STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:	)	
	)	
	)	AGREED ORDER
The Port of Bellingham	)	FOR RI/FS
_____	)	No. DE _____

TO: Port of Bellingham
P.O. Box 1677
Bellingham, Washington 98225

I.

Jurisdiction

This Agreed Order ("Order") is issued pursuant to the authority of RCW 70.105D.050(1).

II.

Findings of Fact

The Washington State Department of Ecology (“Ecology”) makes the following Findings of Fact, without admission or agreement of the accuracy or completeness of such facts by the Port of Bellingham (“Port”).

1. The Site, known as Weldcraft Steel and Marine, is located at 9 Squalicum Way in Bellingham, Washington, as shown in Exhibit A. The Site is located in the NW ¼ of the NW ¼ of Section 25 Township 38 N Range 2 E.

2. The Weldcraft Steel & Marine facility was established on the Site in 1946 and was initially involved in general boat repair activities. The company was known as Weldcraft Steel Works until 1961, Weldcraft Steel and Tank from 1961 to 1972, and Weldcraft Steel & Marine from that point forward. Weldcraft has primarily operated as a shipyard that conducted various activities including: boat construction, repair, and maintenance;

wood and metal fabrication; marine pipefitting; electrical work; sheet metal work; painting; machinery construction, installation, and repair; vessel haul-out and launching; lofting and pattern-making; canvas and plastic work; storage, brokerage, retail, and wholesale sales; and concrete work.

3. Industrial activities at the Site have taken place both in the fee-owned upland and adjacent fee-owned submerged and inter-tidal aquatic lands.

4. The Port has been an owner of the Site, which was vacant tidelands at the time of purchase, since 1927 when it acquired the Site from Hugh Eldridge. During the late 1920's, the Site was filled with material dredged during construction of Squalicum Waterway.

5. The Port has not been an operator of the Site. Entities that conducted shipyard operations at the Site prior to the discovery of site soil, groundwater and sediment contamination in 1998 include Weldcraft Steel & Marine operating under the various names identified in paragraph 2 above.

6. Between 1993 and 2002, the Port conducted a number of investigations of environmental conditions at the Site, including 1) a Phase II environmental site assessment (ESA), 2) a supplemental sediment investigation, and 3) a Phase III ESA, and a sediment remedial investigation (RI).

7. The above listed investigations confirmed the presence of hazardous substances in site soil, groundwater and sediment including total petroleum hydrocarbons (TPH) in the gasoline range in groundwater; tributyltin (TBT), mercury, copper and semivolatile organic compounds in sediment; and TPH in the gasoline range and lead in soil.

8. Based on that sampling, Ecology added the Site to its list of Confirmed and Suspected Contaminated Sites in 2001.

9. In 2001 and 2002, Ecology conducted a Site Hazard Assessment and in 2002 placed the Site on the Hazardous Sites List. In 2002, Ecology listed the Site on its Sediment Management Standards Contaminated Site List.

10. Ecology issued Early Notice Letters of Potentially Liable Person (PLP) status to the Port and Weldcraft Steel & Marine (Mr. Owen Wilson) on September 25 and September 26, 2002, respectively. Ecology issued letters confirming PLP status to the Port and Weldcraft Steel & Marine on December 13, 2002.

11. The investigations conducted by the Port to date constitute remedial actions as defined in RCW 70.105D.020(11).

12. In order to protect human health and the environment and to prevent the release or threatened release of hazardous substances from the Site, Ecology has determined that a Remedial Investigation and Feasibility Study (RI/FS) should be developed for the Site pursuant to WAC 173-340-350 and WAC 173-204-560 and that an interim action should be implemented for cleanup of Site sediment pursuant to WAC 173-340-430 and WAC 173-204.

III.

Ecology Determinations

Ecology makes the following Determinations, without admission or agreement of the accuracy or completeness of the determinations by the Port:

1. The Port of Bellingham is an "owner or operator" as defined at RCW 70.105D.020(11) of a "facility" as defined in RCW 70.105D.020(4).

2. The facility is known as the Weldcraft Steel & Marine site and is located at 9 Squalicum Way in Bellingham, Washington 98227.

3. The substances found at the facility as described above are "hazardous substances" as defined at RCW 70.105D.020(7).

4. Based on the presence of these hazardous substances at the facility and all factors known to Ecology, there is a release or threatened release of hazardous substances from the facility, as defined at RCW 70.105D.020(19).

5. By letter dated December 13, 2002, Ecology notified the Port of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

6. Pursuant to RCW 70.105D.030(1) and 70.105D.050, Ecology may require potentially liable persons to investigate or conduct other remedial actions with respect to the release or threatened release of hazardous substances, whenever it believes such action to be in the public interest.

7. Based on the foregoing facts, Ecology believes the remedial action required by this Order is in the public interest.

IV.

Work to be Performed

Based on the foregoing Facts and Determinations, it is hereby ordered the Port take the following remedial actions and that these actions be conducted in accordance with Chapter 173-340 WAC unless otherwise specifically provided for herein.

1. Purpose & Scope of Work ("Work")

   The purpose of the Work will be to complete a Final Remedial Investigation and Feasibility Study (RI/FS) for the Site pursuant to WAC 173-340-350 and WAC 173-204-560 and to complete an interim action for cleanup of Site sediment pursuant to WAC 173-340-430 and WAC 173-204.

2. Description of the Work

A. Sediment Interim Action. The Port will implement an interim action consistent with the scope of work presented in the interim action work plan (Exhibit C). The interim action shall commence no later than the first full in-water work period following receipt of all required permits and approvals for conducting the Work, anticipated to be September 2003. The Port shall submit a construction documentation report to Ecology within ninety (90) days of completion of the interim action. The construction documentation report shall describe all construction activities and present all relevant construction quality assurance/quality control data, including post-construction bathymetry and sediment quality. All chemical data collected as part of post-construction compliance monitoring will be submitted to Ecology in SEDQUAL electronic data format.

At least ninety (90) days prior to implementation of the interim action, the Port shall submit an Ecology Review Draft Sampling and Analysis Plan (SAP) for Ecology review and comment. The Ecology Review Draft SAP will be submitted to Ecology within thirty (30) days of the effective date of this order. The Port will submit a revised SAP addressing Ecology review comments on the Ecology Draft SAP. The Revised Draft will be submitted to Ecology within thirty (30) days of receiving Ecology's comments.

B. Site-wide RI/FS. The Port will produce a draft RI/FS (Ecology Review Draft RI/FS) for Ecology review and comment. The Ecology Review Draft of the RI/FS will be submitted to Ecology within ninety (90) days of completion of the sediment interim action. The Ecology Review Draft will identify a Preferred

Remedial Alternative for cleanup at the Site and will meet MTCA (WAC 173-340-350) and SMS (WAC173-204-560) requirements for a RI/FS. All chemical data collected as part of the RI/FS will be submitted to Ecology in SEDQUAL (sediment) and EIM (upland) electronic formats.

The Port will submit a revised RI/FS to Ecology addressing Ecology review comments on the Ecology Review Draft RI/FS. The Revised Draft will be submitted to Ecology within forty-five (45) days of receiving Ecology's comments.

After Ecology has determined that the Revised Draft RI/FS has adequately addressed Ecology's comments, Ecology will make the draft available to the public. This "Public Review Draft" of the RI/FS will be made available for public review consistent with WAC 173-340-600(13)(c). Following completion of the review period, Ecology will prepare a responsiveness summary.

Within forty-five (45) days of Ecology's responsiveness summary, the Port will submit to Ecology a revised RI/FS addressing issues raised during public comment. After determining that public comments have been adequately addressed, Ecology will declare the RI/FS final ("Final RI/FS").

The exhibits referenced in this section are incorporated by reference and are integral and enforceable parts of the Order.

3. Progress Reports

During performance of this Order, the Port will submit written quarterly progress reports to Ecology. The progress reports will summarize work performed during the reporting period and the work anticipated during the following quarter.

V.

Terms and Conditions of Order

1. Definitions

Unless otherwise specified, the definitions set forth in Ch. 70.105D RCW and Ch. 173-340 WAC shall control the meanings of the terms used in this Order.

2. Public Notices

WAC 173-340-600(10) (c) requires a thirty (30) day public comment period before this agreed order on a state RI/FS and interim action becomes effective. Ecology shall be responsible for providing such public notice and reserves the right to modify or withdraw any provisions of this Order should public comment disclose facts or considerations which indicate to Ecology that the Order is inadequate or improper in any respect.

3. Remedial Action Costs

The Port shall pay to Ecology costs incurred by Ecology pursuant to this Order and consistent with WAC 173-340-550. These costs shall include work performed by Ecology or its contractors for investigations, remedial actions, and Order preparation, oversight and administration. Ecology costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). The Port shall pay the required amount within ninety (90) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff and the amount of time spent by involved staff members on the project. A general description of work performed will be provided upon request. Itemized statements shall be prepared quarterly. The Port may invoke the Dispute Resolution process under §V, paragraph (9) of this Order if it disagrees with Ecology's oversight cost charges. Failure to pay Ecology's uncontested costs and costs for which a final

decision has been issued under the Dispute Resolution process within 90 days of receipt of the itemized statement of costs or the date of the Dispute Resolution final decision will result in interest charges.

4. Designated Project Coordinators

The project coordinator for Ecology is:

Name: Mary K. O'Herron, Environmental Specialist
Address: Department of Ecology, Bellingham Field Office
1204 Railroad Avenue, #200
Bellingham, Washington 98225

The project coordinator for the Port of Bellingham is:

Name: Mike Stoner, Director of Environment
Address: Port of Bellingham
P. O. Box 1677
Bellingham, Washington 98227

The project coordinator(s) shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communications between Ecology and the Port, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order shall be directed through the project coordinator(s). Should Ecology or the Port change project coordinator(s), written notification shall be provided to Ecology or the Port at least ten (10) calendar days prior to the change.

5. Performance

All work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a professional engineer, hydrogeologist or similar expert, with appropriate training, experience and expertise in hazardous waste site investigation and cleanup. The Port shall notify Ecology as to the identity of such engineer(s),

hydrogeologist(s) or similar expert(s) and of any contractors and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the Site. The Port shall provide a copy of this Order to all agents, contractors and subcontractors retained to perform work required by this Order and shall ensure that all work undertaken by such agents, contractors and subcontractors will be in compliance with this Order.

A. Except where necessary to abate an emergency situation, the Port shall not perform any remedial actions at the Site outside that required by this Order unless Ecology concurs, in writing, with such additional remedial actions.

B. WAC 173-340-400(6) requires that "construction" performed on the Site must be under the supervision of a professional engineer registered in Washington. WAC 173-340-430(8) requires that construction of an interim action shall be in conformance with WAC 173-340-400(7).

6. Access

Ecology or any Ecology authorized representative shall have the authority to enter and freely move about the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the progress in carrying out the terms of this Order; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by the Port. By signing this Agreed Order, the Port agrees that this Order constitutes reasonable notice of access and agrees to allow access to the Site at all reasonable times for purposes of overseeing work performed under this Order. Ecology shall allow split or replicate samples to be taken by the Port during an inspection unless

doing so interferes with Ecology's sampling. The Port shall allow split or replicate samples to be taken by Ecology and shall provide seven (7) days notice before any sampling activity.

7. Public Participation

Ecology shall maintain the responsibility for public participation at the Site. The Port shall help coordinate and implement public participation for the site consistent with the scope of work presented in the public participation plan (Exhibit B).

8. Retention of Records

The Port shall preserve in a readily retrievable fashion, during the pendency of this Order and for ten (10) years from the date of completion of the work performed pursuant to this Order, all records, reports, documents, and underlying data in its possession relevant to this Order. Should any portion of the work performed hereunder be undertaken through contractors or agents of the Port, then the Port agrees to include in their contract with such contractors or agents a record retention requirement meeting the terms of this paragraph.

9. Dispute Resolution

In the event a dispute arises as to an approval, disapproval, proposed modification or other decision or action by Ecology's project coordinator, the parties shall utilize the dispute resolution procedure set forth below.

A. Upon receipt of the Ecology project coordinator's decision, the Defendant has fourteen (14) days within which to notify Ecology's project coordinator of its objection to the decision.

B. The parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) days, Ecology's project coordinator shall issue a written decision.

C. Defendant may then request Ecology management review of the decision. This request shall be submitted in writing to the Toxics Cleanup Program Manager within seven (7) days of receipt of Ecology's project coordinator's decision.

D. Ecology's Toxics Cleanup Program Manager shall conduct a review of the dispute and shall issue a written decision regarding the dispute within thirty (30) days of the defendant's request for review. The Program Manager's decision shall be Ecology's final decision on the disputed matter.

10. Reservation of Rights/No Settlement

This Agreed Order is not a settlement under Ch. 70.105D RCW. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority. Ecology will not, however, bring an action against the Port to recover remedial action costs paid to and received by Ecology under this Agreed Order. In addition, Ecology will not take additional enforcement actions against the Port to require those remedial actions required by this Agreed Order, provided the Port complies with this Agreed Order.

A. Ecology reserves the right, however, to require additional remedial actions at the Site, in addition to those required under this Order, should it deem such actions necessary. The Port expressly reserves its rights with regard to any future agency action.

B. Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the releases or threatened releases of hazardous substances from the Site.

C. In the event Ecology determines that conditions at the Site are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order the Port to

stop further implementation of this Order for such period of time as needed to abate the danger. Any verbal order by Ecology to stop work shall be followed within forty-eight (48) hours of such verbal order by written confirmation from Ecology to the Port of such verbal order.

D. Nothing herein shall be a waiver of the Port's right to pursue any other responsible party for its costs associated herewith.

11. Extension of Schedule

A. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the deadline for which the extension is requested, and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed.

An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology. Ecology shall act upon any written request for extension in a timely fashion. It shall not be necessary to formally amend this Order when a schedule extension is granted.

B. The burden shall be on the Port to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause includes, but is not limited to, the following.

1) Circumstances beyond the reasonable control and despite the due diligence of Port including delays caused by unrelated third parties or

Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by Port;

2) Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or

3) Endangerment of the health or welfare of the people on the site or in the surrounding area or to the environment.

However, neither increased costs of performance of the terms of the Decree nor changed economic circumstances shall be considered circumstances beyond the reasonable control of Port.

C. Ecology may extend the schedule for a period not to exceed ninety (90) days, except where an extension is needed as a result of:

1) Delays in the issuance of a necessary permit which was applied for in a timely manner;

2) Other circumstances deemed exceptional or extraordinary by Ecology; or

3) Endangerment of the health or welfare of the people on the Site or in the surrounding area or to the environment.

Ecology shall give the Port written notification in a timely fashion of any extensions granted pursuant to this Order.

12. Transference of Property

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by the Port without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to the transfer of any legal or equitable interest the Port may have in the site or any portions thereof, the Port shall serve a copy of this Order upon any prospective purchaser, lessee, transferee, assignee, or other successor in such interest. At least thirty (30) days prior to finalization of any transfer, the Port shall notify Ecology of the contemplated transfer.

13. Compliance with Other Applicable Laws

A. All actions carried out by the Port pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in paragraph B of this section.

B. Pursuant to RCW 70.105D.090(l), the substantive requirements of chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW and of any laws requiring or authorizing local government permits or approvals are to be included in the work documents approved by Ecology for this interim action and RI/FS. Ecology has determined that the work under this Order does not implicate laws or regulations covered under RCW 70.105D.090(1).

C. The Port has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(l) would otherwise be required for the remedial action under this Order. In the event the Port determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Order, it shall promptly notify Ecology of this determination. Ecology shall determine whether Ecology or the Port shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, the Port shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written

documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by the Port and on how the Port must meet those requirements. Ecology shall inform the Port in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Order. The Port shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

D. Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this section.

E. Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(l) would result in the loss of approval from a federal agency which is necessary for the State to administer any federal law, the exemption shall not apply and the Port shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70.105D.090(l), including any requirements to obtain permits.

14. Indemnification

The Port agrees to, to the extent permitted by law, indemnify and save and hold the State of Washington, its employees and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of the Port, its officers, employees, agents, or contractors in entering into and implementing this Order. However, the Port shall not indemnify the State of Washington nor save nor hold its employees and agents

harmless from any claims or causes of action arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Order.

VI.

Satisfaction of this Order

The provisions of this Order shall be deemed satisfied upon receipt by the Port of written notification from Ecology that the Port has completed the remedial activity required by this Order, as amended by any modifications, and that all other provisions of this Agreed Order have been complied with.

VII.

Enforcement

1. Pursuant to RCW 70.105D.050, this Order may be enforced as follows:

   A. The Attorney General may bring an action to enforce this Order in a state or federal court.

   B. The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions and orders related to the Site.

   C. In the event the Port refuses, without sufficient cause, to comply with any term of this Order, the Port will be liable for:

      1) Up to three times the amount of any costs incurred by the State of Washington as a result of its refusal to comply; and

      2) Civil penalties of up to $25,000 per day for each day it refuses to comply.

D. This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under RCW 70.105D.060.

Effective date of this Order: _____

PORT OF BELLINGHAM

By_____
Mr. James Darling, Executive Director

Date _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By_____
Steven M. Alexander, Section Manager
Toxics Cleanup Program

Date _____

By_____

Ray Hellwig, Director
Northwest Regional Office

cc: TCP, Cost Recovery Coordinator

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Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1131\Interim Action Work Plan-final\Fig1.dwg (A) "Figure 1" 4/3/2003

LANDAU ASSOCIATES

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Vicinity Map

Figure
1

EXHIBIT B

DRAFT PUBLIC PARTICIPATION PLAN

WELDCRAFT STEEL & MARINE
BELLINGHAM, WASHINGTON

APRIL 2003

INTRODUCTION

The Washington Department of Ecology (Ecology) has developed this ***public participation plan*** pursuant to the Model Toxics Control Act (MTCA) to promote public understanding and participation in the Weldcraft Steel & Marine (Weldcraft) cleanup. This plan describes the tools that Ecology uses to inform the public about site activities and identifies opportunities for the community to become involved.

This plan has been prepared by the Washington State Department of Ecology (Ecology) in cooperation with the Port of Bellingham (Port). Ecology and the Port have negotiated a draft legal agreement (called an ***agreed order***) for the Port to perform an ***interim action*** and a ***remedial investigation/feasibility study*** at the Weldcraft site. The proposed interim action includes cleanup of contaminated marine sediment and the removal of a creosote-contaminated marine railway and the removal of creosote pilings at the Weldcraft site. (An interim action is distinguished from a cleanup action in that it only partially addresses the cleanup of a site.) In addition to this cleanup work, material dredged from Squalicum waterway would be used to construct a new habitat enhancement area outside Squalicum Harbor. The remaining upland portion of the site would be addressed separately by the final site cleanup at a later time.

Following this interim action, an environmental study (called a remedial investigation/feasibility study) would be performed to determine the effectiveness of the interim action and would detail the nature and extent of the remaining contamination at the site. This remedial investigation/feasibility study will also be made available for public review and comment.

The goal of this plan is to promote public understanding of the cleanup process and outline opportunities for public involvement, so that the community can provide comments and be involved throughout the process. The following sections provide background information on the site and community and describe the public involvement tools and activities for the Weldcraft site.

SITE BACKGROUND

The Weldcraft site is located at Squalicum Way and Harbor Loop Drive in Bellingham, Washington (Figure 1). The site, located on Port of Bellingham property adjacent to Squalicum Harbor, consists of upland and in-water areas. Upland areas include several buildings, open storage areas and parking lots. In-water areas include bulkheads, piers, docks, wharves, a marine railway and marine sediment.

The site area was formerly undeveloped tidelands of Bellingham Bay that were filled in the 1920s with material dredged during construction of the Squalicum Waterway. By the 1940s and 1950s, various large businesses began operation in the fill areas along the waterway. The Weldcraft facility was established on the site in 1946 and was initially involved in general boat repair activities.

The site has primarily operated as a boatyard that conducted various activities including: boat construction, repair and maintenance; wood and metal fabrication; painting; machinery construction, installation and repair; vessel haul-out and launching; storage, brokerage, retail and wholesale sales; and concrete work. The lease with the prior tenant/operator (Weldcraft Steel & Marine) was terminated in February 2000 and the Port obtained full operational control of the site in July 2000.

Several investigations have been performed by the Port in coordination with Ecology, including testing to characterize both upland and sediment contamination. Extensive cleanup of upland debris, derelict vessels, containerized wastes and stormdrain catchment basins was performed by the Port following the eviction of the previous tenant. The Port's new tenant, Seaview Boatyard North, is not associated with

any contamination at the site. The new tenant has installed a new collection and treatment system for washwater generated from hull cleaning.

The environmental problems to be addressed at the Weldcraft site include contamination of sediment and localized contaminated soil and groundwater in the upland portion of the site. The information collected to date regarding site history, physical site conditions, and sediment, soil and groundwater has been provided to Ecology in various reports prepared since 1993. The nature and extent of contamination exceeding regulatory standards at the site by area and media are shown on Figure 2 and includes:

In-water Areas Sediment

- The metals, tributyltin (TBT) and mercury, appear to be the primary contaminants of concern in sediment at the site. The contaminants are present in the upper four feet of sediment in the areas adjacent to the site shoreline. (This contamination would be addressed by the interim action.)

- The marine railway well is a constructed site feature that includes upland and intertidal areas. The contaminants detected in the sediment and soil from the marine railway well indicate impact from site operations and include elevated concentration of TBT, metals and semivolatile organic compounds (SVOCs). (This contamination would be addressed by the interim action.)

Upland Areas/Soil and Groundwater

- Gasoline constituents (TPH, benzene and total xylenes) are present in soil and groundwater in the area of a former fuel underground storage tank and dispenser island on the north side of Building 1.

- Diesel is present in soil beneath unlined Catch Basin Number 2.

- Lead is present in soil in a localized area near the northeast corner of Building 1.

SITE CLEANUP

The proposed interim action would include the cleanup of contaminated marine sediment and the removal of a creosote-contaminated marine railway and the removal of creosote pilings. The remaining upland portion of the site would be addressed separately by the final site assessment and cleanup at a later time. In addition to this cleanup work, material dredged from Squalicum waterway would be used to construct a new habitat enhancement area on the outside face of the breakwater for Squalicum Harbor. The interim action would be performed at the same time as redevelopment activities at the site. This coordination of redevelopment and cleanup will prevent the further spread of contaminated sediments that would occur if redevelopment activities were done without the cleanup of contaminated sediments. Coordinating redevelopment and cleanup will also minimize the amount of in-water construction which will help to protect sensitive aquatic life such as Chinook salmon.

Following the interim action, a remedial investigation/feasibility study will be conducted to determine the effectiveness of the interim action and will detail the nature and extent of the remaining contamination at the site. The remedial investigation/feasibility study will also evaluate alternatives for cleanup of the remaining contamination.

NEIGHBORHOOD PROFILE

Community Description

The Weldcraft site is located on the Bellingham waterfront within the Port's Squalicum Harbor facility. The site has been active as a boatyard since 1946. It is bounded by the Port's marina facilities to the south and by other industrial and commercial tenants in the area. Bellingham Cold Storage occupies property to the northwest of the site, across Squalicum Way. Bellingham Cold Storage includes seafood processing facilities and a fuel dock for the marina. Commercial tenants east of the Weldcraft site include various businesses, webhouses and restaurants that serve the marina community. The marina includes the Port's harbor offices, gatehouses and moorage facilities for over 1,400 commercial and recreational customers, including provisions for 100 liveaboards.

Key Community Concerns

Input on the project has been obtained during the Bellingham Bay Demonstration Pilot public outreach efforts, through previous land use planning efforts and meetings with yacht clubs, the Port's Marine Advisory committee and other project stakeholders. Concerns and interests expressed include the following:

- Preservation of commercial boatyard uses within Squalicum Harbor.
- Improvement of facilities to accommodate a full range of commercial and recreational vessels.
- Repair and upgrade of dilapidated structures.
- Cleanup of historic contamination problems at the site.
- Stewardship of aquatic land and resources near the site.
- Coordination of site cleanup and habitat restoration activities with other projects under the Bellingham Bay Demonstration Pilot.
- Compliance with current regulatory requirements for boatyard operation.

PUBLIC PARTICIPATION ACTIVITIES AND RESPONSIBILITIES

The purpose of this plan is to promote public understanding and participation in the cleanup activities planned for this site. This section of the plan addresses how Ecology and the Port will share information and receive public comments and community input on the site cleanup.

PUBLIC INVOLVEMENT ACTIVITIES

Ecology uses a variety of activities to facilitate public participation in the investigation and cleanup of MTCA sites. The following is a list of public involvement activities that Ecology will use, their purposes and descriptions of how they will be used during this site cleanup.

Formal Public Comment Periods

Comment periods are the primary method Ecology uses to get feedback from the public on proposed cleanup decisions. Comment periods usually last 30 days and are required at key points during the investigation and cleanup process before final decisions are made.

During a comment period, the public can comment in writing. Verbal comments are taken if a public hearing is held. After formal comment periods, Ecology reviews all comments received and will respond in a document called a ***responsiveness summary***.

Ecology will consider the need for changes or revisions based on input from the public. If significant changes are made, then a second comment period may be held. If no significant changes are made, then the draft document(s) will be finalized.

The 30-day public comment period for the agreed order (which includes this public participation plan) is being held from April 29 to May 28, 2003. During this time, the community will have the opportunity to provide written comments on the following draft documents:

- Agreed order, which includes (but is not limited to) the interim action work plan, compliance monitoring plan and this public participation plan.

- State Environmental Policy Act documents issued by the Port: ***SEPA checklist*** and ***mitigated determination of nonsignifigance***. These documents address site environmental impacts for the interim action and associated site redevelopment activities.

Following completion of the draft remedial investigation/feasibility study (RI/FS), a 30-day comment period will be held for the RI/FS report. During this time, the community will have the opportunity to provide written comments on this document. Additional public comment periods will be held for any draft ***cleanup action plans*** that are developed for the site, and for any future legal agreements between Ecology and the Port regarding this site.

Public Meeting

Public meetings may be held at key points during the investigation and cleanup process. Ecology also may offer public meetings for actions expected to be of particular interest to the community. These meetings will be held at locations convenient to the community.

A public meeting regarding the proposed agreed order and SEPA documents will be held on May 15, 2003 at the Port of Bellingham, 1801 Roeder Avenue, Bellingham. An open house will be held at 6:30 followed by a public meeting at 7:00. After a brief presentation, Ecology and Port staff will take questions from the public.

Information Repositories

Information Repositories are places where the public may read and review site information, including documents that are the subject of public comment.

For the Weldcraft site, the information repositories are:

- Bellingham Public Library, 210 Central Avenue, Bellingham
  Phone: (360) 676-6860

- Department of Ecology, Bellingham Field Office, 1204 Railroad Avenue, Suite 200
  Phone: (360) 738-6250

- Department of Ecology, Northwest Regional Office, 3190 160th Avenue SE, Bellingham
  Phone: (425) 649-7190

- Site information will also be posted on the Ecology web site at: http://www.ecy.wa.gov/programs/tcp/sites/sites.html

Site Register

All public meetings, comment periods and many other activities are published every two weeks in Ecology's Site Register. To receive the Site Register, contact Sherrie Minnick at (360) 407-7200 or shan461@ecy.wa.gov.

Mailing List

Ecology, with the Port of Bellingham, has compiled a mailing list for the site. The list includes landowners adjacent to the site, businesses in the area, residents of the potentially affected community, marina customers, individuals, groups, public agencies, elected officials and other interested parties that request site-related mailings.

Please contact Jessica Paige at (360) 738-6280 or jpai461@ecy.wa.gov if you would like to have either your mailing or e-mail address added or deleted from this mailing list.

Fact Sheet

Ecology will mail fact sheets to persons and organizations interested in the Weldcraft site to inform them of public meetings and comment opportunities and important site activities. Ecology also may mail fact sheets about the progress of site activities.

Newspaper Ads

Display ads announcing formal comment periods and public meetings for the site will be placed in the *Bellingham Herald*.

PLAN UPDATE

This public participation plan may be updated as the project proceeds. If an update is necessary, the revised plan will be submitted to the public for comment.

POINTS OF CONTACT

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GLOSSARY

Agreed Order (AO): A legal document issued by Ecology, which formalizes an agreement between Ecology and the potentially liable persons for the actions needed at a site. An Agreed Order may be used for remedial actions except for non-routine cleanup actions and interim actions that constitute a substantial majority of a cleanup action likely to be selected. Since an Agreed Order is not a settlement, it shall not provide for mixed funding, a covenant not to sue, or protection from claims for contribution. An Agreed Order means that the potentially liable person agrees to perform remedial actions at the site in accordance with the provisions of the Agreed Order, and that Ecology will not take additional enforcement action against the potentially liable person to require those remedial actions specified in the Agreed Order, so long as the potentially liable person complies with the provisions of the order. Agreed Orders are subject to public comment. If an order substantially changes, an additional public comment period is provided.

Cleanup: Actions taken to deal with a release, or threatened release of hazardous substances that could affect public health and/or the environment. The term "cleanup" is often used broadly to describe various response actions or phases of remedial responses such as the remedial investigation/feasibility study.

Cleanup Action Plan (CAP): A document that explains which cleanup alternative(s) will be used at sites for the cleanup. The Cleanup Action Plan is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Comment Period: A time period during which the public can review and comment on various documents and Ecology or EPA actions. For example, a comment period is provided to allow community members to review and comment on proposed cleanup action alternatives and proposed plans. Also, a comment period is held to allow community members to review and comment on draft feasibility studies.

Feasibility Study (FS): See Remedial Investigation/Feasibility Study

Information Repository: A file containing current information, technical reports, and reference documents available for public review. The information repository is usually located in a public building that is convenient for local residents such as a public school, city hall, or library.

Interim Action: Any remedial action that partially addresses the cleanup of a site. It is an action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at a facility; an action that corrects a problem that may become substantially worse or cost substantially more to address if the action is delayed; an action needed to provide for completion of a site hazard assessment, state remedial investigation/feasibility study, or design of a cleanup action.

Model Toxics Control Act (MTCA): Legislation passed by the State of Washington in 1988. Its purpose is to identify, investigate, and cleanup facilities where hazardous substances have been released. It defines the role of Ecology and encourages public involvement in the decision making process. MTCA regulations became effective March 1, 1989 and are administered by the Washington State Department of Ecology.

Public Participation Plan (PPP): A plan prepared to encourage coordinated and effective public involvement designed to the public's needs at a particular site.

