Ecological No Net Loss Assessment Report

Prepared for

Chen Residence
8440 Benotho Place
Mercer Island, WA 98040

Prepared by

Northwest Environmental Consulting, LLC

Northwest Environmental Consulting, LLC
600 North 36th Street, Suite 423
Seattle, WA 98103
206-234-2520

January 2023

Purpose

The purpose of this report is to fulfill the requirements of City of Mercer Island Municipal Code (MICC) 19.07.110 Shoreline Master Program by assessing overall project impacts and proposed mitigation to determine if the project meets the "No Net Loss" General Regulation of the Shoreline Master Program.

No Net Loss is defined as "An ecological concept whereby conservation losses in one geographic or otherwise defined area are equaled by conservation gains in function in another area."

Permits are being applied for a dock extension and associated moorage improvements.

Location

The subject property is located at 8440 Benotho Place (King County parcel number 0736100100) in the City of Mercer Island, Washington (see Appendix A – Sheet A1.0). The parcel is on the waterfront of Lake Washington, a shoreline of the state, that contains several endangered fish species listed under the Endangered Species Act and Washington State designated priority fish species.

Project Description

The proposed project consists of removing the existing failing 112 lineal-foot wood bulkhead and replacement with a new granite rock bulkhead. The replacement bulkhead will not encroach further into the lake and will be about 4-feet-8-inches high to match the same height as the existing bulkhead. See sheets A2.0 to A6.0.

During construction, a floating boom with a silt curtain will surround the work barge and work area. See sheet A7.0 for a list of BMPs.

Native trees and shrubs, including a western red cedar, will be planted along the shoreline and the existing vegetation will be preserved. See sheets A8.0 and A9.0.

Project drawings are included in Attachment A.

Approach

Northwest Environmental Consulting LLC (NWEC) biologist Brad Thiele conducted a site visit on January 10, 2023 to evaluate conditions on site and adjacent to the site. NWEC also consulted the following sources for information on potential critical fish and wildlife habitat along this shoreline:

- Washington Department of Fish and Wildlife (WDFW): Priority Habitats and Species online database (http://apps.wdfw.wa.gov/phsontheweb/)
- WDFW SalmonScape online database of fish distribution and ESA listing units (https://apps.wdfw.wa.gov/salmonscape/)

- Mercer Island GIS online database (https://chgis1.mercergov.org/Html5Viewer/Index.html?viewer=PubMaps&viewer=PubMaps)

Site Description

The subject property is a shoreline tract in a residential neighborhood. It has shoreline on its south eastern boundary with single-family homes to the northeast and southwest along the shoreline.

The only existing structures on the property are the house and a shared dock.

The shoreline is armored with a timber bulkhead with a timber cap walkway. Vegetation is lawn down to the bulkhead. Privacy ornamental plantings are present along the property lines. The substrates along the shore are gravel with cobble. No aquatic vegetation was present at the time of the site visit.

The neighboring shorelines are landscaped with bulkheads and docks and are similar. See attached photos in Appendix B- Photos.

Species Use

WDFW's PHS mapping and SalmonScape mapping tools show the following salmonid species using Lake Washington for migration and/or rearing: residential coastal cutthroat (*Oncorhynchus clarkii*), winter steelhead (*O. mykiss*), Dolly Varden/bull trout (*Salvelinus malma*), sockeye salmon (*O. nerka*), fall Chinook (*O. tshawytscha*), coho salmon (*O. kisutch*), and kokanee (*O. nerka*). The SalmonScape database maps the site as accessible to the Endangered Species Units (ESU) of Threatened Chinook and steelhead. Juveniles migrate and may rear in the waters near the project when traveling from spawning sites on other lake tributaries to the lakes system's outlet at the Hiram M. Chittenden Locks. The project site is accessible to any fish migrating or rearing in the lake. The shoreline is mapped as a Sockeye spawning location.

Priority Habitats and Species mapping, maps Mercer Island Open Space about 5,000 feet to the north as the closest feature to the site. Other than the aquatic species mentioned above, the PHS mapping does no indicate any terrestrial priority species as occurring at the site.

The City of Mercer Island GIS Portal does not indicate any watercourses or other habitat features are present or within 300 feet of the site besides Lake Washington.

Project Impacts and Conservation Measurements

Direct Impacts:

Sediments: Removal of the existing timber bulkhead and constructing a new rock bulkhead has the potential to create turbidity. A boom with a silt curtain will surround the work area to decrease the potential of turbidity from leaving the site. Any disturbed soils landward of the bulkhead will be stabilized upon completing the work.

Additionally, the tug and barge propwash may disturb sediments temporarily when making trips to and from the site. The project will meet state water quality standards.

Shoreline: Planting native vegetation, including a western red cedar, shore pine and shrubs, will increase the habitat functions of the shoreline by creating shade along the shoreline that will be an improvement from the existing baseline habitat conditions at the project site. These plants will provide overhanging cover for fish, structural diversity for birds and wildlife, detritus for aquatic invertebrates and long-term recruitment of woody material and other allochthonous food sources. The proposed planting plan is included (see Appendix sheet 8.0 and 9.0).

Changing the bulkhead from a near vertical wall to rock will reduce the effects of reflecting waves that cause additional sediment erosion from the lakebed along the bulkhead. The rock bulkhead provides more surface area and creates an uneven surface that helps to attenuate wave action along the shoreline and reduces the occurrence of reflecting waves. This will help stabilized substrates along the shoreline while maintaining sorted substrates in the nearshore.

Lakebed: No changes in lakebed coverage will result. Removing the vertical surface bulkhead should reduce erosive forces from reflecting waves helping to stabilize the lakebed and shoreline.

Noise: Construction equipment will create noise audible to neighbors and in-water. Noise disturbance will be short-term and should have negligible effects on fish and wildlife in the area. Work will be completed during the in-water work window when juvenile fish are not expected to be present in larger numbers.

Potential spills: Short-term risks include the potential for petroleum spills that can occur with any equipment operation. The risk of impact to the aquatic environment is expected to be minor because a trained crew will be onsite that will implement spill containment measures should a spill occur.

Recreational Boating: The project supports continued recreational boating, which has been identified as a limiting factor for salmonid populations in Lake Washington. The pier will not introduce additional boating to Lake Washington, as the owners could still access the lake from a public boat launch or private moorage facility.

Other Conservation measures:

Work window: The work will be completed during the prescribed in-water work window for this area of Lake Washington (July 16 to December 31). Operating within this time frame helps protect Chinook salmon, steelhead, bull trout and other salmonid fish species by doing work when juvenile fish are not expected to be present in large numbers.

Best Management Practices: Applicable BMPs will be used, such as a floating boom and silt curtain around the in-water work area, to contain any floating debris and potential turbidity that may escape during construction. The barge will have a perimeter containment sock to absorb oil and grease that might inadvertently wash from the barge during construction.

Hazardous material containment supplies such as spill absorbent pads and trained personnel will be required onsite during any phase of construction where machinery is in operation near surface waters.

In-lieu Fee: The shoreline on the subject property will be planted with native, overhanging vegetation. The project also requires approval from the National Marine Fisheries Service (NMFS). NMFS has developed a calculator to determine appropriate mitigation costs for proposed in-water structures in Lake Washington. This calculator has established a fund that owners can pay into if they are not willing or cannot find mitigation to offset impacts from the project. The owner is not able to complete the required mitigation at the subject property

required by NMFS and the property owners will pay into the in-lieu fee program to mitigate project impacts. An in-lieu fee program is defined as follows:

> "A program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor." (Fed. Reg. 40 CFR Part 230)

The fee has been determined using the Restoration And Permitting (RAP) Calculator for Lake Washington and will be paid to King County Water & Land Resources Division. This funding has been used to remove 350 derelict piles from the mouth of the Cedar River in Lake Washington.

