposed development the house will be sited outside of the 75-foot setback. While the replacement bulkhead, a concrete retaining wall, and a small boat shed will be constructed within the setback area, the overall impervious surface in the setback will be reduced with elimination of the large concrete bulkhead and associated structures. Non-native vegetation across the site will be almost eliminated with the only remaining patches to be located in a garden bed and minor landscaping immediately adjacent to the house. All invasive and noxious plants will be removed. No exotic species will be planted in the setback area. Over $\frac{3}{4}$ of the overall site (minus the intertidal beach area) will be planted with native species under the proposed action. Within the setback area, only the intertidal zone and the bulkhead footprint will remain unplanted. Overall, riparian function will benefit significantly as a result of the project.

Table 2. Land Use Change (entire property)

	Existing (sf)		Future (sf)		Change (sf)
Impervious Surface ¹	15,054	10%	27,348	19%	12,294
Non-native Vegetation	89,420	62%	120	0%	-89,300
Native Vegetation ²	29,302	20%	99,737	69%	70,435
Beach	11,433	8%	18,004	12%	6,571

Water Quality

The proposed action will disturb a small area of sediment on the beach each day as the existing bulkhead is removed and the new wall and/or beach is constructed. This type of work has the potential to create turbidity issues and could result in unexpected release of petroleum products. Mitigation measures such as timing restrictions, TESC, use of clean equipment and other measures required to avoid impacts to water quality are described in Section 15. Other than

some minor turbidity as native soils resort themselves each day during higher tides, no measurable effects on water quality are expected due to construction of the proposed action.

Table 3. Land Use Change in Shoreline Setback (property out to 35' from OHW)

	Existing (sf)		Future (sf)		Change (sf)
Impervious Surface	1,390	6%	1,143	5%	-247
Non-native Vegetation	11,082	47%	0	0%	-11,082
Native Vegetation	0	0%	8,040	34%	8,040
Beach	11,193	47%	14,482	61%	6,606

¹ Impervious surface includes buildings, hardscape, bulkheads, hard-packed and primarily unvegetated soils.

² Includes existing areas to be protected, planted areas, emergent wetlands, beach grasses.

Long term changes to the site will result in higher erosion protection as virtually the entire site will be covered with native plants or impervious surface where a significant extent of unprotected soils now exist. The landscape plan includes almost 100 percent native vegetation which is expected to thrive with minimal care. As such, no landscaping chemicals will be needed. Several low areas on the site will collect drainage and allow infiltration into raingardens and created wetlands. A modern drainfield meeting all septic requirements will be installed and maintained.

Overall, water quality coming from the site and being delivered to Puget Sound is expected to be improved under the proposed action.

Water Quantity

There are no springs, seeps, or groundwater sources known to occur within the work area. Stormwater management will be designed to meet City of Bainbridge Island stormwater requirements (Stormwater Management Manual for Western Washington 2014 edition). The project will impervious surface on the property but will include newly created wetlands and raingardens to allow infiltration to the maximum extent practicable given underlying soils. Some water is expected to infiltrate to groundwater and some will evaporate. Any groundwater will travel downslope to Puget Sound. Any excess surface water will be tightlined to a dispersion system buried in drain rock behind the new rockery bulkhead where it will trickle through the rock onto the beach.

The project will have no effect on the quantity of freshwater being contributed to Puget Sound.

Prey Availability

No native vegetation will be disturbed. Smelt spawning has been documented on beaches 1,300 feet west of the work area (WDFW 2018). No sand lance or herring activity has been reported in

the Action Area. Work will require activity along the shoreline below OHW. This could result in some minor turbidity as tides rise following the work. The applicant will work with WDFW to identify appropriate measures for the protection of any species that might be in the work area. To help avoid impacts to water quality all work will be completed in the dry during periods of low tides. Due to the lack of prey habitat in the work area, and timing limitations, no impacts to salmonid prey habitat are expected during construction.

With removal of much of the bulkhead, and planting of the shoreline with native plant species, the proposed action will restore some of the natural shoreline functions to the area including beach shade, allocthonous nutrients, longshore sediment transport, and woody debris. All of these should improve primary productivity to the benefit of salmonid prey items including shoreline spawning species.

Noise and Visual Disturbances

The proposed work will create noise and visual movement along the shoreline for a period of about two months. The project will not create any unusually loud noises (blasting, pile driving, etc.). No work will occur near salmonid spawning habitat. The work may occur during a time when forage fish are potentially found in the nearshore area and could preclude spawning from occurring in the immediate area. The applicant will work with WDFW to identify appropriate measures for the protection of any species that might be in the work area.

Over the long term the site will be utilized as single family residential, consistent with other activities along the shoreline in this area. No significant sources of noise or activity are expected. The increase in vegetation will help buffer upland noises.

14. Primary Constituent Elements

Primary Constituent Elements (PCEs) associated with Pacific salmon and killer whale habitat are found within the action area. Critical habitat has been listed for rockfish in the nearshore and offshore areas.

Pacific Salmon Habitat – Primary Constituent Elements

The PCEs determined essential to the conservation of Pacific salmon are:

(1) Freshwater Spawning:

Existing Conditions: The upper intertidal area in which the project is located is not suitable for salmonid spawning or incubation. The nearest documented Pacific salmon spawning habitat occurs in Beaver Creek located approximately 5 miles southwest of the project site.

Effects to PCE: The proposed action would have no effect on Chinook salmon spawning habitat.

(2) *Freshwater Rearing:*

Existing Conditions: The upper intertidal area in which the project is located contains no freshwater rearing habitat.

Effects to PCE: The proposed action would have no effect on freshwater rearing habitat.

(3) *Migration Corridors:*

Existing Conditions: The upper intertidal area in which the project is located is not within any migration corridor.

Effects to PCE: The proposed action will not have any permanent effect on the ability of salmon to migrate past the site.

(4) *Estuarine Areas:*

Existing Conditions: The entire shoreline along Blakely Harbor is considered an estuarine area.

Effects to PCE: The proposed action below OHW consist entirely of removal of anthropogenic structure. While there will be some limited construction impacts such as minor turbidity, long term effects are expected to be beneficial. The work, which will occur in the upper intertidal area, will not occur in any area known to be utilized by listed species. Conservation measures including working in the dry and timing limits will be implemented to protect habitat potentially used by prey species.

(5) *Nearshore Marine Areas:*

Existing Conditions: The existing concrete bulkhead runs along the entire property extending upwards from the gravel/cobble beach to above OHW. No work will occur further than 15 feet waterward of OHW. This area is all intertidal.

Effects to PCE: No adverse impacts on physical nearshore habitat or water quality are expected as a result of the project.

(6) *Offshore Marine Areas:*

Existing Conditions: The project is not located in or near offshore marine waters.

Effects to PCE: The project would have no effect on offshore marine habitat.

Killer Whale Critical Habitat – Primary Constituent Elements

The primary constituent elements (PCE) determined essential to the conservation of southern resident killer whales are:

(1) *Water quality to support growth and development:*

Existing Conditions: Puget Sound in the vicinity of the proposed action is not listed for any water quality constituent (Ecology 2018).

Effects to PCE: Other than some minor turbidity releases during the first high tide after completion of the project, no short or long-term adverse effects on water quality are expected due to the proposed action.

(2) Prey species for foraging:

Existing Conditions: Killer whales are known to forage in Puget Sound. As discussed above for salmon and bull trout, the proposed action is not located in an area used by significant numbers of salmonids for spawning, migrating, or rearing. The upper intertidal area in which the project is located is not utilized by any marine mammals.

Effects to PCE: No significant adverse effects are expected to any prey species utilized by killer whale.

(3) Passage conditions to allow for migration, resting, and foraging:

Existing Conditions: The upper intertidal area in which the project is located is not utilized by killer whale for migrating, resting, or foraging.

Effects to PCE: No long term changes to marine habitat are proposed. Construction could have a minor and temporary influence on use of the nearshore area; however, all work will be conducted in the dry and will be relatively quiet. Therefore, any disturbance should be negligible.

Rockfish

The NMFS identified four major factors that may affect the continued viability of rockfish populations. These factors are listed below along with a discussion of how the proposed project will affect each habitat factor.

(1) Overutilization by commercial and recreational fishing

The proposed action will not alter fishing activity in any way.

(2) Destruction of rocky substrate, eelgrass, kelp and other submerged vegetation

The proposed action will take place within the upper intertidal area and will not result in a expansion to the existing footprint of the sea-wall. There will be no work within areas containing eelgrass, kelp, or other submerged vegetation. No measurable effects on water quality are expected due to the proposed action. Impacts to any eelgrass and kelp located offshore are unlikely.

(3) Resuspension of contaminated sediments and reduction in dissolved oxygen concentration by dredging and discharge of dredge spoils

No dredging or discharge of dredge spoils will be conducted as part of the proposed action.

(4) Point and non-point source discharge of persistent contaminants via new outfalls, new impervious surfaces

No new outfalls, other stormwater discharge, or new impervious surface are part of the proposed action. No new or change in point or non-point discharge of contaminants will occur.

Effects of Interrelated and Interdependent Actions

The proposed action consists of development of a single-family home. No other changes to the property beyond those described in this document will occur as a result of this action.

15. Conservation Measures

The proposed action includes work near habitat for listed species. The following measures will help ensure replacement of the bulkhead does not lead to adverse effects on listed species, critical habitat, and prey species.

Impact Avoidance and Minimization

- All work below OHW shall be completed under marine habitat protection provisions specified by WDFW in the HPA to be issued for the project, and by NOAA in the Corps Permit.
- The applicant will work with WDFW to identify appropriate measures for the protection of any species, including forage fish, that might be in the work area.
- All work below OHW will be completed in the dry during periods of low tides.
- All work on the bulkhead will be completed by equipment operating upland of OHW. Little to no beach access will be required.
- Access, staging, stockpiling, and laydown areas can be located so as not to disturb any native vegetation or habitat.
- Heavy equipment including excavators, loaders, and dump trucks shall be brought to the site on existing roads.
- Work to remove a bulkhead section shall not be started if a storm is expected.
- If for some reason a section of bulkhead has been removed and the hole can't be filled with rock during that work session, the hole shall be filled with sand bags containing beach gravel to prevent fish from becoming entrapped during the next high tide. Backfilling all trenches, depressions, or holes created waterward of OHW prior to tidal inundation will be standard operating procedure as the tide returns during each work session.
- Clean-up and mitigation actions will consist of grading the beach as needed to restore pre-existing contours and eliminate all significant evidence of work activity.
- All work below the OHW shall be completed with clean equipment in good condition with no evidence of petroleum product leakage. All equipment to be used below the OHW line shall be inspected, serviced, and cleaned in an upland site as necessary to prevent leakage or any contamination of the beach or water.

- Emergency spill response and clean-up equipment shall be available on site during all work activities. At a minimum, this kit will include material for containment and clean-up of petroleum product.
- No areas of native vegetation on the upland site will be disturbed. The existing native trees along the property boundaries shall be protected and preserved.

Compensatory Mitigation

Compensatory mitigation will consist primarily of bulkhead removal and native upland plantings. The overall goal of the mitigation program is to return significant portions of the property to a more functional marine shoreline environment by removing anthropogenic structure left over from past land uses and restoring large parts of the upland and beach to a more natural setting based on observations of nearby areas that are relatively undisturbed. The bulkhead removal portion of the mitigation plan is being designed by Coastal Geologic Services and is described in more detail in their report (Coastal Geologic Services 2018). The goal of the beach work has been to restore shoreline processes such as sediment composition, longshore drift, local currents, and potentially forage fish habitat in the portion of beach being restored. The upland planting portion of the mitigation plan being designed by Richard Hartlage Land Morphology (Land Morphology 2018). The goal there has been to restore riparian functions using diverse, multi-story, native, plantings including both aquatic and upland species to the benefit of regional wildlife species that may have historically used the site. Increasing riparian ecological functions including those described in Section 19 has been a high priority.