Remedial Investigation/Feasibility Study (RI/FS): Two distinct but related studies. They are usually performed at the same time, and together referred to as the "RI/FS." They are intended to:

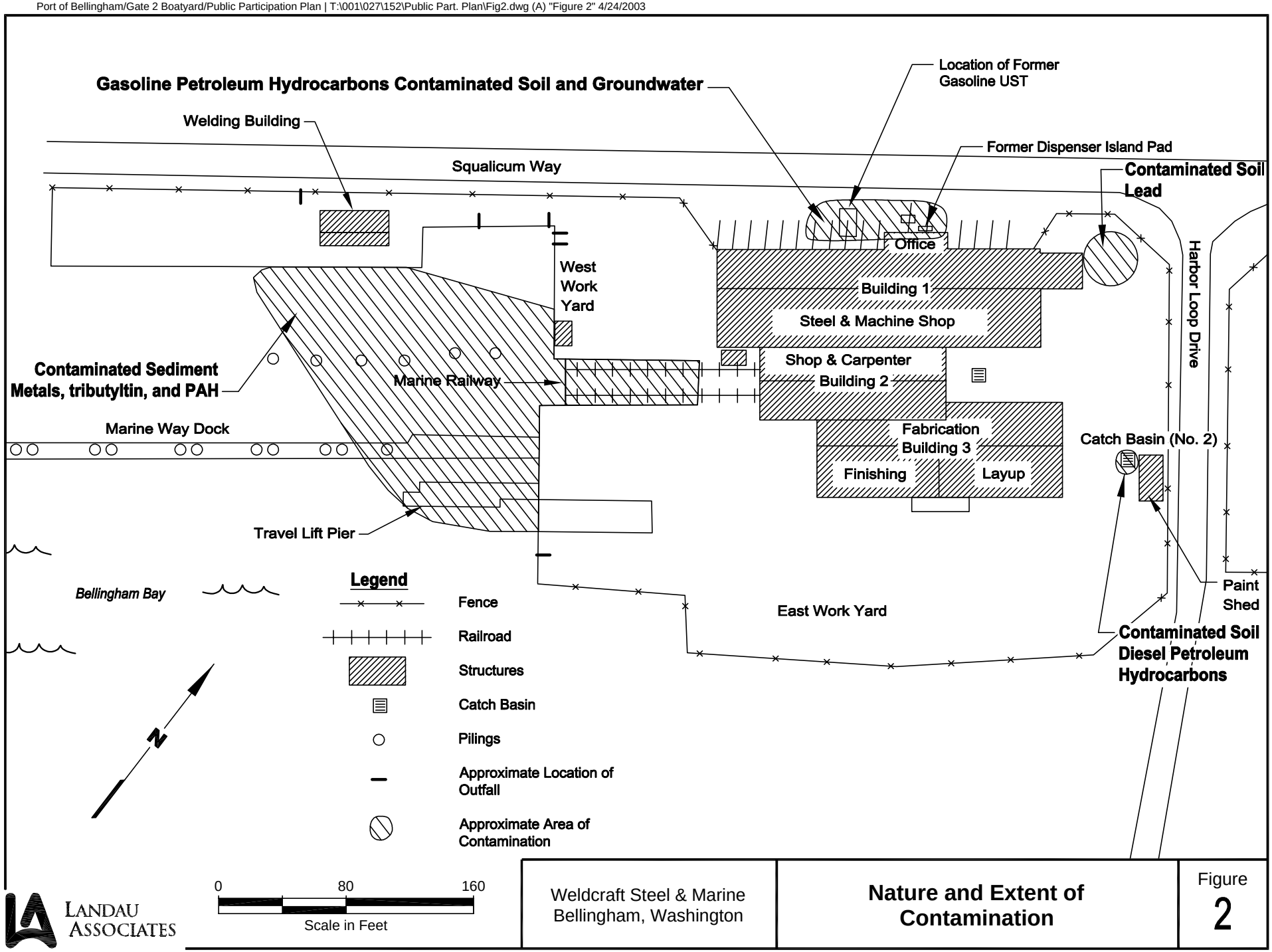
- Gather the data necessary to determine the type and extent of contamination;
- Establish criteria for cleaning up the site;
- Identify and screen cleanup alternatives for remedial action; and
- Analyze in detail the technology and costs of the alternatives.

Responsiveness Summary: A summary of oral and/or written public comments received by Ecology during a comment period on key documents, and Ecology's responses to those comments. The responsiveness summary is especially valuable during the Cleanup Action Plan phase at a site when it highlights community concerns.

Port of Bellingham/Gate 2 Boatyard/Public Participation Plan | T:\001\027\152\Public Part. Plan\Fig1.FH8 (PC) 3/26/2003

LANDAU ASSOCIATES

Weldcraft Steel & Marine Bellingham, Washington	**Vicinity Map**	Figure 1



LANDAU ASSOCIATES

Weldcraft Steel & Marine
Bellingham, Washington

Nature and Extent of Contamination

Figure
2

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1.0 INTRODUCTION

The Port of Bellingham (Port) intends to perform an interim action at the former Weldcraft Steel & Marine site (site) in Bellingham, Washington. The interim action will reduce the threat to human health and the environment from contamination present in site sediment and a limited contiguous upland portion of the site associated with the marine railway. The remaining upland portion of the site will be addressed separately by the final site cleanup.

The interim action will be implemented concurrently with the redevelopment activities:

- To prevent the further spread of contaminated sediments that would occur if redevelopment activities were implemented without the remediation of contaminated sediments
- Due to the limited amount of time available for in-water activity in order to protect sensitive aquatic species (e.g., chinook salmon), and
- To accommodate the needs of the Port's new tenant, Seaview Boatyard North, Inc.

Site redevelopment will result in sediment dredging within, and in some areas, beyond the sediment cleanup boundary to achieve minimum vessel draft requirements. As such, sediment cleanup and redevelopment activities must be closely coordinated and need to be implemented concurrently. The need for concurrent implementation of sediment cleanup and redevelopment dredging activities in conjunction with the schedule for site redevelopment is an important consideration in the Port's intent to implement sediment cleanup as an interim action rather than part of the final site cleanup.

It is intended that the interim action achieve final cleanup for sediment. However, post-construction sediment quality compliance monitoring will be conducted and additional sediment cleanup may be required if Washington State Sediment Management Standards (SMS; WAC 173-204) Sediment Quality Standards (SQS) are not achieved throughout the site.

The combined interim action/redevelopment project is expected to result in significant improvements to nearshore marine habitat in the Squalicum Harbor area. The primary objectives of the project are to:

- Remediate contaminated sediments impacted by boatyard activities of the former site tenant, Weldcraft Steel & Marine through the interim action described in this work plan
- Implement site repairs and improvements necessary to allow continuing site use as a water-dependent boatyard by the Port's new tenant, Seaview Boatyard North, Inc.
- Provide significant new marine habitat in the project vicinity, in addition to compensatory mitigation for the effects on habitat of site improvements and repairs
- Beneficially re-use dredged material from the maintenance dredging of the Squalicum channel for construction of the new marine habitat element of the project.

These project objectives are consistent with and support the Comprehensive Strategy for Bellingham Bay to integrate improvements to land use, habitat, and contaminated sediment remediation, as described in the October 2000 Final Environmental Impact Statement (FEIS; Anchor Environmental 2000), developed under the multi-agency Bellingham Bay Demonstration Pilot Study. This project is also strongly supported by the Whatcom County Marine Creosoted Piling Remediation Program being administered by the City of Bellingham through a grant from the Washington State Department of Ecology (Ecology 2002) because of the significant reduction (greater than 80 percent) of creosote in the marine environment that will be achieved at the site from proposed timber removal and isolation.

This interim action plan was prepared in accordance with the Washington State Department of Ecology (Ecology) Model Toxics Control Act regulations (MTCA; WAC 173-340-430) and the SMS. The objective of remediating contaminated site sediments is consistent with Ecology's antidegradation policy (WAC 173-204-120). The interim cleanup action is intended to result in a post-dredge sediment surface that meets SMS SQS and other applicable criteria. The Port, as the owner of the property, faces potential liability for environmental contamination at the site under the MTCA and SMS. Cleanup of the site, including efforts taken as part of the interim action described in this work plan, will be conducted under an agreed order between the Port and Ecology.

1.1 SITE LOCATION

The site is located on Port property at Section 25, Township 38 North, Range 2 East, within and adjacent to Squalicum Outer Harbor near the intersection of Squalicum Way and Harbor Loop Drive in Bellingham, Washington. The site vicinity map is shown on Figure 1, and an annotated aerial photograph of the site taken in the spring of 2002 is shown on Figure 2.

The street address for the site is 2652 Harbor Loop Drive, Bellingham, Washington, 98225, and the current tenant is Seaview Boatyard North, Inc. The site is on Port property that has provided water-dependent services for over 50 years. The City of Bellingham Shoreline Master Program designates Bellingham Bay as "urban maritime" (City of Bellingham 1989).

1.2 SITE HISTORY

Historic fire insurance maps from 1904 and 1913 show the site area was undeveloped tidelands of Bellingham Bay. In the 1920s, the area was filled with material dredged during construction of the Squalicum Waterway. By the 1940s and 1950s, various large businesses began operation in the filled areas along the waterway (Landau Associates 1993). Construction of the existing breakwater and dredging of the Squalicum marina area to -12 ft MLLW occurred in the early 1950s.

The Port became owner of the site in 1927. Weldcraft Steel & Marine first leased the site in 1946 and was initially involved in general boat repair activities. The company was known as Weldcraft Steel Works until 1961, Weldcraft Steel and Tank from 1961 to 1972, and Weldcraft Steel & Marine (Weldcraft) from that point forward. Weldcraft operated primarily as a shipyard that conducted various activities, including boat construction, repair, and maintenance; wood and metal fabrication; marine pipefitting; electrical and electronic work; sheet metal work; painting; machinery construction, installation and repair; vessel haul-out and launching; lofting and pattern-making; canvas and plastic work; storage, brokerage, retail, and wholesale sales; and concrete work.

The Port's lease with Weldcraft was terminated in February 2000 and the Port obtained full operational control of the site in July 2000. The site has been occupied by Seaview Marine, operating as Seaview Boatyard North, Inc., a company that performs general boat repair activities, since April 2002.

1.3 EXISTING SITE FEATURES

Existing site features are shown on Figures 3 and 4 and summarized below, with an emphasis on site features within the nearshore work areas versus the upland portions of the site. The relationship between true north and plan north being used for the project is indicated on Figures 3 and 4 and on other plan view figures.

The upland portion of the site is relatively flat with a surface elevation of between 13 and 15 ft mean lower low water (MLLW). A bathymetric survey of the near-shore marine area of the site was performed by Blue Water Engineering of Seattle, Washington on October 10, 2001. The survey extended about 500 ft southwest of the shoreline in the marine railway vicinity. The horizontal survey data were referenced to Washington State plane coordinates - north zone (NAD 83). The vertical data were referenced to MLLW datum. The bathymetric survey data were supplemented by spot mudline elevation measurements made by Landau Associates along the bulkhead and under the wharf. The resulting bathymetric contours are shown on Figure 3.

The timber bulkhead along the waterfront on the north and east sides of the site supports the upland fill areas adjacent to Squalicum Harbor. The timber bulkhead is constructed of creosote-treated timber piles that support horizontal timber lagging with tieback rods and deadman anchors at most pile locations. About 176 ft of bulkhead along the north side of the site is covered by an existing wharf. The bulkhead alignment has been subdivided into three segments (A, B, and C) for Port planning purposes, as indicated on Figure 3. The bulkhead lengths for Segments A, B, and C are approximately 144 ft, 222 ft, and 258 ft, respectively.

The marine railway is a creosote-treated timber pile-supported structure that extends from the upland railway well area (approximately 30 ft wide by 100 ft long) into the water about 235 ft beyond the

timber bulkhead. A row of creosote-treated timber mooring piles is located just north of the marine railway. The marine railway is constructed on bents alternately supported by two and three timber piles, with timber pile caps and stringers supporting two steel rails. The marine railway platform that travels on the two steel rails is constructed with steel framing and creosote-treated timber decking. The sides of the railway well are supported by creosote-treated timber piles and lagging supplemented with concrete side walls along a portion of the structure. A concrete-lined vault at the east end of the railway well houses the winch and cable assemblies previously used to move the platform along the marine railway.

The existing 35-ton travel lift pier structure is supported on pairs of timber piles with timber cross bracing (Figure 3). Each pier is about 6 ft wide (including the walkway), and the timber and steel carrier beams extend about 77 ft beyond the timber bulkhead and a short distance upland from the bulkhead. The north travel lift float is a timber structure that extends about 350 ft beyond the timber bulkhead and is secured by fifteen timber piles, while the smaller south float is secured to the southern travel lift pier.

The wharf along the north side of the site within Segment C is a creosote-treated timber pile-supported structure with timber decking, stringers, pile caps, and cross bracing (Figure 3). The Segment C wharf is approximately 30 ft wide and 176 ft long. The upland edge of the wharf extends beyond the alignment of the underlying timber bulkhead, as indicated on Figure 3. A small building is situated on the eastern side of the wharf and also extends upland onto the gravel surfaced area beyond the alignment of the bulkhead, as shown on Figures 3 and 4.

A creosote-treated timber pile-supported wharf to the west of Segment C has concrete decking and exhibits extensive degradation of the piles and superstructure members (Figure 3). This structure is not located within the interim action area and is not part of the presently planned site redevelopment. As such, this western wharf segment will not be addressed as part of this project.

The upland areas to the east of the bulkhead in Segment B contain several small sheds, several buildings, open storage and work areas, parking areas, and a grass bioswale, as indicated on Figures 3 and 4. The area north of the railway well is currently a gravel surfaced storage area, while the areas south of the railway well are paved with asphalt concrete. Access to upland site areas adjacent to bulkhead Segments B and C is limited by existing security fencing and gates. The upland areas to the east of the bulkhead in Segment A contain structures and paved parking areas associated with the Squalicum Yacht Club and the Bellingham Yacht Club. The upland area adjacent to bulkhead Segment A is not affected by site releases and access to this area is unrestricted.

Several active and abandoned stormwater outfall pipes extend through the timber bulkhead on the north and east sides of the site, as indicated on Figure 3. The origin and use of these outfalls are being investigated as part of the MTCA interim cleanup to the extent necessary to identify and abandon inactive outfalls prior to construction of the new bulkhead. The investigation will consist of one or more of the

following methods to evaluate the source(s) discharging to these outfalls and whether the outfalls are active:

- Review available utility drawings
- Observe outfalls during periods of significant precipitation to determine whether the outfalls convey storm water
- Discharge of clean water to catch basins and other potential source locations during dry periods
- Discharge of non-toxic and biodegradable dye tracers.

The outfall investigation to identify inactive outfalls will be completed by June 2003. Outfalls determined to be inactive will be abandoned by plugging with concrete and/or capping. Outfalls that are determined to be active will be evaluated by the Port consistent with requirements under the National Pollutant Discharge Elimination System (NPDES).

It is important to recognize that the distribution of sediment contamination at the site indicates that the primary source of sediment contamination is the marine railway and possibly the existing travel lift area, as described in Section 2.2.2, and does not indicate that the existing outfalls are a source of sediment contamination. Additionally, the Port has previously performed maintenance activities on the site stormwater system to limit potential contaminant releases to site sediment and surface water resulting from stormwater discharges, as described in Section 2.4. Also, Seaview Boatyard North has improved site stormwater management and treatment practices since its tenancy in 2002. Seaview Boatyard North stormwater improvements include construction of a closed loop, self-treating boatyard pressure wash water treatment system and construction of new improvements to treat site stormwater runoff from paved areas outside the pressure wash facility, as described in Section 2.4. As a result, site storm water should not result in surface water or sediment quality impacts to the site, nor do outfall discharges at the site that may originate from other facilities appear to be adversely impacting site sediment.

Some of the floating piers associated with the Squalicum Harbor marina facility are directly south of the site and will affect contractor access to certain project work areas. These piers are shown on Figures 2 and 3.

1.4 REGULATORY FRAMEWORK

Site cleanup, including this interim action, is being accomplished under MTCA. Because site sediments are one of the affected media, the Washington State Sediment Management Standards (SMS; WAC 173-204; Ecology 1995) are also directly applicable to site cleanup. Ecology involvement in site cleanup-related investigation activities conducted to date was facilitated through informal

consultation. Future cleanup activities, including this interim action, will be conducted under an agreed order between the Port and Ecology.

1.5 REPORT ORGANIZATION

Section 2.0 of this report presents a summary of site environmental conditions. Section 3.0 presents the evaluation and selection of the interim action for the site. Section 4.0 summarizes the use of this report. Section 5.0 presents the references for this document.

2.0 SITE ENVIRONMENTAL CONDITIONS

This section presents site environmental conditions and discusses site geologic and hydrologic conditions, the nature and extent of contamination for affected media (sediment and soil) in the interim action area, and other relevant site data. Data collection and evaluation of site conditions was performed in a phased manner. Initial identification of potential environmental affects occurred during the Phase I environmental site assessment (ESA) in 1993. A Phase II ESA was conducted in 1998 to assess impacts to site soil, groundwater and sediment. A supplemental sediment investigation was conducted in 2000, and a sediment remedial investigation was implemented in 2001. Figure 5 presents the sediment sampling locations. The results of these investigations and the associated data relevant to site conditions are integrated in this section to provide the reader a comprehensive understanding of site conditions. Information from previous site investigations that are not relevant to the planned interim action area (i.e., the Phase III upland investigation and the ongoing upland RI) are not presented in this work plan, but will be presented as part of the remedial investigation/feasibility study (RI/FS) report for the upland portion of the site.

This section is organized into the following subsections: Environmental Investigations (Section 2.1), Sediment Quality (Section 2.2), Upland Conditions (Section 2.3), Previous Decommissioning and Maintenance Activities (Section 2.4), and Interim Action Cleanup Levels (Section 2.5).

2.1 ENVIRONMENTAL INVESTIGATIONS

This section provides a description of the site investigation activities conducted within the interim action area. Relevant site investigations included the Phase I and II ESAs, a supplemental sediment investigation, and the sediment RI. A summary of the sediment sampling activities and the associated sample analyses is presented in Table 1. Sediment sampling locations are shown on Figure 5.

2.1.1 PHASE I ESA

The Phase I ESA (Landau Associates 1993) consisted of research and review of historical information for the Weldcraft site; contacts with local, state, and federal government regarding the site and properties of potential concern within a 1-mile radius; a site reconnaissance; data evaluation; and reporting. The Phase I ESA identified various areas of potential environmental concern, primarily related to poor housekeeping practices during site operations (Landau Associates 1993). Specific items of concern to sediment quality that were identified included:

- Historic sandblasting activities in the yard and buildings, and near the marine railway at the site, that could be a source of heavy metal impact to soil, groundwater, and sediment

- Potential impacts to sediments due to an outfall located in the bulkhead south (plan west) of the site buildings; the origin and use of the outfall were not identified.

2.1.2 PHASE II ESA

The Phase II ESA (Landau Associates 1998) was completed at the site to evaluate the conditions of potential concern noted in the findings of the Phase I ESA. The scope for the Phase II ESA consisted of sampling and chemical analysis of soil, groundwater, and sediment at various locations where available information and observations suggested that past practices, or ongoing practices at the time of the Phase II ESA, may have impacted the environment. Chemical testing was performed on samples from areas of the site most likely to show environmental impact from site activities, including sediment in the vicinity of shoreline operations and outfall areas. Sample descriptions, depth, and analysis parameters for sediment samples collected during the Phase II ESA are presented in Table 1.

The Phase II ESA included the following sediment investigation activities. On January 22, 1998, Landau Associates collected surface sediment samples (0-10 cm depth) from three locations near the south edge of the site in areas where site activities and/or runoff from the site may have impacted sediment quality. The sediment sample locations are shown on Figure 5. Each of the sediment samples (SD-MW, SD-TL, and SD-OF) underwent analysis for SMS metals, semivolatile organic compounds (SVOC), bulk butyltins including tributyltin (TBT), and total organic carbon (TOC). In addition, the sample located near the outfall pipe (SD-OF) was analyzed for polychlorinated biphenyls (PCB). Analytical results are discussed in Section 2.2.

On January 22, 1998, Landau Associates collected a sample of accumulated waste solids in the upper intertidal portion of the marine railway, within the marine railway well, at the site for laboratory analysis. The sample was obtained to assist in profiling the solid material for future waste disposal. The marine railway waste sample location, labeled "Railway Waste Sample", is shown on Figure 5. Analytical parameters for the marine railway waste sample are presented in Table 1. Analytical results for the marine railway waste sample are discussed in Section 2.2.

2.1.3 SUPPLEMENTAL SEDIMENT SAMPLING

The objective of the supplemental sediment investigation (Landau Associates 2001a) was to collect additional information to further evaluate sediment quality conditions beyond the area investigated during the Phase II ESA. On November 21, 2000, surface sediment samples were collected at five

locations offshore from the upland area of the site (SD2-01 through SD2-05, as shown on Figure 3). Bulk sediment samples were analyzed for SMS metals, SVOC, butyltins, TOC, and grain size. Table 1 presents the analytical parameters for the supplemental sediment sampling. Analytical results for the supplemental sediment investigation are discussed in Section 2.2.

2.1.4 SEDIMENT REMEDIAL INVESTIGATION

The objective of the sediment RI was to evaluate the horizontal and vertical extent of potential sediment contamination. Surface sediment samples (0-10 cm) were collected from seven locations (RIFS-01 through RIFS-07) using a stainless-steel power grab sampler. Multiple grabs were necessary at some stations to collect a sufficient volume of sediment for analysis. A total of ten subsurface sediment samples were collected at five locations (RIFS-01 through -04 and RIFS-07) to a depth of approximately 8 ft below the mudline. Subsurface sediment samples were collected with a vibracore with an aluminum core tube attached. The sampling locations (stations) were selected to evaluate the horizontal and vertical extent of potential contamination that may require remediation under SMS and MTCA. Sample coordinates are presented in Table 2, and sampling locations are shown on Figure 5.

Three of the surface sediment samples were co-located with samples collected during previous investigations to allow the use of the previously collected bulk sediment data with TBT porewater data collected during the RI. RIFS-03 was co-located with sample SD-TL from the Phase II ESA investigation. RIFS-04 was approximately co-located with SD-MW from the Phase II ESA investigation. RIFS-05 was co-located with SD2-01 from the supplemental sediment investigation. Because of difficulties in sample recovery, in part caused by the presence of the marine railway, RIFS-04 was collected about 30 ft west of SD-MW, rather than precisely co-located.

Surface sediments generally consisted of black silt and silty clay. Surface sediment field observations and sampler penetration are summarized in Table 3. Core logs based on a compaction corrected depth scale are presented in Appendix A.

Surface sediment samples that were approximately co-located with samples from previous locations (RIFS-03, RIFS-04 and RIFS-05) were analyzed for porewater TBT and dissolved organic carbon. Surface sediment samples collected in the vicinity of the marine railway (RIFS-01 and RIFS-02) were analyzed for SMS metals, SVOCs, porewater and bulk butyltins, and a suite of SMS conventional parameters (i.e., grain size, TOC, total sulfides, and ammonia). Outlying samples (RIFS-06 and RIFS-07), where previous investigations indicated TBT was the only potential constituent of concern, were tested for porewater and bulk butyltins, TOC, and DOC. Based on surface sediment analytical results, which indicated metals and bulk TBT were the primary contaminants of concern, subsurface sediment samples RIFS-01(0-4 ft), RIFS-02(0-4 ft), RIFS-02(4-8 ft), RIFS-03(0-4ft), RIFS-03(4-8 ft),

RIFS-04(0-4 ft), and RIFS-04(4-8 ft) were analyzed for total metals and bulk TBT to determine the vertical extent of SMS exceedances. Analytical results for the sediment RI are discussed in Section 2.2.

2.2 SEDIMENT QUALITY

Site sediment environmental conditions were evaluated based on analytical results for sediment samples generated during the Phase II ESA, supplemental sediment investigation, and sediment RI. The analytical results were used to evaluate the nature and extent of contamination resulting from the presence and release of wastes or hazardous substances associated with site activities. Sediment quality was evaluated based on SMS sediment quality standards (SQS) and cleanup screening levels (CSL). The SQS represents the concentration below, which no adverse affects should occur. The CSL represents the concentration above which more than minor adverse affects may occur.

All sediment analytical data were validated prior to use. Data validation results for pre-RI investigations are described in previous documents (Landau Associates 1998 and 2001a). Data validation for the RI was conducted in accordance with the procedures identified in the RI Work Plan (Landau Associates 2002). A number of metals were qualified as estimated (J) as a result of precision outside of laboratory control limits. TBT and zinc were qualified as estimated (J) because of accuracy outside of laboratory control limits. No RI data were rejected and the data, as qualified, are acceptable for use. Details of the RI laboratory data quality evaluation are provided in Appendix B to this report.

2.2.1 PRELIMINARY SEDIMENT CLEANUP LEVELS

The sediment analytical results were compared to SQS and CSL criteria, and are summarized in Table 4. Laboratory reports are presented in Appendix B for sediment RI data, and are presented in the applicable reports for prior investigations.

The railway sample collected during the Phase II ESA was not tested for TOC because it consisted primarily of boat maintenance waste and was collected primarily for waste designation rather than environmental media (sediment) characterization. As a result, the railway sample was not analyzed for all the SMS parameters that sediment samples are typically tested for (e.g., conventionals) and was tested for some parameters that sediment samples are not typically tested for (e.g., total petroleum hydrocarbons). For the purposes of comparison of organic compounds to sediment quality criteria, a TOC of 2 percent was assumed for the railway sample. The marine railway analytical results are compared to SQS and CSL criteria and summarized in Table 5.

The SMS provides SQS and CSL cleanup standards for many constituents. However, SMS cleanup standards for TBT have not been promulgated at this time. However, Puget Sound Dredge

Disposal Analysis (PSDDA) evaluation criteria for open water disposal identifies a no effects TBT sediment porewater criteria of 0.05 µg/L and a potential adverse affects sediment porewater criteria of 0.15 µg/L for open water disposal of dredged material that provide a reasonable basis for assessing the potential affects of TBT on marine biota. For the purposes of this evaluation, a TBT porewater concentration of 0.05 µg/L is considered analogous to the SQS and a TBT porewater concentration of 0.15 µg/L is considered analogous to the CSL.

Because significantly more bulk TBT data are available than pore water TBT data, a correlation between bulk and porewater TBT concentrations was developed to allow a more comprehensive evaluation of the extent of TBT contamination based on bulk TBT data. A linear regression analysis was performed for co-located porewater and bulk TBT data. A strong correlation with an R^2 of 0.96 was obtained for the six available data points, as shown on Figure 6. Based on this linear regression, the preliminary site-specific bulk TBT criteria are 79 µg/kg and 156 µg/kg based on the PSDDA TBT porewater evaluation criteria of 0.05 and 0.15 µg/L, respectively.

As indicated in Section 2.1.4, RIFS-04 was located about 30 ft west of its intended co-location with SD-MW because of sample recovery difficulties. Because the TBT porewater concentration for the RIFS-04 sample (0.022 U µg/L) is very low relative to the bulk concentration for the SD-MW sample (1400 µg/kg), and the samples were not precisely co-located, the TBT data from RIFS-04 and SD-MW were not used in the linear regression.

For ease of interpretation and review, sediment quality exceedances were normalized for graphical presentation by dividing the measured concentration by the SQS and CSL criteria. Thus, an exceedance ratio greater that 1 indicates that the respective criteria was exceeded. This exceedance ratio approach provides the reader with a relative measure of the level of exceedance for multiple constituents without the need to refer to the individual criteria. Figures 7 and 8 present the extent of contamination for surface and subsurface sediment quality samples, respectively.

It should be noted that exceedance ratios for the railway sample are only presented on Figure 7 for metals (including TBT). Organic compound exceedances are not presented on the figure because concentrations are based on an assumed TOC concentration, and the extensive number of criteria exceedances in the railway sample make graphical presentation of all exceedances impractical. Additionally, most of the organic compounds only exceed SMS criteria in the railway sample, so graphical presentation is not necessary.

It should be noted that the laboratory reporting limits exceeded SQS or CSL values for a limited number of constituents (primarily chlorinated benzenes, phenols and benzoic acid) in some samples. However, these constituents have not been detected in upland soil or groundwater samples, nor were they

detected in samples that did not have elevated reporting limits. As a result, the reporting limit exceedance of SQS or CSL values for these constituents in a limited number of samples does not significantly compromise the completeness of sediment quality data, or its usability.

2.2.2 SUMMARY OF FINDINGS

As indicated in Table 4, sediment quality exceedances occurred in surface sediment samples and sediment core samples collected from 0.1 to 4 ft below mudline. No sediment quality exceedances were detected in samples collected from 4 to 8 ft below mudline. As a result, subsequent discussion of subsurface sediment quality is in reference to the 0.1 to 4 ft zone.

Figures 7 and 8 present surface and subsurface sediment SMS exceedances and preliminary site-specific bulk TBT criteria exceedances. TBT and mercury appear to be the most common constituents of concern in the site sediment.

Surface sediment contained concentrations of bulk TBT, likely from shipyard activities, above the preliminary site-specific TBT screening criteria. TBT exceedances extend southwest of the marine railway to co-located samples SD2-01 and RIFS-05. Bulk TBT concentrations tend to decrease from surface to subsurface sediment, indicating TBT is a more recent contaminant. The vertical extent of TBT exceedance is limited to the upper 4 ft of sediment. The decrease in bulk TBT concentration with depth and the observed stratigraphy suggest that the vertical extent of bulk TBT exceedances may be less than 4 ft.

Surface sediment exceedances of mercury were limited to sample RIFS-02 and the railway sample. However, subsurface sediment exceedances of mercury were observed in samples RIFS-02(0-4), RIFS-03(0-4), and RIFS-04(0-4). Observed mercury exceedances extend southwest of the marine railway to core RIFS-04. The vertical extent of mercury exceedances appears to be limited to the upper 4 ft of sediment. Mercury concentrations tend to increase from surface to subsurface sediment, indicating mercury is an historical contaminant.

Other sediment quality exceedances at the site, excluding the numerous organic and inorganic exceedances in the railway sample, consist of:

- Bis(2-ethylhexyl)phthalate (BEP). Surface sediment exceedances at RIFS-02 (SQS exceedance ratio of 1.3) and SD-MW (CSL exceedance ratio of 1.1).
- Fluoranthene. Surface sediment exceedance at SD-TL (SQS exceedance ratio of 1.7).
- Copper. Surface sediment exceedance at RIFS-02 (CSL exceedance ratio of 2.1).

The locations of these exceedances fall within the extent of the TBT and mercury exceedances. Additionally, the numerous additional exceedances detected in the railway sample are limited to the upper intertidal and upland portion of the marine railway.