Conclusion

Juvenile Chinook salmon, and other salmonids, rear and migrate along the Lake Washington shoreline.

There will be temporary impacts from noise and disturbed sediments during construction. No change to overwater coverage is proposed.

Changing the bulkhead from a vertical structure to rock helps attenuate wave action and reduces the occurrence of erosion of shoreline substrates from occurring and will improve shoreline and lakebed conditions in the long term.

The project will minimize construction effects on the environment by following the prescribed fish window and using applicable BMPs to prevent construction spills and floating debris from escaping the area. The construction crew will retrieve all dropped items from the bottom and dispose of them properly.

A shoreline planting plan will be implemented that will add 2 native trees and 3 native shrubs to the shoreline that will provide natural shading, allochthonous food sources and will eventually be a source of woody materials that will improve shoreline conditions at the site in the long-term. The owner has also opted to pay into the In Lieu Fee program that will be used for conservation projects that benefit salmon in King County.

This project has been designed to meet current dock replacement standards and will use Best Management Practices to reduce project impacts. The conservation measures are designed to improve ecological functions or prevent further degradation of habitat **and will result in No Net Loss of ecological functions** at the site.

Document Preparers

Brad Thiele	Biologist	29 years of experience	Northwest Environmental Consulting, LLC (NWEC)

The conclusions and findings in this report are based on field observations and measurements and represent our best professional judgment and to some extent rely on other professional service firms and available site information. Within the limitations of project scope, budget,

and seasonal variations, we believe the information provided herein is accurate and true to the best of our knowledge. Northwest Environmental Consulting does not warrant any assumptions or conclusions not expressly made in this report, or based on information or analyses other than what is included herein.

REFERENCES

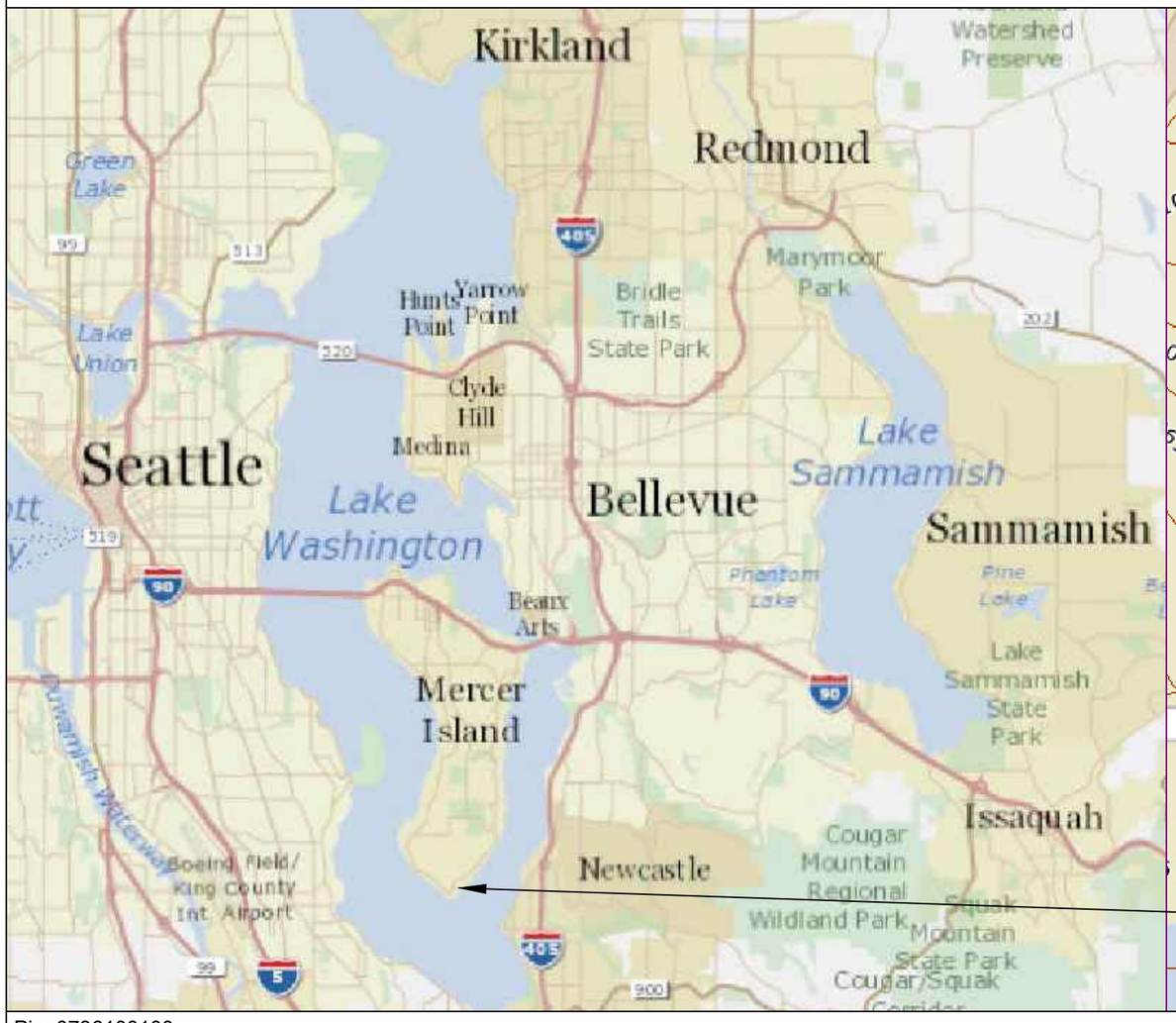
King County. 2023. King County iMap. Online database. Accessed January 2023 at https://gismaps.kingcounty.gov/iMap/

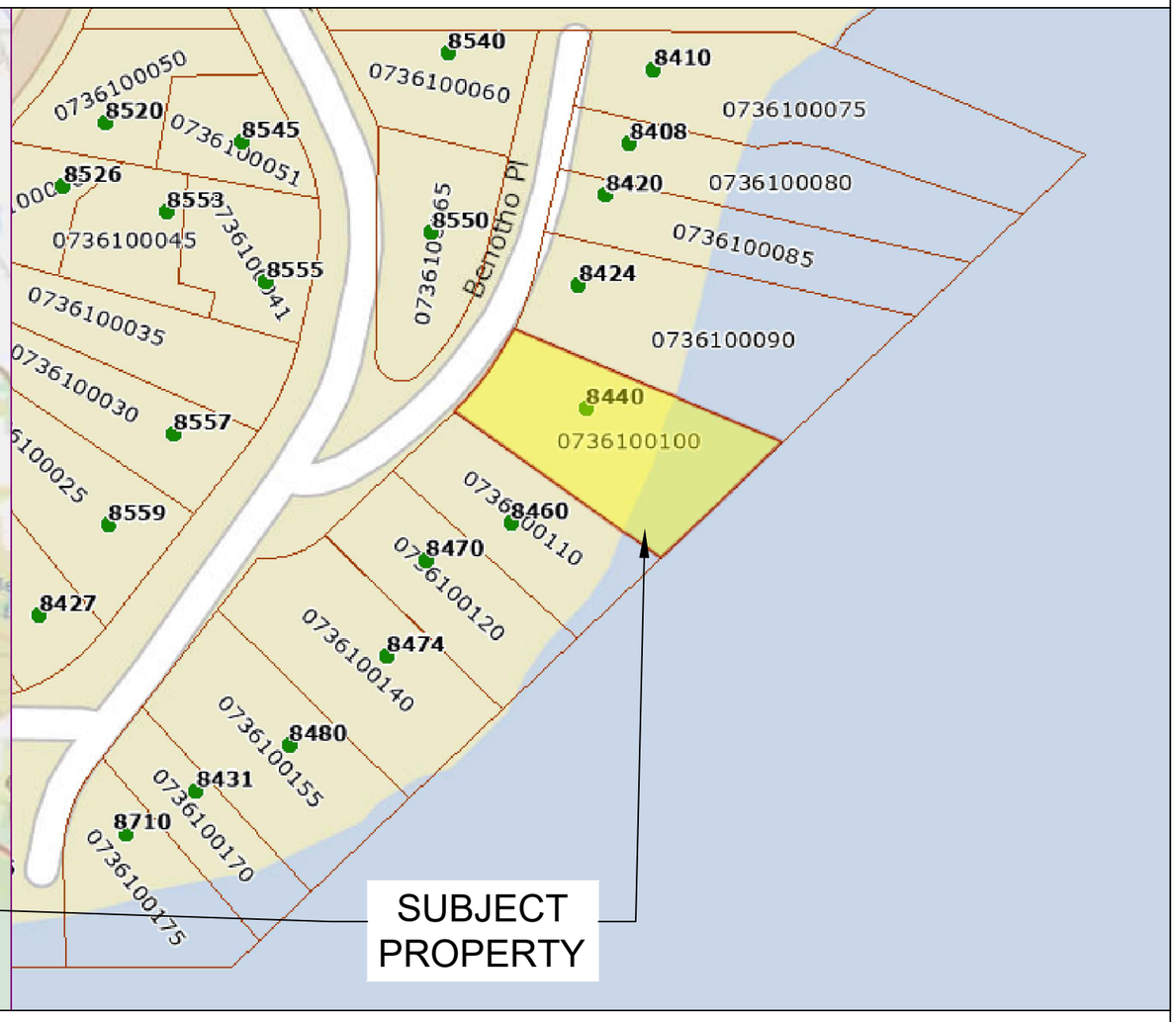
Washington Department of Fish and Wildlife (WDFW). 2023. Priority Habitats and Species. Online database. Accessed January 2023 at http://apps.wdfw.wa.gov/phsontheweb/