Highlights of the marine and riparian mitigation plans include the following actions:

- The overall length of the existing concrete bulkhead shall be reduced by over 50 percent. A new beach shall be created where the bulkhead is permanently removed. The remainder of bulkhead to be replaced will have the same footprint as the existing structure.
- All groins, the external staircase, and other appurtenant structures will be permanently removed.
- The replacement bulkhead shall utilize material with less regular shape and texture than the existing concrete wall.
- Approximately 70 percent of the site shall be regraded to a more natural undulating condition with lower areas to help trap and filter stormwater runoff, and higher areas to provide upland wildlife habitat and visual barriers. A complex mosaic of native plantings will be established in zones suitable for the microhabitat being created. These shall include salt exposure, nearshore, wetland, upland-sun, upland-shade, and forest plantings.
- Stormwater management shall be designed to meet City of Bainbridge Island stormwater requirements (Stormwater Management Manual for Western Washington 2014 edition).

Most stormwater from the site shall be infiltrated. Any excess shall be tightlined to the shore and released within drainrock behind the new bulkhead.

Maintenance

Controlling invasive species and re-establishing native vegetation are the primary goals of the upland maintenance program. Activities required to maintain new plantings include initial watering of the new plants, and periodic removal of non-native vegetation (weeding) within the newly planted areas.

New plantings shall be watered from May through mid-October during the first season.

Due to the aggressively invasive habit of many non-native species on and around the site, and the existence of nearby seed sources, control efforts shall be completed for a minimum of five years following initial plant installation. Care of native plantings over the five-year time period will create a well-established native habitat lessening the chance for non-native vegetation invasion. The control of invasive weeds (competing grasses and herbs) shall be mechanically provided at the base of each plant at a minimum of twice per year, or more, should additional weeding be deemed necessary. The optimal season for weed control occurs in April thru September. All work shall be performed by hand with the lightest possible equipment.

Mitigation Performance Standards

The following performance standards apply to all new plantings. Success of the planting plan will be evaluated and reported each year:

Year 1 (from date of plant installation)

- 100% survival of all installed plants and/or replanting in following dormant season to reestablish 100% of original plantings.
- Less than 10% coverage of invasive plants in planting area.

Year 2 (from date of plant installation)

- At least 90% survival of all installed material (100% of trees).
- Less than 10% coverage of planting area by invasive species or non-native/ornamental vegetation.

Year 3, 4, & 5 (from date of plant installation)

- At least 85% survival of all installed material (100% of trees).
- At least 35% (Yr3), 50% (Yr4), 70% (Yr5) coverage of the planting area by native plants in each year respectively.
- Less than 5% coverage by invasive species or non-native/ornamental vegetation.

Monitoring and Contingency Plan

Mitigation plantings shall be maintained and monitored by the homeowner for a period of five years. Vegetation monitoring shall consist of plant inspection to determine the health and vigor of all plants. Dead or dying plants shall be replaced the following fall as needed to meet or exceed the performance standards. Plant species substitutions may be made if site conditions are believed responsible for plant mortality. Replacement species must be approved by the City of Bainbridge Island. A minimum of three photographs of showing broad areas of the mitigation planting area shall be taken from approximately the same location each year and included in the report.

Annual monitoring reports shall be submitted to the City of Bainbridge, Attn: Environmental Planning Manager by October 31st in each of the five years. The report shall include a list of all initial plantings by species and numbers, current healthy plantings by species and numbers, any replacement plantings that are needed, a list of any contingency measures that were applied, and photos showing planting areas for that year.

If monitoring results indicate that any of the performance standards are at risk of not being met, it may be necessary to develop and implement a contingency plan. Such plans are prepared on a case-by-case basis to reflect the failed mitigation characteristics. Contingency plans could include additional plant installation, erosion control, and plant substitutions including type, size, and location. A contingency plan would be developed by the applicant and provided to the City with the monitoring report from that year. The contingency plan would be implemented only after City approval.

Contingency/maintenance activities may include:

- Replacing all plants lost to damage, drought, or disease, as necessary.
- Replacing any plant species with a 20 percent or greater mortality rate with the same species or similar species approved by the City biologist.
- Irrigating the mitigation areas after Year 1 only as necessary during dry weather if plants appear to be too dry, with a minimal quantity of water.
- Seeding the buffer area with an approved grass mixture as necessary if erosion/sedimentation occurs.

Maintenance Bond

Performance and maintenance sureties meeting requirements of BIMC 16.20.160 will be provided once the mitigation plans are finalized and before construction begins.

16. Determination of Effect

Chinook Salmon

Chinook salmon are present within the Action Area during the migratory seasons but would not be found within the upper intertidal work area. A few juvenile Chinook may be present year-round. No Chinook spawning streams are found within the Action Area. Short term and minor impacts to aquatic habitat quality will occur during the two-month construction period but work will be timed to avoid the season when Chinook are most likely in the area. Forage fish spawning activity has not been observed within 1,300 feet of the site. Conservation measures employed during work on the site are expected to maintain aquatic habitat at current or better conditions for the long term. No adverse indirect, interrelated, and/or interdependent effects of the action were identified.

It is expected that the proposed action with listed conservation measures **may affect, but is Not Likely to Adversely Affect**, Chinook salmon or destroy or adversely modify critical habitat for Chinook salmon.

Bull Trout and Dolly Varden

Native char are not known to be present within the Action Area in any significant numbers but a few individuals may periodically be present as they forage along the shoreline. Native char would not be found within the upper intertidal work area. No critical habitat is found within the Action Area. Short term and minor impacts to aquatic habitat quality will occur during the two-month construction period but work will be timed to avoid the season when native char are most likely to be in the area. There is no reason for bull trout to concentrate or be unable to avoid the work area if they are present. Forage fish spawning activity has not been observed within 1,300 feet of the site. Conservation measures employed during the proposed work are expected to maintain aquatic habitat at current conditions for the long term. No indirect, interrelated, and/or interdependent effects of the action were identified.

It is expected that the proposed action with conservation measures **may affect, but is Not Likely to Adversely Affect** bull trout. The work will have **No Effect** on Critical Habitat for bull trout. The proposed action is not expected to jeopardize the continued existence of Dolly Varden.

Steelhead

Steelhead are present within the Action Area during the migratory seasons. There are no natal streams or estuaries within the Action Area. Juvenile steelhead may be present year-round but would not be found within the upper intertidal work area. Short term and minor impacts to aquatic habitat quality will occur during the two-month construction period and steelhead may be present in the area. There is no reason for fish to concentrate or be unable to avoid the work area. Forage fish spawning activity has not been observed within 1,300 feet of the site. Conservation measures employed during the proposed work are expected to maintain aquatic

habitat at current conditions for the long term. No indirect, interrelated, and/or interdependent effects of the action were identified.

It is expected that the proposed action with listed conservation measures **may affect, but is Not Likely to Adversely Affect**, steelhead.

Southern Resident Killer Whale

The southern resident killer whale is found throughout Puget Sound with sightings primarily during the fall when Chinook and chum runs peak. They would not enter the project area because of the shallow depths. The project is located in the upper intertidal area. The project will not affect killer whale habitat and should have no more than a negligible effect on food supplies including salmon.

It is expected that the project, with conservation measures, will have **No Effect** on southern resident killer whales or designated critical habitat.

Humpback Whale, Leatherback Sea Turtle, Steller Sea Lion

No records exist of these species ever being present within the Action Area. Habitat suitability within the Action Area is not conducive to their presence. The project will not affect habitat normally used by these species.

It is expected that the project with proposed conservation measures will have **No Effect** on the humpback whale, leatherback sea turtle, Steller sea lion, or designated/proposed critical habitat for any of these species.

Rockfish

The two species of rockfish listed under the ESA may be present within the Action Area but no lifestage of any of the species would be present within the sandy upper intertidal work area that will be disturbed. The proposed work will have no effect on fishing in Puget Sound; will not adversely modify rocky substrate, kelp, or eelgrass beds; will not include dredging or disposal of dredged material in any waterbody; and will not result in any new source of stormwater contaminants.

It is expected that the project with proposed conservation measures will have **No Effect** on Bocaccio or Yelloweye rockfish.

17. EFH Analysis

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the 1996 Sustainable Fisheries Act (SFA), an Essential Fish Habitat (EFH) evaluation of impacts is necessary for work to remove and replace the bulkhead. EFH is defined by the MSA as “those

waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The project includes work on approximately 300 lineal feet of bulkhead adjacent to EFH, though the habitat is only physically accessible to fish at high tide.

Estuaries of Washington State, including Puget Sound and the Pacific Ocean off the mouth of these estuaries, are designated as EFH for various groundfish, coastal pelagic and salmonid species. EFH and life history stages for groundfish, pelagic and salmonid species commonly found in Puget Sound are listed in Table 4. Potential impacts and proposed conservation measures to avoid, minimize, and mitigate impacts are described in Table 5.

Groundfish EFH

The impacts of the project on groundfish habitat are shown in Table 5. Disturbance is only proposed within the upper portion of the intertidal area where the bulkhead exists so no groundfish habitat will be directly affected. There will be a minor temporary impact in this area to any primary productivity and food resources resulting from disturbance to the sand and gravel at the base of the bulkhead. A minor amount of turbidity could occur during the first high tide after each day of construction. Given the very small footprint of the proposed disturbance area, the net difference in productivity will be negligible and will be well within natural variability. No significant differences in post-project habitat conditions for groundfish species in the area are expected.

Coastal Pelagic EFH

A very slight and short-term increase in turbidity caused by the shoreline disturbance could temporarily affect water column EFH for pelagic species. The effect would be minor (immeasurable), short-termed (less than one hour after each day of work), and localized (within tens of feet). Conservation measures described in Table 5 are reasonably expected to avoid or minimize impacts to pelagic species EFH. No change in function of the coastal pelagic EFH resulting from the project is expected.

Salmonid EFH

The impacts of the project on salmonid habitat are described in Section 13 and summarized in Table 5. Negligible short-term and no long-term alterations to salmonid EFH are expected.

Conclusions and Determinations of Effect on EFH

Based on the analysis in this document, it is expected that implementation of the proposed action will have **No Effect** on existing EFH for salmonid species. Adverse effect as defined under the MSA “*means any impact which reduces quality and/or quantity of EFH*”. The proposed action will temporarily disturb beach sediments that are constantly undergoing natural erosion and aggradation. However, the final beach surface and shoreline will be enhanced with reduction of the bulkhead and additional beach creation. No long-term change in water quality is expected.

With proposed conservation measures, long term impacts to salmonid EFH are not expected. The proposed action will have **No Effect** on EFH for groundfish and pelagic species.

Table 4.
Species of Fishes with Designated EFH in the Puget Sound

Groundfish Species			
Spiny dogfish	China rockfish	Yelloweye rockfish	Black rockfish
Big skate	Copper rockfish	Yellowtail rockfish	Bocaccio
California skate	Darkblotch rockfish	Shortspine thornyhead	Brown rockfish
Bignose skate	Greenstriped rockfish	English sole	Canary rockfish
Ratfish	Quillback rockfish	Pacific sanddab	Splitnose rockfish
Lingcod	Redbanded rockfish	Rex sole	Striptail rockfish
Cabezon	Redstripe rockfish	Curlfin sole	Tiger rockfish
Kelp greenling	Rosethorn rockfish	Dover sole	Vermilion rockfish
Pacific cod	Rosy rockfish	English sole	Rock sole
Pacific whiting (Hake)	Rougheye rockfish	Flathead sole	Sand sole
Sablefish	Sharpchin rockfish	Petrale sole	Starry flounder
			Arrowtooth flounder
Pacific Salmon Species			
Chinook salmon	Coho salmon	Puget Sound pink salmon	
Coastal Pelagic Species			
Northern anchovy	Pacific mackerel	Market squid	Pacific sardine

18. FEMA Floodplain Analysis

The proposed action includes work within a FEMA floodplain (Zone AE). The work will result in removal of shoreline protection and other concrete structures located along a marine shoreline. The proposed action is not within or near a stream, stream buffer, or channel migration zone. The project includes a net reduction in anthropogenic structure within the floodplain. The project will have no effect on flood storage area or volume of Puget Sound.

An analysis of potential impacts of the project on federally listed species was conducted as part of this review (see Sections 1-17). The analysis presented in this document concludes that the project, with suggested conservation measures, will either have no effect, or is not likely to adversely affect any species currently listed under the federal ESA. No critical habitat will be adversely affected and no species proposed for listing will be jeopardized. No change in function to Essential Fish Habitat is predicted.