Marine railway exceedances include the metals arsenic, cadmium, copper, lead, mercury, zinc, and bulk TBT. Organic compound exceedances in the railway sample include numerous low molecular weight polycyclic aromatic hydrocarbons (PAHs), high molecular weight PAHs, BEP, dibenzofuran, and n-nitrosodiphenylamine. The marine railway sample was also analyzed for gas, diesel, and oil range total petroleum hydrocarbons (TPH). There are no SMS criteria for TPH. However, the concentrations of gas, diesel, and oil range TPH (1600, 16,000, and 17,000 mg/kg, respectively) were elevated in the railway sample.

Based on the distribution of site sediment contamination, the marine railway near its upland terminus appears to be the primary source of sediment contamination. To a lesser extent, the travel lift vicinity may have also contributed to sediment contamination in the past. Available data do not suggest that existing outfalls are a significant source of site sediment contamination.

2.3 UPLAND CONDITIONS

This section summarizes upland conditions that are relevant to the proposed interim action. The primary relevance of upland conditions to the proposed interim action is the potential for future upland releases of contaminants to sediment following implementation of the interim action. The potential sources for future releases to sediment are groundwater discharge, surface soil erosion, and/or discharges through site stormwater outfalls.

As part of the upland investigations, nine monitoring wells have been installed and sampled on the site, and groundwater samples have been collected from six geoprobes. Of these 15 groundwater monitoring locations, three wells are within about 40 ft of the shoreline and two additional wells and four geoprobes are within about 100 ft of the shoreline, as shown on Figure 9. Based on review of available data, including preliminary data from the ongoing upland RI, all constituents of concern identified in site sediment were either not detected, or were detected at concentrations below surface water quality criteria in the nine groundwater monitoring locations in close proximity to the shoreline. Additionally, no other environmental constituents were detected in these nine groundwater monitoring locations at concentrations exceeding surface water quality criteria. Groundwater analytical data associated with these monitoring locations will be presented in the upland RI/FS report.

Based on existing site conditions, soil erosion and transport via surface/stormwater into the marine environment is unlikely to occur. As previously noted in Section 1.3, the project site is relatively flat and the majority of the site is paved. Surface water runoff is collected in stormwater catch basins or

dry wells, and there is no indication of direct surface water runoff or soil erosion to surface water and sediment. As indicated in Section 1.3, the distribution of site sediment contamination indicates that contamination is associated with the marine railway and possibly the travel lift, and does not indicate a significant contribution from outfalls that discharge within the site vicinity. As indicated in Section 1.3, and further discussed in Section 2.4, the Port cleaned existing site catch basins and floor drains prior to occupancy by its new tenant (Seaview Boatyard North) and Seaview Boatyard North has made significant improvements to the site stormwater collection and treatment system. As a result, storm water is not considered a significant contaminant source to site sediment.

Soil samples collected during previous investigations indicate that site contamination (including soil) is limited and localized, with no significant environmental issues in close proximity to the shoreline. As a result, the potential for recontamination of sediment from the erosion of contaminated soil appears to be very limited. However, further assessment of the upland portion of the site will occur at a later date under the Ecology/Port agreed order and additional work may be done to eliminate any contamination sources that are identified at that time.

Section 2.4 summarizes the actions taken to minimize the potential for recontamination of sediment in the interim action area from site stormwater outfall discharges.

2.4 DECOMMISSIONING AND MAINTENANCE ACTIVITIES

The Port performed a number of relevant environmental decommissioning and maintenance activities in the upland portion of the site in preparation for use by the new tenant. As part of this work, the Port cleaned out three catch basins and two floor drains, and removed an apparent septic tank from the west side of Building 1, in January 2000 (Landau Associates 2001b) (Figure 4). The Port removed accumulated sediment from the catch basins and floor drains to prevent potential future releases of these historically generated contaminants to site sediment and Bellingham Bay through the stormwater conveyance system. The apparent septic tank was removed because it was thought to be a petroleum hydrocarbon underground storage tank, although upon excavation it appeared to be a small septic tank with an attached drain line; laboratory analysis of the tank contents did not indicate the presence of hazardous substances at concentration of concern.

In addition to the maintenance and decommissioning activities described above, the Port removed a large quantity of waste materials left onsite from the previous tenant. Waste materials included derelict boats, used oil, scrap metal and fiberglass, unused paints and solvents, and other wastes typically associated with boatyard activities. All waste materials were disposed of in compliance with applicable regulations.

Seaview Boatyard North, Inc. has subsequently constructed a closed, self-treating boatyard water treatment system that retains, treats, and recycles water from the pressure wash facility. Additionally, they have also constructed new improvements to treat site stormwater runoff from paved areas outside the pressure wash facility, including a bioswale that treats stormwater runoff to Ecology standards prior to release into the marine environment (Figure 3). These treatment systems offer a significant improvement in surface water quality over site discharges during the past 50 years.

The Port is also evaluating several outfalls that terminate at the site bulkhead, as shown on Figure 3. The Port is evaluating whether the outfalls are still active, and if inactive, they will be abandoned prior to construction of the new bulkhead. The results of this evaluation, and the location and manner in which inactive outfalls were abandoned, will be presented in the site-wide RI/FS report to be completed subsequent to the interim action. The source(s) of discharge to the outfalls that are active will be evaluated consistent with NPDES requirements.

As noted previously, further assessment of the upland portion of the site will occur at a later date under the Ecology/Port agreed order. Follow-up evaluation of the sediment portion of the site will also occur. Additional work may be done to eliminate any contamination or contamination sources that are identified at that time.

2.5 INTERIM ACTION CLEANUP LEVELS

The SQS, and the site-specific TBT no-effects cleanup level will be the sediment cleanup levels used for the interim action. It is anticipated that if these cleanup levels are achieved throughout the site, the interim action will constitute the final cleanup action for sediment. However, final cleanup level will be determined by Ecology. If the identified cleanup levels are not achieved throughout the site, additional sediment cleanup may be required.

As indicated in Section 2.2.2, the primary constituents of concern are TBT and mercury. Other hazardous substances that exceeded the SQS, excluding the numerous organic and inorganic exceedances in the railway sample, consist of copper, BEP and fluoranthene. The cleanup levels for these constituents of concern are presented in Table 6.

3.0 INTERIM ACTION

This section presents a summary of the evaluation and selection of the interim action planned for the site.

This section is organized into the following subsections: Purpose of the Interim Action (Section 3.1), Alternative Interim Actions Considered (Section 3.2), Interim Action Design and Construction Details (Section 3.3), Construction Timing (Section 3.4), and Compliance Monitoring (Section 3.5).

3.1 PURPOSE OF THE INTERIM ACTION

The purpose of the interim action is to remediate contaminated sediment affected by the activities of the prior site tenant, Weldcraft Steel & Marine. The Port is planning to remediate site sediment in conjunction with the redevelopment of the boatyard facility in Squalicum Harbor, which has been in operation for over 50 years. The Port recently evicted the prior tenant and entered into a new lease agreement with Seaview Boatyard North, Inc. to operate the boatyard. This change has provided the opportunity to address problems associated with the prior tenant's operations, including upland and sediment contamination, dilapidated structures, and non-compliance with current regulatory requirements. The interim action and redevelopment will be conducted consistent with the goals of the Comprehensive Strategy, including cleanup of a high priority contaminated sediment site and construction of a high priority habitat restoration site identified in the FEIS (Anchor Environmental 2000). Additionally, the interim action and redevelopment removes a significant amount of creosoted timbers and piling, consistent with the goals of the Whatcom County Marine Creosoted Piling Remediation Program (Ecology 2002).

The sediment cleanup and redevelopment elements of the project are interdependent, and as a result, both aspects of the project are presented in this plan. The proposed interim action consists of the following four major in-water construction elements:

- Sediment dredging to remove contaminated sediment above the SQS
- Installation of a new steel sheet pile bulkhead in front of the existing timber bulkhead where contaminated sediments are to be removed (existing bulkhead to be left in place)
- Removal of the marine railway to facilitate dredging of contaminated sediments
- Construction of new marine habitat along the Squalicum Outer Harbor breakwater to address habitat losses associated with post-construction dredge depths and the location of the new bulkhead.

In conjunction with these interim action activities, the following site redevelopment activities will be implemented:

- Construction of a 150-ton travel lift pier to replace the marine railway
- Sediment dredging to attain adequate vessel drafts (-10 ft MLLW) in the vicinity of the new 150 ton travel lift
- Installation of a new steel sheet pile bulkhead in front of the existing timber bulkhead along portions of the bulkhead alignment adjacent to the portion being replaced to facilitate removal of contaminated sediments (existing bulkhead to be left in place)
- Repair of the existing timber bulkhead along the north shoreline
- Repair/replacement of damaged timber piles associated with the existing wharf and north timber bulkhead and the north travel lift float
- Repair/replacement of selected structural elements of the existing wharf.

This project is focused on the in-water portion of the site. Upland remediation will be addressed separately, following completion of a site-wide remedial investigation/feasibility study to be conducted under an agreed order between the Port and Ecology.

The Port will perform this interim action in accordance with the MTCA and the SMS. The interim action will reduce the threat to human health and the environment from chemicals present in site sediment and a limited contiguous upland portion of the site associated with the marine railway.

3.2 ALTERNATIVE INTERM ACTIONS CONSIDERED

Sediment remedial action alternatives that were considered for this site included: 1) monitored natural recovery; 2) capping of contaminated sediments; and 3) complete excavation of contaminated sediments (the selected alternative).

The alternative that would rely on natural attenuation of the contaminated sediments at the site was not selected because of the uncertainty associated with the efficacy of this approach, as well the high probability that some future sediment remedial activities would be required at the site for reasons of either environmental cleanup or boat access.

The capping alternative would rely on at least 2 ft of clean sand to cap contaminated sediment to mitigate potential exposure pathways to biological or human receptors. However, this alternative was not selected because sediment capping would result in vessel drafts too shallow to allow the site to continue its historic marine-dependent use as a boatyard.

Complete excavation of contaminated sediment was selected as the most appropriate alternative because it provides a high level of protection to human health and the environment, and provides for the continued use of the site for marine-dependent activities.

3.3 INTERIM ACTION DESIGN AND CONSTRUCTION DETAILS

The focus of this interim action is the in-water and over-water work in the project area. The in-water work will occur only during the period identified by the U.S. Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS) as least disruptive to salmon and trout migration. It is presently anticipated that the interim action will be implemented between September 1, 2003 and February 15, 2004. As described in Section 3.2, the interim action and associated site redevelopment activities will consist of the following four major in-water construction elements:

- Sediment dredging to remove contaminated sediment and restore minimum vessel draft requirements for access to the boatyard
- Installation of a new steel sheet pile bulkhead in front of the existing timber bulkhead (to be left in place) along the east shoreline
- Replacement of the marine railway with a 150-ton travel lift pier
- Construction of new marine habitat along the Squalicum Outer Harbor breakwater.

The removal and/or isolation of significant areas of creosote-treated wood is another major in-water benefit of site remediation. This project is strongly supported by the Whatcom County Marine Creosoted Piling Remediation Program (Ecology 2002) because of the significant reduction of creosote in the marine environment that will be achieved at the site from the proposed timber removal and isolation activities.

Additional maintenance and repair activities will occur over or in water as part of this project (most repair activities will be conducted out of the water, either during low tide or from over-water structures). These activities consist of:

- Repair of the existing timber bulkhead along the north shoreline
- Repair/replacement of damaged timber piles associated with the existing wharf and north timber bulkhead and the north existing travel lift float
- Repair/replacement of selected structural elements of the existing wharf.

Preliminary estimates indicate that proposed in-water activities at the project site will result in the loss of about 0.18 acre of intertidal habitat (above -4 ft MLLW) and 0.23 acre of shallow subtidal habitat

(between -4 ft and -10 ft MLLW), and an increase of 0.46 acre of deep subtidal habitat (below -10 ft MLLW). As discussed in Section 3.3.7, these losses will be offset by concurrent new habitat construction along the Squalicum Outer Harbor breakwater. The planned habitat construction element of the project was developed to be consistent with the habitat restoration goals and objectives of the Comprehensive Strategy. The selected habitat restoration site is one of the high priority habitat action sites identified in the FEIS (Anchor Environmental 2000), and will provide significant habitat restoration in addition to compensatory mitigation.

Ecology, Washington Department of Natural Resources (DNR), and Washington Department of Fish and Wildlife (WDFW) have an inter-agency agreement with a preference for "the use of materials (such as untreated wood, precast concrete, steel or plastic) that have a lower potential to release toxic chemicals" than treated wood. The selection of materials for this project is consistent with the intent of this agreement and greatly reduces the presence of creosote treated wood, which is considered the greatest hazard of the materials typically used for marine construction. A white paper on chemical contaminants in treated wood and the potential for adverse impact to salmon was prepared for Ecology, WDFW, and WDOT by Battelle (Battelle 2001). The white paper identifies creosote treated wood as a greater hazard (to salmon and other aquatic species) than ammoniacal copper zinc arsenate (ACZA) treated wood, and states a general preference for metals treated wood as more environmentally friendly (than creosote). The project is removing a large amount of creosote treated wood, and replacing it with steel or ACZA treated wood. The following actions, described in greater detail in the following sections of this report, will be taken to remove creosote treated wood and replace it with more environmentally friendly materials:

- 95 creosote support piles and 5,300 ft^2 of creosote treated timbers associated with the marine railway will be removed and replaced with 26 steel piles that will be installed to support the new 150-ton travel lift

- 10 creosote treated mooring piles adjacent to the north side of the marine railway, and about 20 derelict pile stubs, will be removed and not replaced

- 57 creosote treated piles and 5,400 ft^2 of creosote treated timber lagging associated with Segments A and B of the bulkhead will be isolated from the marine environment by the new steel bulkhead

- At least 800 ft^2 of creosote treated lagging associated with Segment C of the bulkhead will be isolated using ACZA treated wood lagging

- 16 creosote treated fender piles along the south side of the wharf will be replaced with ACZA treated piles

- 6 creosote treated piles associated with the new wharf and 5 piles associated with north travel lift float will be replaced with ACZA treated piles.

In addition to the above removal/replacement actions, other mitigation strategies recommended by the treated wood white paper will be employed:

- Pile stubs that cannot be removed will be cut off below the mud line
- In-water activities will be conducted when juvenile salmon will not be present in the area to allow time for sufficient weathering of the ACZA treated wood before there is any exposure to juvenile salmon
- Treated wood stored at the project site will be properly managed prior to installation to minimize the release of contaminants.

The in-water and over-water construction and maintenance activities are described in more detail in the following sections.

3.3.1 SEDIMENT DREDGING AND BACKFILLING

Sediment dredging will be conducted to remove contaminated sediment to the interim action sediment cleanup levels identified in Section 2.5, and to achieve minimum vessel draft requirements for access to the boatyard. Up to about 8,000 cy of silt and sand material will be removed to achieve these goals (this volume includes an allowance for up to 1 ft of overdredge below the design dredge depth). Of this volume, 7,600 cy will be removed to remediate contaminated sediment and 400 cy will be removed to achieve minimum vessel draft requirements in the vicinity of the new 150-ton travel lift.

Contaminated sediment removal areas will include the impacted area west of the new sheet pile bulkhead and the entire marine railway well area east of the new sheet pile bulkhead, as shown on Figure 10. As discussed in Section 2.2.2, the vertical extent of contamination is limited to the upper 4 ft of sediment. The planned sediment dredging depths shown on Figure 11, as well as on the cross sections on Figures 12 and 13, were developed to remove the upper 4 ft of sediment within the identified zone of contamination, to the extent practicable given existing site constraints.

To achieve minimum vessel draft requirements for access to the new boatyard facilities, additional sediment dredging to -10 ft MLLW will be conducted to within about 25 ft of the new sheetpile bulkhead across the alignment of the marine railway where the new travel lift structure will be constructed. This area of additional sediment dredging is indicated on Figure 11 and Cross Section A-A' on Figure 12. Note that the original USACE permitted dredge depth was -12 ft MLLW, with an additional 1 ft over-dredge allowance, so the proposed dredging effort represents maintenance dredging to restore previous permitted vessel drafts.

The presence and condition of existing marine structures within and directly adjacent to the work areas present certain requirements and constraints on sediment dredging activities, including the following:

- The marine railway structure must be removed to allow dredging in front of the bulkhead and within the marine railway well area. Dredge access is the primary reason that the railway will be removed.

- The new sheetpile bulkhead along the east side of the dredge area must be installed prior to dredging in front of the bulkhead, to avoid undercutting and destabilizing the existing timber pile and lagging bulkhead.

- Bathymetry along the north side of the dredge area, both under the timber wharf and in the adjacent unshaded intertidal area in the northeast corner of the site where it is desirable to maintain existing grades, prevents setting the toe of the dredge cut at the southern edge of the wharf. To avoid undercutting the slope under the wharf and in the adjacent intertidal area, the toe of the dredge cut has been offset approximately 12 to 13 ft south to allow an approximate 1.5H:1V to 2H:1V cutslope to daylight near the southern the edge of the wharf, as shown on Figures 10 and 11 and the cross sections on Figure 13.

- The north and south floats and access ramps associated with the existing 35-ton travel lift pier will be temporarily relocated to facilitate sediment dredging. However, the presence of the 6-ft wide travel lift piers and associated piles and cross bracing will likely preclude complete removal of sediment directly under the piers to the 4-ft design dredge depth. Assuming that vertical cuts on each side of each pier will slough to 1.5H:1V, it is possible that a 2-ft high wedge of sediment might remain directly under the piers, as indicated on Detail A on Figure 13.

- The need for maintaining boat access to the adjacent Squalicum Outer Harbor facility, the presence of the floating piers directly adjacent to certain dredge areas, and the overall space constraints at the site will limit the contractor's overall production rate.

Sediment dredging will be conducted using barge-mounted mechanical clamshell dredge equipment, with the dredged material placed on an adjacent barge and dewatered prior to offloading. Free water released from sediment upon placement on the barge will be allowed to drain back to surface water, and straw bales or geotextile filter material would be placed at the weep holes in the sides of the barge if needed to limit loss of material and control turbidity. Land-based excavation equipment will be used to excavate sediment and remove debris within the marine railway well, with such equipment removing intertidal sediment near the bulkhead line "in the dry" during low tide and potentially placing excavated material directly into shore-based containers or trucks.

Dredge material handling and disposal requirements will depend on the disposal facility ultimately selected for the project. Material handling and disposal options currently include:

- Offloading the material from the barge at a designated upland location along the north side or near the northeast corner of the site, and transfer to lined rail cars for transport to an upland

landfill disposal facility. The offloading area would be lined to facilitate containment and collection of any material spillage during the material transfer operations. Any free water generated during upland handling of sediment will be contained, transported, treated and disposed of consistent with applicable laws and regulations.

- Transporting the material by barge to an upland landfill that has facilities for offloading the barge and transferring the material to the upland disposal facility. Any free water present on the barge at the time of departure from the site will be contained for treatment and disposal in conjunction with sediment at the upland disposal facility.

As indicated on Figure 14, selected areas of the site will be backfilled with clean imported granular fill material. The fill material will be a granular soil in the sand to gravel range with a relatively low percentage of fines (less than about 4 to 5 percent material passing the U.S. No. 200 sieve) to limit turbidity and facilitate placement. The areas to be backfilled include:

- Areas that are dredged to remove contaminated sediment to depths below a neat line elevation of -13 ft MLLW that will be backfilled up to -13 ft MLLW, which is within the -12 ft authorized dredge depth with the 1 ft overdredge allowance. The post sediment dredging and backfilling contours are shown on Figure 15.
  - These areas will be backfilled with granular fill material delivered to the site by barge and placed with a clamshell bucket. Because of the low percentage of fines, the imported backfill material is predicted to settle freely through the water column and spread evenly onto the sediment surface to be backfilled.
  - It is estimated that up to about 1,600 cy of imported granular fill material will be placed to backfill these lower dredge areas back up to -13 ft MLLW.
- The marine railway well area behind the new sheetpile bulkhead that will backfilled up to about 14 ft MLLW and paved to match existing upland site grades.
  - This area will be backfilled with granular fill material delivered to the site by truck, and placed and compacted with conventional earthwork equipment to meet the project requirements for structural backfill to support wheel loads associated with the new 150-ton travel lift hoist. (It is possible that the lower portions of the excavation will be backfilled with quarry spalls to facilitate compaction of the overlying structural fill material.)
  - It is estimated that up to about 1,200 cy of imported granular fill material will be placed to backfill the marine railway well area.
- The nominal 3 ft wide space between the existing timber bulkhead and the new sheetpile bulkhead that will backfilled up to about 14 ft MLLW to match existing upland site grades (refer to Section 3.3.2 and Figure 17).
  - This area will be backfilled with a free flowing granular fill material (such as pea gravel) delivered to the site by truck, and placed with conventional earthwork equipment.
  - It is estimated that up to about 400 cy of imported fill material will be placed to backfill the space between the existing timber bulkhead and the new sheetpile bulkhead.

- The nominal 4 inch-wide space between the existing Segment C timber bulkhead and the new timber lagging used for repair would backfilled up to the top of the new lagging. This area would receive up to about 80 cy of fill (e.g., pea gravel), as shown on Figure 19b.

3.3.2 BULKHEAD REPLACEMENT

To facilitate sediment dredging, and as part of the planned site improvements, the timber bulkhead along the east shoreline in Segments A and B will be replaced with a galvanized-steel sheetpile bulkhead and tieback system installed directly in front of (i.e., waterward of) the existing creosote-treated timber pile and lagging bulkhead. The alignment of the new sheetpile bulkhead is shown on Figure 16, and a generalized cross section of the bulkhead replacement area is shown on Figure 17. The new steel sheetpile bulkhead will be about 368 ft long, and will tie into the existing steel sheetpile bulkhead at the south end of Segment A near the Bellingham Yacht Club.

The new sheetpile bulkhead along the east side of the dredge area in Segment B will close off the existing marine railway well, and must be installed prior to dredging to avoid undercutting and destabilizing the existing timber bulkhead structure. The steel sheetpile sections will be driven to design depth with an impact or vibratory hammer mounted on a land- or barge-based crane, depending on site constraints and the contractor's preference. The new bulkhead will be anchored by tieback rods connected to anchors installed along the upland portion of the site.

The existing timber bulkhead will remain in place behind the new bulkhead structure; however, the new sheetpile bulkhead will completely encase the old creosote-treated wood bulkhead. As a result of this bulkhead replacement, about 110 creosote-treated piles and about 3,600 ft^2 of creosote-treated wood lagging will have been removed from direct contact with the marine environment. The new bulkhead will dampen, but not completely eliminate, surface water and groundwater interaction. As a result, groundwater will contact creosote treated wood prior to discharge to surface water. However, the potential for significant release of contaminants associated with creosote (e.g., PAHs) is very small because of their low solubility and the dampening effect of the new bulkhead. The creosote bulkhead isolation is an important part of this remediation project because the bulkhead vicinity comprises a significant part of intertidal habitat used by juvenile salmonids within the project site.

As indicated on Figure 17, the new sheetpile bulkhead will be driven up to 3 ft in front of the existing timber lagging to accommodate the variable alignment and occasional outward tilting of the existing timber bulkhead. The space between the existing and new bulkhead will be backfilled with imported fill material to match existing upland site grades. The filling of this narrow band of existing intertidal habitat along the existing bulkhead (about 920 ft^2), combined with the filling of the existing marine railway well area (about 2,700 ft^2), results in the filling/loss of about 0.083 acres of intertidal

habitat in this area of the site. This will be mitigated by construction of new marine habitat along the Squalicum Outer Harbor breakwater, discussed in Section 3.3.7.

3.3.3 MARINE RAILWAY REPLACEMENT WITH NEW TRAVEL LIFT

The primary purpose for removal of the marine railway is to allow access to underlying sediment for contaminant removal. In conjunction with sediment dredging activities, the components of the existing marine railway will be demolished and disposed at an appropriate offsite location to allow construction of the new 150-ton travel lift finger piers along the railway alignment. The location of the existing marine railway is shown on Figures 3 and 10, the alignment of the new travel lift piers is shown on Figure 16, and a generalized section of the new travel lift pier structure is shown on Figure 18.

The various components of the marine railway will be cut or dismantled using both barge-mounted and land-based mechanical equipment and brought to an upland area of the site for size reduction and salvaging/disposal activities. The creosote-treated timber piles located beyond the bulkhead line (approximately 105 piles, including the 10 mooring piles located north of the railway) will be pulled or cut off below the final dredge mudline elevation. Unless suitable for salvaging and reuse by the contractor, the piles and timbers will be cut to appropriate lengths and disposed of at an appropriate upland landfill facility. The steel components of the marine railway platform and the steel rails will salvaged or recycled. As previously discussed, land-based excavation equipment would be used to excavate sediment and remove debris within the marine railway well as part of sediment dredging activities, and any timber piles and structural components within or near the railway well area that might interfere with installation of the new steel sheetpile bulkhead/tieback system or the new travel lift pier structure will be cut off or removed. As discussed in Section 3.3.1, the marine railway well area behind the new sheetpile bulkhead will then be backfilled with imported backfill material up to about Elevation 14 ft MLLW to match existing upland site grades.

The new finger piers for the 150-ton travel lift will be installed following completion of sediment dredging activities. As shown on Figures 16 and 18, each concrete finger pier will be 6 ft wide and approximately 145 ft long, with an average 105-ft length extending out beyond the alignment of the new bulkhead. Each finger pier will have a 2.5-ft wide steel or aluminum open-grated walkway and a handrail attached to the outer edge of each pier. The two finger piers will be supported by 26 two-ft dia. open-ended, galvanized or coated steel pipe piles driven to an appropriate embedment depth below the final mudline with an impact hammer and leads mounted on a barge-based crane. The top elevation of the finger piers will be about 14 ft MLLW to match existing site grades.

The new finger piers will partially shade about 330 ft² (<0.01 acre) less marine habitat than the former marine railway. Additionally, the shading effects will be less severe because the height of the

piers over the marine substrate is much greater than the existing in-water marine railway structure and the narrow profile of the piers will result in only transient shading. The finger piers will partially shade about 50 ft² of intertidal habitat between -2 and -4 ft MLLW and about 2,100 ft² of subtidal habitat between -4 and -11 ft MLLW.

The amount of creosote-treated wood that will be removed from the marine environment by dismantling the marine railway is about 5,300 ft² plus about 125 piles.

3.3.4 SEGMENT C BULKHEAD REPAIRS

The timber bulkhead located under the wharf along Segment C has timber lagging and scour damage. The portion of the Segment C bulkhead requiring lagging repair is shown on Figure 16, and a cross section of the Segment C wharf and bulkhead is shown on Figure 19a. The repairs will consist of installing vertical metal channels along existing piles and attaching ACZA-treated wood lagging between the channels, water-ward of the failing lagging. The nominal 4-inch space between the old and new lagging will be backfilled with a clean granular material to further isolate the old creosote-treated lagging from the marine environment (Figures 19a and 19b). The filling of this narrow band of existing intertidal habitat along the existing bulkhead (about 120 ft²) results in the filling/loss of about 0.003 acres of intertidal habitat in this area of the site.

The existing timber bulkhead along Segment C also contains two timber piles (Nos. 79 and 85) with less than 90 percent remaining cross sectional area that will be repaired by removing the wharf decking near each damaged pile, using land-based pile driving equipment to install galvanized steel H-piles on both sides of each damaged pile, and installing a galvanized channel to secure these H-piles to the existing tieback rod. This timber bulkhead pile repair scheme is shown on Figure 20.

3.3.5 TIMBER PILE REMOVAL, REPLACEMENT, AND REPAIRS

Based on the underwater pile condition surveys performed in 2002, timber piles at the site with less than 90 percent remaining cross sectional area will be repaired/replaced as appropriate. The locations of the deteriorated timber piles are indicated on Figures 3 and 16 (as well as on other plan views), and include:

- 2 piles along the bulkhead in Segment C (to be repaired as discussed in Section 3.3.4)
- 6 piles under the wharf in Segment C (to be repaired/replaced)
- All 16 fender piles along the south side of the wharf in Segment C (to be replaced)
- 5 of the 15 piles supporting the north travel lift float (to be replaced)
- 3 piles along the bulkhead in Segment C (to be left in place behind the new bulkhead).

Certain timber piles no longer in use will be pulled/vibrated out of the sediment, if practicable, or cut off slightly below the final mudline elevation. These include about 105 piles supporting the portion of the marine railway located beyond the bulkhead line, about 10 mooring piles located north of the marine railway, about 30 piles located within the marine railway well, and about 20 derelict pile stubs located adjacent to the Segment C bulkhead. Additionally, all of the piles supporting the north travel lift float will need to be removed and replaced to allow temporary relocation of the float during sediment dredging activities. Unless suitable for salvaging and reuse by the contractor, the piles will be cut to appropriate lengths and disposed of at an appropriate upland landfill facility. Creosote-treated piles removed from the marine environment may be temporarily stockpiled on the upland portion of the site, with runoff from the stockpile area to be collected and treated by the boatyard stormwater treatment system.

Existing deteriorated timber pier piles will be repaired, removed and/or replaced by one or a combination of the following methods. Piles may be cut at or slightly below the mudline and a new pile secured directly on top, fully extracted with or without replacement, or removed by cutting off the pile below the mudline. Replacement timber piles and pile sections will be ACZA-treated.

Piles deemed to be repairable may be repaired using a fiberglass or steel casing that is subsequently filled with concrete; such casings will extend from approximately 2 ft below the mudline up to the bottom of the pile caps.

Replacement piles will be ACZA-treated timber piles (or steel piles if appropriate). Replacement piles will be driven to design depth using barge- or land-based pile driving equipment, as determined to be most appropriate by the contractor. The choice of pile materials will depend on available funds and the intended application.

3.3.6 SEGMENT C WHARF REPAIRS

In addition to the pile repair/replacement activities discussed in Section 3.3.5, certain structural repairs will be made to the existing timber wharf along Segment C as part of site redevelopment. The location of the wharf is shown on Figure 16 and a cross section of the wharf and bulkhead is shown on Figure 19a.

The wharf rehabilitation activities will include repair/replacement of selected timber pile caps, stringers, decking, chocks, and bullrailing. New timber cross bracing will also be added to the wharf as needed. Most of these activities will occur above the mean higher high water elevation.

3.3.7 MARINE HABITAT CONSTRUCTION

The project will incorporate compensatory habitat creation along a portion of the existing riprap breakwater on the west (seaward) side of Squalicum Outer Harbor. The general location and configuration of the marine habitat area is shown on Figures 2 and 21, and a cross section is shown on Figure 22.