WDFW. 2023. SalmonScape. Online database. Accessed January 2023 at http://apps.wdfw.wa.gov/salmonscape/

Appendix A:
Project Drawings

SITE PLAN





Pin: 0736100100

Legal Description: BENOTHO BEACH UNREC TGW SH LDS ADJ LESS C/M RGTS

Plat Block:
Plat Lot: 19-20

Parcel	Bulkhead
LAT: 47.52555	LAT: 47.525504
LONG: -122.2243	LONG: -122.224164

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Seaborn Pile Driving
1080 W Ewing St
Seattle, WA 98119

Office: 206-236-1700 ext. 3
www.seabornpiledriving.com

Scope of Work: We propose to replace the existing wooden bulkhead with a granite rock bulkhead.

Applicant: Chen Residence
8440 Benotho Place
Mercer Island, WA 98040

County: King County
Location: Lake Washington

Created: 11-01-22

Last Updated: 1/9/2023 11:31 AM Zion

Datum: CORPS OF ENGINEERS 1919
NW Quarter Of Section 31, Township 24, Range 05

Adjacent Owners:
ASPIRI GARY+MITZI
8460 BENOTHO, PL 98040
GOODRICK ELIZABETH S+RAYMON
8424 BENOTHO PL, 98004

SHEET A1.0

NWS-2023-XXX
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GENERAL NOTES:

MATERIALS SPEC LIST:

Boat Lifts:

* SL8012ARW - 146" x 167"

SEWER:

* All sewer is field verified by probing the lake bed manually during the allowed work windows for the area.

CODE REFERENCES: Mercer Island

We are applying for the permit to be reviewed under the:

"Bulkheads and Shoreline Stabilization Structures" per MIMC 19.13050(B)(1).

1. An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents or waves, and the following conditions shall apply:

i. The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.

NNL Report attached.

ii. Replacement walls or bulkheads shall not encroach waterward of the ordinary high water mark or existing structure unless the primary structure was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure. Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high water mark.

Replacement bulkhead will not encroach further waterward of OHWM than existing bulkhead.

iii.For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

Replacement bulkhead will have no addition or increase in size over existing bulkhead.

iv. Construction and maintenance of normal protective bulkhead common to single-family dwellings requires only a shoreline exemption permit, unless a report is required by the code official to ensure compliance with the above conditions; however, if the construction of the bulkhead is undertaken wholly or in part on lands covered by water, such construction shall comply with SEPA mitigation.

Replacement bulkhead will not be constructed in lands covered by water.

Last permit issued for property: 1304-164 4/14/2013

Bulkhead established/constructed: 4/25/1980

Boat lift permitted: 08/14/1990

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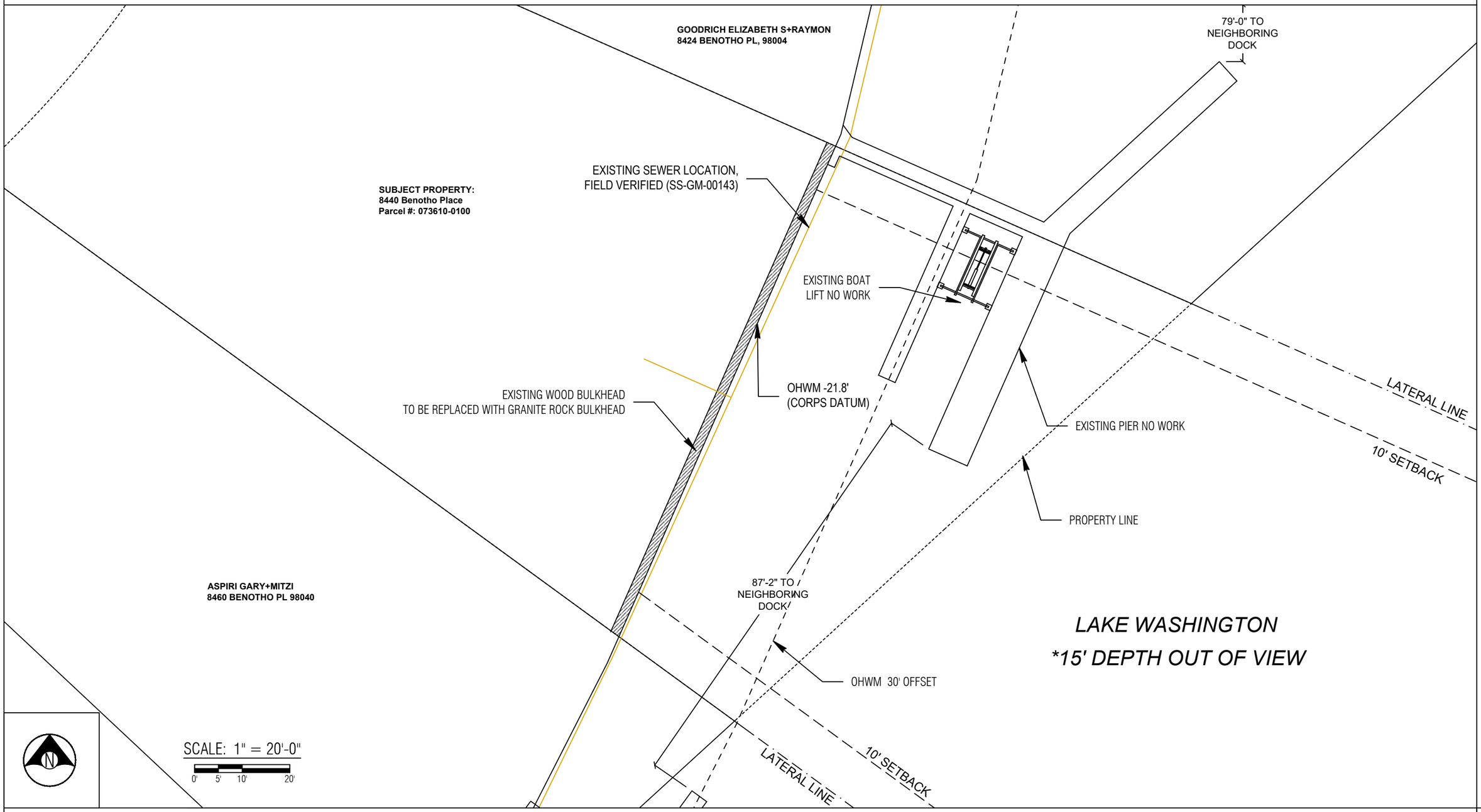
Scope of Work: We propose to replace the existing wooden bulkhead with a granite rock bulkhead.