Table 5.
Affected EFH by Project Element and Proposed Conservation Measures

Project Element	Affected EFH	Impact Mechanism	Applicable Conservation Measures (see list below)
Construction	Groundfish, pelagic and salmonid EFH	Physical loss of habitat.	1
		Beach sediment will be disturbed by equipment.	1, 2, 3, 4, 5, 6
		Temporary increase in noise and turbidity	1, 2, 3, 4, 5
		Benthic invertebrates and marine algae on the existing embankment and scattered rocks could be disturbed and/or destroyed resulting in a temporary loss in primary productivity and food resources.	10
		There is potential for an unintentional release of fuel, lubricants, or hydraulic fluid from the construction equipment that could lead to adverse impacts to the water column EFH.	5, 7, 12, 13
		Fish entrapment in artificially created holes on the beach is possible.	8, 9, 11
		Upland changes can affect riparian buffer functions	6, 14, 15
	Groundfish EFH	Work on the beach could impact groundfish habitat.	1-8
Bulkhead Presence	All	Bulkheads can result in long term change to EFH.	10, 14, 15, 16

List of Applicable Conservation Measures

1. The overall size of the existing concrete bulkhead will be reduced. The remainder to be replaced will have the same footprint as the existing structure. The replacement wall will eliminate the smooth concrete surface in favor of a rougher material with less regular shape. All groins, the external staircase, and other appurtenant structures will be permanently removed.
2. All work below OHW shall be completed under marine habitat protection provisions specified by WDFW in the HPA to be issued for the project.
3. All work below OHW will be completed in the dry during periods of low tides.
4. The applicant will work with WDFW to identify appropriate measures for the protection of any species, including forage fish, that might be in the work area.
5. All work on the bulkhead will be completed by equipment operating upland of OHW. Little to no beach access will be required.
6. Access, staging, stockpiling, and laydown areas can be located so as not to disturb any native vegetation or habitat.
7. Heavy equipment including excavators, loaders, and dump trucks shall be brought to the site on existing roads.

8. Work to remove a bulkhead section shall not be started if a storm is expected.
9. If for some reason a section of bulkhead has been removed and the hole can't be filled with rock during that work session, the hole shall be filled with sand bags containing beach gravel to prevent fish from becoming entrapped during the next high tide. Backfilling all trenches, depressions, or holes created waterward of OHW prior to tidal inundation will be standard operating procedure as the tide returns during each work session.
10. About half of the bulkhead will be removed and not replaced. A new beach will be created instead.
11. Clean-up and mitigation actions will consist of grading the beach as needed to restore pre-existing contours and eliminate all significant evidence of work activity.
12. All work below the OHW shall be completed with clean equipment in good condition with no evidence of petroleum product leakage. All equipment to be used below the OHW line shall be inspected, serviced, and cleaned in an upland site as necessary to prevent leakage or any contamination of the beach or water.
13. Emergency spill response and clean-up equipment shall be available on site during all work activities. At a minimum, this kit will include material for containment and clean-up of petroleum product.
14. No areas of native vegetation on the upland site will be disturbed. The existing native trees along the property boundaries shall be protected and preserved.
15. Approximately 70 percent of the site shall be regraded to a more natural undulating condition with lower areas to help trap and filter stormwater runoff, and higher areas to provide upland wildlife habitat and visual barriers. A complex mosaic of native plantings will be established in zones suitable for the microhabitat being created. These will include salt exposure, nearshore, wetland, upland-sun, upland-shade, and forest plantings.
16. Stormwater management will be designed to meet City of Bainbridge Island stormwater requirements (Stormwater Management Manual for Western Washington 2014 edition). Most stormwater from the site shall be infiltrated. Any excess shall be tightlined to the shore and released within drainrock behind the new bulkhead.

19. Effects of the Proposed Action on Shoreline Functions

The effect of the proposed action on shoreline ecological functions is discussed in this section. Standard shoreline ecological functions include water quality improvements, bank protection, organic material source, and fish and wildlife habitat. Each of these functions is reviewed below for both the pre- and post-redevelopment condition.

In shoreline areas the standard for protection is "no net loss". No net loss means that, following an action, shoreline ecological functions necessary to sustain shoreline natural resources are equivalent to or greater than ecological functions immediately prior to the action. As noted in Ecology guidelines for the Shoreline Management Act, the "no net loss" standard focuses on shoreline ecological functions "as they currently exist"¹. In this case "as they currently exist" refers to conditions with the existing shoreline grading, bulkhead, and relative absence of natural habitat. No net loss does not compare to theoretical, perfect, or undisturbed conditions as may have occurred before the area was developed.

Shoreline habitat in its natural condition performs many functions essential to fish survival and productivity. Vegetation in riparian areas can provide shade and helps maintain cool water temperatures needed by most fish native to the Pacific Northwest. Plant roots stabilize banks,

¹ See WAC 173-26-201(2)(c) (no net loss focuses on sustaining "existing shoreline natural resources" and protecting shoreline resources "as they currently exist").

help control erosion and sedimentation, and can offer shade for forage fish eggs. Where present, trees and shrubs contribute leaves, twigs, and insects to waterbodies, thereby providing basic food and nutrients that support fish and aquatic wildlife. Large trees that fall can create refuge habitat needed by small fish for cover and protection from predators. Riparian vegetation, litter layers, and soils filter incoming sediments and pollutants, thereby assisting in the maintenance of high water quality needed for healthy fish populations (Knutson, K. L. and V. L. Naef. 1997).

Land use changes within the 200-foot jurisdictional shoreline area are summarized in Table 6. Primary ecological functions provided within the Puget Sound shoreline on the project site are described below along with an evaluation of the project impact. Shoreline functions and values are based on WDFW guidelines² and other best available science³. The discussion is summarized in Table 7.

Table 6. Land Use Change in Jurisdictional Shoreline (property out to 200' from OHW)

	Existing (sf)		Future (sf)		Change (sf)
Impervious Surface ¹	10,216	14%	17,458	24%	7,242
Non-native Vegetation	41,746	58%	0	0%	-41,746
Native Vegetation ²	8,236	11%	36,134	50%	27,898
Beach	11,433	16%	18,039	25%	6,606

¹ Impervious surface includes buildings, hardscape, bulkheads, hard-packed and primarily unvegetated soils.

² Includes existing areas to be protected, planted areas, emergent wetlands, beach grasses.

² Ibid.

³ For example, see Citations of Recommended Sources of Best Available Science for Designating and Protecting Critical Areas. 2002. Washington State Office of Community Development, Olympia, WA. and City of Seattle's 2005 Best Available Science (BAS) Review (Herrera 2005).

Table 7. Standard Puget Sound Shoreline Buffer Functions and Analysis of Change

Buffer Function	Description of Function	Current Buffer Function	Buffer Function After Re-Development
Shade	The ability to create a cool and humid microclimate for incubating forage fish eggs and upper tidal area vegetation and microfauna.	Non-existent for the project site due to absence of vegetation (trees and shrubs) overhanging or adjacent to Puget Sound.	Beneficial Effect – significant new vegetation will be added along the shoreline.
Beneficial Nutrient Sources	The ability to provide food resources to Puget Sound in the form of leaf litter, vegetative matter, and terrestrial insects.	Low for the project site due to the scarcity of native vegetation on the site.	Beneficial Effect – no native vegetation will be removed. 27,898 sf of new native vegetation will be added within the shoreline.
Woody Debris Recruitment	The ability to provide large woody debris to Puget Sound.	Low for the project site due to the scarcity of potential recruitment trees on the site.	Beneficial Effect – no trees will be removed; new native trees will be added.
Sediment and Pollutant Control	The ability to physically filter sediments, chemicals, and nutrients before reaching fish-bearing waters.	Low due to the absence of native vegetation and little surface water running off, or across the site.	Beneficial Effect - elimination of bare earth from the shoreline area and addition of biofiltration facilities.
Bank Stability and Sediment Recruitment	The ability to maintain bank stability and sediment sources, and prevent erosion.	Non-existent due to entirely developed and artificially armored shoreline.	Beneficial Effect – Approximately half of the existing bulkhead will be permanently removed and replaced with natural beach.
Human Access Control	The ability to reduce or eliminate human disturbance along a sensitive shoreline.	None. Access control is not an issue for this private property.	No change
Wildlife Habitat Suitability	The ability to provide habitat for upland mammals and avian species within the riparian corridor.	Low for the project site due to the scarcity of native vegetation on the project site and fragmentation.	Beneficial Effect – 27,898 sf of new native vegetation will be added to the shoreline area.

Shoreline Buffer Function: The physical, chemical, and biological processes or attributes of the buffer.

Existing conditions on the subject property were described in Section 2. While currently vacant, the shoreline area was historically entirely developed with both commercial and residential uses over the past century. Very little native vegetation or habitat currently exists. Under the proposed action the new house and related structures will occupy about 20 percent of the shoreline area. Most of the rest (74 percent) will consist of native plantings and natural sand and gravel beach. This area currently consists primarily (73 percent) of hard-packed dirt and non-native vegetation. The beach (11% of the property) is currently isolated from the upland by a concrete bulkhead across the entire site. As shown in Table 6, the house will primarily displace existing non-native vegetation from within the Shoreline area. Compensatory mitigation is also reflected in the table as new native plantings and natural beach habitat.

Water Quality

Vegetation adjacent to a waterbody can improve water quality by filtering pollutants, removing nutrients, and preventing sediment introduction. The water quality function of the existing shoreline area on the subject site is low due to the lack of native vegetation. Stormwater currently runs off the impervious surfaces into landscaping areas where it infiltrates. However, several small drain pipes were noted in the bulkhead. These may be relicts of an old stormwater system and could be collecting surface water runoff. There is currently very little pollution generating surface on the subject site with only a small dirt parking and turn-around area.

Re-developing the site will result in a significant increase in native landscaping including water collection points designed to capture and infiltrate stormwater. The expanded house footprint will not contribute any new water quality contaminants. All of the current dirt paths and driving surfaces will be eliminated. While some new landscaping areas will be added, they will be kept outside of the buffer and adjacent to the house. By reducing fine sediment sources and adding new native areas including biofiltration areas the proposed action will have a small beneficial effect on water quality.

Water Quantity

As described above there will be an increase in impervious surface of 7,242 sf. Water from the site currently infiltrates or drains directly to Puget Sound a very large waterbody. Stormwater management will be designed to meet City of Bainbridge Island stormwater requirements (Stormwater Management Manual for Western Washington 2014 edition). Stormwater will be collected and distributed to support the new rain gardens, and native plantings. Some water is expected to infiltrate to groundwater and some will evaporate. Any excess will be tightlined to a dispersion system buried in drain rock behind the new rockery bulkhead where it will trickle through the rock onto the beach. The project will have no effect on any streams and will not influence Puget Sound.

Beneficial Nutrients

Native riparian buffers can be important to aquatic habitat productivity being the primary source of leaf litter and insects delivered to fish habitat. When present, overhanging vegetation contributes leaves, vegetative litter, and small woody debris directly to the waterbody.

No native vegetation will be removed from within 35-feet of Puget Sound under the proposed action and only incidental removal will occur within the shoreline management area. A total of 27,898 sf of new native planting area (new native trees, shrubs and groundcovers) will be located within 200 feet of Puget. The project will have a positive effect on beneficial nutrient delivery.

Microclimate

Riparian vegetation has the ability to protect waterbodies from climate changes caused by widespread development away from the water, including soil and air temperature, humidity, and wind. There is no direct link between microclimate and the condition of fish habitat, however, it has been suggested that microclimate needs protection to maintain desirable assemblages of plants and animal species, including insects, beneficial to fish.

No native riparian vegetation will be removed as part of the project. With the significant increase of native vegetation immediately along the shoreline, the proposed action is expected to benefit microclimate adjacent to Puget Sound.

Temperature & Shade

No vegetation overhanging Puget Sound will be removed during re-development of the property. Native plantings to be installed will include new trees and shrubs, some of which will be adjacent to the new beach habitat created where the bulkhead is to be removed. As the plantings mature, they will extend out over the upper intertidal area and will provide increased shading to the area where forage fish often spawn. Microflora and fauna in this area will also benefit from the increased shade.

Human Access Control

One function of buffers in populated areas can be reducing the direct encroachment of humans on the watercourse. This project will be conducted on private property where access control is not an issue.