Habitat will consist of a shallow subtidal bench at about -4 ft MLLW, with a 5H:1V outer slope descending to the existing mudline elevation of approximately -12 ft MLLW. The goal of the marine habitat design is to create a minimum of 2 acres of shallow subtidal habitat above -10 ft MLLW, including a minimum of 1 acre of habitat between -4 and -6 ft MLLW. This new habitat will result in at least a 2:1 compensation ratio to address project impacts, plus additional habitat to concurrently fulfill enhancement and restoration objectives and ensure maintenance of compensatory habitat over time.

Habitat will be constructed using approximately 30,000 to 35,000 cy of Squalicum Waterway dredged material designated for beneficial reuse and made available through a separate USACE maintenance dredging project scheduled for the fall of 2003. The Puget Sound Dredge Material Management Office (DMMO) has determined that all of the Squalicum Waterway maintenance dredge materials are suitable for unconfined, open-water disposal or beneficial reuse. It is expected that most of the available dredge material will be fine-grained silt to clayey silt material with greater than about 90 percent material passing the U.S. No. 200 sieve.

Only sediment from Squalicum Channel dredge material management units (DMMUs) that exhibit chemical concentrations below SQS will be used for the habitat site fill. Based on data available from the Squalicum Channel Puget Sound Dredge Disposal Analysis (PSSDA) sediment characterization report (Striplin Environmental 2000), DMMUs C3, and C5 through C11 are the most appropriate for use as habitat fill.

Habitat construction material will likely be transferred to the outer breakwater area using bottom-dump barges, which will be used to place the majority of the habitat material up to approximately Elevation -4 ft MLLW. Above that elevation, or when tides drop to depths too shallow to operate a bottom-dump barge, the habitat material may need to be placed with mechanical clamshell equipment.

The habitat material will be placed in a series of relatively thin lifts, with a designated waiting period between placement of successive lifts to allow the material to consolidate and gain strength. The habitat surface will be constructed to an elevation of approximately -4 ft MLLW, as shown on Figure 22. The slope of the habitat bench surface will not exceed about 10H:1V, and in most areas will be flatter than about 20H:1V. The contractor will monitor lift thickness and bench elevations and slopes during and immediately following construction.

A preliminary evaluation of the potential settlement of the habitat bench was conducted, based on primary consolidation of the underlying soft Bellingham Bay sediments due to the weight of the bench fill material; the results of this evaluation indicate that about 6 to 12 inches of settlement might be expected to occur during and following bench construction. Most of the settlement is expected to occur within the first year following construction.

A preliminary slope stability evaluation of the habitat bench was also conducted under both static and dynamic (pseudostatic) seismic loading conditions using the program XSTABL to compute the factor of safety against slope failure at various locations through the habitat bench fill and underlying sediments. The preliminary static analyses indicated a factor of safety against slope failure greater than 2.5. Slope stability analyses under seismic conditions were performed using a horizontal pseudostatic coefficient (k_h) to represent the effects of the design level earthquake. A horizontal pseudostatic coefficient of $k_h = 0.118$ was chosen for a design level earthquake with $a_{max}/g = 0.237$. The preliminary dynamic analyses indicated a factor of safety against slope failure greater than 1.1. Thus, the constructed habitat bench is expected to be stable under reasonable worst case conditions, including seismic events.

Because of the fine-grained composition of the Squalicum Waterway dredge material, turbidity levels generated during fill placement will be greater than turbidity levels generated during project site dredging or backfilling activities. However, the Squalicum Waterway dredge material is highly desirable for habitat construction because the fine-grained material and organic content will provide excellent colonization potential for aquatic invertebrates and eelgrass.

An important design objective for the habitat bench is to maintain its integrity with relatively little erosion during peak waves and tidally induced currents. The bench has been designed to ensure stability under reasonable worst-case wave conditions. Additional stability analyses were conducted to predict erosion during annual and 5-year waves at the most sensitive tidal stage. These analyses showed that the upper bench elevations should be stable between -4 and -6 ft MLLW. Based on these evaluations, the Squalicum Waterway dredge materials are expected to be sufficiently strong to resist erosion from ambient waves. Colonization of the habitat surface by eelgrass, which is expected to occur, would provide further protection from erosion over time. A more detailed discussion of the erosion analysis is presented in Attachment 1 to the compliance monitoring plan (Appendix C).

3.4 CONSTRUCTION TIMING

Project construction, including the in-water activities, is expected to take about 5 months. The table below shows the estimated duration of each project component. It should be recognized that the duration and the total period of in-water work will be affected by a number of factors, including:

- The type of equipment and construction procedures used by the contractor

- The sequencing of work elements
- The availability and delivery schedule for construction materials
- The length of daily in-water work periods, which may be affected by minimum vessel draft requirements and ongoing boatyard activities
- Dredging and backfill placement rates, which may be affected by engineering controls, site access limitations, and water quality considerations.

As such, the estimates of project activity duration presented below should be considered advisory and will vary based on the considerations described above.

ESTIMATED DURATION OF PROJECT IN-WATER ACTIVITIES

PROJECT COMPONENT	ESTIMATED DURATION
Bulkhead Replacement	6 to 8 weeks
Dredging	3 to 4 weeks
Backfilling	1 week
Marine Railway Removal	1 to 2 weeks
Pile Removal	1 week
150-ton Travel Lift Installation	8 to 10 weeks
Wharf and Bulkhead Repairs	2 to 4 weeks
Fender Pile Replacement	1 week
Marine Habitat Construction	4 to 8 weeks

To avoid disturbance to late outmigrating juvenile salmon, the Services have specified an in-water construction period of September 1, 2003 to February 15, 2004. All in-water work will occur during daylight hours, except that sediment removal within the marine railway well may occur at night to maximize the amount of contaminated sediment removed "in the dry" during extreme low tides.

3.5 COMPLIANCE MONITORING

In accordance with MTCA requirements in WAC 173-340-410, a compliance monitoring plan was developed for the interim action activities and is attached as Appendix C to this work plan. Compliance monitoring activities for the project will include:

- Protection monitoring to confirm that human health and the environment are adequately protected during construction of the interim action

- Performance monitoring to confirm that the interim action has attained the sediment cleanup standards established for the project and other performance standards (such as construction quality control monitoring necessary to demonstrate compliance with project permits), and

- Confirmational monitoring to confirm the long-term effectiveness of the interim action once the cleanup standards and other performance standards have been attained.

The compliance monitoring plan (Appendix C) addresses surface water quality monitoring during dredging and filling activities and post-construction sediment quality monitoring, and should be reviewed for a more thorough discussion of the bases for and scope of the proposed compliance monitoring activities.

4.0 USE OF THIS REPORT

This work plan has been prepared for the exclusive use of the Port of Bellingham for specific application to the Gate 2 Boatyard project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

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LDB/DAP:rgm

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RIFS-1

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -14.72 (MLLW)	
0					ML	Black, silty CLAY (soft, wet)	Groundwater not encountered.
2					SP-SM	Grey SAND with trace silt, gravel, and occassional shell fragments and wood debris (medium dense, wet)	
4					ML	Grey SILT with charcoal (medium stiff, wet)	
					SP	Black, medium to coarse SAND with subangular gravel and shell fragments (loose, wet)	
6					WD	Brown WOOD CHIPS with trace silt	
					SP	Black, coarse, angular SAND with trace gravel, silt, shell fragments, and wood chips (loose, wet)	
8							
10							
12							
14							

Boring Completed 09/25/01
Total Depth of Boring = 9.5 ft.

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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LANDAU ASSOCIATES

Weldcraft Steel and Marine
Bellingham, Washington

Log of Boring RIFS-1

Figure
A-2

RIFS-2

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -5.23 (MLLW)	
0					ML	Black, slightly clayey SILT with wood debris and worm burrows (soft, wet)	Groundwater not encountered.
2					SP	Black, silty, coarse SAND with shell fragments (loose, wet)	
					ML	Dark grey SILT with trace wood chips, shell fragments, and plant debris (medium stiff, wet)(sulfur odor)	
4					SP	Dark grey, medium SAND with trace gravel, shell fragments, and wood debris (loose to medium dense, wet)	
					SP	Black, coarse SAND to fine GRAVEL (loose, wet)	
6					SM	Dark grey, silty fine to medium SAND with trace gravel, shell fragments, and wood debris (medium dense, wet)	
					ML	Black, sandy SILT (medium stiff, wet)	
					ML	Dark grey SILT with wood chips, shell fragments, and coal (medium stiff, wet)	
					SP	Dark grey, fine to medium SAND with trace silt and trace shell fragments (medium dense, wet)	
8					SP-SM	Dark grey, medium SAND with silt, gravel, and trace shell fragments (medium dense, wet)	
10							
12							
14							

Boring Completed 09/25/01
Total Depth of Boring = 12.0 ft.

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Weldcraft Steel and Marine
Bellingham, Washington

Log of Boring RIFS-2

Figure
A-3

RIFS-3

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -15.90 (MLLW)	
0					ML	Black SILT with trace organic material (very soft, wet)	Groundwater not encountered.
2							
4					SP	Dark grey, fine SAND with wood debris and coal fragments (loose, wet)	
					SP	Dark grey, fine SAND with trace coal fragments (loose, wet)	
6							
						Shell fragments from 7.25 to 8.2 feet	
8							
10							
12							
14							

Boring Completed 09/25/01
Total Depth of Boring = 9.0 ft.

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellingham, Washington

Log of Boring RIFS-3

Figure
A-4

RIFS-4

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -20.32 (MLLW)	
0					ML	Black, slightly clayey SILT with trace wood debris and worm burrows (soft, wet)	Groundwater not encountered.
4					ML	Dark grey SILT (medium stiff, wet)	
					SP	Dark grey, silty, fine SAND (medium dense, wet)	
6					SP	Dark grey, fine SAND (medium dense, wet)	
					CL	Grey CLAY (very stiff, moist) (Native)	
8							

Boring Completed 09/25/01
Total Depth of Boring = 8.0 ft.

10
12
14

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellingham, Washington

Log of Boring RIFS-4

Figure
A-5

RIFS-7

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -9.41 (MLLW)	
0					ML	Dark grey SILT with wood debris and worms (soft, wet)	Groundwater not encountered.
2							
					CL	Grey, silty CLAY with trace shell fragments (soft, wet)	
4					SP	Dark grey, fine SAND with trace silt inclusions (medium dense, wet)	
6					SP	Dark grey, fine to medium SAND (medium dense, wet)	
8							
10							
12							
14							

Boring Completed 09/25/01
Total Depth of Boring = 7.4 ft.

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Weldcraft Steel and Marine
Bellingham, Washington

Log of Boring RIFS-7

Figure
A-6

RIFS-7

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Graphic Symbol	USCS Symbol	Drilling Method: Vibracore (4-inch core tube) Ground Elevation (ft): -9.41 (MLLW)	
0					ML	Dark grey SILT with wood debris and worms (soft, wet)	Groundwater not encountered.
2							
4					CL	Grey, silty CLAY with trace shell fragments (soft, wet)	
					SP	Dark grey, fine SAND with trace silt inclusions (medium dense, wet)	
6					SP	Dark grey, fine to medium SAND (medium dense, wet)	
8							
10							
12							
14							

Boring Completed 09/25/01
Total Depth of Boring = 7.4 ft.

Notes:
1. Actual water depth based on National Oceanographic and Atmospheric Administration, National Oceanographic Survey.
2. Stratigraphic contacts are based on field interpretations and are approximate.
3. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
4. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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LANDAU ASSOCIATES

Weldcraft Steel and Marine
Bellingham, Washington

Log of Boring RIFS-7

Figure
A-6

Landau Associates
Environmental and Geotechnical Services

TECHNICAL MEMORANDUM

TO: Larry Beard, Project Manager, Landau Associates, Inc.

FROM: Shannon Dunn, Landau Associates, Inc.

DATE: April 24, 2003

RE: WELDCRAFT STEEL AND MARINE
REMEDIAL INVESTIGATION/SEDIMENT INVESTIGATION
LABORATORY DATA QUALITY EVALUATION

This memorandum provides the results of a data quality evaluation of 14 sediment samples collected on August 25 and 26, 2001. A data quality evaluation was performed for analysis of total metals by EPA methods 6010 and 7000 series; porewater and bulk tributyltin (TBT) by Krone; semivolatile organic compounds (SVOCs) by EPA method 8270; total organic carbon (TOC), N-ammonia, and sulfide by Plumb (1981); and dissolved organic carbon (DOC) by EPA method 415.1. The analyses were performed by Analytical Resources, Inc., (ARI) located in Seattle, Washington. This data quality evaluation covers ARI data packages DQ89, DT87, and DV89. This data quality evaluation was performed in accordance with the quality assurance procedures described in Appendix B of the *Draft Work Plan Remedial Investigation and Feasibility Study Weldcraft Steel and Marine Facility, Bellingham, Washington* (Landau Associates 2001), and with applicable portions of the U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (1994a,b).

The evaluation considered the following items:

- Chain-of custody records
- Holding times
- Laboratory and method blank results
- Surrogate recoveries
- Laboratory matrix spikes and matrix spike duplicates (MS/MSD) (including the laboratory control samples)
- MS/MSD and laboratory duplicate relative percent difference (RPD)
- Quantitation limits
- Conclusions and completeness.

Data validation qualifiers were added to the sample results based on the evaluation of the data quality. The absence of a data quality qualifier indicates that the data are acceptable without qualification. Data validation qualifiers are summarized in Table 1.

CHAIN-OF-CUSTODY RECORDS

Chain-of-custody records accompanied each data package. The laboratory received all the samples in good condition and all analyses requested were performed.

HOLDING TIMES

For all the samples, the time between sample collection, extraction, and analysis was determined to be within EPA and method-specified holding times.

SURROGATE SPIKE RECOVERIES

All of the surrogate recoveries were within the method and/or laboratory control limits with the following exception:

- The percent recoveries for two surrogates associated with the TBT analyses of diluted sample RIFS-02 were less than the laboratory control limits as a result of sample dilution. No qualifiers were assigned as TBT surrogate recoveries in the original RIFS-02 sample were within control limits.

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE SAMPLES

Matrix spike and matrix spike duplicate (MS/MSD) samples were performed with each organic analysis and an MS was performed with each inorganic analysis. All of the MS/MSDs were performed on project samples. Recoveries for the MS/MSDs were within the current laboratory control limits with the following exceptions:

- Recoveries of the TBT spikes in the MS/MSD samples for data package DQ89 were below laboratory control limits. No qualifiers were assigned because the spike concentration was less than five times the sample concentration.

- Recoveries of the copper and zinc spike in the MS sample for data package DQ89 were below laboratory control limits. No qualifiers were assigned because the spike concentration was less than five times the sample concentration.

- Recoveries of chromium and zinc spikes in the MS sample for data package DT87 were below laboratory control limits. Chromium and zinc in samples RIFS-01(0-4), RIFS-02(0-4), RIFS-03(0-4), and RIFS-04(0-4) were qualified as estimated (J).

- Recoveries of TBT spikes in the MSD sample for data package DT87 were above laboratory control limits. TBT in sample RIFS-01(0-4) was qualified as estimated (J).

- Recovery of the zinc spike in the MS sample for data package DV89 was below laboratory control limits. Zinc in samples RIFS-02(4-8), RIFS-03(4-8), and RIFS-04(4-8) were qualified as estimated (J).

RELATIVE PERCENT DIFFERENCES

Laboratory duplicate and MS/MSD RPDs were within the current laboratory control limits with the following exceptions:

- TBT MS/MSD RPDs were below laboratory control limits in data package DQ89. No qualifiers were assigned because the spike concentration was less than five times the sample concentration.

- Copper, lead, and mercury laboratory duplicate RPDs were above laboratory control limits in data package DQ89. Associated sample results (RIFS-01 and RIFS-02) were qualified as estimated (J).

- Chromium, copper, lead, and mercury laboratory duplicate RPDs were above laboratory control limits in data package DT87. Chromium, copper, lead, and mercury in samples RIFS-01(0-4), RIFS-02(0-4), RIFS-03(0-4), and RIFS-04(0-4) were qualified as estimated (J).

- TBT MS/MSD RPDs were above laboratory control limits in data package DT87. TBT in sample RIFS-01(0-4) were qualified as estimated (J).

REPORTING LIMITS

Laboratory reporting limits were within project specified limits with the following exceptions:

- Reporting limits for 1,2-dichlorobenzene, 1,2,4-trimethylbenzene, and hexachlorobenzene were above project specified reporting limits in samples RIFS-01 and RIFS-02.

- Reporting limits for pentachlorophenol and benzoic acid were above project specified control limits in sample RIFS-02.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through matrix spike duplicates. Data accuracy was evaluated through laboratory control samples, surrogate spikes, and matrix spikes. Based on this data quality evaluation, all of the data were determined to be acceptable and no data was rejected. The completeness for this data is 100 percent.

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LIST OF FIGURES

INTRODUCTION

This appendix to the Gate 2 Boatyard Biological Evaluation and Essential Fish Habitat Analysis (BE/EFHA) summarizes evaluations conducted to determine the potential for short-term water quality impacts during sediment dredging at the Gate 2 Boatyard, as well as during construction of the habitat mitigation/restoration bench along the existing breakwater on the west side of Squalicum Outer Harbor. An evaluation of the long-term stability of the habitat bench is also presented.

As discussed in the main text of this report, the primary objectives of the Gate 2 Boatyard project are to:

- Remediate contaminated sediments impacted by boatyard activities of the former site tenant (Weldcraft);
- Implement site repairs and improvements necessary to return the site to a water-dependent use by the Port's new tenant; and
- Provide significant habitat restoration in the project vicinity, in addition to providing compensatory mitigation for the effects of site improvements and repairs on marine habitat. Both the mitigation and restoration elements of the project will be consistent with the Bellingham Bay Comprehensive Strategy, implementing priority habitat restoration actions identified in this area (Ecology 2000).

POTENTIAL FOR SHORT-TERM WATER QUALITY IMPACTS

During dredging activities associated with this project, as well as placement of clean sediments to construct the habitat mitigation/enhancement bench, there is a potential for short-term loss of sediments and/or sediment-associated contaminants to the water column. This section presents an evaluation of the potential for such releases to exceed ambient water quality criteria or standards, using the available site characterization data and project design as input to water quality models developed for this purpose by the U.S. Army Corps of Engineers (Corps). The Corps' Dredging Operations and Environmental Research (DOER) program recently developed an approach for estimating suspended sediment-source strength or resuspension rates associated with typical operation of dredges. The approach, described in Technical Note DOER-E6 (Johnson and Parchure 2000), uses empirical measurements of suspended sediment loss rates from a range of different dredging operations, to provide estimates of sediment resuspension that could reasonably be expected under dredging scenarios. The modeling approach applied to the Gate 2 Boatyard site is described below.

SHORT-TERM WATER QUALITY IMPACTS DURING DREDGING

Sediment dredging will remove contaminated sediment impacted by historical Weldcraft boatyard activities and achieve minimum vessel draft requirements for access to the boatyard. Up to about 8,000 cy of sediment within the project site will be dredged to achieve these goals. Sediment dredging will be conducted using barge-mounted mechanical dredge equipment, supplemented with land-based excavation equipment.

Consistent with DOER guidelines, evaluation of the potential for water quality impacts at the point of mechanical dredging is commonly evaluated using the results of a dredge elutriate test (DRET). The results of the DRET performed on a composite sample of sediment within the dredge prism (conservatively biased toward higher concentration sediment areas; see Anchor 2002a) is presented in Table 1. Only four parameters were detected in the DRET at concentrations that exceeded conservative water quality criteria – copper, mercury, tributyltin (TBT), and total suspended solids/turbidity. Of these parameters, turbidity measured in the DRET exceeded its water quality criterion by the greatest degree (14 times above the criterion, conservatively assuming seasonal minimum ambient background conditions of less than 50 NTU). Thus, water quality modeling may be appropriately directed to turbidity as the indicator parameter, since control of this parameter (i.e., a 14-fold reduction in concentrations within the prospective mixing zone surrounding the mechanical dredge; see below) will also address more marginal exceedances detected for other chemicals such as copper, mercury, and TBT.

Only TBT exceeded the proposed (but not yet promulgated) Clean Water Act Section 304(a) aquatic life criterion in the dissolved phase of the DRET (62FR42554, August 7, 1997). No other parameter exceeded its respective water quality criterion in the dissolved phase of the DRET. Moreover, TBT "exceedances" of the dissolved criterion in this case were marginal (less than 2-fold) and were based on estimated concentrations (i.e., uncertain quantitation) within the DRET. Thus, based on the results of the DRET, dissolved constituents potentially released into the water column during project dredging would not be expected to exceed water quality criteria. Again, because of the greater magnitude of turbidity exceedances compared to chemical exceedances of water quality criteria in the DRET, water quality evaluations focused on turbidity as the indicator chemical (including considerations of dispersion within the water column; see below) would also be expected to address more marginal dissolved TBT releases.

Under state and federal standards, surface water quality criteria are applicable at the boundary of an approved mixing zone. Temporary mixing zones for this project will be developed as part of the State Water Quality Certification and associated permit approval process. For sediment cleanup projects, the Washington Department of Ecology (Ecology) typically approves temporary mixing zones during dredging activities that conform generally to requirements for longer-term point source discharges, with

the delineated mixing zone routinely set at a distance of three hundred (300) ft from the outer boundary of the dredging activity (e.g., Water Quality Certifications for sediment cleanup dredging projects in the Duwamish Estuary, Commencement Bay, and other areas of Puget Sound). For the Gate 2 Boatyard project, the prospective mixing zone would be established at a distance of 300 ft in all directions from the edges of the dredge prism, which would be the point of compliance with turbidity/total suspended solids (TSS) and other standards. As discussed in the BE/EFHA, water quality monitoring would be completed during the dredging operations to verify that water quality is maintained within standards, and to trigger contingency actions, as appropriate.

To evaluate potential impacts to water quality resulting from dredging at the Gate 2 Boatyard, mechanical (e.g., open clamshell) equipment was evaluated with the Corps' DREDGE module of the Automated Dredging Disposal and Alternatives Modeling System (ADDAMS). ADDAMS is compiled and maintained by the Environmental Laboratory at WES. The DREDGE module models the transport of suspended sediment from dredging operations into two distinct areas: the near field; and far-field. The near-field area in the immediate vicinity of the dredging operation (typically within 30 to 60 ft of the dredge) contains the highest turbidity levels, and is dominated by mixing induced by the dredging process. Sediment transport in the far-field area is controlled by ambient currents and diffusion processes, and sedimentation. DREDGE utilizes a two-dimensional, vertically-averaged transport model to develop both near- and far-field water quality predictions.

The DREDGE module was used to estimate TSS/turbidity concentrations at the point of dredging and at the boundary of the prospective mixing zone, 300 ft from the point of dredging. Input values are summarized in Table 2. Based on the project design and assuming typical worst-case operations of regional contractors, a 5 cy dredge bucket with a 60 second cycle time was modeled. A contractor may elect to use a smaller bucket for this project, and overall production might be slower than a 60 second cycle time due to tight spaces and possible debris; both of these conditions would reduce sediment release rates. An ambient velocity of 3 cm/s was assumed for the project area, based on the conservatively low end of the velocity range reported in this region of Bellingham Bay (Anchor Environmental and Hart Crowser 2000). Based on sediment characterization data, a median grain size of 74 µm was used, which corresponds to roughly equal proportions of sand and silt. Turbidity generation unit (TGU) values reported by Nakai (1978) and recommended by DOER for use in the DREDGE module were used to select a representative TGU value.

The DREDGE module incorporates loss from the clamshell as it ascends through the water column, providing a conservative estimate of sediment loss and resuspension. Results from the DREDGE model are reported in terms of TSS. Within the near-field area of dredging, predicted TSS concentrations

are approximately 14 milligrams per liter (mg/L) throughout the water column, but are predicted to drop below 1 mg/L at a distance of approximately 100 ft from the dredging operation.

Because water quality monitoring in the field during the dredging operations will be evaluated based on turbidity in terms of nephelometric turbidity units (NTUs), consistent with State Surface Water Quality Standards, the regional correlation between TSS and NTU values was used to relate these two parameters (e.g., see Anchor and Hart Crowser 2000). It should be noted that there is not a direct relationship between TSS and NTU for all site conditions, as the relationship is dependent upon variable ambient conditions and sediment types encountered by the dredge. However, it is clear from the regional data that for each mg/L increase in TSS, there is a corresponding increase of turbidity equal to or less than 1 NTU. Thus, turbidity increases of less than 1 NTU are predicted at distances greater than roughly 100 ft from the dredge.

Based on the DREDGE modeling, potential turbidity increases at the prospective mixing zone boundary are predicted to be less than 1 NTU, well below the state water quality standard. Thus, no short-term water quality impacts are anticipated at the point of dredging. Accordingly, no further water quality controls are indicated for the dredging elements of this project. Water quality compliance will be verified during construction, and contingency actions implemented if needed.

SHORT-TERM WATER QUALITY IMPACTS DURING HABITAT BENCH CONSTRUCTION

As previously discussed, the proposed project will incorporate habitat mitigation and enhancement along an existing breakwater on the west side of Squalicum Outer Harbor. The proposed habitat mitigation/enhancement will be constructed using approximately 30,000 cy of clean dredge material beneficially reused from the Corps' Squalicum Channel maintenance dredging scheduled for fall 2003. The dredged material will be placed on the waterward side of the riprap breakwater, creating a broad, shallow-subtidal bench of fine-grained material conducive to colonization by a wide range of endemic organisms, potentially including eelgrass.

Turbidity/TSS and other appropriate water quality standards must be met at a point approximately 300 ft from the location of sediment release into the water column during construction. For the purposes of remedial design, potential short-term losses of Squalicum Channel sediments to surface waters, and associated temporary turbidity/TSS increases, were evaluated using the STFATE modules developed and maintained by the Corps. For the purpose of this evaluation, Squalicum Channel materials were assumed to be placed either using a bottom-dump barge or rehandled using a 10 cy clamshell, at an estimated production rate of up to approximately 1,000 cy per day over a working day of 10 hours. The STFATE model evaluates each discharge as a cloud of sediment free-falling through the water column. This provides a conservative estimate of TSS releases to the water column, since the material is likely to

behave more like a cohesive mass. Further, the modeled TSS values were based on settling velocities of individual particles, which does not take into account increased settling velocities due to flocculation.

Many of the ambient receiving water and site characteristic input assumptions used in the STFATE module were equivalent to those used in the DREDGE model discussed above (see Table 2). A similar regional current velocity (3 cm/sec) was applied to represent the receiving water environment on the west side of Squalicum Outer Harbor breakwater (Anchor and Hart Crowser 2000). Maximum TSS concentrations were evaluated at 2-foot depth intervals. Results from the STFATE modeling are summarized below:

- During the first few minutes immediately following release of the finer-grained Squalicum Channel material, peak TSS concentrations at the point of release may range up to approximately 4,000 mg/L. However, peak concentrations are predicted to diminish rapidly within tens of feet of the point of release, dropping below approximately 100 mg/L within 10 minutes of the discharge. Thus, turbidity increases proximal to the point of release are expected to be highly localized and transient.

- Peak TSS concentration increases at a prospective 300-ft mixing zone boundary during either bottom-dump or clamshell rehandling placement are predicted to be less than 1 mg/L.

Assuming a reasonable worst-case 1:1 relationship between TSS and NTU, as discussed above, peak turbidity increases at the prospective 300-ft mixing zone boundary during construction of the habitat bench are predicted to be well within water quality standards. Water quality monitoring will be completed during the placement operations to verify that turbidity and other parameters are maintained below water quality criteria, as discussed in Section 6.2 of the report.

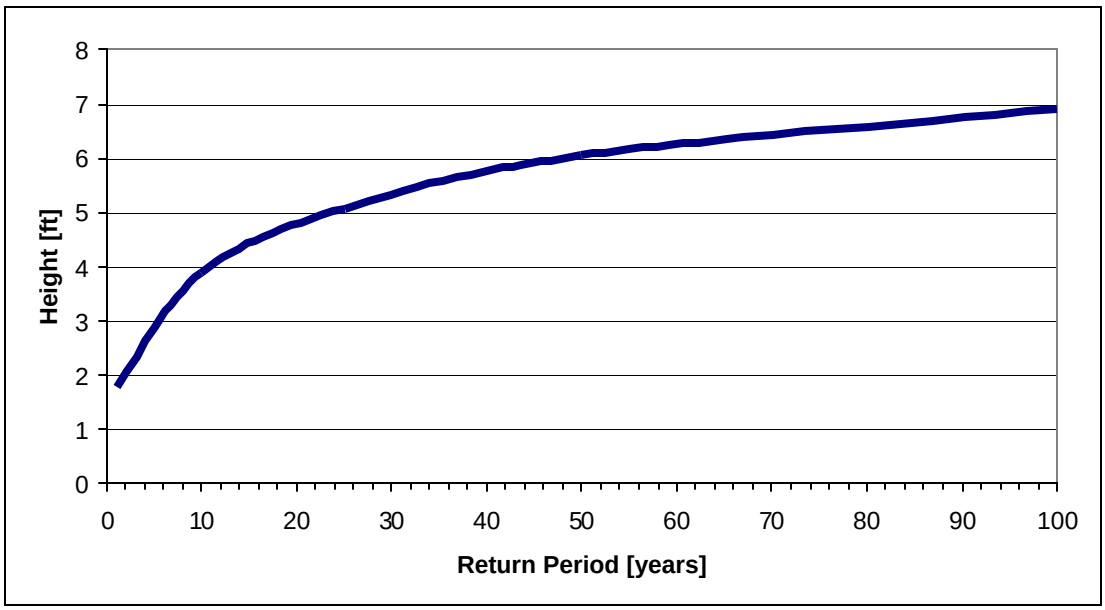
LONG-TERM STABILITY OF THE HABITAT BENCH

The proposed project will incorporate habitat mitigation and enhancement within a 2-acre bench constructed along an existing breakwater on the west side of Squalicum Outer Harbor. The proposed habitat mitigation/enhancement will be constructed using approximately 30,000 cy of clean dredged silt material beneficially reused from the Corps' Squalicum Channel maintenance dredging, currently scheduled for fall 2003 (USACE 1995). The dredged material will be placed on the waterward side of the riprap breakwater, creating a broad, shallow bench of fine-grained material conducive to colonization by a wide range of endemic organisms, potentially including eelgrass. The bench is designed to provide valuable foraging habitat for juvenile salmonids that migrate along the existing breakwater. The bench will create about 2 acres of shallow subtidal habitat at a target elevation of -4 ft MLLW. The offshore edge of the bench will slope at an angle of 5H:1V, terminating at existing depths of approximately -12 ft MLLW (see BE/EFHA Figure 16).