EXISTING CONDITIONS

CLEAN UP LAKE AROUND PROJECT



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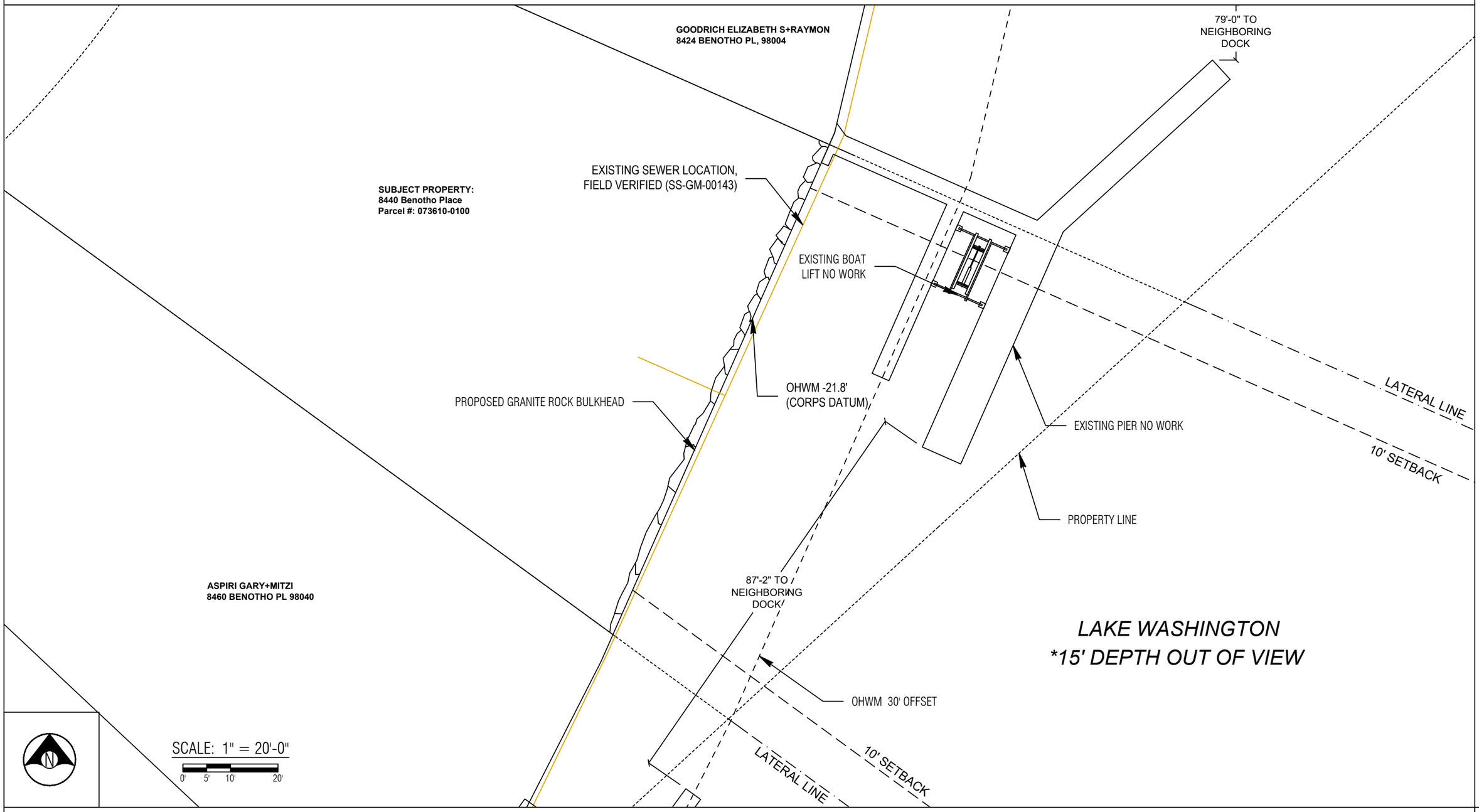
PROPOSED CONDITIONS

CLEAN UP LAKE AROUND PROJECT



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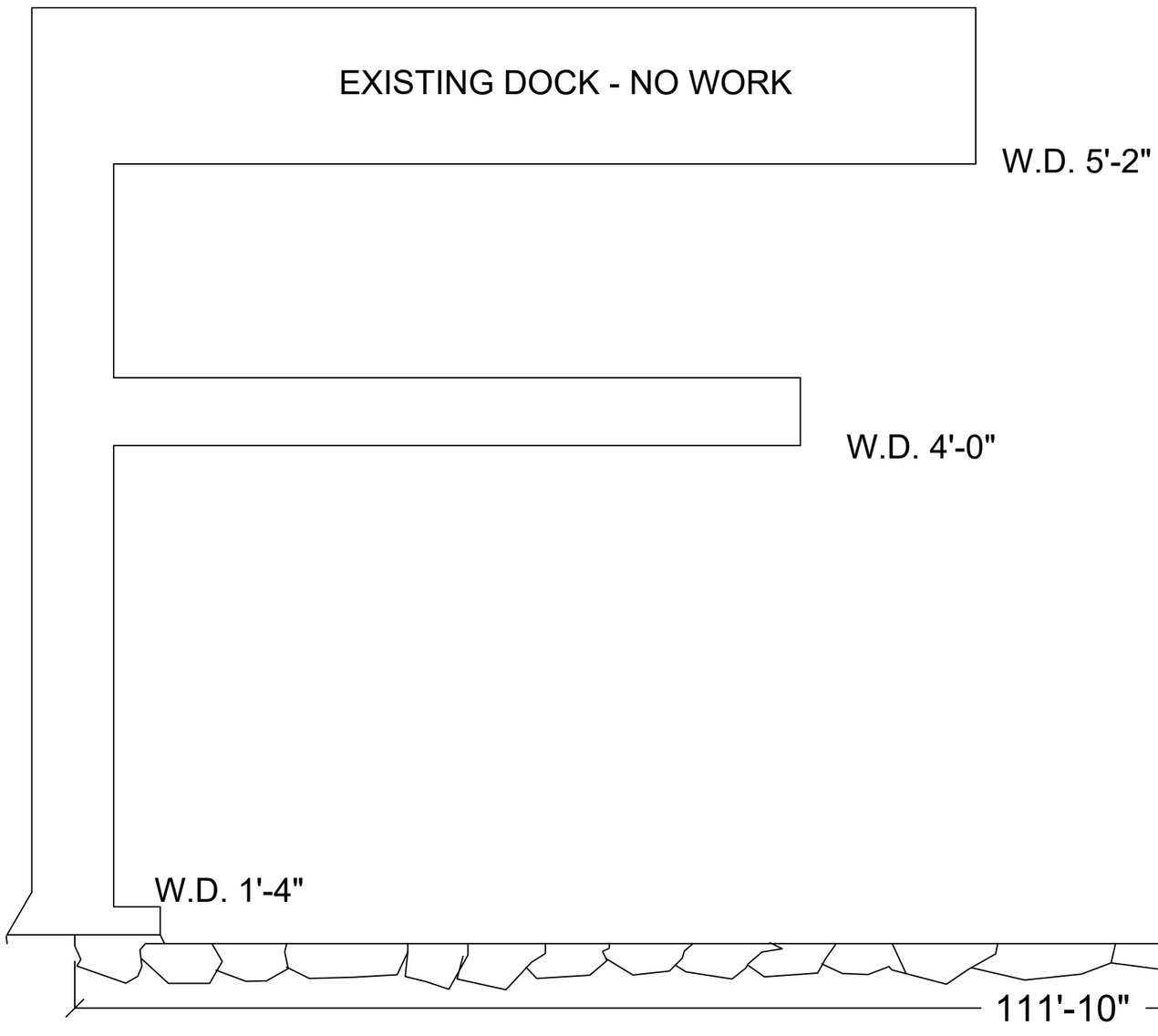
SHEET A4.0