Woody Debris

Large and small woody debris consists of downed tree stems and branches and is a functionally important structural component of aquatic habitat in the Pacific Northwest.

No vegetation capable of supplying woody debris will be removed during re-development of the property. New trees and shrubs, some of which will be adjacent to the new beach, could eventually drop branches and potentially larger stems into Puget Sound.

Bank Stability

A large, buttressed bulkhead located at OHW currently runs the entire length of the property and provides absolute bank protection except where it is starting to fail. Under the proposed action the smooth concrete bulkhead will be removed in its entirety and replaced with a mix of natural beach and rough boulder bulkhead. About half of the bulkhead will be permanently removed and a natural beach restored to the site. This beach will be allowed to aggrade and degrade with seasonal fluctuations in tidal energy. These changes will alter the sediment transport characteristics of the shoreline back closer to a natural condition. Reflected wave energy will be reduced.

Shoreline Function Conclusion

The proposed redevelopment will convert a site along the shore that currently consists of less than 25 percent native condition to one with about 75 percent native condition. About half of the existing bulkhead will be removed and replaced with a natural beach. The entire area of proposed development will take place within areas of existing disturbance; no native vegetation or natural habitat will be disturbed. Mitigation for minor adverse effects related to removal of non-native shrubs and grasses will be provided as new native planting areas. Under the Shoreline Management Act, this level of protection will provide “no net loss” of shoreline ecological functions necessary to sustain shoreline natural resources.

20. Habitat Management Plan

The proposed action includes a boathouse, retaining walls, and an upland stairway that will all be located within Zone 1 of the standard shoreline buffer. Although structure in Zone 1 will be reduced by 362 sf compared to existing conditions, the total remaining area of structure is approximately 1,017 sf which exceeds the 300 sf maximum allowed under SMP 4.1.3.8. As an alternative to the standard shoreline buffer, the applicant will establish a site-specific Vegetation Management Area along the shoreline to include the beach creation/enhancement area. This Vegetation Management Area is established pursuant to a Habitat Management Plan as described in this section. This plan was prepared pursuant to the requirements described in SMP Appendix B, Section B-4.

The goal of the Vegetation Management Plan is to enhance and preserve shoreline ecological functions and processes within the Marks-Maione property. To meet this goal, an approximately 75-foot wide Vegetation Management Area located along the waterward edge of the property will be restored, planted with native species, and set aside in perpetuity. The specific location

including dimensions and an exception for the boat shed and staircase are shown in Figure 4. Area calculations are shown in Table 8.

Table 8. Land Use Change in Vegetation Management Area (property out to 75' from OHW)

	Existing (sf)		Future (sf)		Change (sf)
Impervious Surface ¹	1,379	4%	2,265	7%	886
Non-native Vegetation	21,114	62%	0	0%	-21,114
Native Vegetation ²	384	1%	13,723	40%	13,339
Beach	11,179	33%	18,068	53%	6,889

¹ Impervious surface includes buildings, hardscape, bulkheads, hard-packed and primarily unvegetated soils.

² Includes existing areas to be protected, planted areas, beach grasses.

The requirements of a Habitat Management Plan as described in the City of Bainbridge Island SMP (2014-4) Appendix B, Section B-4 are listed below along with a description of how the plan intends to meet those requirements.

A Habitat Management Plan shall clearly demonstrate that greater protection of the functions and values of critical areas can be achieved through the HMP than could be achieved through providing the prescribed habitat buffers.

Under the standard SMP guidelines Zone 1 would extend from the OHWM a minimum of 30 feet, or to the limit of existing native vegetation whichever is greater. In this case, the existing absence of native vegetation across much of the shoreline means the 30-foot limit would apply. Zone 2 would extend an additional 5-feet to the limit of the shoreline setback, in this case 35-feet. Under standard SMP guidelines a minimum of 6,403 sf of land would be planted in native vegetation and protected under the SMP use regulations for shoreline buffers and any other restrictions that may be required pursuant to a shoreline variance. This doesn't include 1,143 sf of impervious surface within 35-feet of OHWM that would remain under the proposed action (boathouse, retaining walls, and stairway). Additional mitigation may have to be provided for these structures and it is reasonable to assume this would be 100 percent of the impervious area (1,143 sf) for a total planting of around 7,546 sf.

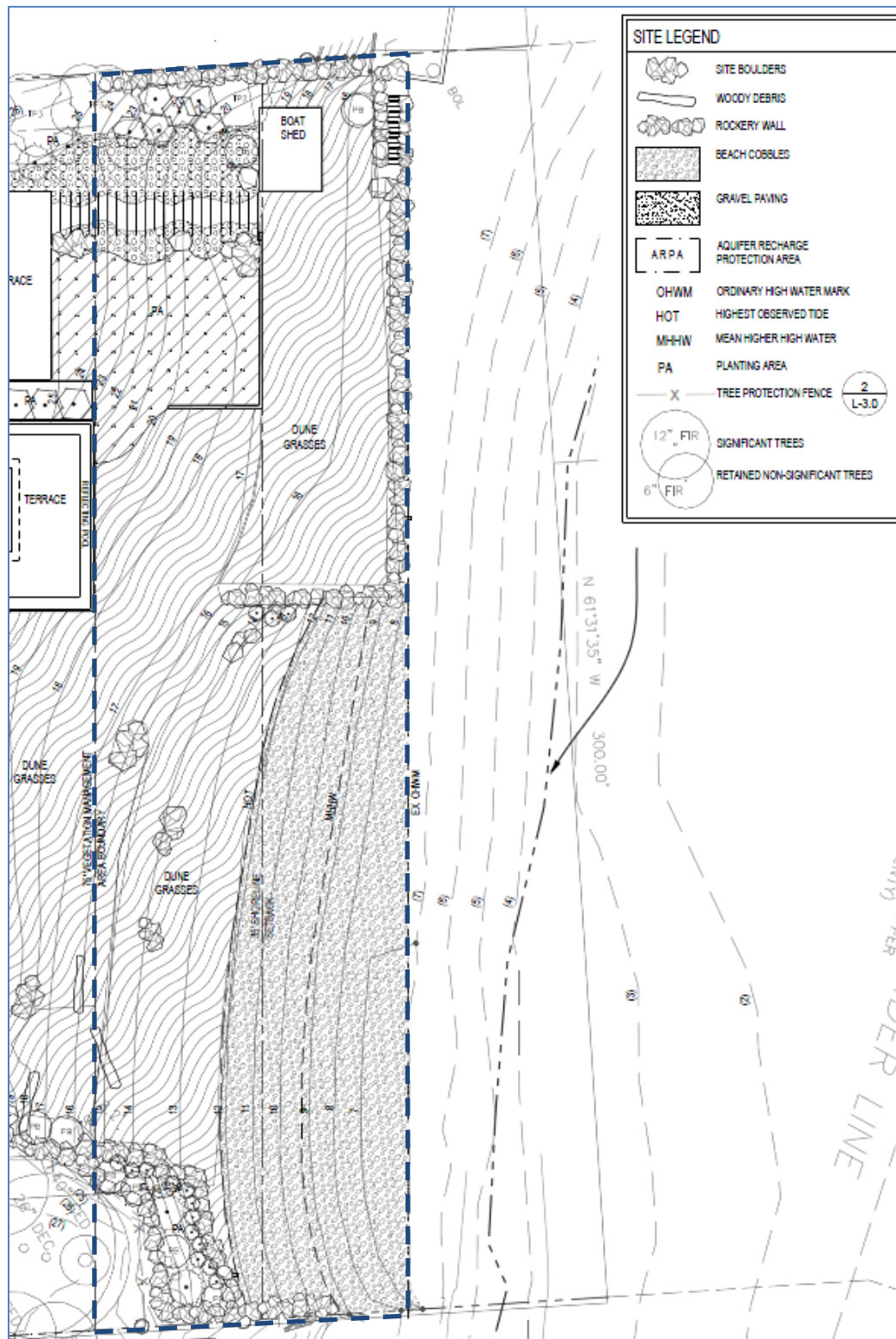


Figure 4. Vegetation Management Area (Detail from Sheet L-3.1 Planting Plan)

The applicant instead has proposed to create and preserve a total of 13,723 sf of native vegetation planting located within 75-feet of OHW. In addition, 6,889 sf of new beach will be created after removing about 150 feet of concrete bulkhead. Native plantings will cover 86 percent of the shoreline area immediately above OHW and only excludes the boathouse, retaining walls, and stairway noted above. Overall, the proposed action will provide 81 percent more native habitat (6,177 sf) in the most critical shoreline area than would occur under the standard guidelines. Expected habitat function and value improvements are described in more detail in Section 19.

Performance standards and monitoring guidelines shall be provided.

Proposed performance standards and monitoring guidelines are described in Section 15.

HMPs are primarily intended as a means to restore or improve buffers that have been degraded by past activity, and should preserve, and not reduce, existing high quality habitat buffers.. An HMP shall not reduce the prescribed water quality buffer width as listed in B-8 and B-10 under any circumstance.

As described in Section 12 (Existing Conditions) the entire site has been heavily altered from natural conditions with only small patches of native vegetation left along the shoreline. The proposed action, including HMP provisions, is designed to preserve all areas of existing native vegetation and restore large areas of degraded habitat to a more natural condition. This includes adding 27,898 sf of new native vegetation and restoring 6,606 sf of beach habitat within the shoreline management area (see Table 6). No water quality buffers for streams or wetlands will be impacted.

The Habitat Management Plan shall also contain a report which contains:

1. A description of the nature and intensity of the proposed development;

The proposed action is described in Section 1.

2. An analysis of the effect of the proposed development, activity or land use change upon the wildlife species and habitat identified for protection.

Effects of the proposed development on sensitive fish and wildlife species along with sensitive habitat are described in Section 13-17, and 19.

3. A plan which identifies how the applicant proposes to mitigate any adverse impacts to wildlife habitats created by the proposed development. For wetland or other habitats protected by this chapter, the application shall show, using the appropriate function assessment methodology,

that habitat functions and values are greater after the development than would occur had the prescribed buffers been provided.

A mitigation plan designed to avoid, minimize, and compensate for environmental impacts is provided in Section 15. An analysis of habitat quantity being provided under the proposed HMP development compared to what would occur under the prescribed buffers is provided above in Section 20.

4. All review comments received from outside reviewers. If the HMP recommends mitigation involving federally listed threatened or endangered species, migratory waterfowl or wetlands, the U.S. Fish and Wildlife Service shall receive a copy of the draft HMP.

The only comments received from outside reviewers were from WDFW habitat biologist Nam Siu after reviewing the proposed beach restoration design. In a June 8, 2018 e-mail to Ann Hillier, City of Bainbridge Island Planner, Mr. Siu stated the following:

We've been in communications with Jim Johannessen of CGS regarding this project. After reviewing the proposal and discussing the limitations of the site, we feel that the project as proposed will restore a section of shoreline on this property as well as littoral sediment transfer processes from the removal of the groins on the beach. As such, we feel that this project provides a net benefit for the nearshore environment in Blakely Harbor and are support of this project.

5. The HMP shall specifically address, as appropriate, the following:

a. Enhancement of existing degraded buffer area and replanting of the disturbed buffer area with native or equivalent vegetation;

The planting plan for the entire site is attached (See Sheet L-3.1 in the appendix).

b. The use of alternative on-site wastewater systems in order to minimize site clearing;

No clearing is required to create disposal areas for wastewater. Previously disturbed areas of the site will be regraded to a more natural undulating condition with lower areas to help trap and filter stormwater runoff, and higher areas to provide upland wildlife habitat and visual barriers. Stormwater will be collected and distributed to new rain gardens and native plantings. Some water is expected to infiltrate to groundwater and some will evaporate. Any excess will be tightlined to a dispersion system buried in drain rock behind the new rockery bulkhead where it will trickle through the rock onto the beach. Sewage treatment will be provided by an onsite septic system to be located under the new native plantings.

c. Infiltration of stormwater where soils permit;

This will be done to the maximum extent possible given the underlying clay layers. See further description above under 5.b.

d. Retention of existing native or equivalent vegetation on other portions of the site in order to offset habitat loss from buffer reduction; and

Overall, the proposed action will provide 81 percent more native habitat (6,177 sf) in the most critical shoreline area than would occur under the standard guidelines. All existing native vegetation will be preserved. No buffer reduction is proposed; no habitat loss due to buffer reduction will occur with this development.

e. The need for fencing and signage along the buffer edge.