An important design objective for the habitat bench is to maintain its integrity with relatively little erosion during peak waves and tidally induced currents. Sediment erosion is characterized by a critical value, called the critical shear stress for initiation of motion, at which particles start to erode under this applied force. Knowledge of design waves, as well as current conditions at the proposed capping site, is required for this evaluation.

The Corps (USACE 1975) performed a wind wave analysis of the Squalicum Outer Harbor area, and used that information in the design of the existing breakwater. Baker (1997) also analyzed more recent wind data collected at the Bellingham Airport and the Georgia-Pacific (G-P) facility, which in turn was used in the design of Coast Guard improvements within the nearby I&J Waterway. Both wind wave analyses concluded that peak waves in the site area enter from the south/southwest, and would thus affect the project area. Baker also performed a wind wave probability analysis to estimate the frequency of occurrence of peak storm waves. The results of this analysis, summarized in Figure A-1, suggest that in a typical year waves up to approximately 2 ft in height may enter the project area. Under estimated 100-year storm conditions, wave heights up to roughly 7 ft are possible in the site area.

Figure 1. Wind Wave Return Periods for Inner Bellingham Bay (from Baker 1997)

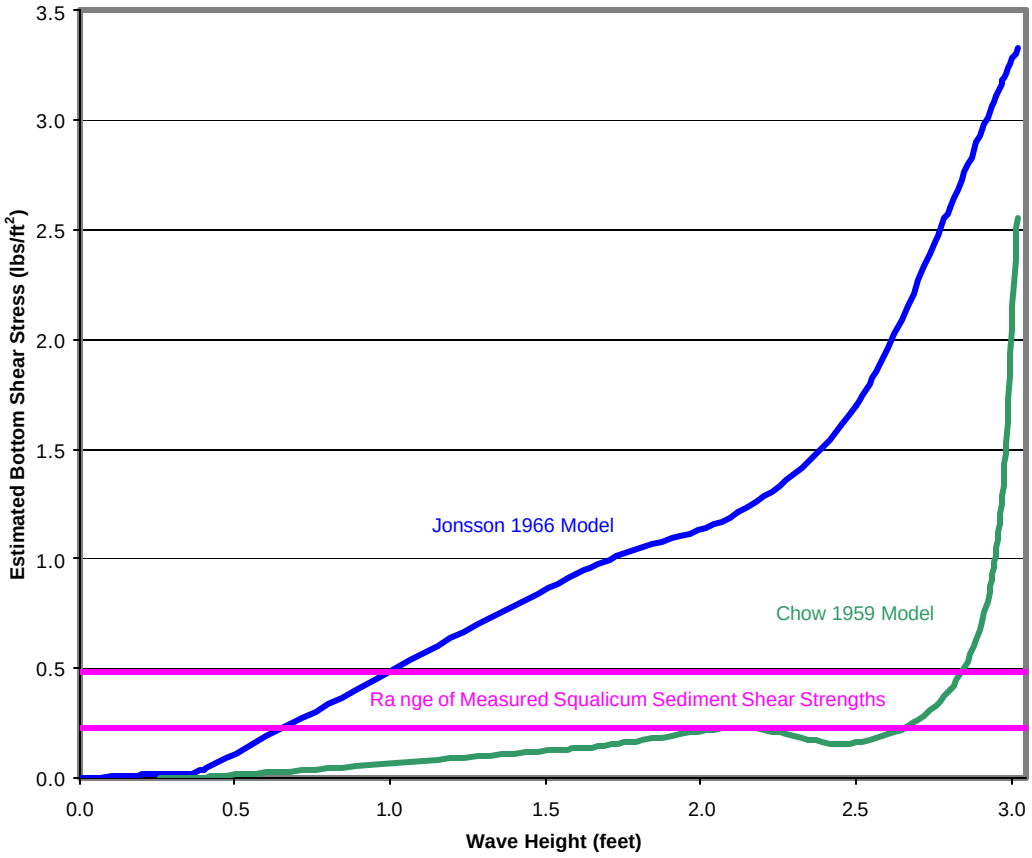


Shoaling characteristics of waves entering the site area were computed using the Automated Coastal Engineering Software (ACES; Coastal Engineering Research Center [CERC] 1984). Based on this evaluation, waves with heights less than approximately 3 ft are expected to pass into the bench area without breaking. However, waves with heights greater than approximately 3 ft, which occur at an estimated frequency of once every 5 years (Figure A-1), may potentially break on the outer slope of the constructed habitat bench, provided such peak wave events coincide with low tides of around 0 ft MLLW. Under these relatively infrequent events, the turbulence generated by the breaking waves could potentially erode portions of the outer face of the bench. Calculations of the forces exerted on the slope of the bench during such conditions indicate that armoring the outer face of the berm with one-foot-diameter rock would ensure stability of the face of the bench during peak wave events. Also of potential importance in the stability evaluation is the erosive force exerted on the habitat surface by waves entering the bench area without breaking. Based on wave periods reported by the Corps (1975) and Baker (1997), a maximum non-breaking wave height entering the bench area of approximately 3 ft was confirmed with ACES. As presented in Figure A-1, waves of this magnitude occur at an estimated frequency of once every 5 years.

The bottom orbital velocity and associated bottom shear stress produced by waves entering the -4 ft MLLW bench area were computed using ACES (CERC 1984) and associated CERC guidance provided in the *Coastal Engineering Manual.* In practice, bottom shear stress is difficult to estimate, and various approaches are available for computing this parameter based on bottom current velocity estimates and sediment friction characteristics (e.g., Chow 1959, Jonsson 1966, Gailani et al. 1999). The range in

predicted relationships between wave height and computed shear stress (incorporating wave periods from Corps 1975 and Baker 1997) on the habitat bench under low tide (0 ft MLLW) conditions is summarized is Figure A-2. The variability in shear stresses predicted by these models, all of which are based on empirical observations from a range of conditions, is evident in Figure A-2.

Figure 2. Relationship Between Wave Height and Estimated Shear Stress at -4 ft MLLW



The bottom shear stress associated with non-breaking waves was compared with results of vane shear stress analyses performed on Squalicum Channel sediments, which are available from two sources:

1) Samples collected from the Squalicum Channel in early 2000 and analyzed in the laboratory, resulting in a measured critical shear strength of 0.48 lb/ft^2 (Anchor 2000);

2) Vane shear tests of Squalicum Channel surface sediments placed in late 2000/early 2001 within the G-P Log Pond. Approximately 7 months after completion of construction, all six field vane shear tests exhibited critical shear strengths between 0.2 and 0.3 lb/ft^2 (Anchor 2001b).

The available vane shear measurements are summarized on Figure A-2, and suggest that potential movement and instability of the habitat bench (if constructed of Squalicum Channel sediments to an elevation of -4 ft MLLW) may begin to occur as wave heights exceed roughly 1 foot (based on the Jonsson 1966 model). However, the Chow (1959) relationship suggests that significant sediment transport may not occur at this bench elevation until wave heights approach 3 ft. Other analytical models predict intermediate erosion thresholds for this site (Bijker 1971; Scheffner et al. 1995). The variability in analytical model results in this case reflects the uncertainty associated with predictions of fine-grained sediment erosion in turbulent environments. However, all models predict that the bench will be stable at an elevation of -6 ft MLLW, even without armoring by eelgrass (see below).

Interpretation of these model results must necessarily rely on professional judgment. Observations of other environmental conditions and mitigating factors that influence model interpretations are summarized below:

- Existing sediment benches with similar grain size, depth, and wave exposure conditions are currently present within the site area (e.g., the existing eelgrass adjacent to the I&J Waterway). These benches have been observed to be stable or accreting over time (PIE and Anchor 1999); bench stability is enhanced by eelgrass.

- The entire site area has been characterized as a net depositional environment for silts and clays, with net sediment accumulation rates exceeding 2 centimeters per year throughout the inner Bellingham Bay region (Anchor and Hart Crowser 2000).

- Squalicum Channel sediments were recently (2000/2001) placed in the G-P Log Pond to elevations comparable to those specified for the Squalicum Outer Harbor bench (Anchor 2001a). Waves ranging in height from approximately 1.0 to 1.5 ft routinely enter the Log Pond site (Anchor 2000). Detailed bathymetric monitoring of the site area has demonstrated the stability of the sediment surface, and also revealed initial colonization by eelgrass approximately 18 months after construction (Anchor 2002b). A similar potential for eelgrass colonization is expected for the new habitat site.

- Given that peak waves in the prospective habitat bench area enter from the southwest, perpendicular to the orientation of the existing breakwater, sediment eroded from the bench is likely to be redistributed in the immediate vicinity of the point of erosion. Given the wave and wind characteristics and site bathymetric configuration, strong longshore currents capable of transporting sediments significantly beyond the outer boundaries of the bench are unlikely to occur. Thus, potential sediment deposition from bench erosion is likely to be confined to the edges of the bench.

Based on these considerations, it is highly likely that the majority of the prospective habitat bench would be stable during and following construction, without the need for any constructed armoring.

Local redistribution of the sediment surface should be anticipated, particularly during the first year following construction as sediment consolidation and dynamic equilibrium processes begin to establish a stable configuration. Based on observations at the G-P Log Pond (Anchor 2002b), eelgrass

may begin to immediately colonize the bench at the target -4 ft MLLW elevation, ultimately enhancing surface sediment stability. Considering regional eelgrass distributions (PIE and Anchor 1999), the stabilizing benefits of eelgrass are expected to occur at bench elevations as deep as -6 ft MLLW.

Should significant erosion of parts of the habitat bench be observed during this initial equilibration and colonization period (see BE/EFHA conservation measures), several alternative stabilizing actions could be implemented:

- Portions of the bench could be renourished using Squalicum Channel sediments available during the next scheduled Corps maintenance dredging of the waterway;

- Portions of the bench, particularly in areas of more intense erosion (e.g., along the outer face of the bench) could be armored with 1-foot-diameter rock. Because of the increased friction (turbulence) created by the armor material, this would also reduce the height of waves entering the habitat bench; or

- An underwater berm could be constructed along the outer face of the bench (following consolidation of these materials) that would attenuate the larger (and potentially erosive) incoming waves.

However, stabilizing actions, particularly those that include rock armoring, could potentially adversely affect habitat functions.

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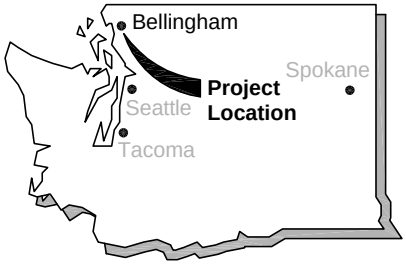

Site:	Gate 2 Boatyard, Squalicum Harbor Port of Bellingham
Address:	2652 Harbor Loop Drive (Intersection Squalicum Way and Harbor Loop Drive) Bellingham, Washington 98225
Directions:	(From Seattle, Washington) I-5 North Exit No. 253 (Lakeway Dr.) Right on King St. Right on Lakeway Dr./E. Holly St. Left on "F" St. Right on Roeder Ave. Left on Squalicum Way Left on Harbor Loop Drive
Latitude: Longitude:	48° 45' 47" 122° 30' 36"

0 2000 4000

Approximate Scale in Feet

Port of Bellingham/Gate 2 Boatyard/Compliance Monitoring Plan | T:\001\027\152\Comp Mon Plan\Fig1.dwg (A) "Figure 1" 4/3/2003

LANDAU ASSOCIATES

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Vicinity Map

Figure
1

Site: Gate 2 Boatyard, Squalicum Harbor
Port of Bellingham

Latitude: 48° 45' 47"
Longitude: 122° 30' 36"

Address: 2652 Harbor Loop Drive
(Intersection Squalicum Way and
Harbor Loop Drive)
Bellingham, Washington 98225

0 400 800

Approximate Scale in Feet

Port of Bellingham/Gate 2 Boatyard/Compliance Monitoring Plan | T:\001\027\152\Comp Mon Plan\Fig2.dwg (A) "Figure 2" 4/3/2003

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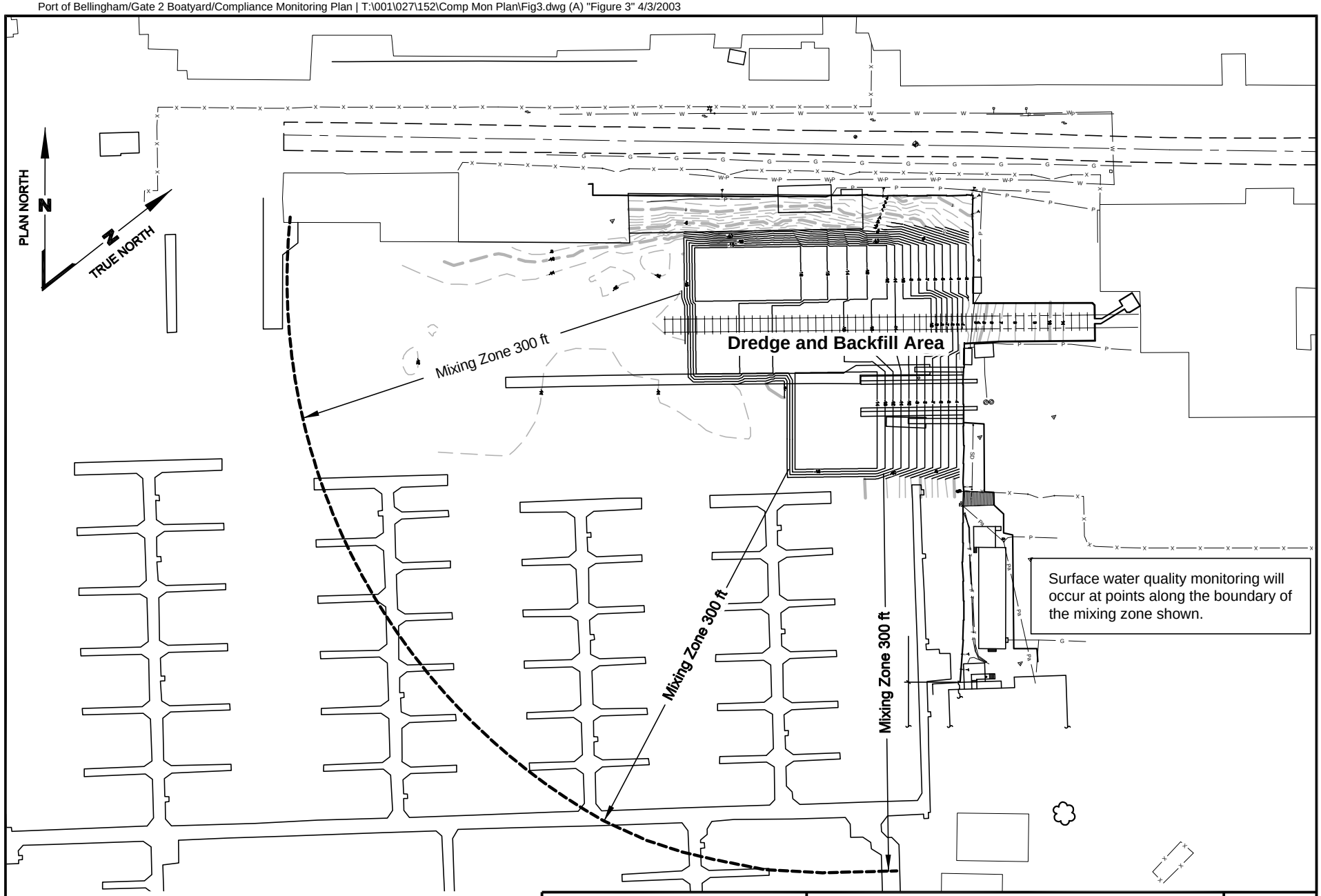
Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**Project Area Site Map**	Figure **2**



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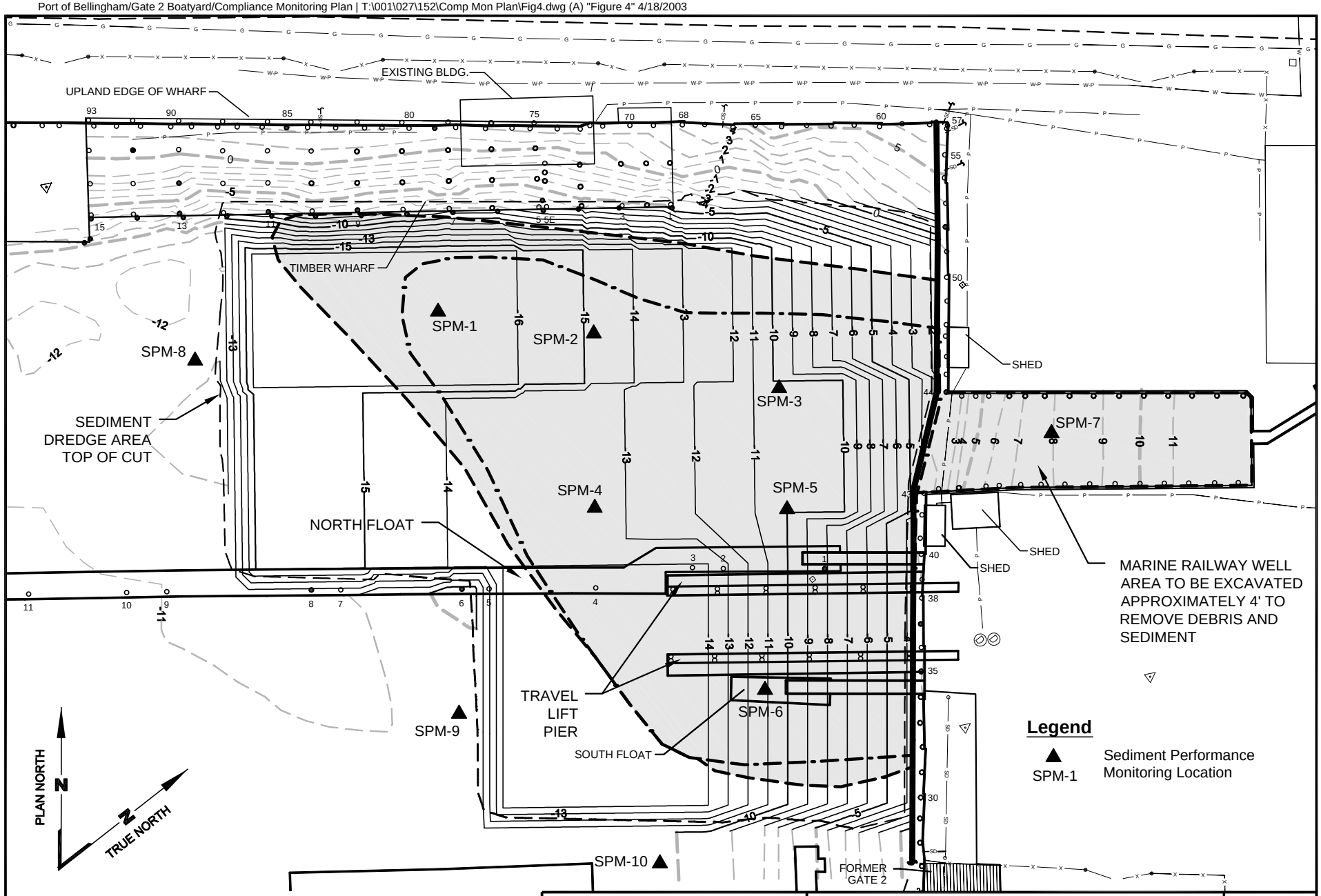
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Surface Water Mixing Zone
Dredging and Backfilling Activities

Figure
3



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0 40 80

Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Performance Monitoring Locations with Post Sediment Dredging Contours

Figure 4

TABLE 1
SEDIMENT CLEANUP ACTION LEVELS

Analyte	SQS (a)
Metals (mg/kg dry weight)	
Arsenic	57
Cadmium	5.1
Chromium	260
Copper	390
Lead	450
Mercury	0.41
Silver	6.1
Zinc	410
Bulk Organotin (ug/kg dry weight)	
Tributyltin (as TBT ion)	79 (b)
PAHs (mg/kg OC) (c)	
Naphthalene	99
Acenaphthylene	66
Acenaphthene	16
Fluorene	23
Phenanthrene	100
Anthracene	220
2-Methylnaphthalene	38
LPAH (d, e)	370
Fluoranthene	160
Pyrene	1000
Benzo(a)anthracene	110
Chrysene	110
Total Benzofluoranthenes (d,f)	230
Benzo(a)pyrene	99
Indeno(1,2,3-c,d)pyrene	34
Dibenz(a,h)anthracene	12
Benzo(g,h,i)perylene	31
HPAH (d,g)	960
SVOCs (mg/kg OC) (c)	
Dimethylphthalate	53
Diethylphthalate	61
Di-n-Butylphthalate	220
Butylbenzylphthalate	4.9
bis(2-Ethylhexyl)phthalate	47
Di-n-octyl phthalate	58
Dibenzofuran	15
N-Nitrosodiphenylamine	11

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).

(b) 79 µg/kg equals site-specific no effects TBT bulk sediment cleanup level.

(c) All organic data are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.

(d) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:

(i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.

(ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.

(e) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.

(f) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.

(g) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.

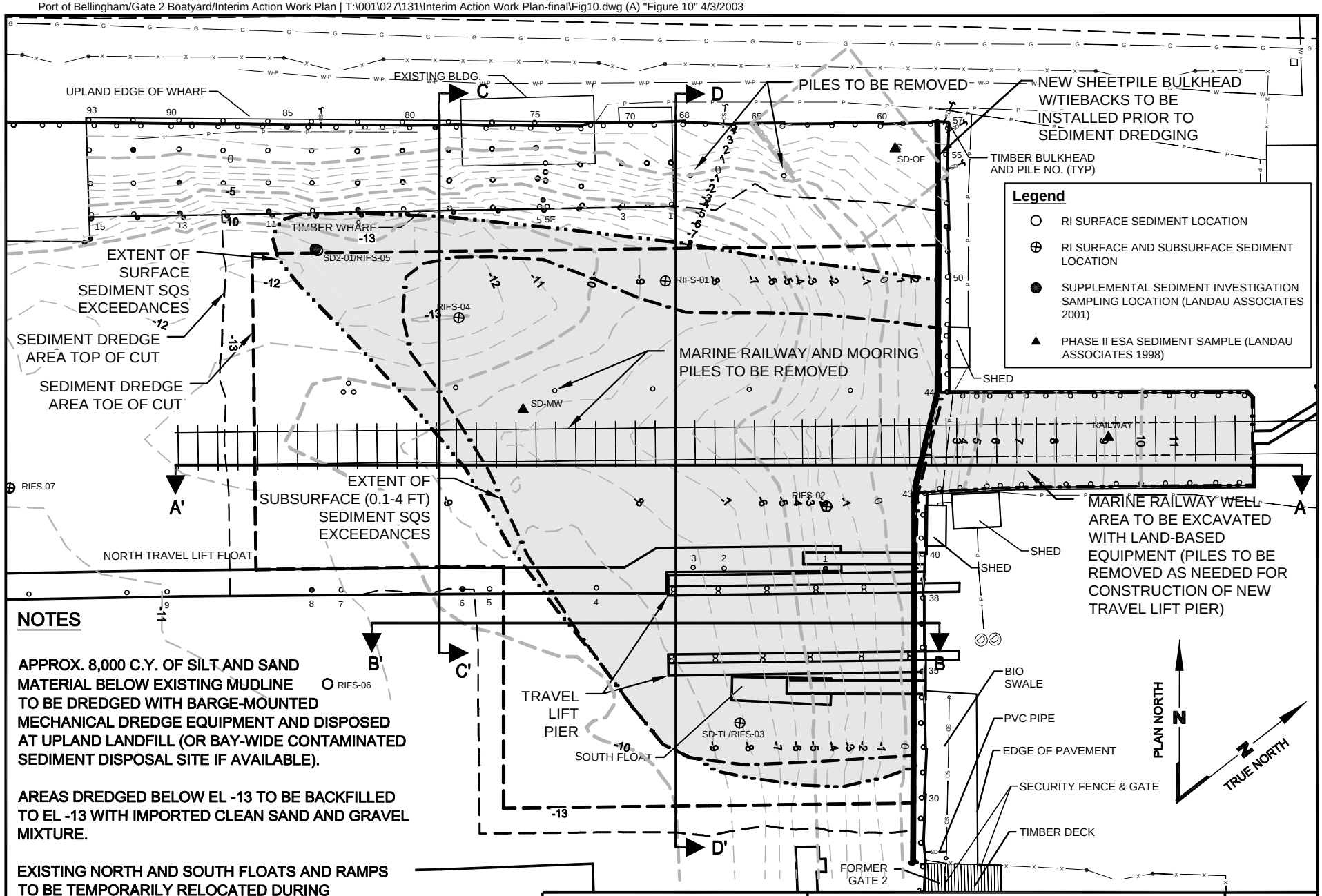
Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1131\Interim Action Work Plan-final\Fig1.dwg (A) "Figure 1" 4/3/2003

LANDAU ASSOCIATES

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Vicinity Map

Figure
1



NOTES

APPROX. 8,000 C.Y. OF SILT AND SAND MATERIAL BELOW EXISTING MUDLINE TO BE DREDGED WITH BARGE-MOUNTED MECHANICAL DREDGE EQUIPMENT AND DISPOSED AT UPLAND LANDFILL (OR BAY-WIDE CONTAMINATED SEDIMENT DISPOSAL SITE IF AVAILABLE).

AREAS DREDGED BELOW EL -13 TO BE BACKFILLED TO EL -13 WITH IMPORTED CLEAN SAND AND GRAVEL MIXTURE.

EXISTING NORTH AND SOUTH FLOATS AND RAMPS TO BE TEMPORARILY RELOCATED DURING DREDGING ACTIVITIES.

LANDAU ASSOCIATES

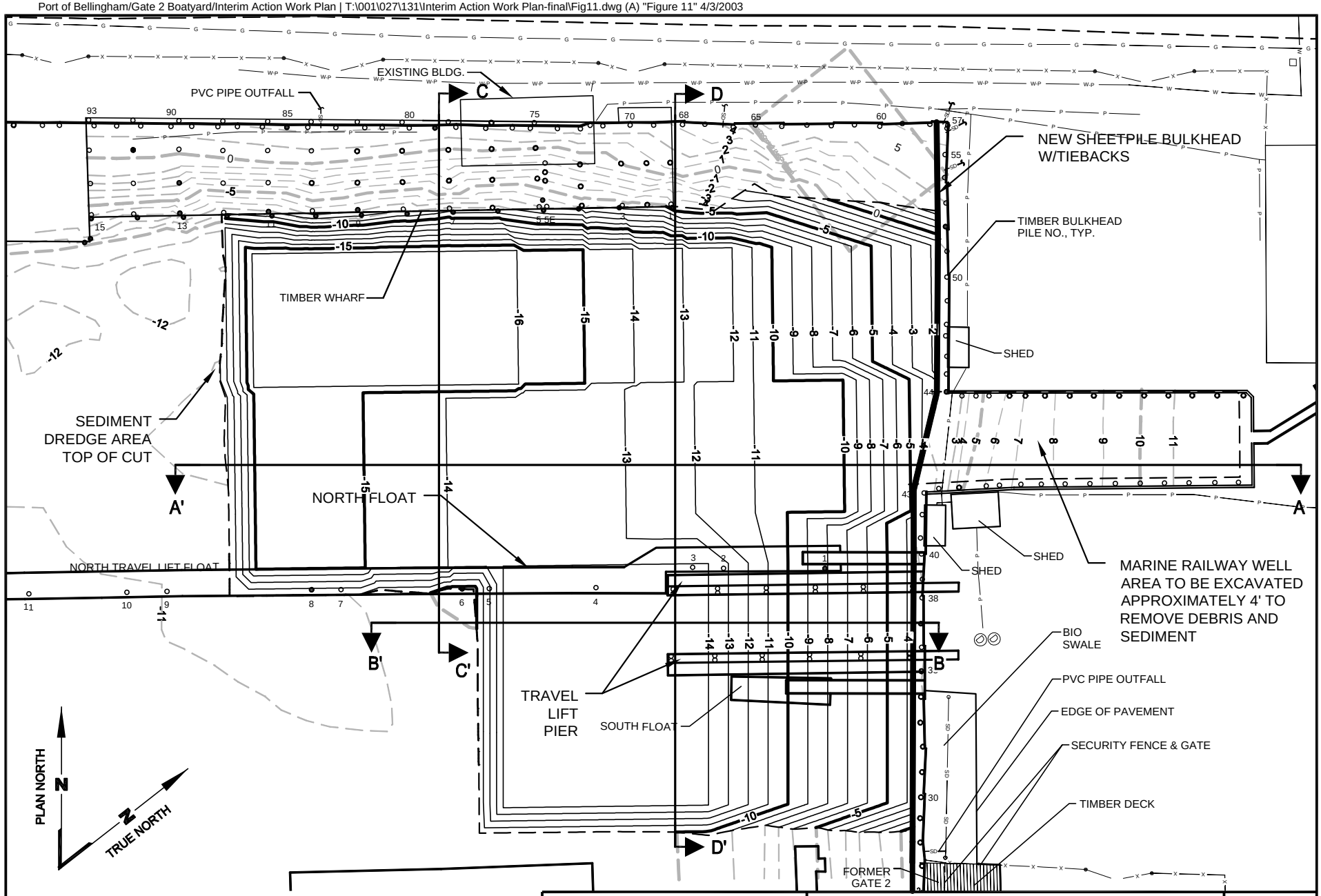
0 40 80

Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Dredging Areas

Figure 10



0 40 80

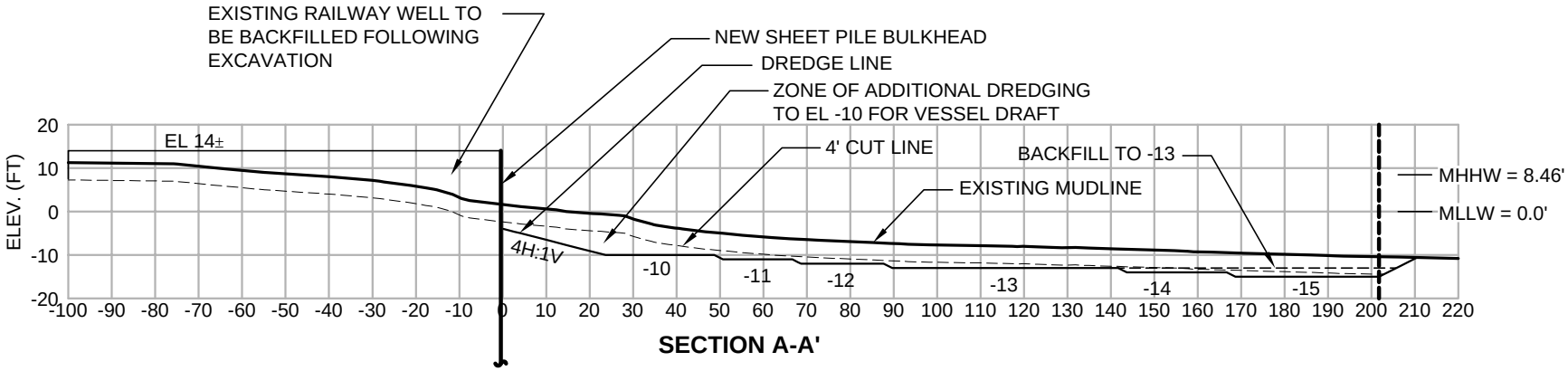
Scale in Feet

LANDAU ASSOCIATES

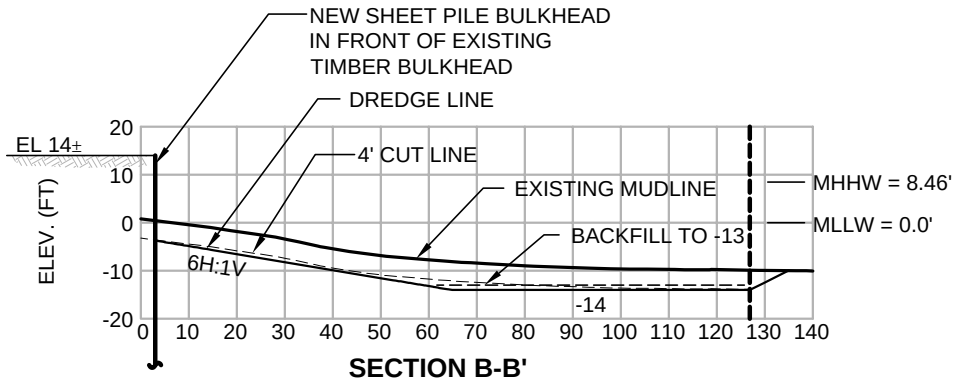
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Post Sediment Dredging Contours