BULKHEAD DETAILS - EXISTING/PROPOSED



PLAN VIEW

PROPOSED WORK

- REPLACE EXISTING WOOD SLAT BULKHEAD w/ GRANITE ROCK BULKHEAD

BULKHEAD DETAILS

- 2"X12" VERTICAL BULKHEAD FACE
- 2"X12" CAP BOARDS

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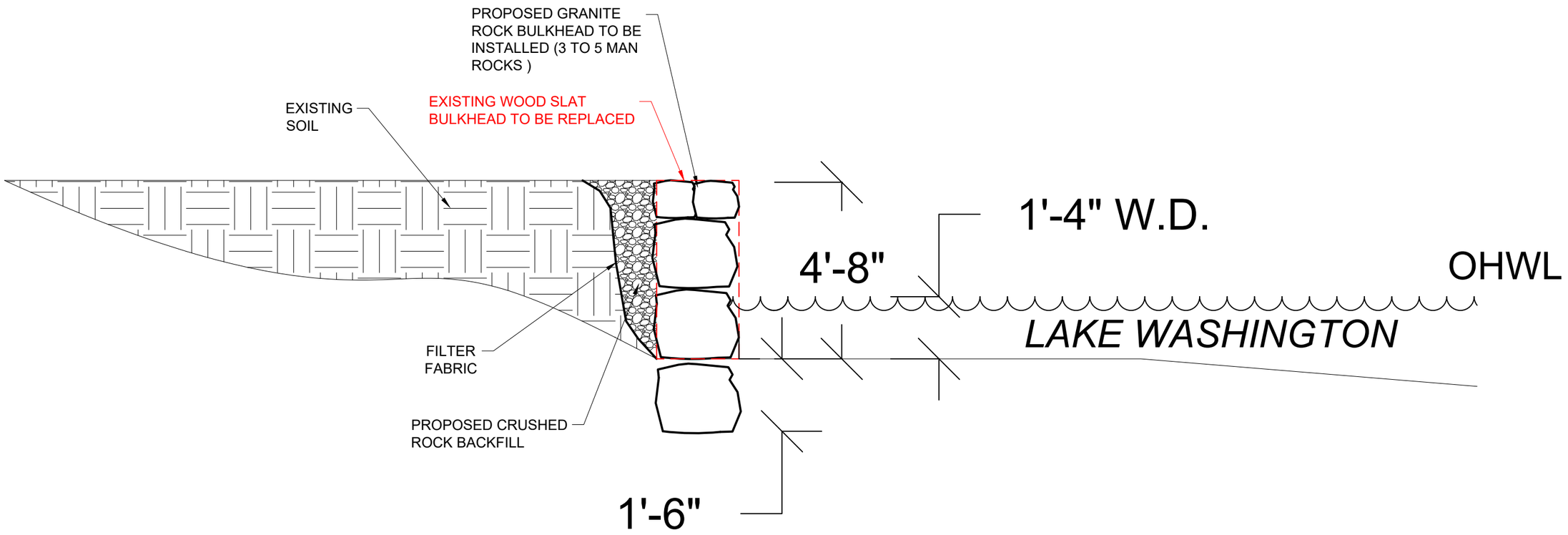
SHEET A5.0

BULKHEAD DETAILS EXISTING/PROPOSED



SECTION VIEW: A'-A'

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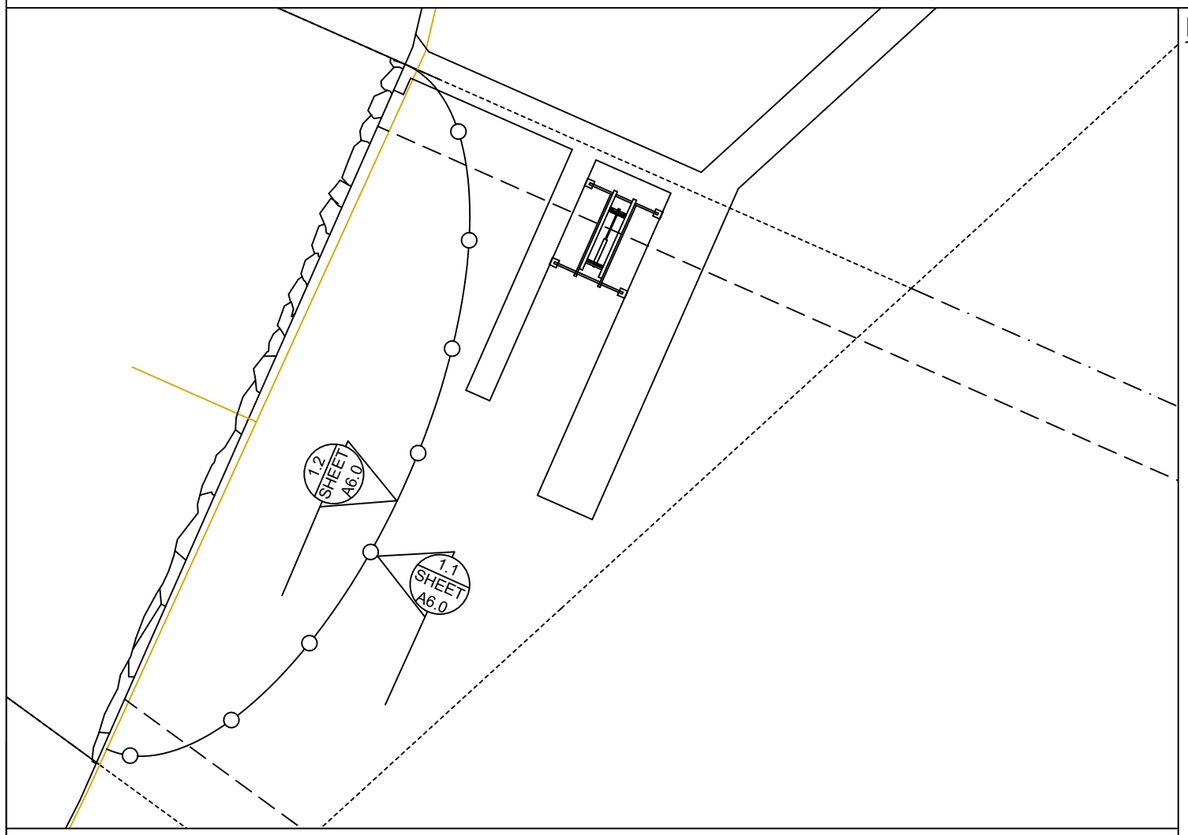
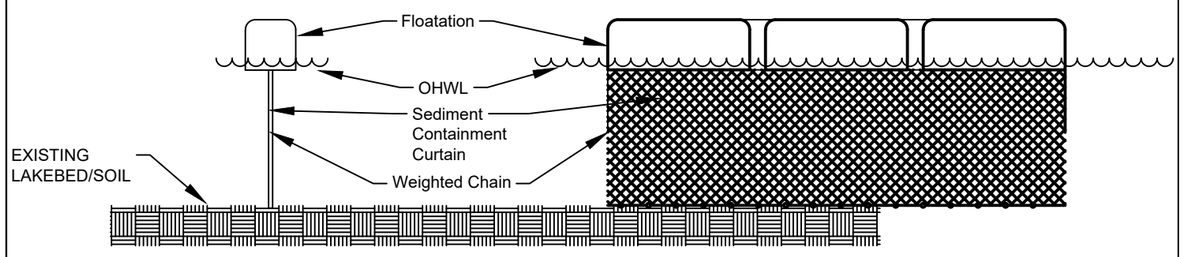
SHEET A6.0

BMP INFORMATION



DETAIL 1.1 DETAIL 1.2



DETAIL 1.1 & 1.2

BMP NOTES:

A. Constant vigilance shall be kept for the presence of protected fish species during all aspects of the proposed action, particularly during in-water activities such as vessel movement, deployment of anchors & spuds, pile driving, dredging, and placement of gravels and other fill.