Almost the entire undeveloped site (99.9%) will be planted and preserved as a native growth area so the need for fencing or signage on this privately-owned property is minimal.

H. Mitigation measures. Possible mitigation measures to be included in the report, or required by the Director, could include, but are not limited to:

1. Establishment of buffer zones;

An approximately 75-foot buffer from OHW will be established and preserved as the Vegetation Management Area. This area will include the restored beach to be created after about half of the existing bulkhead is removed.

2. Preservation of critically important plants and trees;

All significant trees and naturally vegetated areas will be preserved. Please see Sheet L3.0 (Tree Retention Plan) in the appendix.

3. Limitation of access to habitat areas;

As a privately-owned property, access to habitat areas will naturally be limited to just a few people. No other restrictions are likely necessary.

4. Seasonal restriction of construction activities;

Construction activities below OHW will be limited by WDFW and NOAA timing restrictions for the protection of Chinook, bull trout, and forage fish species. These restrictions will be part of the

Hydraulic Project Approval to be issued by WDFW and the Corps Permit. Upland grading will be subject to any City of Bainbridge Island seasonal clearing and grading restrictions.

5. Establishing phased development requirements; and

No phasing will be part of this project. However, work will start near the water and proceed inland so that no access by water is required.

6. Monitoring plan for a period necessary to establish that performance standards have been meet. Generally, this will be for a period of seven to ten years.

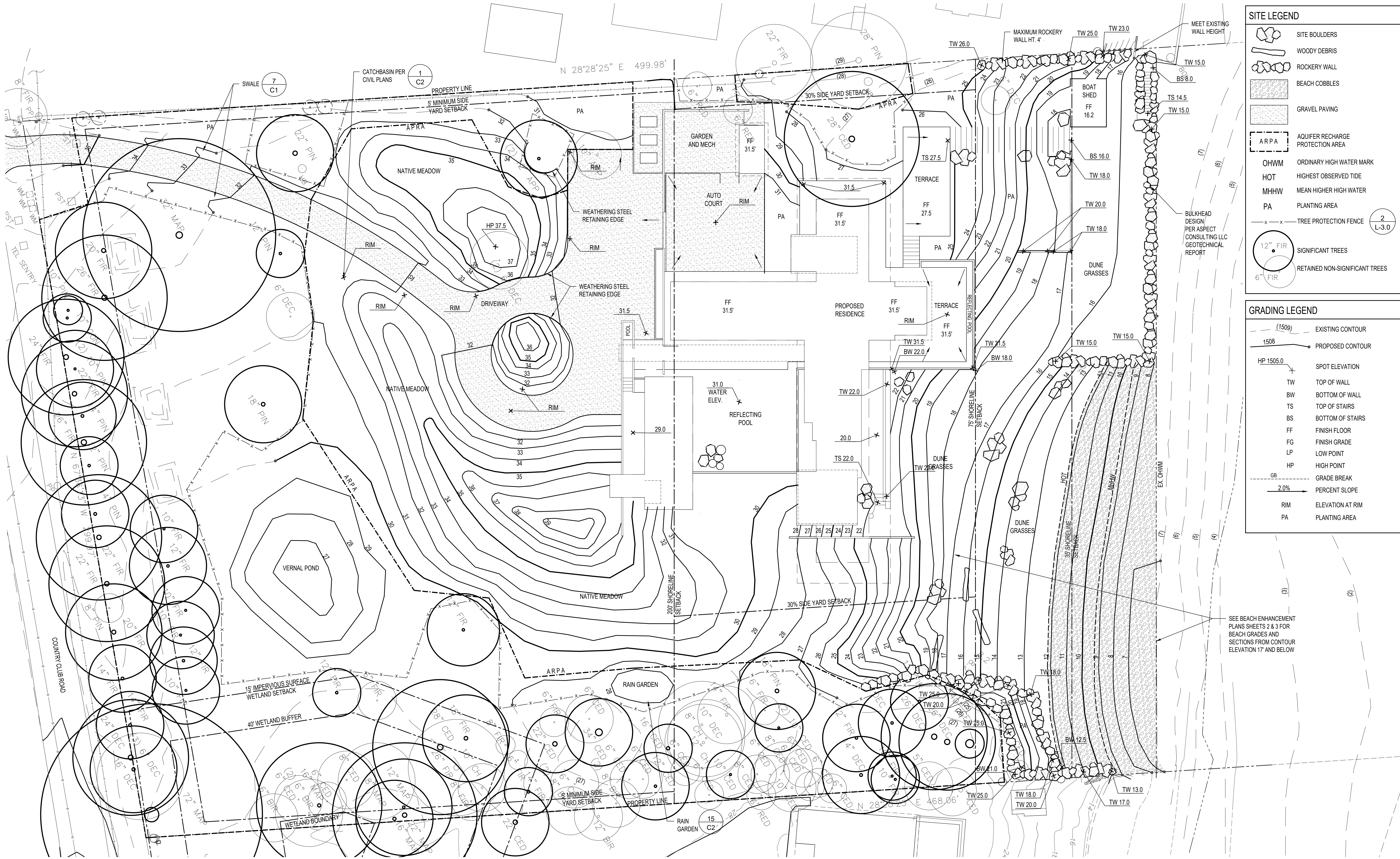
Monitoring for a period of five years is proposed (see Section 15). Because the only planting will occur in uplands, and no wetland work is involved, this period should be adequate to ensure that upland plantings are adequately established and thriving. In addition, the owners of this private property will live on site and have a vested interest in ensuring that the landscape is healthy and maintained.

21. References

- Aspect Consulting. 2011. Geotechnical Report and Critical Area Considerations, Spoor Property, 10950 and 11000 NE Country Club Road. May 4, 2011. 33pp.
- Aspect Consulting. 2018. Subsurface investigation results for proposed shoreline grading and modifications. Memo to Brian Marks and Carol Maione. March 15, 2018. 15pp.
- BGE Environmental. 2017. 11000 NE Country Club Rd., Wetland Delineation. September 15, 2017. 36pp.
- Coastal Geologic Services. 2018. Beach enhancement design report, Marks-Maione residence - Draft. June 28, 2018. 9pg plus figures.
- Knutson, K. L. and V. L. Naef. 1997. Management recommendations for Washington's priority habitats: riparian. Washington Department of Fish and Wildlife, Olympia, WA. 181p
- Richard Hartlage Land Morphology. 2018. Mitigation planting plan, Marks-Maione residence.
- Washington State Department of Ecology (Ecology). 2018. Water Quality Assessment for Washington, 303(d), 2012.
- Washington State Department of Ecology (Ecology). 2018. Washington State Coastal Atlas.
- Washington State Department of Fish and Wildlife (WDFW). 2018a. SalmonScape database.
- Washington State Department of Fish and Wildlife (WDFW). 2018b. Priority habitat and species database search.
- Washington State Department of Fish and Wildlife (WDFW). 2018c. Forage fish spawning atlas.

APPENDIX

Landscaping Plans (Richard Hartlage Land Morphology)
Beach Enhancement Plans (Costal Geologic Services)



SITE LEGEND

SITE BOULDERS

WOODY DEBRIS

ROCKERY WALL

BEACH COBBLES

GRAVEL PAVING

ARPA

ORDINARY HIGH WATER MARK

HIGHEST OBSERVED TIDE

MEAN HIGHER HIGH WATER

PLANTING AREA

TREE PROTECTION FENCE

SIGNIFICANT TREES

RETAINED NON-SIGNIFICANT TREES

GRADING LEGEND

EXISTING CONTOUR

PROPOSED CONTOUR

SPOT ELEVATION

TOP OF WALL

BOTTOM OF WALL

TOP OF STAIRS

BOTTOM OF STAIRS

FINISH FLOOR

FINISH GRADE

LOW POINT

HIGH POINT

GRADE BREAK

PERCENT SLOPE

ELEVATION AT RIM

PLANTING AREA

Marks Maione Residence

11000 NE Country Club Road
Bainbridge Island, WA 98110

PERMIT
SET

Scale: 1/16" = 1'-0"

Date: 07.05.2018

Drawn By: ALC

Checked By: RF

Revisions:

Sheet:

L-2.0

SITE GRADING PLAN

1 SITE GRADING PLAN
SCALE: 1/16" = 1'-0"

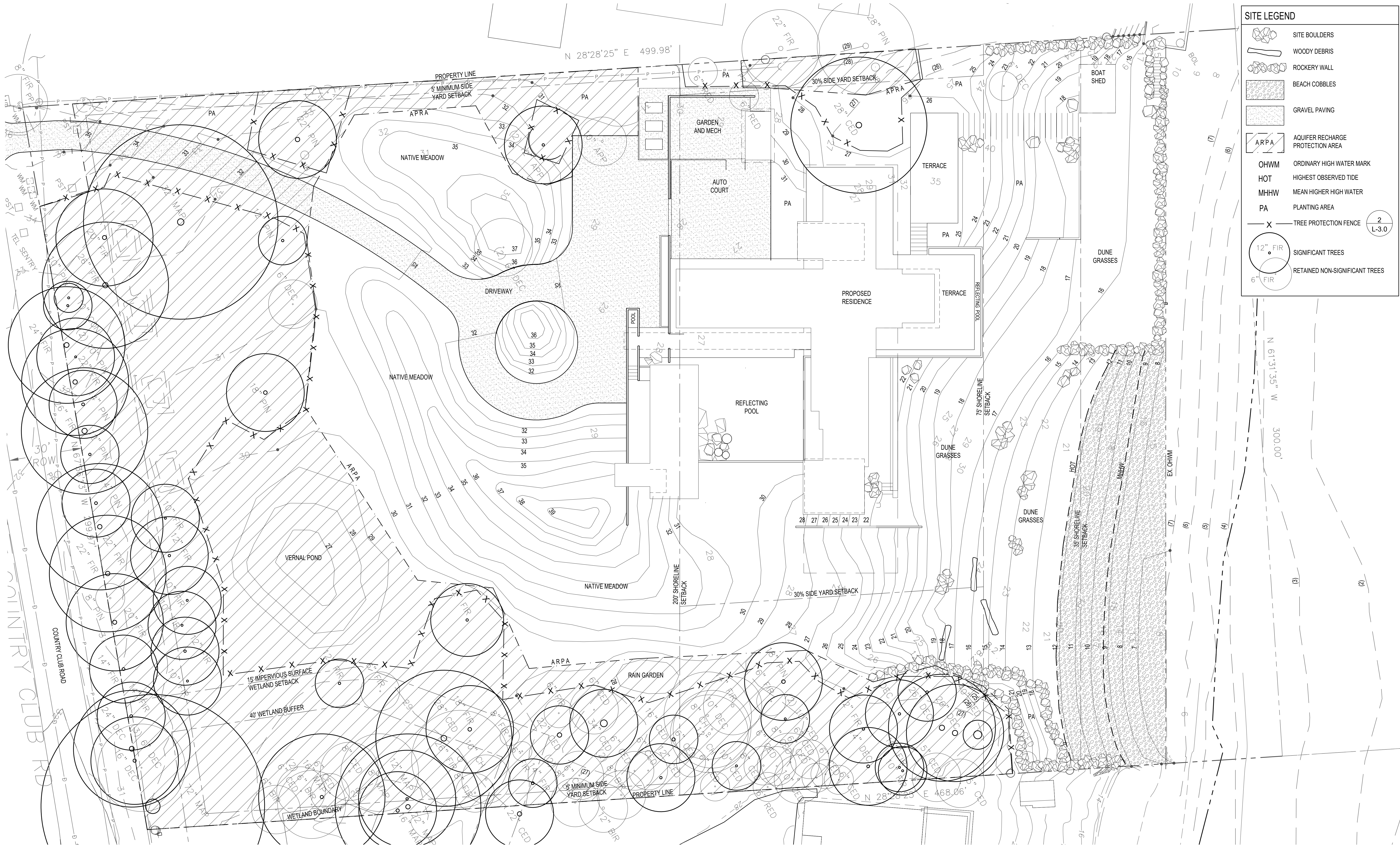
CUT/FILL CALCULATIONS:

UPLAND (17' ELEVATION AND ABOVE)
Cut: 3207 cy
Fill: 5736 cy

SHORELINE (17' ELEVATION AND BELOW)
Cut: 4730 cy (2111 cy Clay + 2619 sandy fill)
Fill: 1602 cy (Beach nourishment gravel)
Export from site: 2111 cy Clay

TOTAL (UPLAND + SHORELINE)
Cut: 7937 cy
Fill: 7338 cy

NOTE:
SEE SHEET L-3.0 FOR TREE PROTECTION MEASURES
SEE SHEET C-1 FOR SITE DRAINAGE



SITE LEGEND

SITE BOULDERS

WOODY DEBRIS

ROCKERY WALL

BEACH COBBLES

GRAVEL PAVING

AQUIFER RECHARGE PROTECTION AREA

ORDINARY HIGH WATER MARK

HIGHEST OBSERVED TIDE

MEAN HIGHER HIGH WATER

PLANTING AREA

TREE PROTECTION FENCE

SIGNIFICANT TREES

RETAINED NON-SIGNIFICANT TREES

2 L-3.0

1 TREE RETENTION PLAN

SCALE: 1/16" = 1'-0"

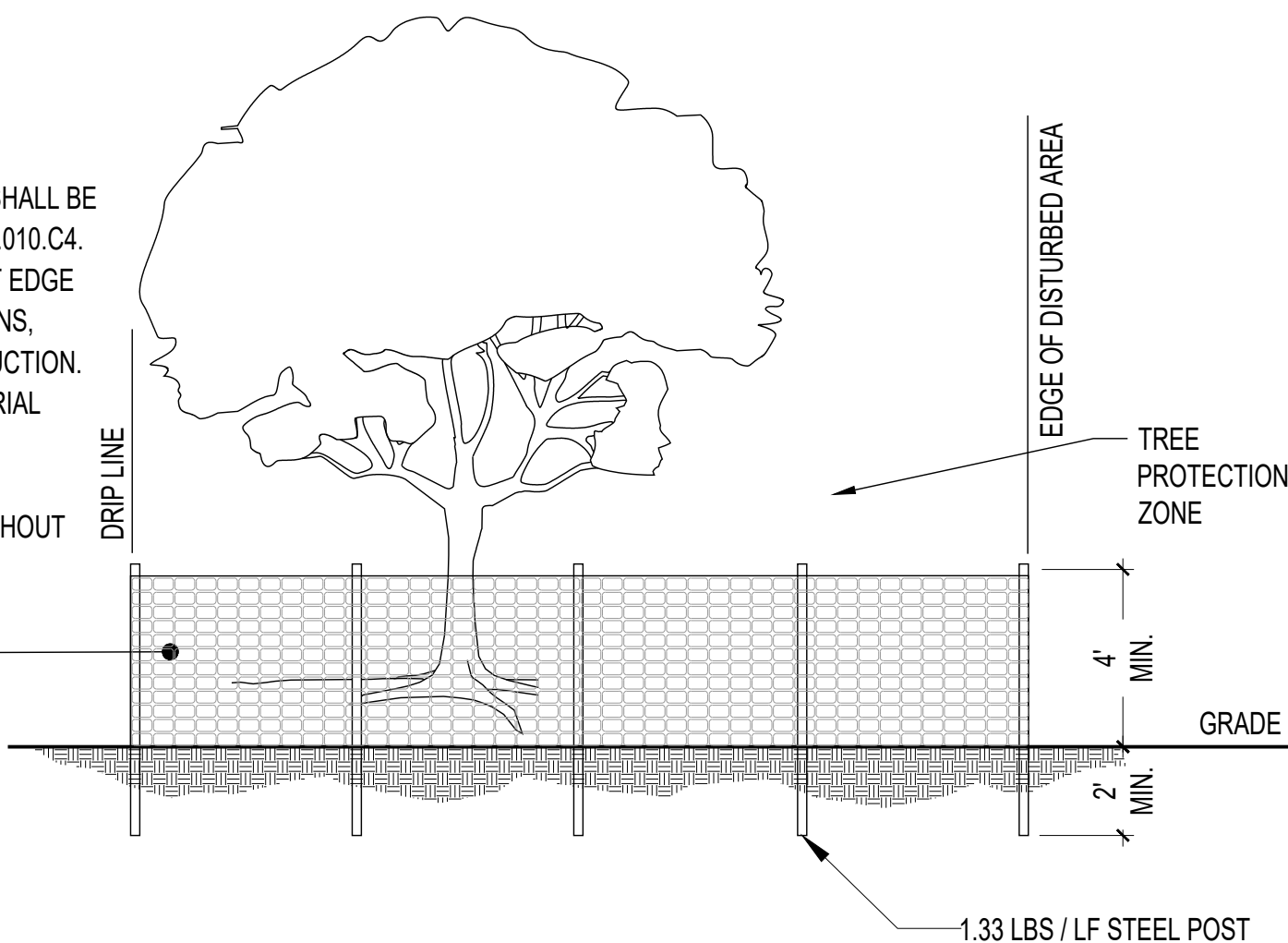
TREE PROTECTION MEASURES

- Requirements for Protection During Construction and Development per BIMC 18.15.010.4
- No cutting of significant trees shall be allowed on a site until the tree retention and planting plans have been approved by the director.
 - An area of prohibited disturbance, generally corresponding to the dripline or critical root zone (as identified by a consulting arborist) of the significant trees and/or tree canopy of tree stands, shall be identified by the applicant and approved by the director.
 - A temporary four-foot-high plastic net fence shall be erected before construction starts and shall remain in place until construction has been completed, and shall at all times have affixed to it a sign indicating the protected area. See detail this Sheet.
 - No impervious surfaces, fill, excavation, vehicle operations, compaction, removal of native soil or storage of construction materials shall be permitted within the area defined by the required construction fencing.
 - A rock well shall be constructed if the grade level around the tree is to be raised more than one foot. The inside diameter of the well shall be equal to the diameter of the dripline or critical root zone (as identified by a consulting arborist) of the tree or tree canopy of tree stands.
 - The grade level shall not be lowered within the larger of (A) the dripline or critical root zone (as identified by a consulting arborist) of the tree, or the tree canopy of tree stands, or (B) the area recommended by a consulting arborist.
 - Alternative protection methods may be used if recommended by a consulting arborist and determined by the director to provide equal or greater tree protection.

NOTES:

- ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING PER BIMC 18.15.010.C4.
- INSTALL FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
- FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

FENCE MATERIAL:
ORANGE, UV RESISTANT, WIRE BACKED,
SILT FENCE



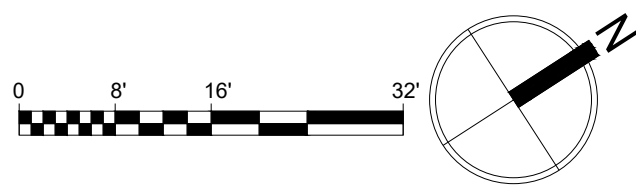
2 TREE PROTECTION FENCE

SCALE: 1/4"=1'-0"

VEGETATION QUANTITIES

PROPERTY SIZE: 145,209 S.F.
EXISTING NON-NATIVE VEGETATION: 89,420 S.F.
PROPOSED NON-NATIVE VEGETATION: 120
EXISTING NATIVE VEGETATION: 29,302 S.F. (~20% OF SITE)
PROPOSED NATIVE VEGETATION: 70,435 S.F. + EXISTING = 99,737 S.F. (~68.7% OF SITE)
EXISTING BEACH AREA: 11,433 S.F.
PROPOSED BEACH AREA: 6,571 +11,433 = 18,004 S.F.
AQUIFER RECHARGE PROTECTION AREA: 51,275 S.F.
NUMBER OF EXISTING SIGNIFICANT TREES*: 58
NUMBER OF EXISTING SIGNIFICANT TREES REMOVED: 0

* SIGNIFICANT TREES PER BIMC 16.18.020: 10" DIA. EVERGREEN TREES AND 12" DIAMETER DECIDUOUS TREES MEASURED 4.5' ABOVE EXISTING GRADE.



Richard Hartlage
Land Morphology

1512 Alaskan Way
Seattle, WA 98101
206 443 2120

www.landmorphology.com

Marks Maione Residence

11000 NE Country Club Road
Bainbridge Island, WA 98110

PERMIT SET

Scale: 1/16" = 1'-0"

Date: 07.05.2018

Drawn By: ALC

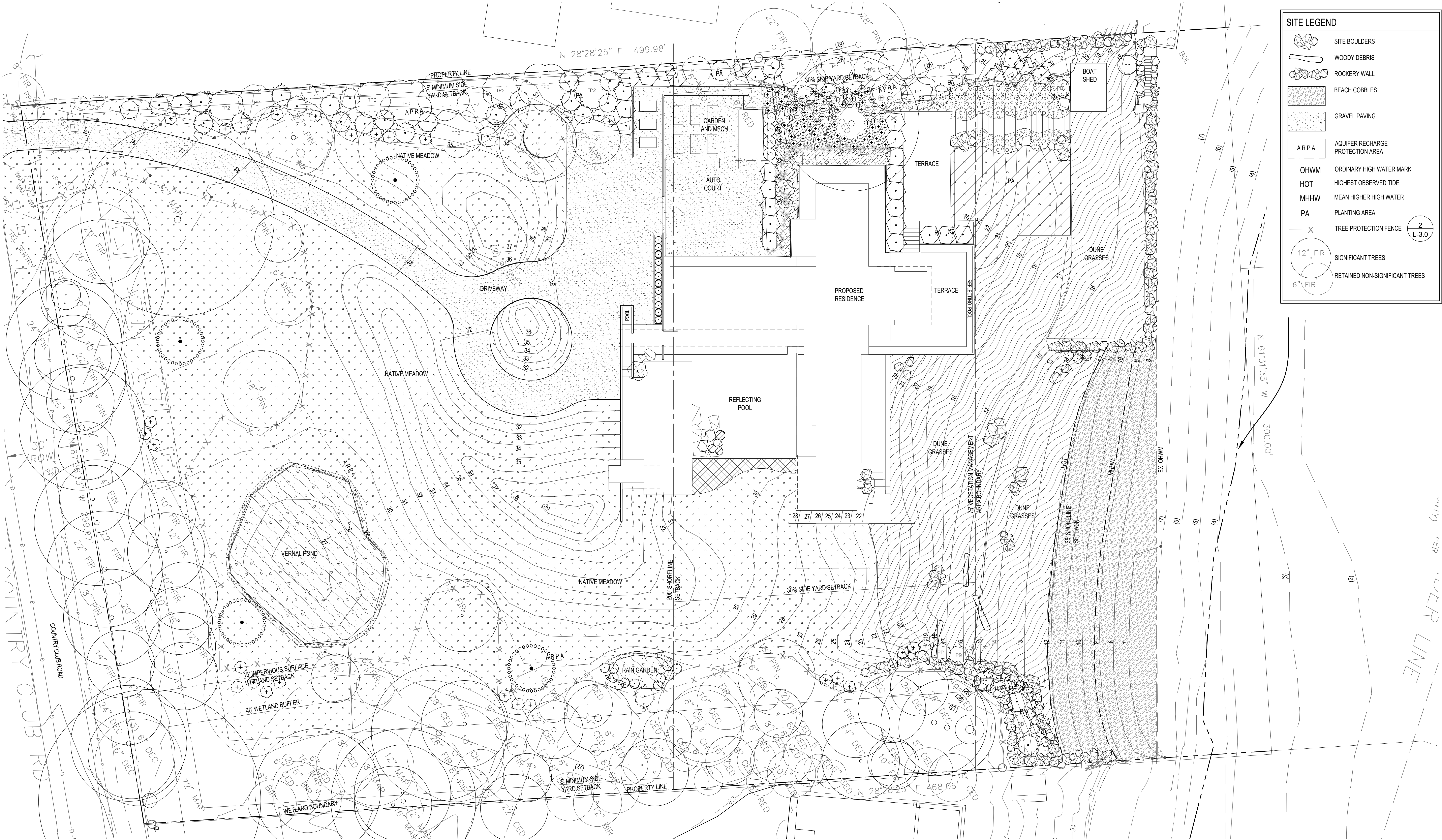
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TREE RETENTION
PLAN