Figure
11



SECTION A-A'



SECTION B-B'

0 40 80

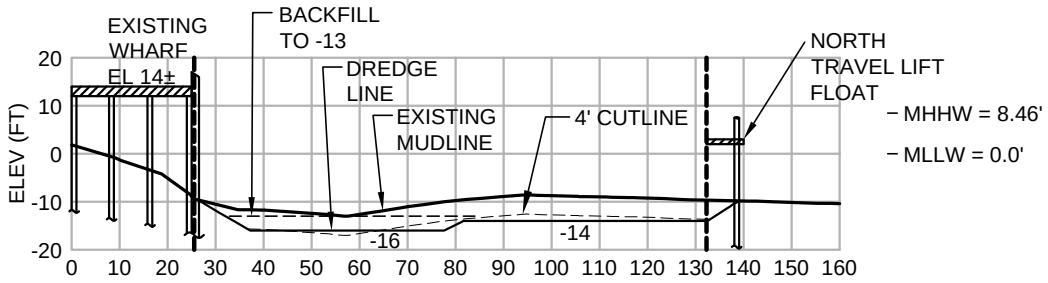
Scale in Feet

LANDAU ASSOCIATES

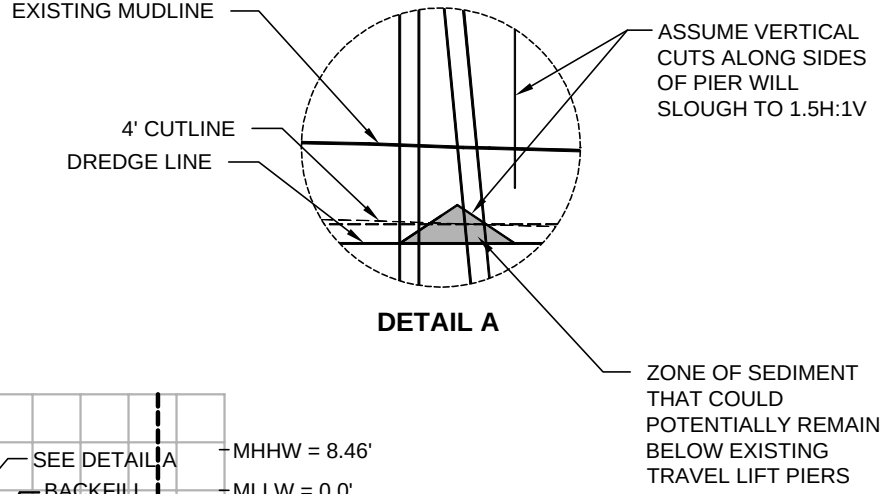
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Dredging Cross Sections

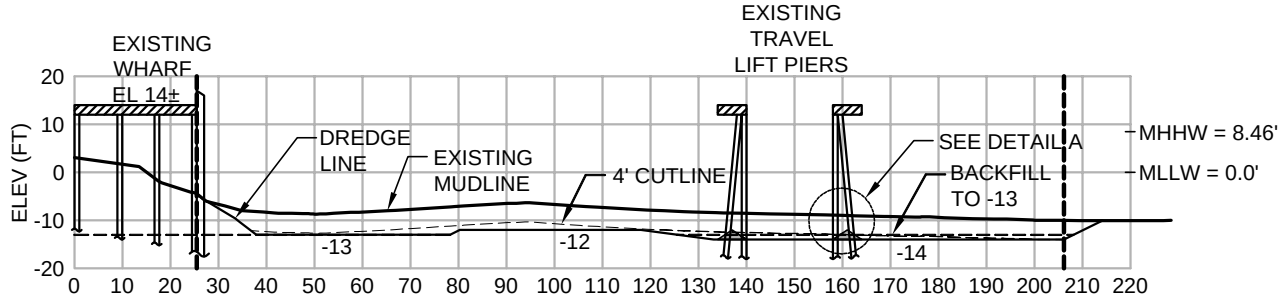
Figure
12



SECTION C-C'



DETAIL A



SECTION D-D'

LANDAU ASSOCIATES

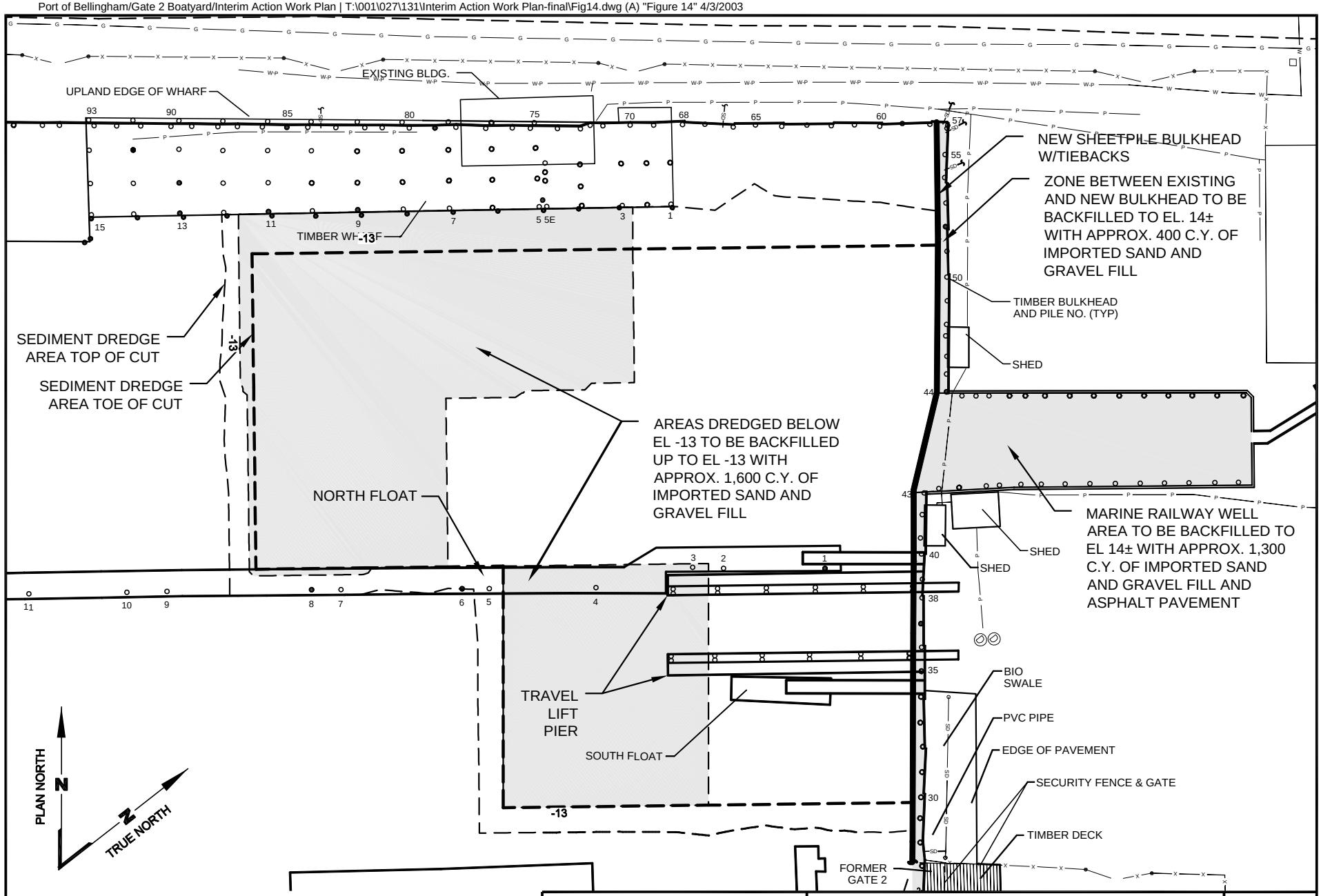
0 40 80

Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Dredging Cross Sections

Figure
13

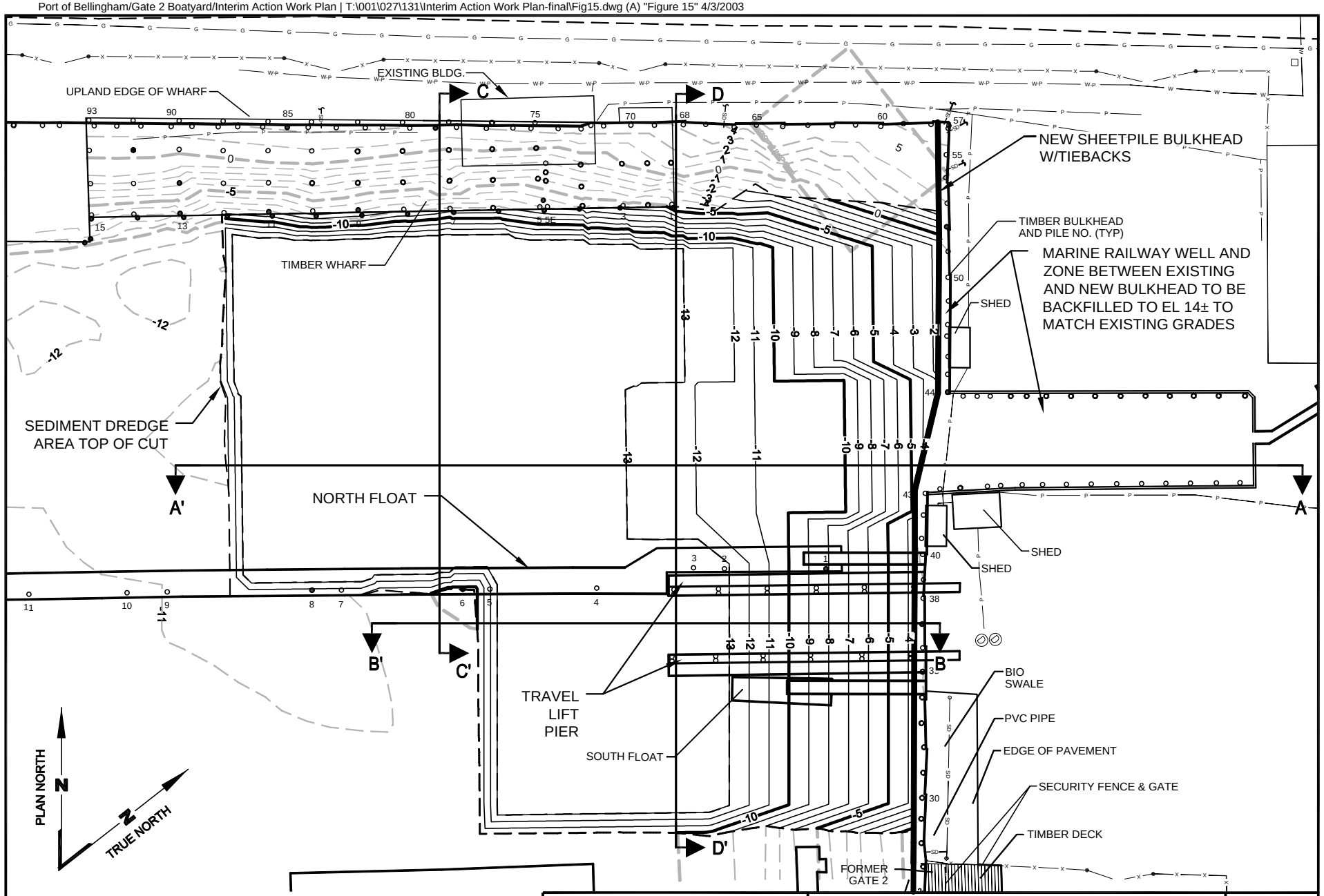


LANDAU ASSOCIATES

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Backfill Areas

Figure
14



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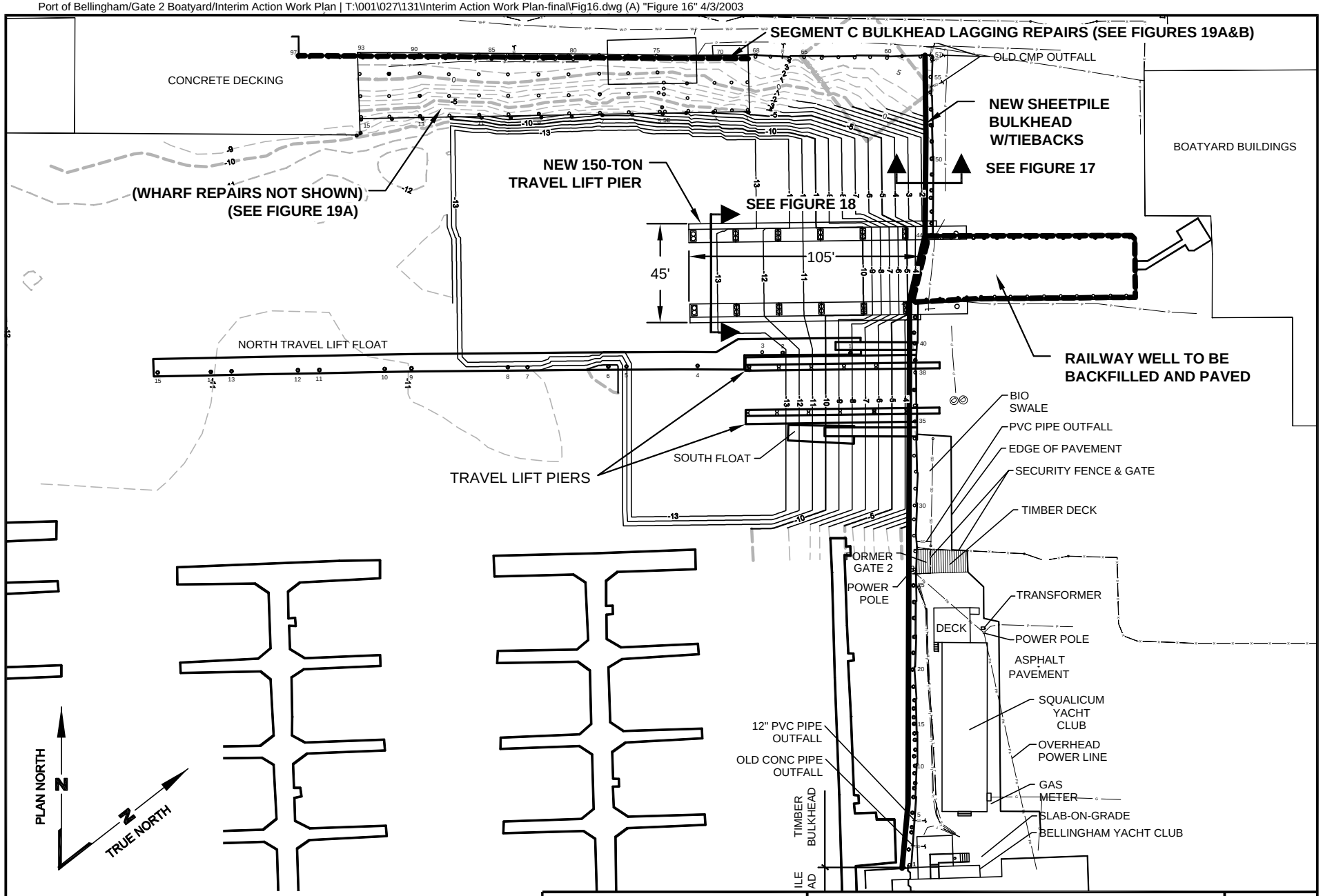
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Post Sediment Dredging and Backfilling Contours

Figure
15



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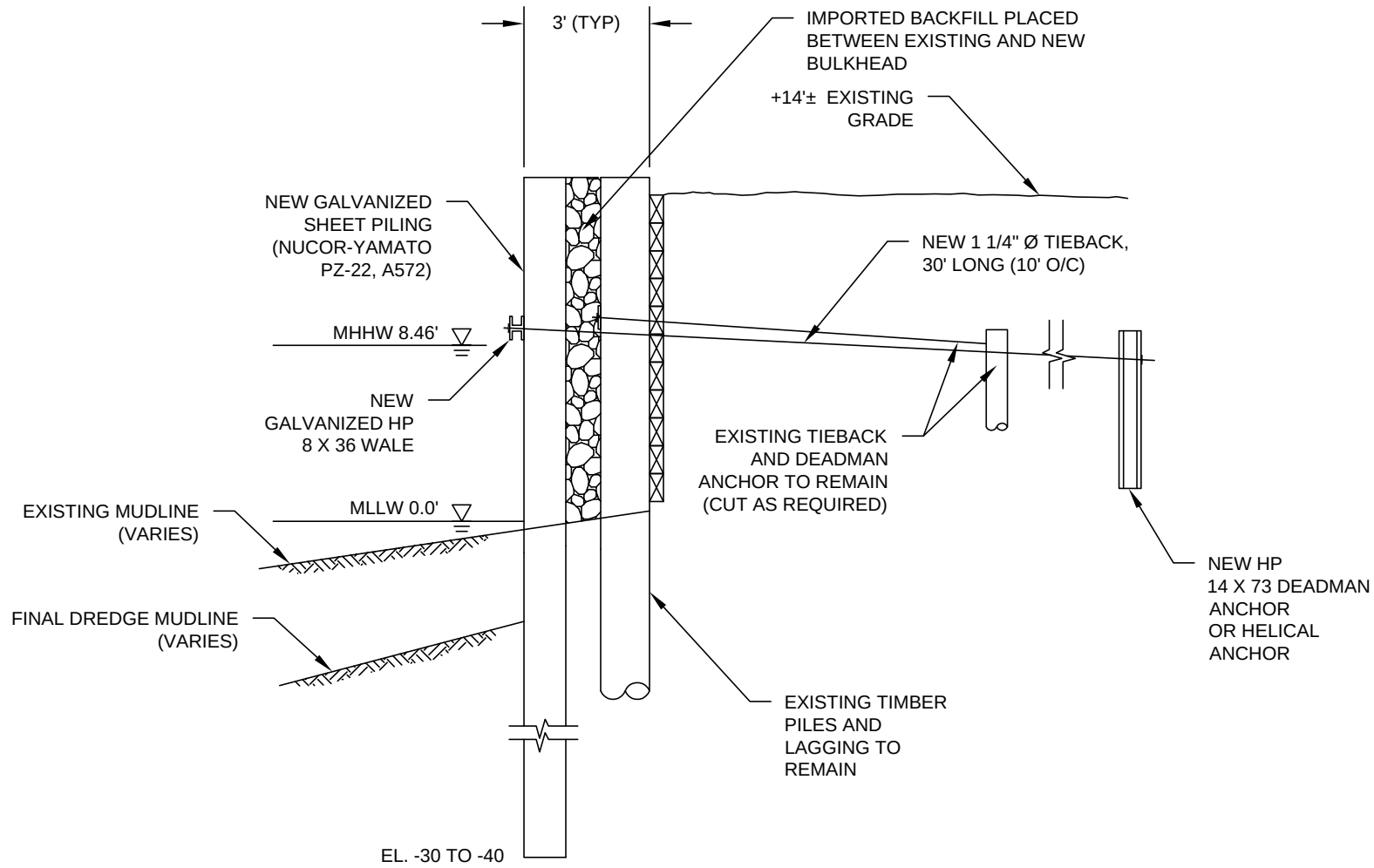
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Planned Site Improvements

Figure
16



LANDAU ASSOCIATES

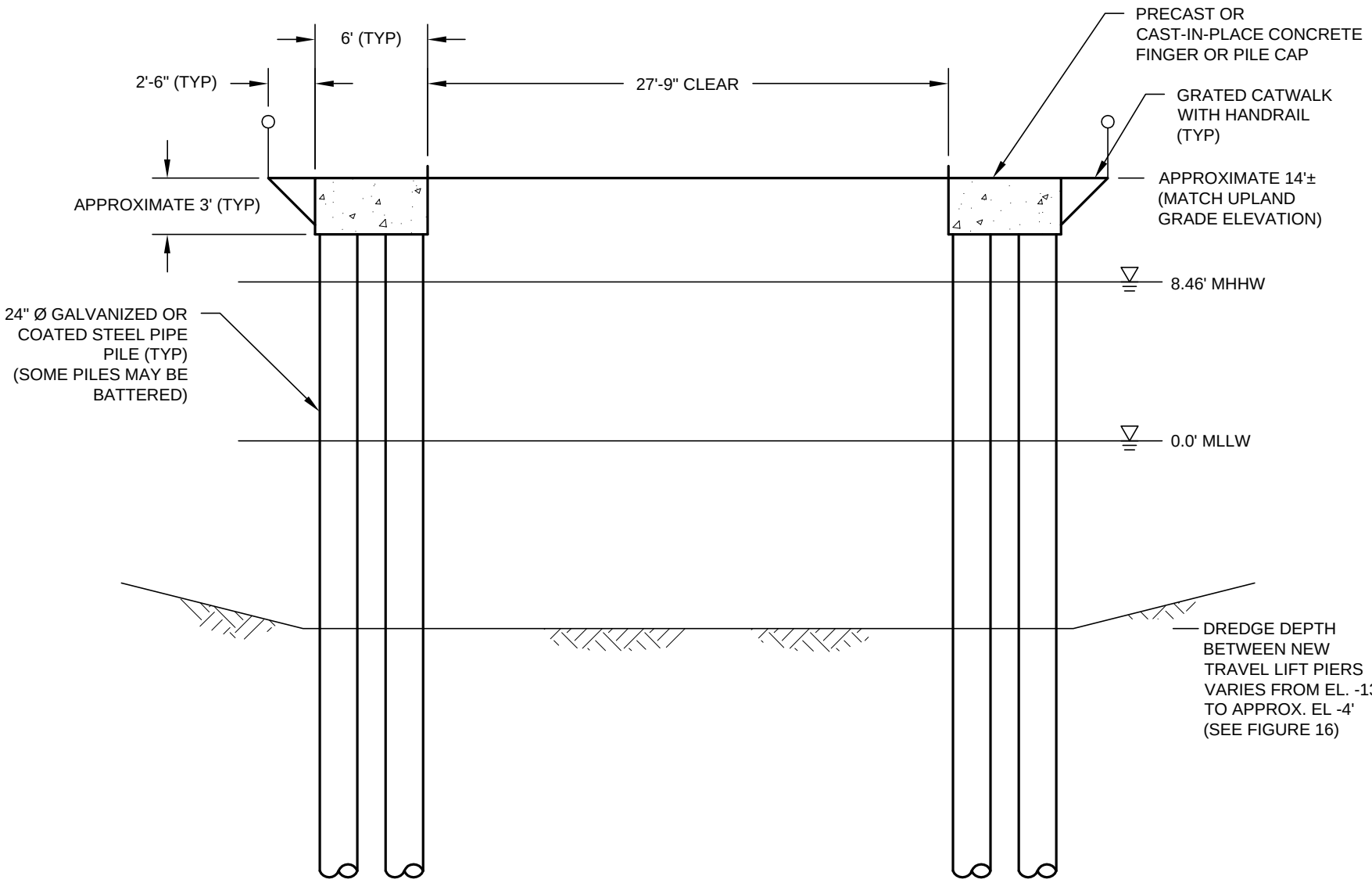
0 4 8

Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

New Sheet Pile Bulkhead

Figure
17



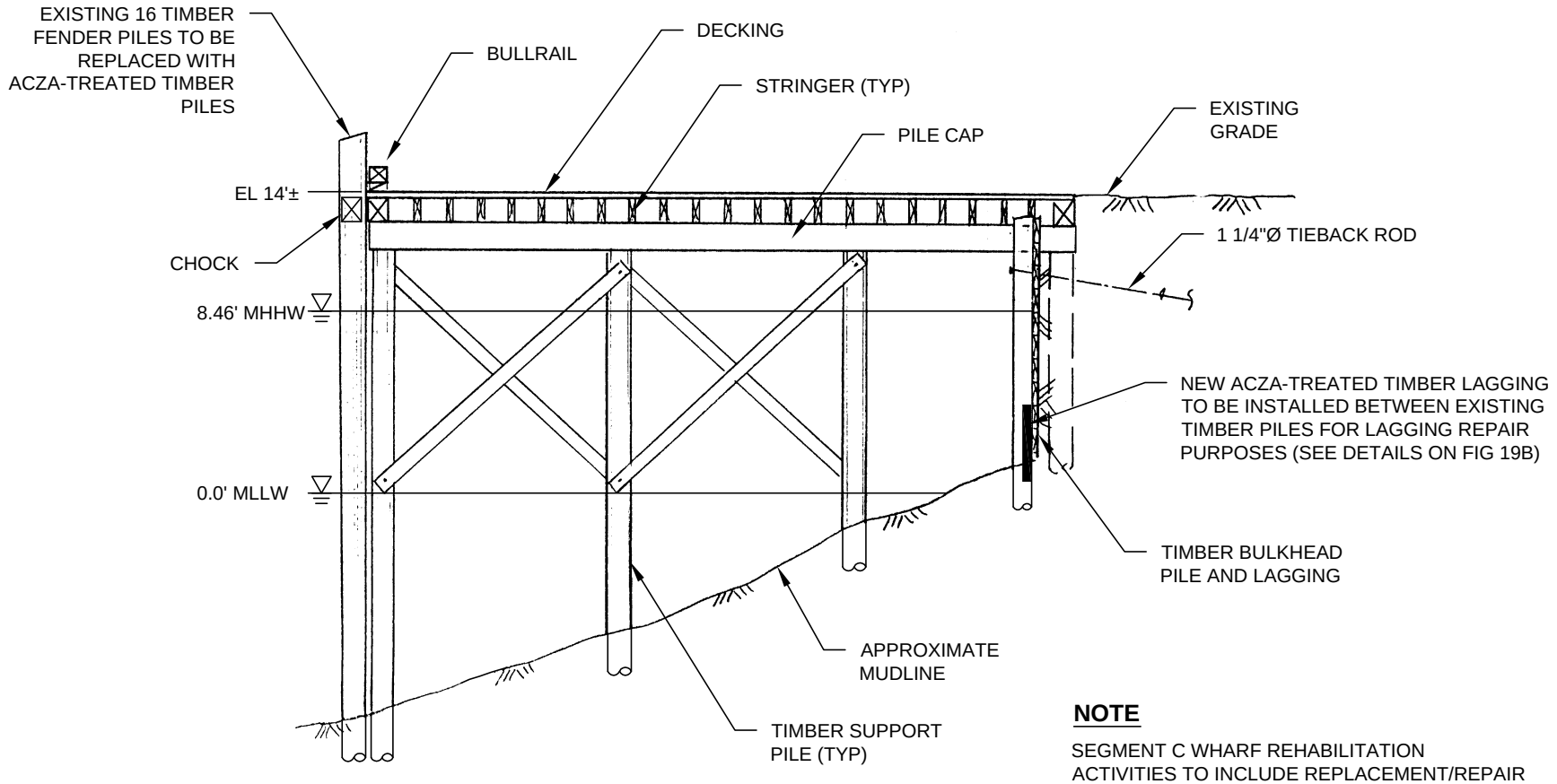
LANDAU ASSOCIATES

0 8 16
Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

150 Ton Travel Lift Pier Cross Section

Figure
18



NOTE

SEGMENT C WHARF REHABILITATION ACTIVITIES TO INCLUDE REPLACEMENT/REPAIR OF CERTAIN PILE CAPS, STRINGERS, DECKING AND BULLRAILING, AS WELL AS INSTALLATION OF ADDITIONAL CROSS-BRACING TIMBERS.