1. The project manager shall designate an appropriate number of competent observers to survey the project site and adjacent areas for protected species, including the presence of fish as conditions allow.
2. Visual surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than an hour. Periodic additional visual surveys throughout the work day are strongly recommended.
3. All in-water work shall be done during the in-water work window for the waterbody. Where there is a difference between the USCOE and WDFW work windows, the overlap of the two shall apply.
4. All pile driving and extraction shall be postponed or halted when obvious aggregations or schooling of fish are observed within 50 yards of that work, and shall only begin/resume after the animals have voluntarily departed the area.
5. When piloting vessels, vessel operators shall operate at speeds and power settings to avoid grounding vessels, and minimize substrate scour and mobilization of bottom sediments.

B. No contamination of the marine environment shall result from project-related activities.

1. Appropriate materials to contain and clean potential spills shall be stored and readily available at the work site and/or aboard project-related vessels.
2. The project manager and heavy equipment operators shall perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations shall be postponed or halted should a leak be detected, and shall not proceed until the leak is repaired and the equipment is cleaned.
3. To the greatest extent practicable, utilize biodegradable oils for equipment that would be operated in or near water.
4. Fueling of land-based vehicles and equipment shall take place at least 50 feet away from the water, preferably over an impervious surface. Fueling of vessels shall be done at approved fueling facilities.
5. Turbidity and siltation from project-related work shall be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
6. All wastes shall be collected and contained for proper disposal at approved upland disposal sites appropriate for the material(s).
7. When removing piles and other similarly treated wood, containment booms must fully enclose the work area. Wood debris, oils, and any other materials released into lake waters must be collected, removed, and properly disposed of at approved disposal sites.
8. All in- and over-water wood cutting would be limited to the minimum required to remove the subject wood component, and all cutting work should be enclosed within floating containment booms.
9. When removing piles, no actions shall be taken that would cause adhering sediments to return to lake waters.
10. Above-water containment shall be installed around removed piles to prevent sediment laden waters from returning to lake waters.
11. Construction staging (including stocking of materials, etc.) will occur on the supply barge.
12. All Exposed wood to be used on the project will be treated with a cheminite treatment.

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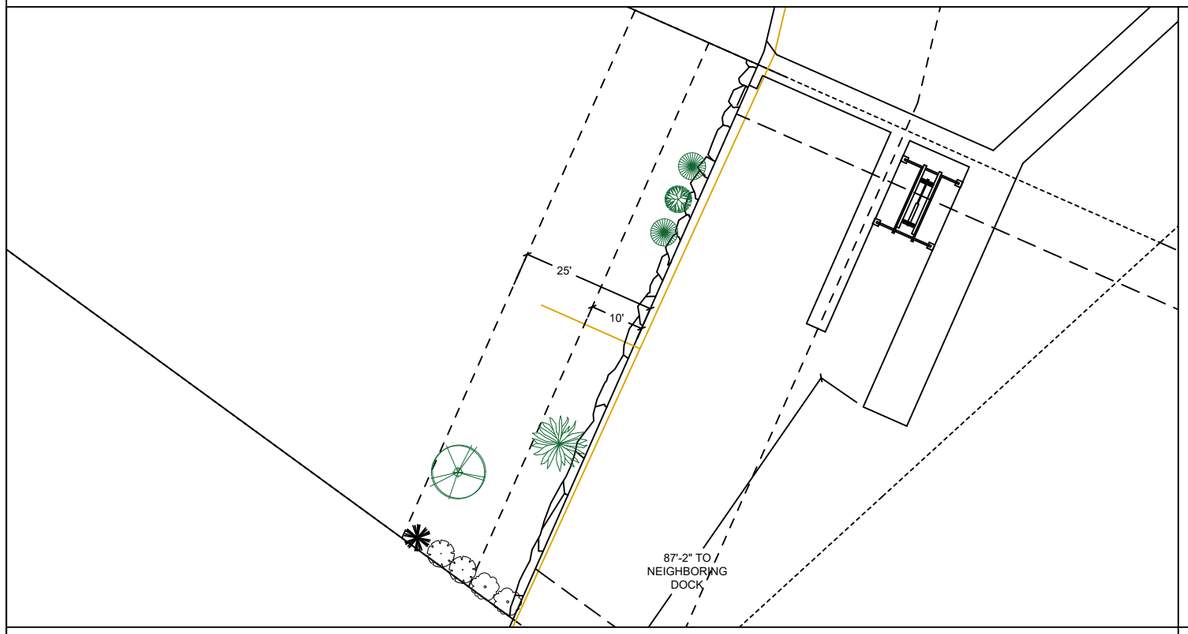
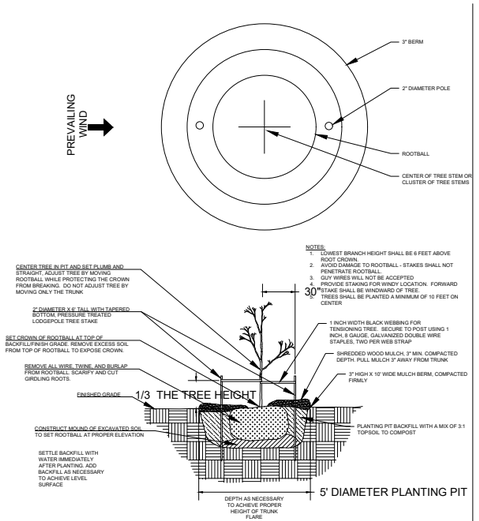
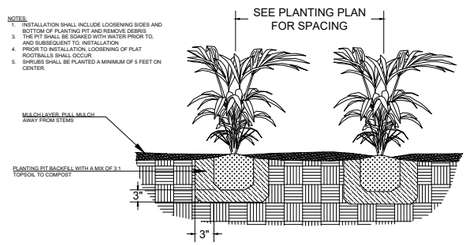
MITIGATION PLAN





TREE PLANTING DETAILS (NTS)



SHRUB AND GROUNDCOVER PLANTING DETAILS (NTS)

Notes:

1. Shrubs are show, and shall be planted, at least five feet on center. Trees are show, and shall be planted, at least ten feet to center.
2. The property owner will implement and abide by the shoreline planting plan. The plants shall be installed before or concurrent with the work authorized by this permit. A report, as-built drawing and photographs demonstrating the plants have been installed or a report on the status of project construction will be submitted to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch, within 12 months from the date of permit issuance. This reporting requirement may be met by completing and submitting a U.S. Army Corps of Engineers approved Report for Mitigation Work Completion form.
3. The property owner will maintain and monitor the survival of installed shoreline plantings for five years after the U.S. Army Corps of Engineers accepts the as-built report. Installed plants shall achieve 100% survival during monitoring Years 1 and 2. Installed plants shall achieve at least 80% survival during monitoring Years 3, 4 and 5. Percent survival is based on the total number of plants installed in accordance with the approved riparian planting plan. Individual plants that die will be replaced with native riparian species in order to meet the survival performance standards.
4. The property owner will provide annual monitoring reports for five years (Monitoring Years 1-5). Each annual monitoring report will include written and photographic documentation on plant mortality and replanting efforts and will document whether the performance standards are being met. Photos will be taken from established points and used repeatedly for each monitoring year. In addition to photos at designated points, photo documentation will include a panoramic view of the entire planting area. Submitted photos will be formatted on standard 8 1/2 x 11" paper, dated with the date the photo was taken, and clearly labeled with the direction from which the photo was taken. The photo location points will be identified on an appropriate drawing. Annual shoreline planting monitoring reports will be submitted to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch, by November 31 of each monitoring year. This reporting requirement may be met by completing and submitting a U.S. Army Corps of Engineers approved Mitigation Planting Monitoring Report form.