SITE LEGEND

SITE BOULDERS

WOODY DEBRIS

ROCKERY WALL

BEACH COBBLES

GRAVEL PAVING

ARPA

OHWM

ORDINARY HIGH WATER MARK

HOT

HIGHEST OBSERVED TIDE

MHHW

MEAN HIGHER HIGH WATER

PA

PLANTING AREA

X

TREE PROTECTION FENCE

12" FIR

SIGNIFICANT TREES

6" FIR

RETAINED NON-SIGNIFICANT TREES

2

L-3.0

1

PLANTING PLAN

SCALE: 1/16" = 1'-0"

PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME / COMMON NAME	CONT	QTY
	AC3	Acer circinatum / Vine Maple	B & B	8
	CS	Cornus nuttallii / Pacific Dogwood	B & B	4
	TP	Thuja plicata / Western Red Cedar	B & B	30
	TP2	Thuja plicata / Western Red Cedar	B & B	11
	TP3	Thuja plicata / Western Red Cedar	B & B	8

SHRUBS	CODE	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	BUX IN3	Buxus sinica insularis / Littleleaf Boxwood	3 gal	12
	CI	Cornus sericea / Redosier Dogwood	5 gal	14
	GE	Garrya elliptica / Coast Silkassel	5 gal	3
	MN	Mahonia nervosa / Oregon Grape	2 gal	63
	MC	Myrica californica / Pacific Wax Myrtle	15 gal	32
	PB	Philadelphus lewisii / Mockorange	5 gal	10
	PM2	Polystichum munitum / Western Sword Fern	3 gal	66
	RP	Ribes sanguineum / Flowering Currant	5 gal	28
	SA	Symphoricarpos albus / Common White Snowberry	5 gal	12
	VO	Vaccinium ovatum / Evergreen Huckleberry	10 gal	4

ANNUALS/PERENNIALS	CODE	BOTANICAL NAME / COMMON NAME	SIZE	QTY
	TRI OVA	Trillium ovatum / Coast Trillium	4" pot	48
GROUND COVERS	CODE	BOTANICAL NAME / COMMON NAME	CONT	QTY
	AC6	Asarum caudatum / British Columbia Wild Ginger	4" pot	244
	CD	Carex densa / Dense Sedge	1 gal	173
	EA	Equisetum arvense / Field Horsetail	Plug	177
	FC2	Fragaria chiloensis / Beach Strawberry	4" pot	529
	IO	Iris tenax / Oregon Iris	Bulb	1,545
	VH	Vancouveria hexandra / White Insideout Flower	4" pot	73

	MEADOW MIX	46,319 sf	Size/Spacing
	Achillea millefolium / Common Yarrow		Plug 18" oc
	Aster modesta / Great Northern Aster		Plug 18" oc
	Brodiaea laxa / Corrina Brodiaea		Bulb 12" oc
	Camassia leichlinii / White Camas		Bulb 12" oc
	Deschampsia cespitosa / Tufted Hair Grass		Plug 18" oc
	Festuca idahoensis / Idaho Fescue		Plug 18" oc
	Geum triflorum / Prairie Smoke		seed
	Iris douglasiana / Douglas Iris		1 gal 24" oc
	Lupinus polyphyllus / Large-leaved Lupine		seed
	Penstemon ovatus / Egg Leaf Beardtongue		Plug 18" oc
	Penstemon serrulatus / Coast Penstemon		Plug 18" oc
	Sisyrinchium bellum / Blue Eyed Grass		seed
	SHORELINE MIX	14,303 sf	Size/Spacing
	Elymus mollis / American Dunegrass		Plug 18" oc
	Erigeron glaucus / Beach Daisy		Plug 18" oc
	Fragaria chiloensis / Beach Strawberry		4" pot 18" oc

	NORTH TERRACE PATH	1,839 sf	Size/Spacing
	Achillea millefolium / Common Yarrow		Plug 18" oc
	Arctostaphylos uva-ursi / Kinnikinnick		4" pot 18" oc
	Aster modesta / Great Northern Aster		Plug 18" oc
	Mahonia nervosa / Oregon Grape		1 gal 24" oc
	Potentilla fruticosa / Potentilla		1 gal 18" oc
	Rosa gymnocarpa / Dwarf Rose		1 gal 24" oc
	Rosa nutkana / Nootka Rose		1 gal 24" oc

NOTE:
SEE SHEET L-3.0 FOR TREE PROTECTION MEASURES.
SEE SHEET C-1 FOR SOIL AMENDMENT NOTES.

Marks Maione Residence

11000 NE Country Club Road
Bainbridge Island, WA 98110

PERMIT SET

Scale: 1/16" = 1'-0"

Date: 07.05.2018

Drawn By: ALC

Checked By: RF

Revisions:

Sheet:

L-3.1
PLANTING PLAN



Richard Hartlage
Land Morphology

1512 Alaskan Way
Seattle, WA 98101
206 443 2120

www.landmorphology.com

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FEATURE	EXISTING	PROPOSED
CONTOURS, MAJOR	---#---	---#---
CONTOURS, MINOR	---#---	---#---
TOP OF BANK	---	---
PROPERTY LINES	---	---
OHWM	---OHWM---	
MHHM	---MHHW---	---MHHW---
CONCRETE	---	---
BEACH EXCAVATION		---
PLACE GRAVEL		---
PLACE GRAVELLY SAND		---
BULKHEAD/ROCKERY/RETAINING WALLS		---
PLANT DUNEGRASS (<i>Leymus mollis</i>)		---



Marks - Maione Beach Enhancement
11000 NE Country Club Road, Bainbridge Is., WA
Proposed Conditions - Site Plan