LANDAU ASSOCIATES

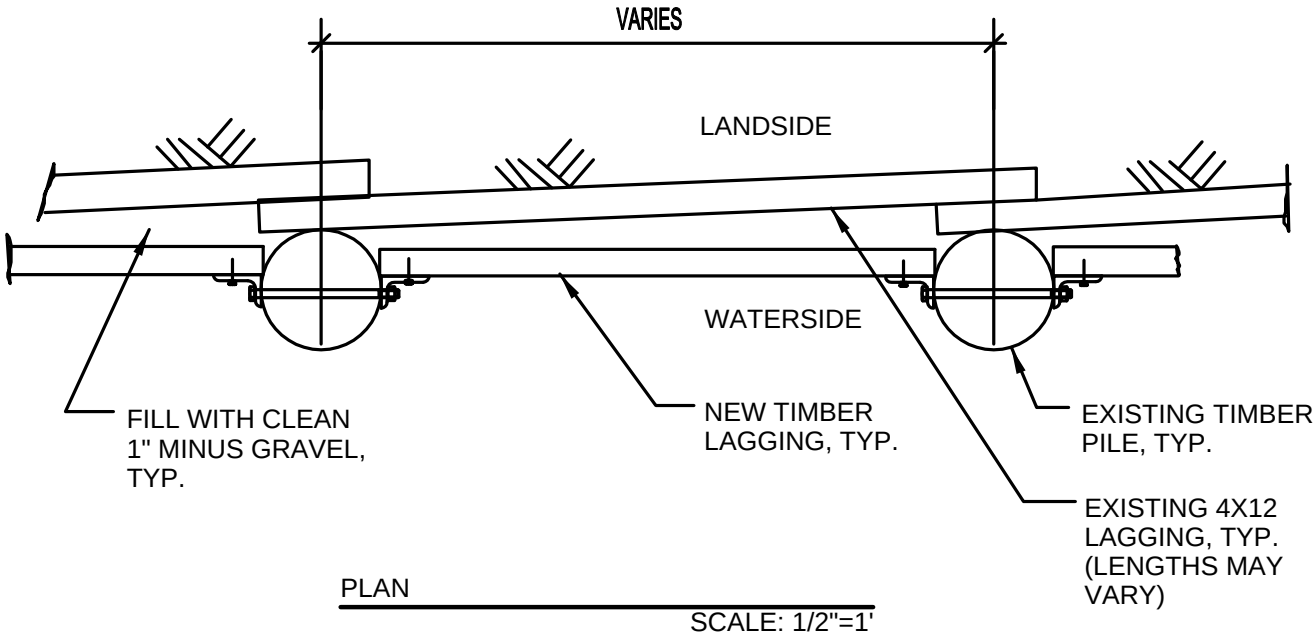
0 8 16

Approximate Scale in Feet

Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

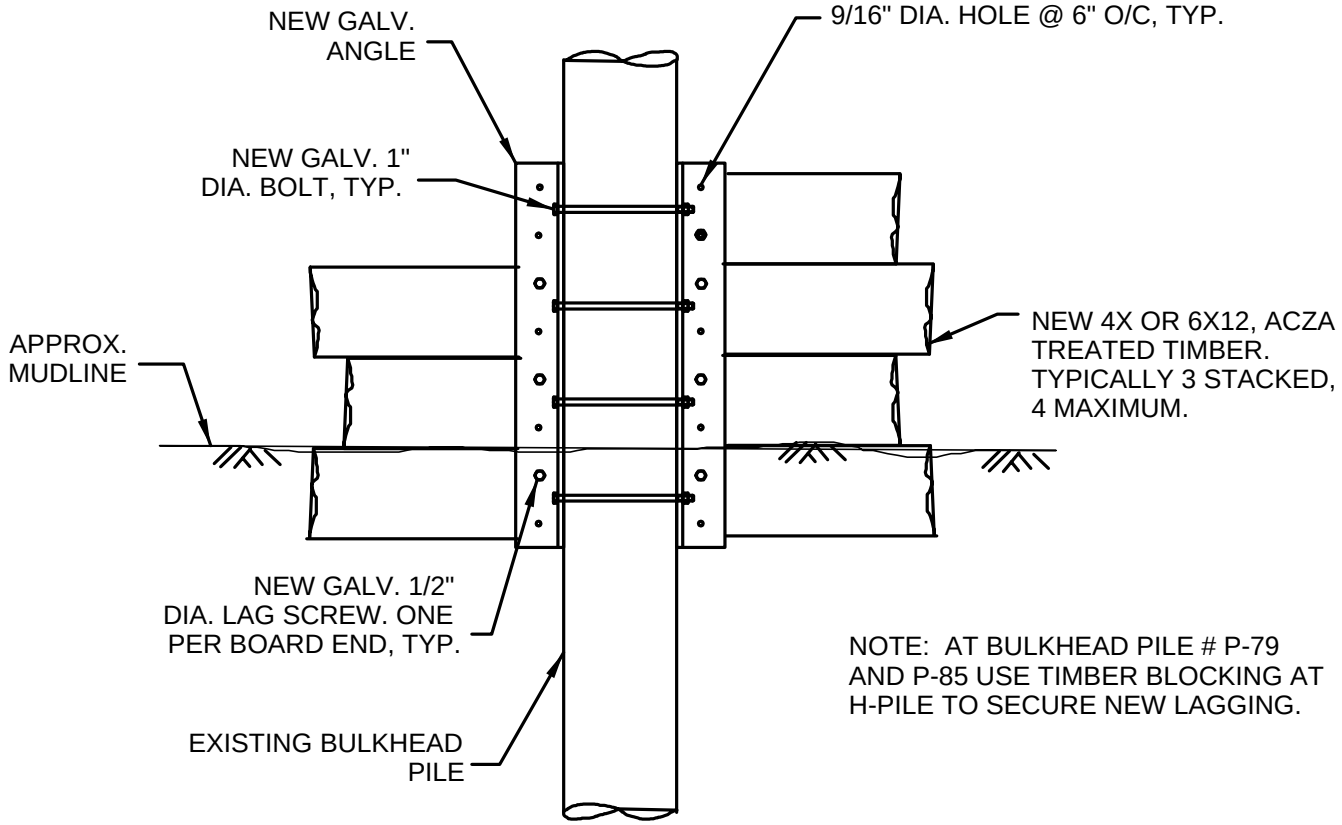
Segment C Wharf Configuration and Bulkhead Repair

Figure
19A



PLAN

SCALE: 1/2"=1'



NOTE: AT BULKHEAD PILE # P-79 AND P-85 USE TIMBER BLOCKING AT H-PILE TO SECURE NEW LAGGING.

ELEVATION

SCALE: 1/2"=1'

0 1 2

Scale in Feet

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POB Gate 2 Boatyard
Bellingham, Washington

Timber Bulkhead Pile Repair Detail

Figure
19B

Site: Gate 2 Boatyard, Squalicum Harbor
Port of Bellingham
(Former Weldcraft Steel & Marine Site)

Latitude: 48° 45' 47"
Longitude: 122° 30' 36"

Address: 2652 Harbor Loop Drive
(Intersection Squalicum Way and
Harbor Loop Drive)
Bellingham, Washington 98225

0 400 800

Approximate Scale in Feet

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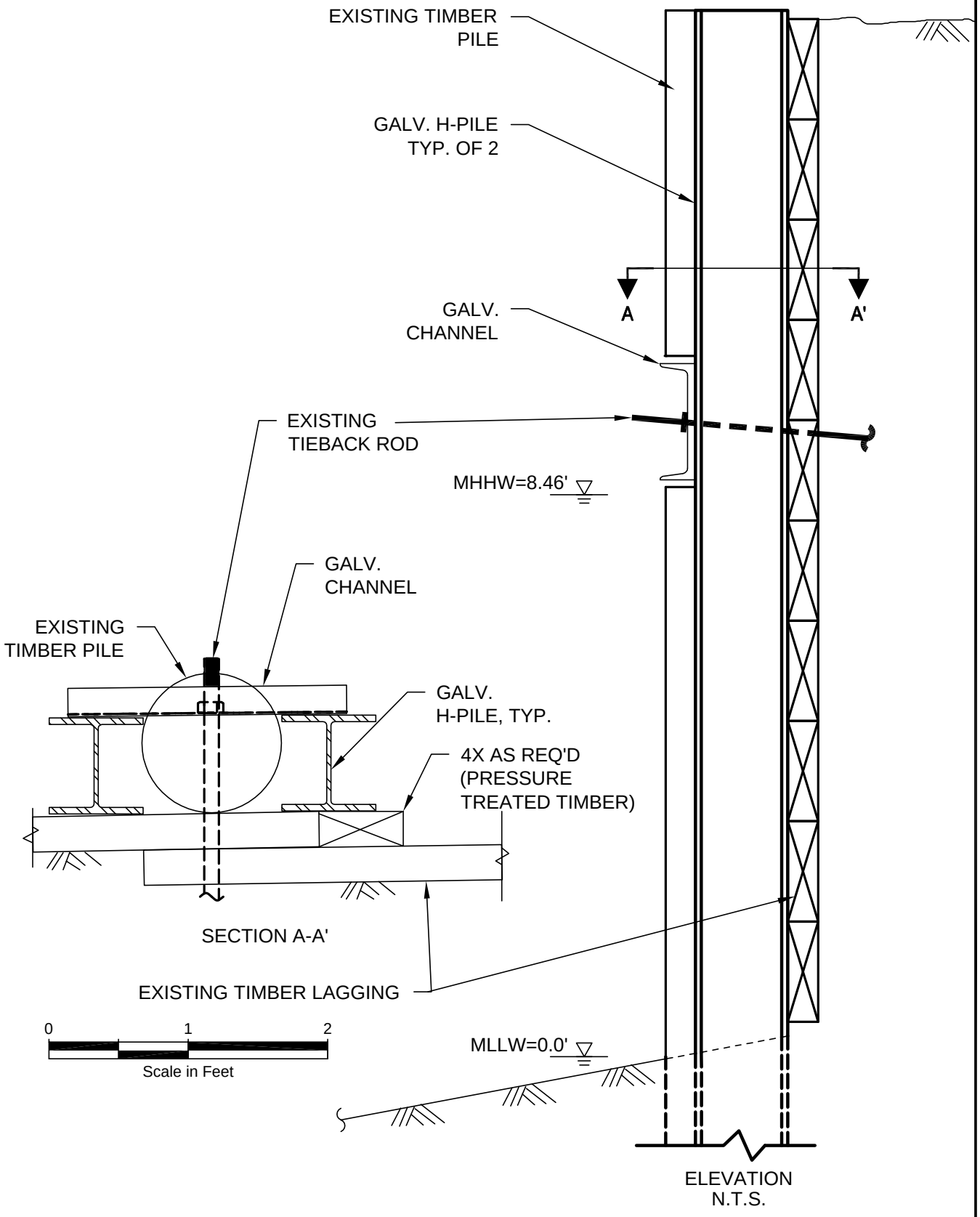
Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**Project Area Site Map**	Figure **2**

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1131\Interim Action Work Plan-final\Fig2.dwg (A) "Figure 2" 4/3/2003



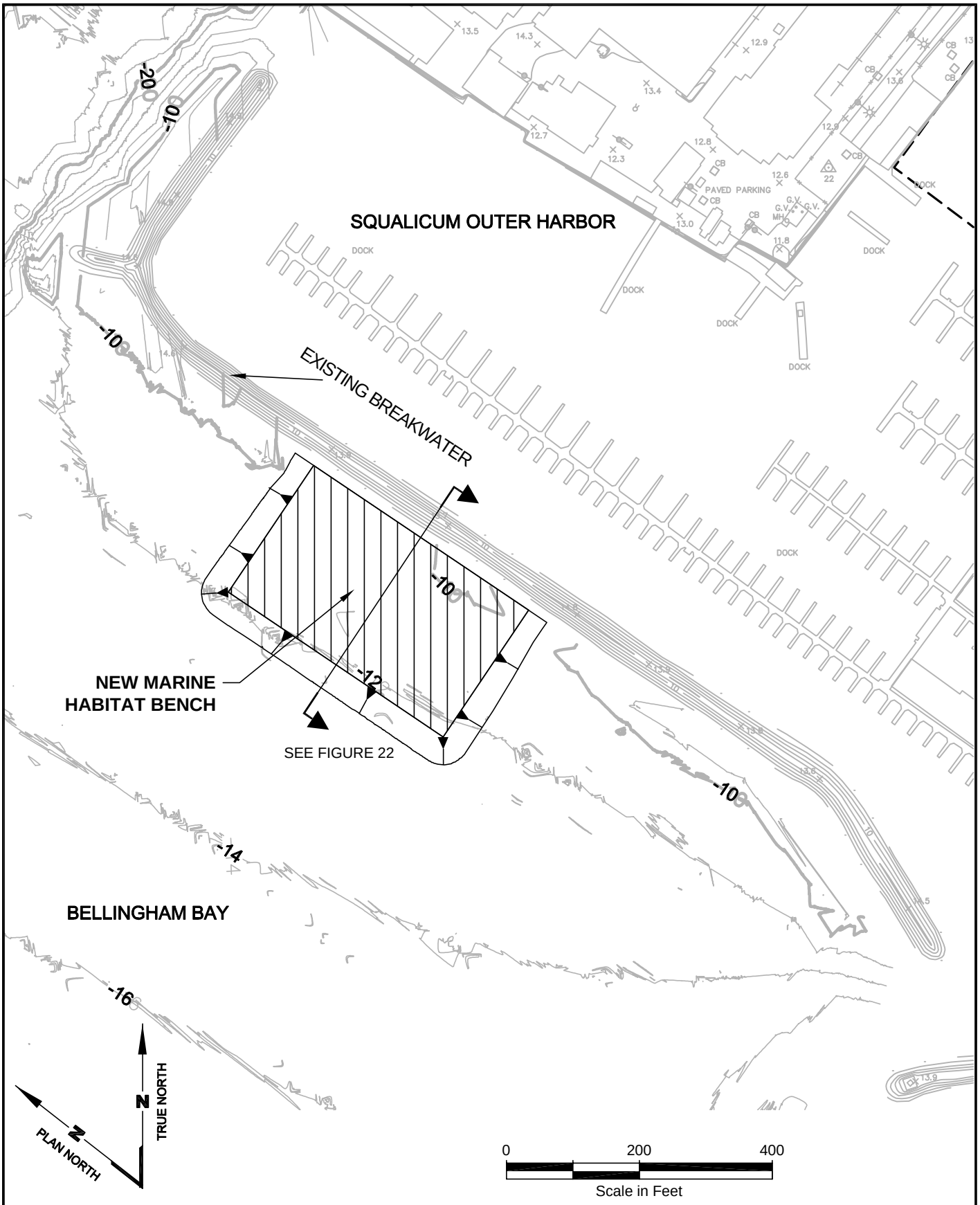
Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1311\Interim Action Work Plan-final\Fig20.dwg (A) "Figure 20" 4/3/2003

LANDAU ASSOCIATES

POB Gate 2 Boatyard
Bellingham, Washington

Timber Bulkhead Pile Repair Detail

Figure
20

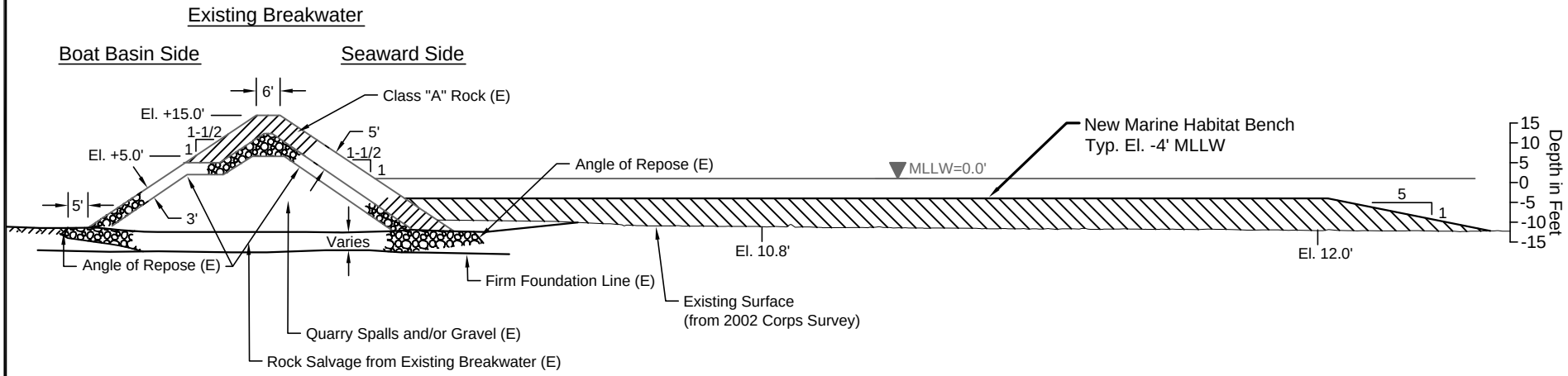


Adapted from: Anchor Environmental

Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**New Marine Habitat**	Figure 21

LANDAU ASSOCIATES

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1311\Interim Action Work Plan-final\Fig21.dwg (A) "Figure 21" 4/3/2003

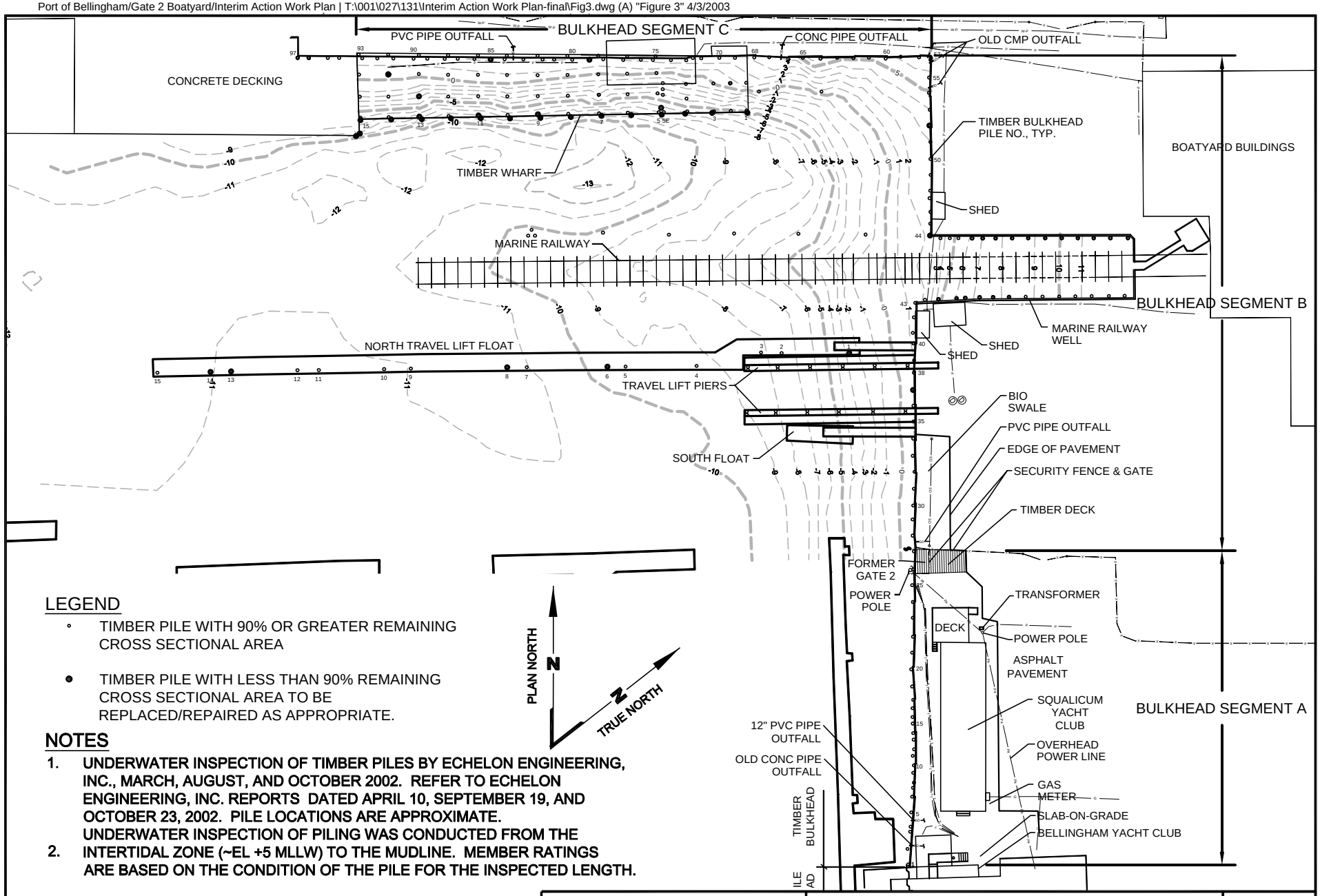


(E)=Existing

Adapted from: Anchor Environmental

LANDAU ASSOCIATES

Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**New Marine Habitat Site Cross Section**	Figure **22**



LEGEND

- ◦ TIMBER PILE WITH 90% OR GREATER REMAINING CROSS SECTIONAL AREA
- ● TIMBER PILE WITH LESS THAN 90% REMAINING CROSS SECTIONAL AREA TO BE REPLACED/REPAIRED AS APPROPRIATE.

NOTES

1. UNDERWATER INSPECTION OF TIMBER PILES BY ECHELON ENGINEERING, INC., MARCH, AUGUST, AND OCTOBER 2002. REFER TO ECHELON ENGINEERING, INC. REPORTS DATED APRIL 10, SEPTEMBER 19, AND OCTOBER 23, 2002. PILE LOCATIONS ARE APPROXIMATE.
2. UNDERWATER INSPECTION OF PILING WAS CONDUCTED FROM THE INTERTIDAL ZONE (~EL +5 MLLW) TO THE MUDLINE. MEMBER RATINGS ARE BASED ON THE CONDITION OF THE PILE FOR THE INSPECTED LENGTH.

0 60 120
Scale in Feet

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Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Existing Site Conditions

Figure
3

PLAN NORTH
N
TRUE NORTH

Burlington Northern Railway
Roeder Avenue
Location of Former Gasoline UST
Former Septic Tank
Former Dispenser Island Pad
Welding Building
Squalicum Way
Office
BLDG.1
Steel & Machine Shop
Shop & Carpenter
BLDG.2
Fabrication
BLDG.3
Finishing
Layup
West Work Yard
Marine Way Dock Shed
Marine Railway
Donkey Shed
Catch Basin (No. 1)
Harbor Loop Drive
Catch Basin (No. 2)
North Travel Lift Float
Travel Lift Pier
Dry Storage Yard
(Unpaved)
Paint Shed
Catch Basin with Welded Grate (No. 3)
East Work Yard
Bellingham Bay

Legend

- Fence
- Railroad
- Structures
- Catch Basin
- Pilings

0 80 160
Scale in Feet

Note

See Figure 3 for details of existing site conditions in the marine and nearshore areas of the site.

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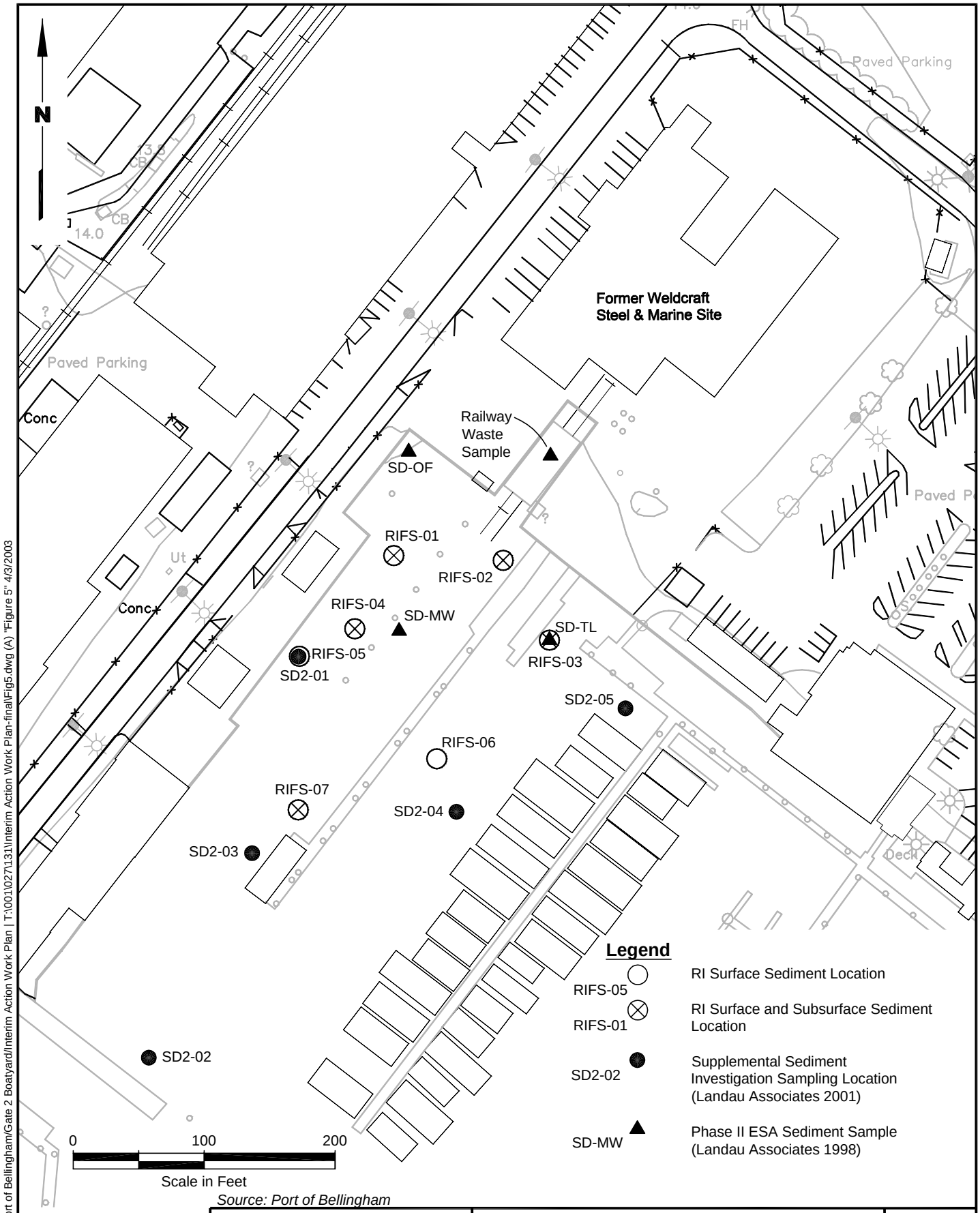
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Upland Area Site Features

Figure
4

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1131\Interim Action Work Plan-final\Fig4.dwg (A) "Figure 4" 4/3/2003



Source: Port of Bellingham

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1131\Interim Action Work Plan-final\Fig5.dwg (A) "Figure 5" 4/3/2003

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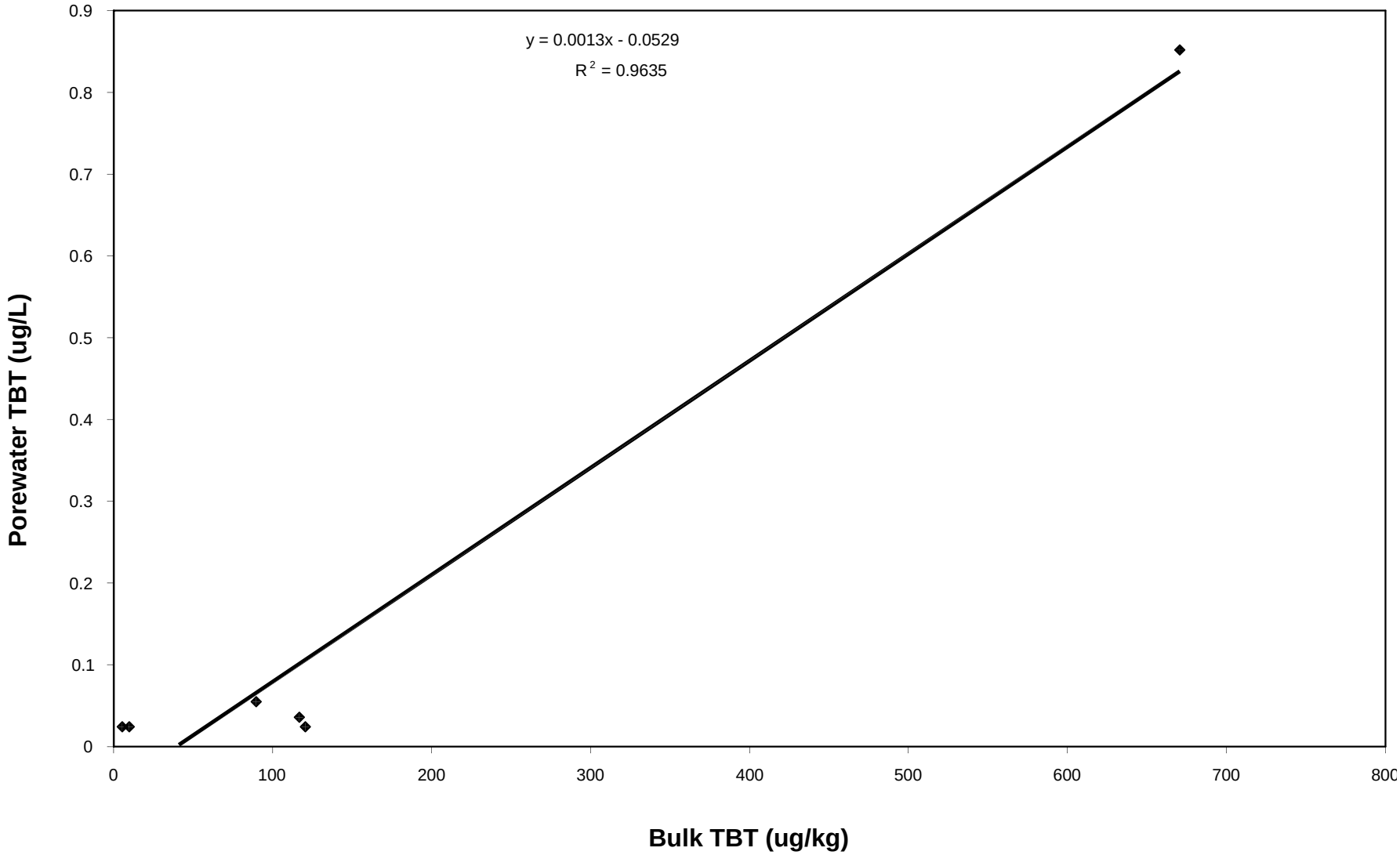
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Sediment Sampling Locations