PROPOSED PLANTING SPECIES/QUANTITIES

SYMBOL	LATIN NAME	COMMON NAME	QTY	SIZE
	Thuja picatta	Western Redcedar	1	3 ft
	Pinus contorta v contorta	Shore pine	1	3 ft
	Rosa nutkana	Nootka Rose	1	1 Gallon
	Philadelphus lewisii	Mock Orange	2	1 Gallon

PLANTS: Shrubs to be installed 5ft on center and trees to be installed 10ft on center.

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8440 Benotho Place
Mercer Island, WA 98040

Created: 11-01-22

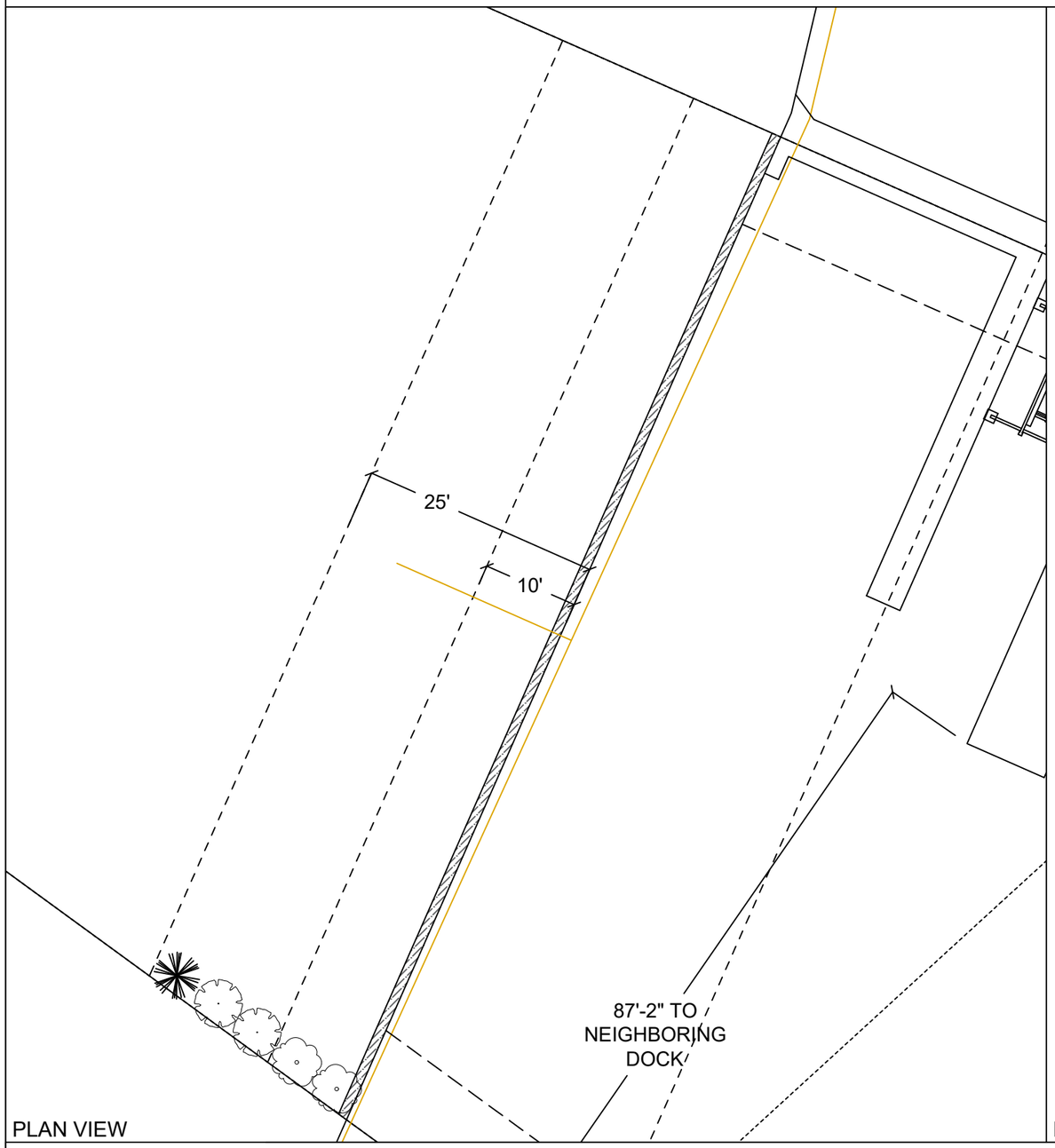
Last Updated: 1/9/2023 11:31 AM Zion

Datum: CORPS OF ENGINEERS 1919
NW Quarter Of Section 31, Township 24, Range 05

Adjacent Owners:
GOODRICK ELIZABETH S+RAYMON
8424 BENOTHO PL, 98004
ASPIRI GARY+MITZI
8460 BENOTHO, PL 98040

SHEET A8.0

EXISTING PLANT PLAN



PLAN VIEW

EXISTING PLANTING SPECIES/QUANTITIES

SYMBOL	SCIENTIFIC NAME	COMMON NAME	QTY	SIZE
	Cortaderia Selloana	Pampas Grass	2	5'x5'x5'
	Prunus Lauroceraus	Cherry Laurel	2	5'x5'x5'
	Prunus Cerasifera	Cherry Plum	1	5'x5'x5'

EXISTING PLANTS TABLE

County: King County
Location: Lake Washington

Applicant: Chen Residence
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BUILT BY SEABORN · ESTD 1947 ·

Seaborn Pile Driving
1080 W Ewing St
Seattle, WA 98119

Office: 206-236-1700 ext. 3
www.seabornpiledriving.com

Scope of Work: We propose to replace the existing wooden bulkhead with a granite rock bulkhead.