DRAFT

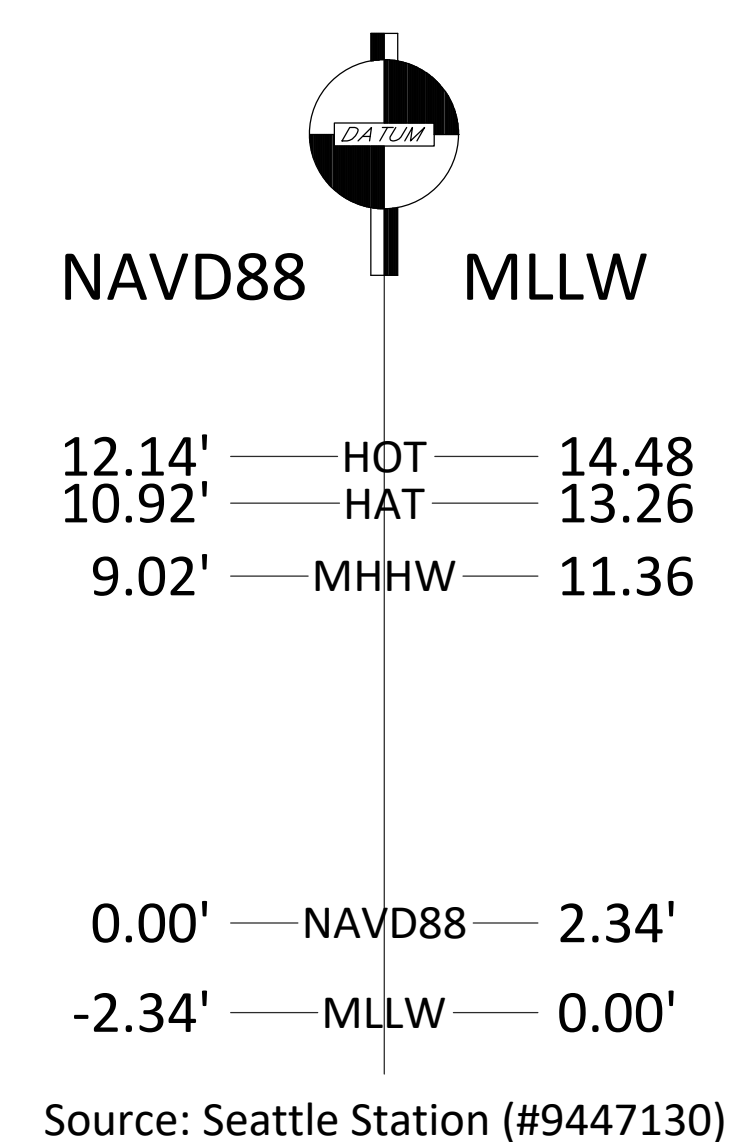
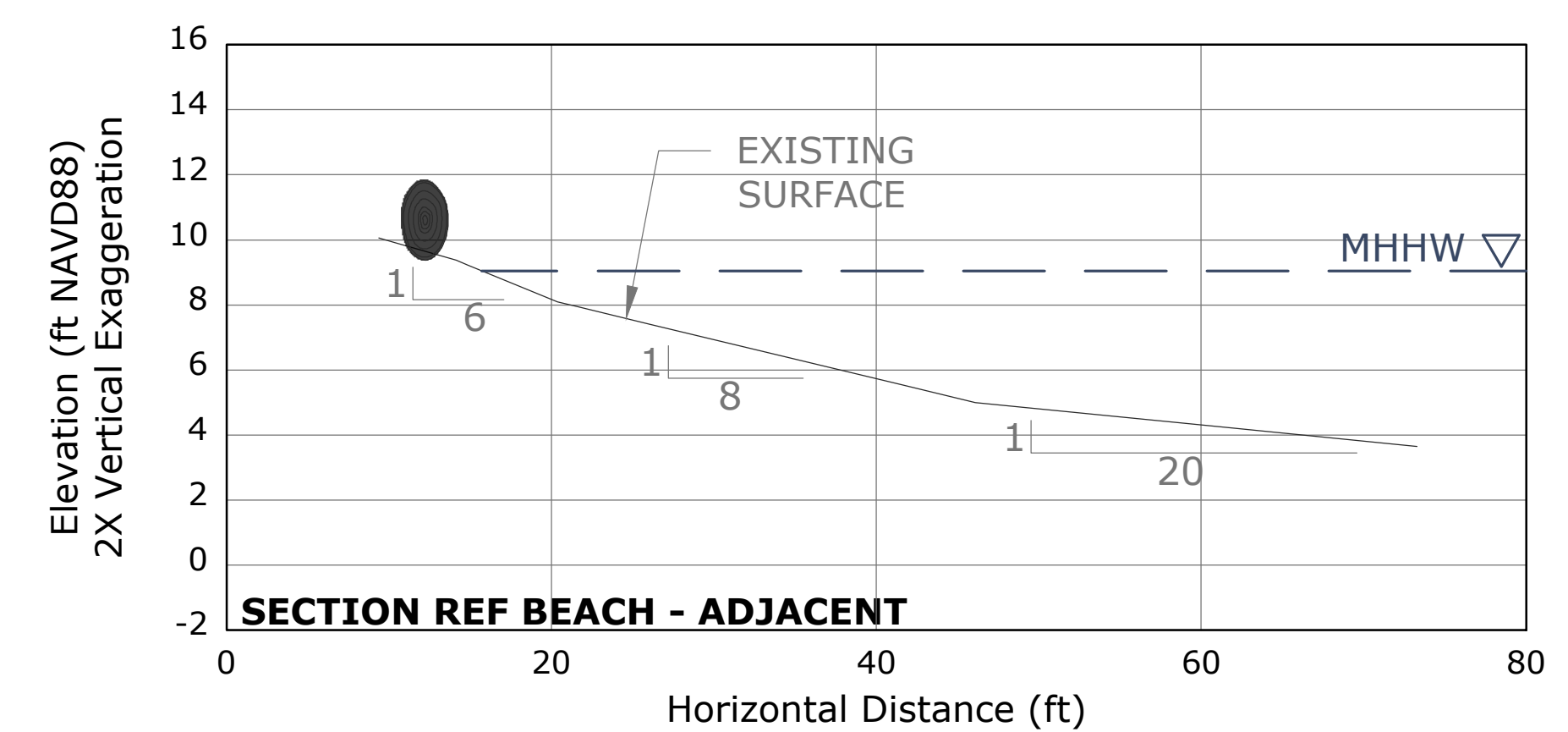
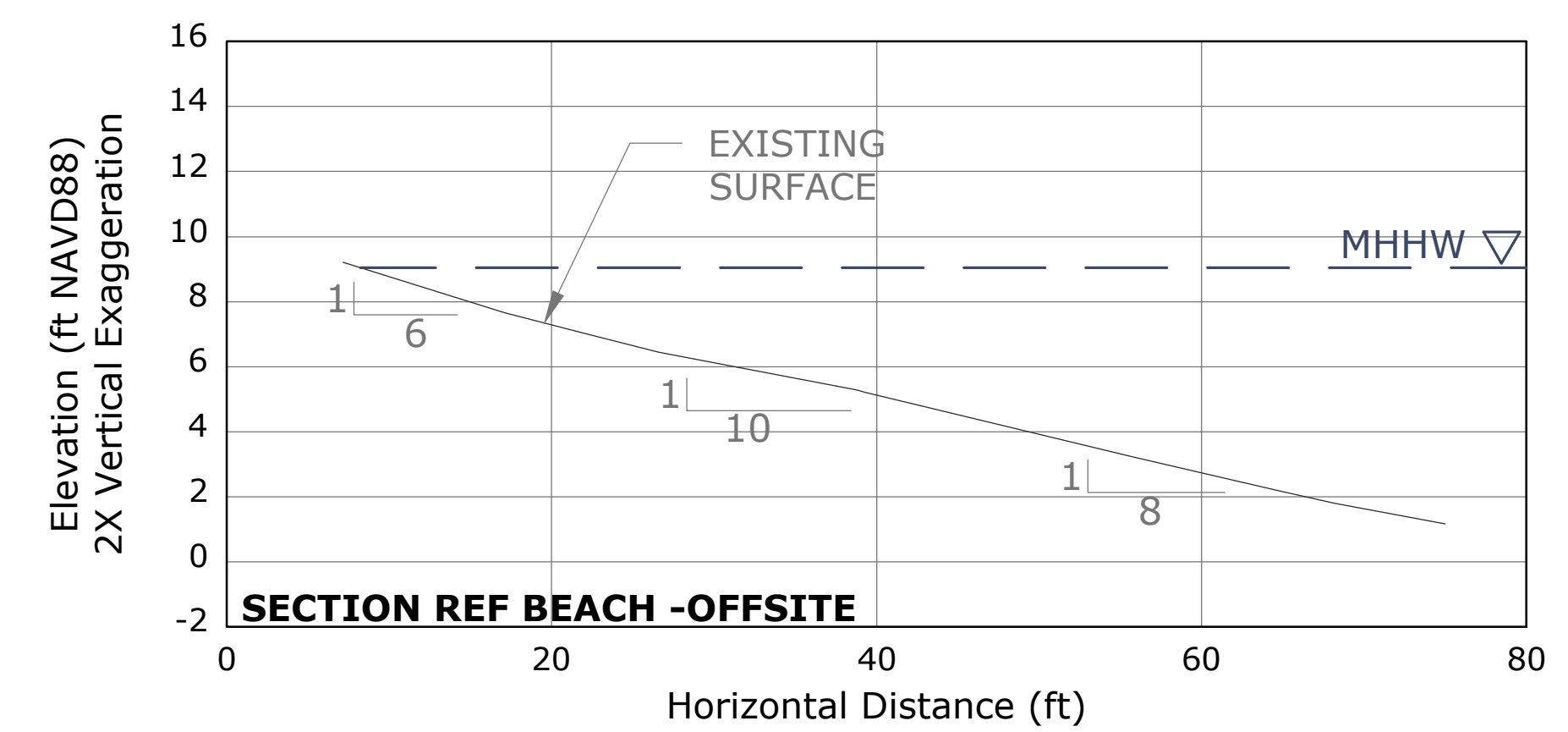
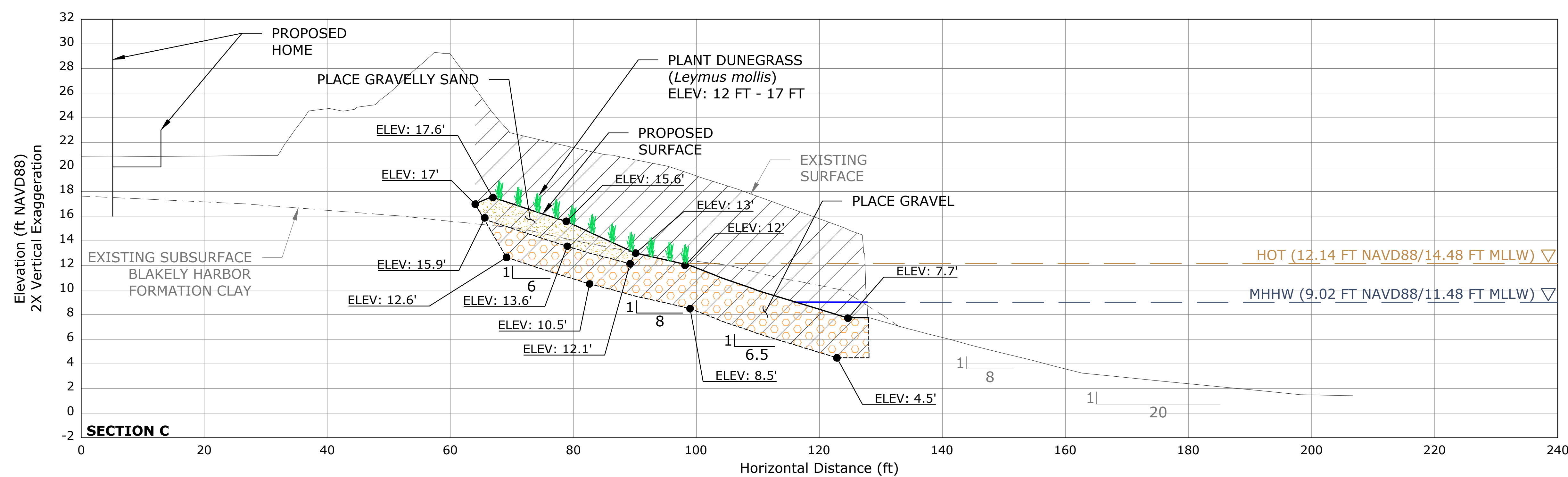
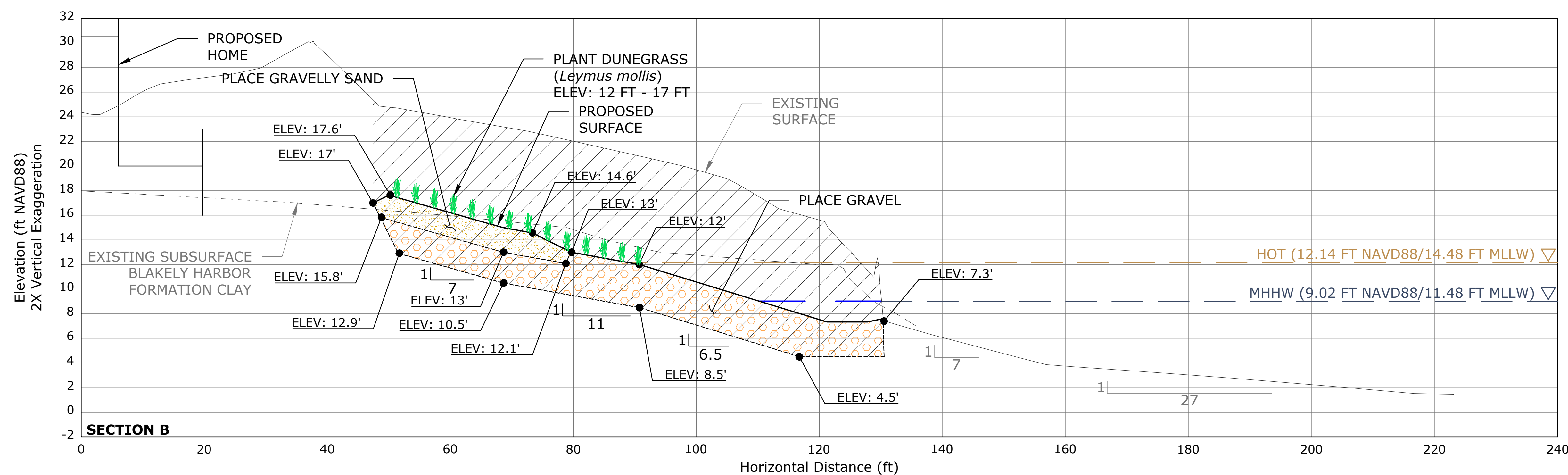
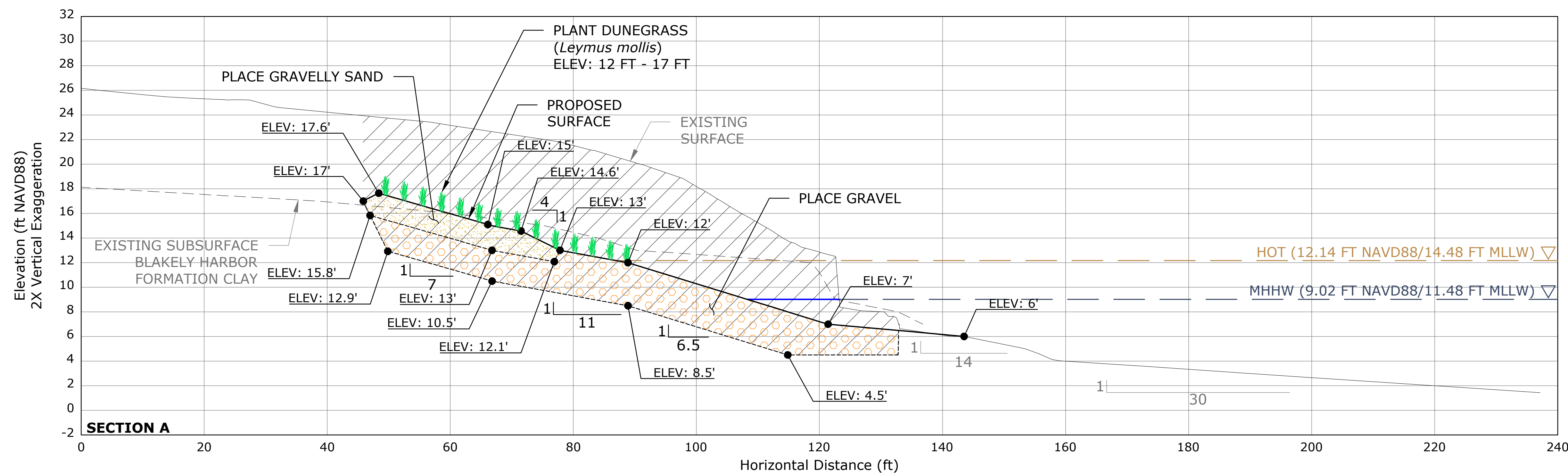
NAVD88
ELEV. MLLW: -2.34 FT
ELEV. MHHW: 9.02 FT
SCALE: AS SHOWN
DATE: 6/28/2018
SHEET:

2

OF: 3

COASTAL GEOLOGIC SERVICES
1711 Ellis St, Suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS	DRAWN BY:	DESIGNED BY:	CHECKED BY:	DATE SURVEYED:	SURVEYED BY:
	ADT	JWJ			



DATUM ABBREVIATIONS

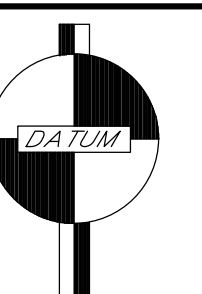
HOT: HIGHEST OBSERVED TIDE
HAT: HIGHEST ASTRONOMICAL TIDE
MHHW: MEAN HIGHER HIGH WATER
MLLW: MEAN LOWER LOW WATER
NAVD88: NORTH AMERICAN DATUM OF 1988

DRAWN BY:	
ADT	
DESIGNED BY:	
IWI	
CHECKED BY:	
DATE SURVEYED:	
SURVEYED BY:	
	REVISIONS

Marks - Maione Beach Enhancement
111000 NE Country Club Road, Bainbridge Is., WA

Proposed Conditions - Cross Sections

DRAFT



NAVD88
ELEV. MLLW: -2.34 FT
ELEV. MHHW: 9.02 FT

SCALE: AS SHOWN

DATE: 6/28/2018

SHEET:

3

OF:3