SHEET A9.0

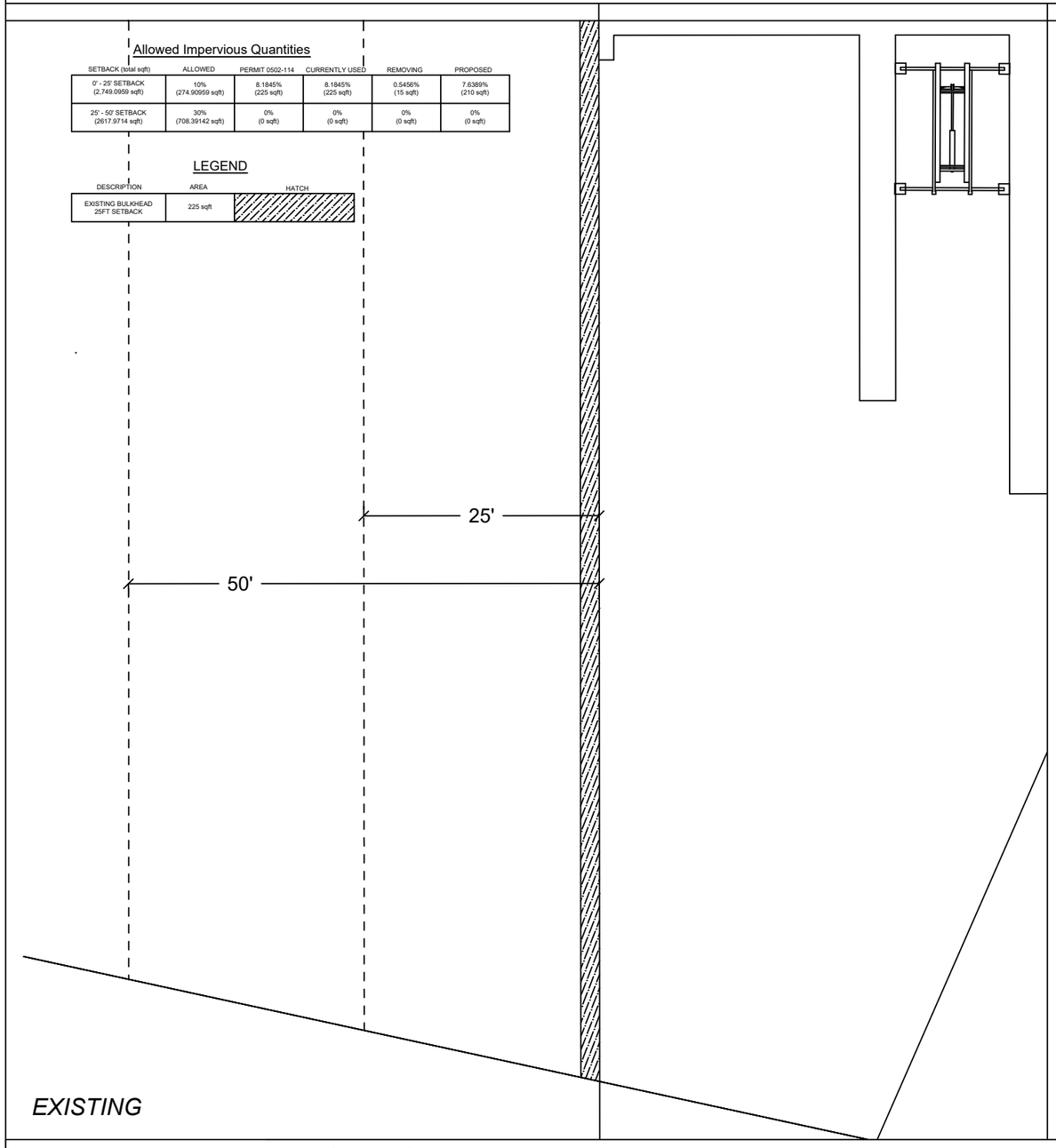
HARDSCAPE CALCULATION DRAWING

Allowed Impervious Quantities

SETBACK (total sqft)	ALLOWED	PERMIT 0502-114	CURRENTLY USED	REMOVING	PROPOSED
0' - 25' SETBACK (2,749.0959 sqft)	10% (274.90959 sqft)	8.1845% (225 sqft)	8.1845% (225 sqft)	0.5456% (15 sqft)	7.6389% (210 sqft)
25' - 50' SETBACK (2617.9714 sqft)	30% (708.39142 sqft)	0% (0 sqft)	0% (0 sqft)	0% (0 sqft)	0% (0 sqft)

LEGEND

DESCRIPTION	AREA	HATCH
EXISTING BULKHEAD 25FT SETBACK	225 sqft	



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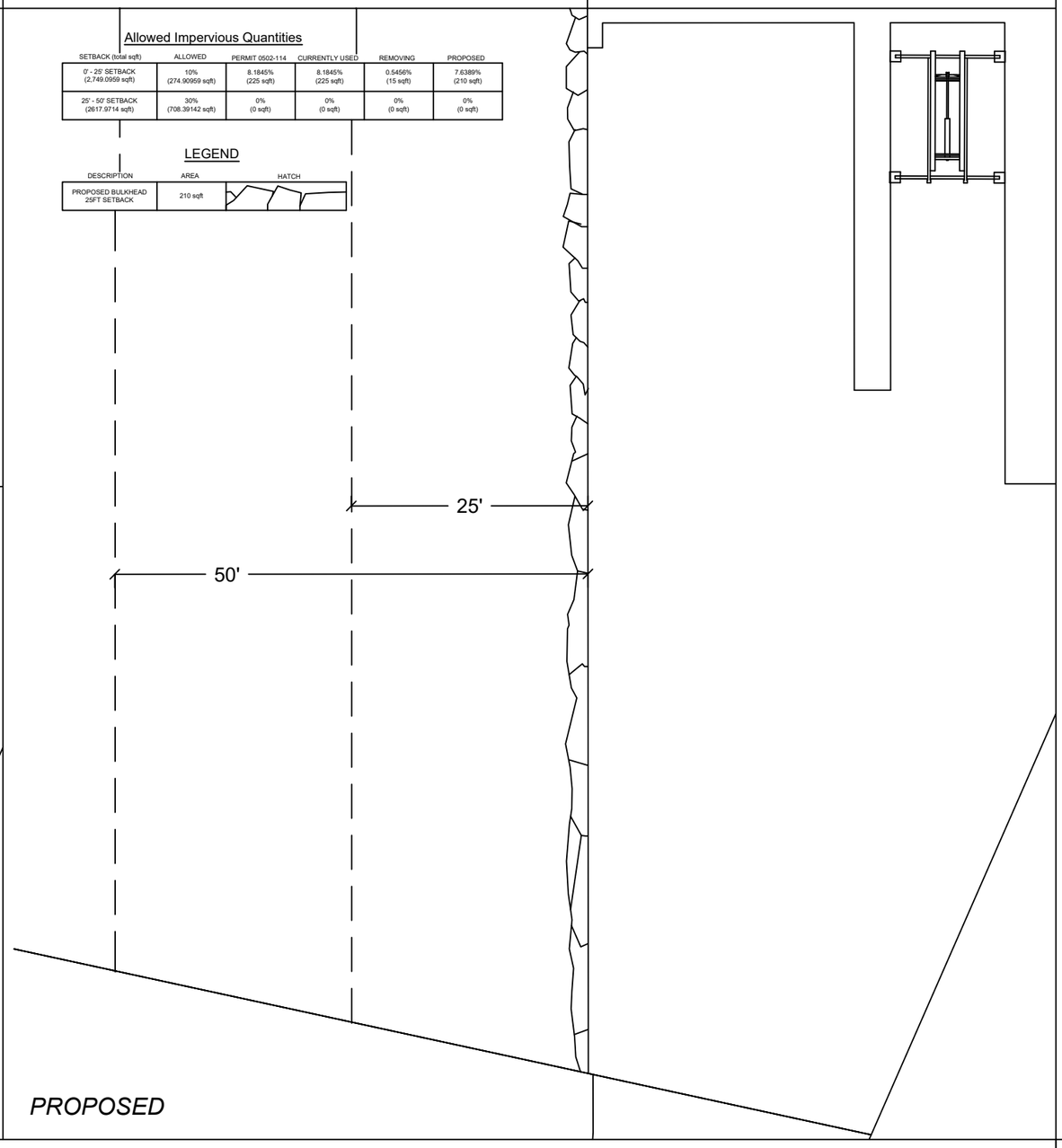
LEGEND

DESCRIPTION	AREA	HATCH
PROPOSED BULKHEAD 25FT SETBACK	210 sqft	



PROPOSED

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SHEET A10.0

Appendix B:
Site Photographs

Photo 1 - Existing shoreline looking south

Photo 2 - Existing shoreline looking north.

Photo 3 - Shoreline conditions north of the site.

Photo 4 - Shoreline conditions south of the site.

Photo 5 - Shoreline looking north along bulkhead.

Photo 6 - Shoreline looking south along bulkhead.