Figure
5



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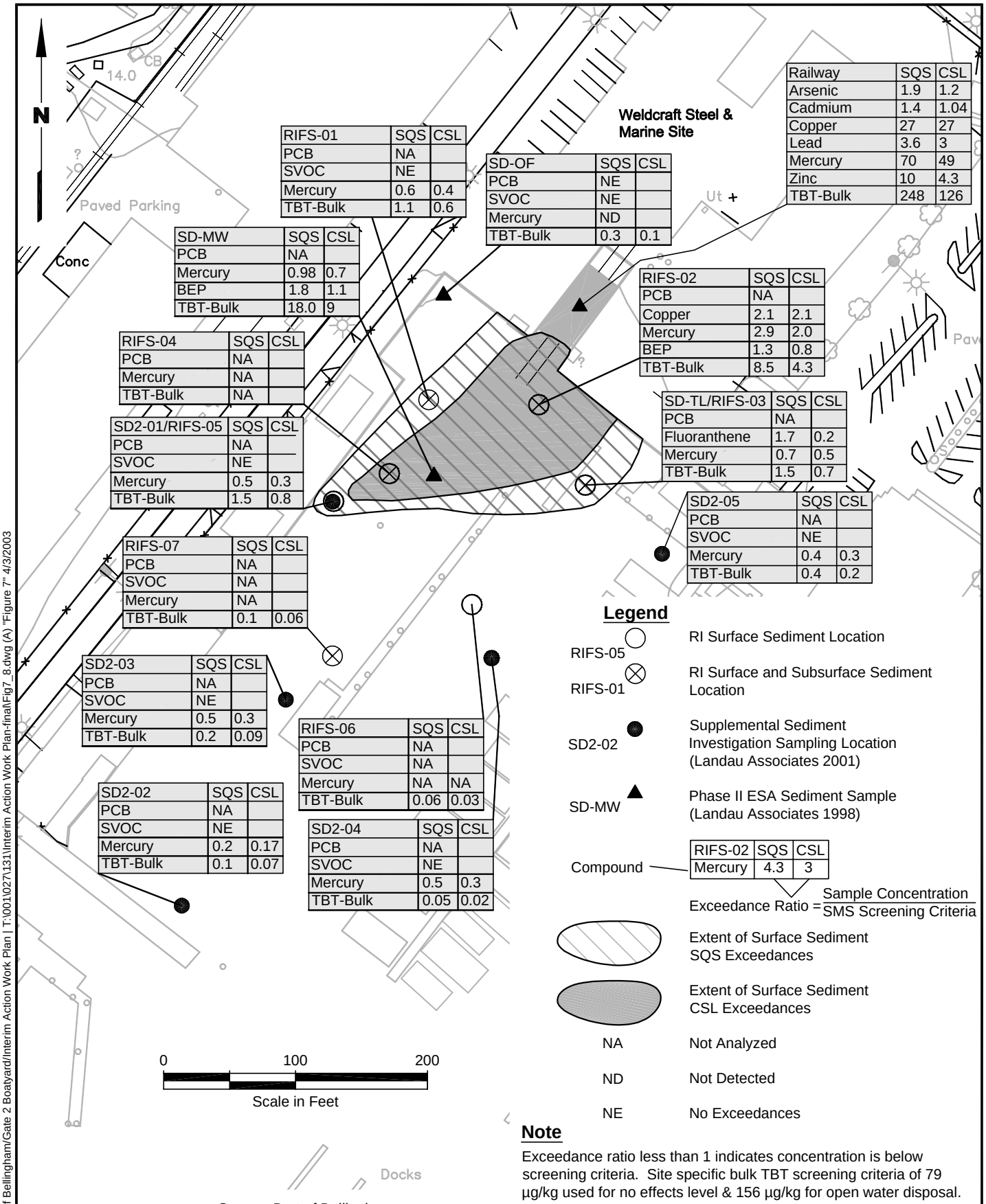
Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**Comparison of Bulk TBT and Porewater TBT**	Figure 6



RIFS-01	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.6	0.4
TBT-Bulk	1.1	0.6

SD-OF	SQS	CSL
PCB	NE	
SVOC	NE	
Mercury	ND	
TBT-Bulk	0.3	0.1

Railway	SQS	CSL
Arsenic	1.9	1.2
Cadmium	1.4	1.04
Copper	27	27
Lead	3.6	3
Mercury	70	49
Zinc	10	4.3
TBT-Bulk	248	126

SD-MW	SQS	CSL
PCB	NA	
Mercury	0.98	0.7
BEP	1.8	1.1
TBT-Bulk	18.0	9

RIFS-02	SQS	CSL
PCB	NA	
Copper	2.1	2.1
Mercury	2.9	2.0
BEP	1.3	0.8
TBT-Bulk	8.5	4.3

RIFS-04	SQS	CSL
PCB	NA	
Mercury	NA	
TBT-Bulk	NA	

SD-TL/RIFS-03	SQS	CSL
PCB	NA	
Fluoranthene	1.7	0.2
Mercury	0.7	0.5
TBT-Bulk	1.5	0.7

SD2-01/RIFS-05	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.5	0.3
TBT-Bulk	1.5	0.8

SD2-05	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.4	0.3
TBT-Bulk	0.4	0.2

RIFS-07	SQS	CSL
PCB	NA	
SVOC	NA	
Mercury	NA	
TBT-Bulk	0.1	0.06

SD2-03	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.5	0.3
TBT-Bulk	0.2	0.09

RIFS-06	SQS	CSL
PCB	NA	
SVOC	NA	
Mercury	NA	NA
TBT-Bulk	0.06	0.03

SD2-02	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.2	0.17
TBT-Bulk	0.1	0.07

SD2-04	SQS	CSL
PCB	NA	
SVOC	NE	
Mercury	0.5	0.3
TBT-Bulk	0.05	0.02

Legend

- RIFS-05 — RI Surface Sediment Location
- RIFS-01 — RI Surface and Subsurface Sediment Location
- SD2-02 — Supplemental Sediment Investigation Sampling Location (Landau Associates 2001)
- SD-MW — Phase II ESA Sediment Sample (Landau Associates 1998)

Compound — e.g. RIFS-02 | SQS | CSL | Mercury | 4.3 | 3

Exceedance Ratio = Sample Concentration / SMS Screening Criteria

- Extent of Surface Sediment SQS Exceedances
- Extent of Surface Sediment CSL Exceedances
- NA — Not Analyzed
- ND — Not Detected
- NE — No Exceedances

Note

Exceedance ratio less than 1 indicates concentration is below screening criteria. Site specific bulk TBT screening criteria of 79 µg/kg used for no effects level & 156 µg/kg for open water disposal.

Source: Port of Bellingham

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1311\Interim Action Work Plan-final\Fig7_8.dwg (A) "Figure 7" 4/3/2003

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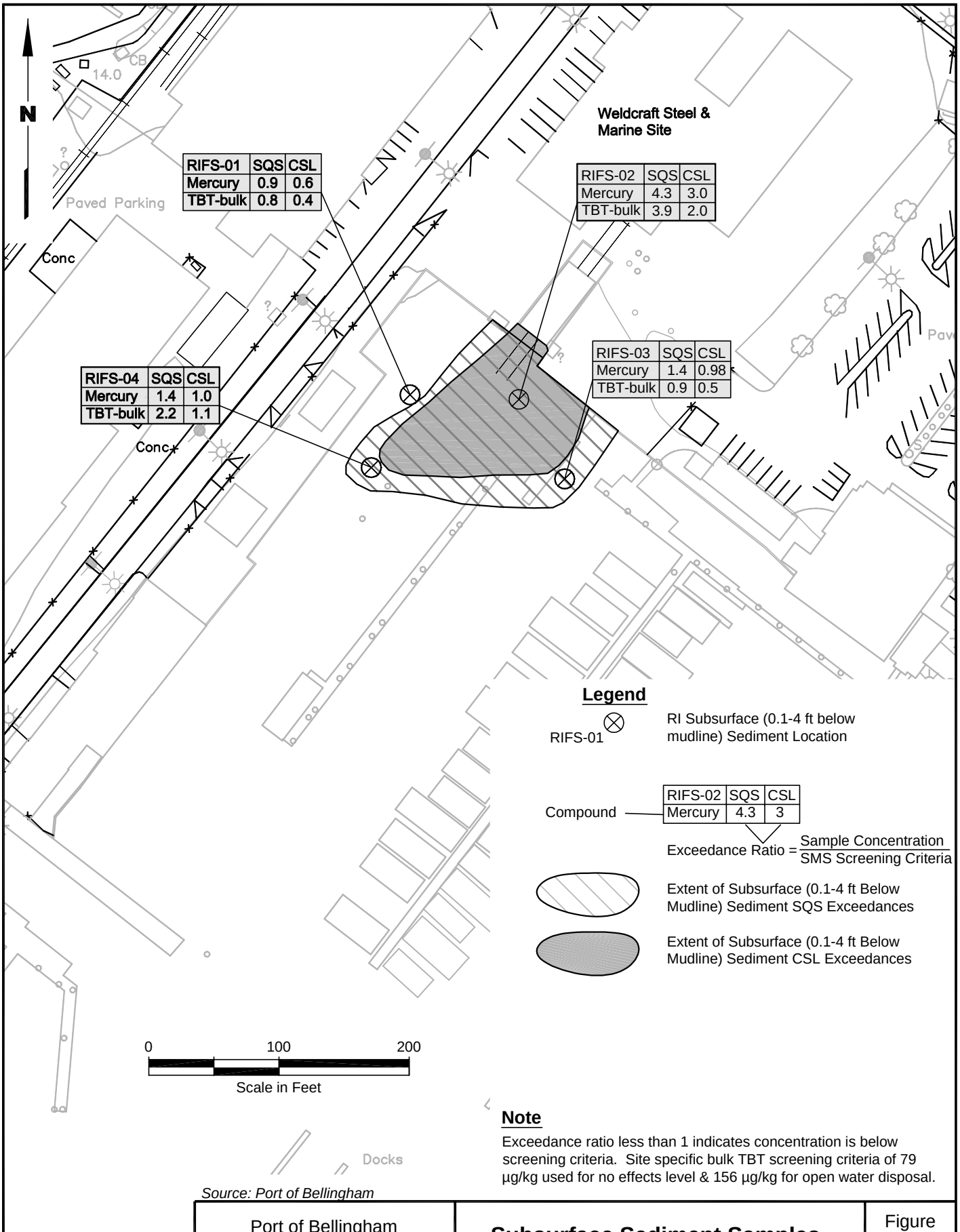
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Surface Sediment Samples SMS Exceedance Ratios

Figure 7



Note

Exceedance ratio less than 1 indicates concentration is below screening criteria. Site specific bulk TBT screening criteria of 79 µg/kg used for no effects level & 156 µg/kg for open water disposal.

Source: Port of Bellingham

Port of Bellingham/Gate 2 Boatyard/Interim Action Work Plan | T:\001\027\1311\Interim Action Work Plan-final\Fig7_8.dwg (A) "Figure 8" 4/3/2003

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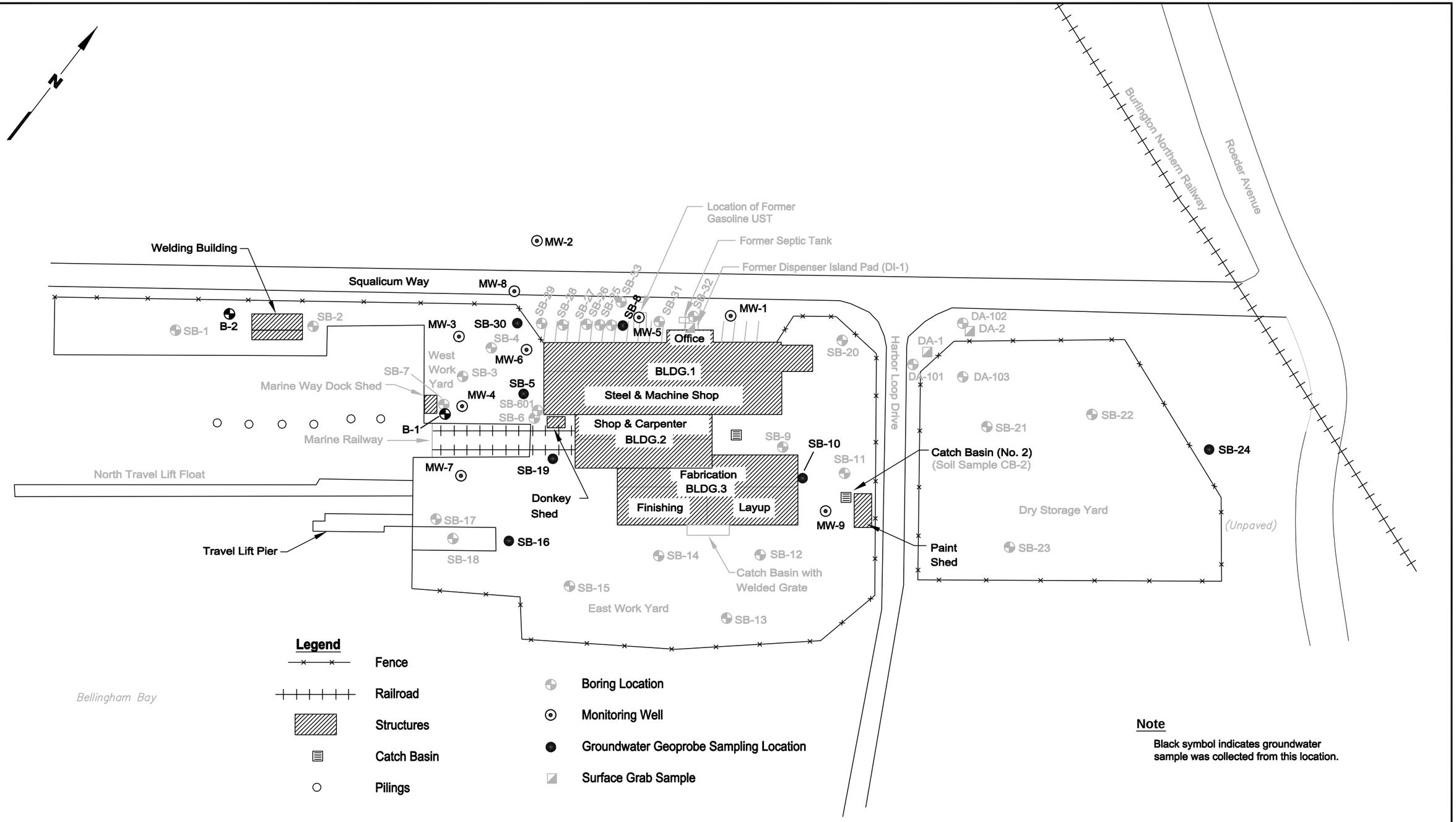
Port of Bellingham
Gate 2 Boatyard
Bellingham, Washington

Subsurface Sediment Samples
SMS Exceedance Ratios

Figure
8



Port of Bellingham\Gate 2 Boatyard\Interim Action Work Plan | T:\001\027\131\Interim Action Work Plan-final\Fig9.dwg (A) "Figure 9" 4/3/2003

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Port of Bellingham Gate 2 Boatyard Bellingham, Washington	**Groundwater Sampling Locations**	Figure 9

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-01		RIFS-02		
Sample ID:			RIFS-01	RIFS-01	RIFS-02	RIFS-02	RIFS-02
Depth:			(0-10cm)	(0-4ft)	(0-10cm)	(0-4ft)	(4-8ft)
Sample Date:	SQS (a)	CSL (b)	9/26/2001	9/25/2001	9/26/2001	9/25/2001	9/25/2001
Metals (mg/kg)							
Arsenic	57	93	7	10	11	13	6 U
Cadmium	5.1	6.7	0.6	0.3 U	0.6	0.3 U	0.3 U
Chromium	260	270	70.9	54.4 J	71.5	49.5 J	28.6
Copper	390	390	154 J	72.7 J	827 J	273 J	40.4
Lead	450	530	17 J	24 J	51 J	73 J	30
Mercury	0.41	0.59	0.26 J	0.37 J	1.17 J	1.78 J	0.19
Silver	6.1	6.1	1	0.4 U	1	0.5 U	0.4 U
Zinc	410	960	164	98.5 J	268	182 J	52.8 J
Bulk Organotin (ug/kg)							
Tributyltin (as TBT ion)	79 (c)	156 (c)	89	61 J	670	310	5.3 U
Tributyltin (as chloride)	None	None	100	69 J	760	350	5.9 U
Tetrabutyltin	None	None					
Dibutyltin (as Chloride)	None	None					
Butyltin (as Chloride)	None	None					
Porewater Organotin (ug/L)							
Tributyltin (as TBT ion)	0.15 (d)	None	0.053		0.85		
Tributyltin (as chloride)	None	None	0.06		0.96		
PAHs (mg/kg OC) (e)							
Naphthalene	99	170	2.71 U		2.03 U		
Acenaphthylene	66	66	3.14		5.26		
Acenaphthene	16	57	2.71 U		2.03 U		
Fluorene	23	79	2.71 U		3.68		
Phenanthrene	100	480	12.38		22.11		
Anthracene	220	1200	10.00		13.95		
2-Methylnaphthalene	38	64	2.71 U		2.03 U		
LPAH (f, g)	370	780	25.52		45.00		
Fluoranthene	160	1200	30.48		78.95		
Pyrene	1000	1400	43.81		71.05		
Benzo(a)anthracene	110	270	15.24		36.84		
Chrysene	110	460	28.57		73.68		
Benzo(b)fluoranthene	None	None	23.33		65.79		
Benzo(K)fluoranthene	None	None	23.33		47.37		
Total Benzofluoranthenes (f, h)	230	450	46.67		113.16		
Benzo(a)pyrene	99	210	13.33		28.95		
Indeno(1,2,3-c,d)pyrene	34	88	5.24		18.68		
Dibenz(a,h)anthracene	12	33	2.71 U		4.21		
Benzo(g,h,i)perylene	31	78	3.19		8.42		
HPAH (f, i)	960	5300	186.52		433.95		

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-01		RIFS-02		
Sample ID:			RIFS-01	RIFS-01	RIFS-02	RIFS-02	RIFS-02
Depth:			(0-10cm)	(0-4ft)	(0-10cm)	(0-4ft)	(4-8ft)
Sample Date:	SQS (a)	CSL (b)	9/26/2001	9/25/2001	9/26/2001	9/25/2001	9/25/2001
SVOCs (mg/kg OC) (e)							
1,2-Dichlorobenzene	2.3	2.3	2.71 U(j)		2.03 U		
1,3-Dichlorobenzene	None	None	2.71 U		2.03 U		
1,4-Dichlorobenzene	3.1	9	2.71 U		2.03 U		
1,2,4-Trichlorobenzene	0.81	1.8	2.71 U(j)		2.03 U (j)		
Hexachlorobenzene	0.38	2.3	2.71 U(j)		2.03 U (j)		
Dimethylphthalate	53	53	4.76		14.21		
Diethylphthalate	61	110	2.71		2.03 U		
Di-n-Butylphthalate	220	1700	2.71 U		4.47		
Butylbenzylphthalate	4.9	64	2.71 U		2.03 U		
bis(2-Ethylhexyl)phthalate	47	78	37.14		63.16		
Di-n-octyl phthalate	58	4500	2.71 U		2.03 U		
Dibenzofuran	15	58	2.71 U		2.11		
Hexachlorobutadiene	3.9	6.2	2.71 U		2.03 U		
N-Nitrosodiphenylamine	11	11	2.71 U		2.03 U		
SVOCs (ug/kg)							
Phenol	420	1200	100		77 U		
2-Methylphenol	63	63	57 U		77 U		
4-Methylphenol	670	670	57 U		77 U		
2,4-Dimethylphenol	29	29	57 U(j)		77 U(j)		
Pentachlorophenol	360	690	280 U		390 U(j)		
Benzyl Alcohol	57	73	57 U		77 U(j)		
Benzoic Acid	650	650	570 U		770 U(j)		
Conventionals							
Total Organic Carbon (percent)	None	None	2.1		3.8		
Total Solids (percent)	None	None	45.1		39.6		
N-Ammonia (mg-N/kg)	None	None	11		13		
Sulfide (mg/kg)	None	None	660		720		
DOC (mg/l)	None	None	14		13		
Total PCBs (f) (mg/kg OC)	12	65					
Grain Size (%)							
Gravel	None	None	0.7		2.5		
Sand	None	None	3.5		15.9		
Silt	None	None	53		47.8		
Clay	None	None	42.6		33.8		
Fines	None	None					

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-03				RIFS-04			
Sample ID:			SD-TL	RIFS-03	RIFS-03	RIFS-03	SD-MW	RIFS-04	RIFS-04	RIFS-04
Depth:			(0-10cm)	(0-10cm)	(0-4ft)	(4-8ft)	(0-10cm)	(0-10cm)	(0-4ft)	(4-8ft)
Sample Date:	SQS (a)	CSL (b)	1/22/1998	9/26/2001	9/25/2001	9/25/2001	1/22/1998	9/26/2001	9/25/2001	9/25/2001
Metals (mg/kg)										
Arsenic	57	93	10.0 U		14	6 U	10 U		10	6 U
Cadmium	5.1	6.7	0.6		0.4 U	0.2 U	0.9		0.4 U	0.5
Chromium	260	270	83.0		67.4 J	26.6	80		82 J	29.6
Copper	390	390	158.0		100 J	10.3	380		149 J	31.8
Lead	450	530	25.0		37 J	2 U	88		33 J	4
Mercury	0.41	0.59	0.3		0.58 J	0.05 U	0.4		0.59 J	0.05
Silver	6.1	6.1	0.6 U		0.6 U	0.3 U	0.7 U		0.6 U	0.3 U
Zinc	410	960	177.0		126 J	33.8 J	281		170 J	66.9 J
Bulk Organotin (ug/kg)										
Tributyltin (as TBT ion)	79 (c)	156 (c)	116.0		75	5.1 U	1,400		170	5.2 U
Tributyltin (as chloride)	None	None			85	5.8 U			190	5.8 U
Tetrabutyltin	None	None								
Dibutyltin (as Chloride)	None	None								
Butyltin (as Chloride)	None	None								
Porewater Organotin (ug/L)										
Tributyltin (as TBT ion)	0.15 (d)	None		0.034 M				0.022 U		
Tributyltin (as chloride)	None	None		0.038 M				0.025 U		
PAHs (mg/kg OC) (e)										
Naphthalene	99	170	4.6				3.35			
Acenaphthylene	66	66	4.4				3.73			
Acenaphthene	16	57	3.2				8.08			
Fluorene	23	79	11.1				12.31			
Phenanthrene	100	480	63.2				96.15			
Anthracene	220	1200	15.3 M				17.69			
2-Methylnaphthalene	38	64	2.4 M				5.77			
LPAH (f, g)	370	780	104.0				147.08			
Fluoranthene	160	1200	268.4				146.15			
Pyrene	1000	1400	242.1				173.08			
Benzo(a)anthracene	110	270	57.9				42.31			
Chrysene	110	460	73.7 M				88.46			
Benzo(b)fluoranthene	None	None								
Benzo(K)fluoranthene	None	None								
Total Benzofluoranthenes (f, h)	230	450	102.1				103.85			
Benzo(a)pyrene	99	210	36.3				38.46			
Indeno(1,2,3-c,d)pyrene	34	88	9.5 M				21.54			
Dibenz(a,h)anthracene	12	33	6.3 M				7.69			
Benzo(g,h,i)perylene	31	78	12.1				16.92			
HPAH (f, i)	960	5300	848.4				638.46			

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-03				RIFS-04			
Sample ID:			SD-TL	RIFS-03	RIFS-03	RIFS-03	SD-MW	RIFS-04	RIFS-04	RIFS-04
Depth:			(0-10cm)	(0-10cm)	(0-4ft)	(4-8ft)	(0-10cm)	(0-10cm)	(0-4ft)	(4-8ft)
Sample Date:	SQS (a)	CSL (b)	1/22/1998	9/26/2001	9/25/2001	9/25/2001	1/22/1998	9/26/2001	9/25/2001	9/25/2001
SVOCs (mg/kg OC) (e)										
1,2-Dichlorobenzene	2.3	2.3	1.1 U				0.73 U			
1,3-Dichlorobenzene	None	None								
1,4-Dichlorobenzene	3.1	9	1.1 U				0.73 U			
1,2,4-Trichlorobenzene	0.81	1.8	1.1 U (j)				0.73 U			
Hexachlorobenzene	0.38	2.3	1.1 U (j)				0.73 U (j)			
Dimethylphthalate	53	53	6.3				20.00			
Diethylphthalate	61	110	1.1 U				0.73 U			
Di-n-Butylphthalate	220	1700	1.1 M				1.12			
Butylbenzylphthalate	4.9	64	1.2 M				2.04			
bis(2-Ethylhexyl)phthalate	47	78	25.3				84.62			
Di-n-octyl phthalate	58	4500	1.1 U				0.73 U			
Dibenzofuran	15	58	7.9				10.38			
Hexachlorobutadiene	3.9	6.2	2.1 U				1.50 U			
N-Nitrosodiphenylamine	11	11	1.1 U				0.73 U			
SVOCs (ug/kg)										
Phenol	420	1200	40.0 U				39 U			
2-Methylphenol	63	63	40.0 U				39 U			
4-Methylphenol	670	670	28.0				29			
2,4-Dimethylphenol	29	29	60.0 U				58 U			
Pentachlorophenol	360	690	100.0 U				97 U			
Benzyl Alcohol	57	73	100.0 U (j)				97 U (j)			
Benzoic Acid	650	650	200.0 U				190 U			
Conventionals										
Total Organic Carbon (percent)	None	None	1.9				2.6			
Total Solids (percent)	None	None								
N-Ammonia (mg-N/kg)	None	None								
Sulfide (mg/kg)	None	None								
DOC (mg/l)	None	None		17				15		
Total PCBs (f) (mg/kg OC)	12	65								
Grain Size (%)										
Gravel	None	None								
Sand	None	None								
Silt	None	None								
Clay	None	None								
Fines	None	None								

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-05		RIFS-06	RIFS-07	SD-OF	SD2-02	SD2-03
Sample ID:			SD2-01	RIFS-05	RIFS-06	RIFS-07	SD-OF	SD2-02	SD2-03
Depth:			(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)
Sample Date:	SQS (a)	CSL (b)	11/21/2000	9/26/2001	9/26/2001	9/26/2001	1/22/1998	11/21/2000	11/21/2000
Metals (mg/kg)									
Arsenic	57	93	5 U				6 U	5 U	6
Cadmium	5.1	6.7	0.2 U				0.2 U	0.2 U	0.2
Chromium	260	270	39.1				22.1	37.4	37.0
Copper	390	390	60.4				63.4	33.7	64.0
Lead	450	530	10				28	7	8
Mercury	0.41	0.59	0.2				0.05 U	0.1	0.2
Silver	6.1	6.1	0.3 U				0.4	0.3 U	0.3
Zinc	410	960	73.1				60.0	60.8	65.5
Bulk Organotin (ug/kg)									
Tributyltin (as TBT ion)	79 (c)	156 (c)	120		4.7 J	9.2 M	23.00 M	11	14
Tributyltin (as chloride)	None	None			5.3 J	10 M			
Tetrabutyltin	None	None	5.9 U					5.9 U	6.0
Dibutyltin (as Chloride)	None	None	27					2.2 J	5.2
Butyltin (as Chloride)	None	None	13 J					5.9 UJ	6.0
Porewater Organotin (ug/L)									
Tributyltin (as TBT ion)	0.15 (d)	None		0.022 U	0.022 U	0.022 U			
Tributyltin (as chloride)	None	None		0.025 U	0.025 U	0.025 U			
PAHs (mg/kg OC) (e)									
Naphthalene	99	170	2.0				1.13 M	2.4	1.4
Acenaphthylene	66	66	2.5				0.80 U	1.1 J	1.7
Acenaphthene	16	57	2.0				1.20 M	1.6	1.6
Fluorene	23	79	3.9				2.33	3.1	1.9
Phenanthrene	100	480	20				4.20	9.4	20
Anthracene	220	1200	12				1.07 M	12	4.7
2-Methylnaphthalene	38	64	2.1				2.40 M	1.9	1.4
LPAH (f, g)	370	780	43				12.33	29	31
Fluoranthene	160	1200	57				6.00	20	55
Pyrene	1000	1400	48				4.40	22	43
Benzo(a)anthracene	110	270	23				0.93	7.1	19
Chrysene	110	460	38				2.13 M	12	25
Benzo(b)fluoranthene	None	None							
Benzo(K)fluoranthene	None	None							
Total Benzofluoranthenes (f, h)	230	450	46				2.13 M	13	29
Benzo(a)pyrene	99	210	17				0.80 U	4.5	8.0
Indeno(1,2,3-c,d)pyrene	34	88	9.5				0.80 U	2.5	5.0
Dibenz(a,h)anthracene	12	33	3.1				0.80 U	1.2 U	1.6
Benzo(g,h,i)perylene	31	78	6.7				2.00 M	2.0	3.5
HPAH (f, i)	960	5300	248				17.60	84	188

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:			RIFS-05		RIFS-06	RIFS-07	SD-OF	SD2-02	SD2-03
Sample ID:			SD2-01	RIFS-05	RIFS-06	RIFS-07	SD-OF	SD2-02	SD2-03
Depth:			(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)	(0-10cm)
Sample Date:	SQS (a)	CSL (b)	11/21/2000	9/26/2001	9/26/2001	9/26/2001	1/22/1998	11/21/2000	11/21/2000
SVOCs (mg/kg OC) (e)									
1,2-Dichlorobenzene	2.3	2.3	0.90 U				0.80 U	1.2 U	1.0
1,3-Dichlorobenzene	None	None							
1,4-Dichlorobenzene	3.1	9	0.90 U				0.80 U	1.2 U	1.0
1,2,4-Trichlorobenzene	0.81	1.8	0.90 U (j)				0.80 U	1.2 U (j)	1.0
Hexachlorobenzene	0.38	2.3	0.04 U				0.80 U (j)	0.05 U	0.05
Dimethylphthalate	53	53	2.3				0.80 U	1.2 U	1.4
Diethylphthalate	61	110	0.90 U				0.80 U	1.2 U	1.0
Di-n-Butylphthalate	220	1700	3.9				0.80 U	2.4	1.6
Butylbenzylphthalate	4.9	64	0.90 U				0.80 U	1.2 U	1.0
bis(2-Ethylhexyl)phthalate	47	78	18				6.00	12 U	11
Di-n-octyl phthalate	58	4500	0.90 U				0.80 U	1.2 U	1.0
Dibenzofuran	15	58	4.5				2.33	3.2	2.6
Hexachlorobutadiene	3.9	6.2	0.04 U				1.60 U	0.05 U	0.05
N-Nitrosodiphenylamine	11	11	0.90 U				8.00 Y	1.2 U	1.0
SVOCs (ug/kg)									
Phenol	420	1200					240 U		
2-Methylphenol	63	63					240 U (j)		
4-Methylphenol	670	670					120 U		
2,4-Dimethylphenol	29	29					360 U (j)		
Pentachlorophenol	360	690					610 U (j)		
Benzyl Alcohol	57	73					610 U (j)		
Benzoic Acid	650	650					1200 U (j)		
Conventionals									
Total Organic Carbon (percent)	None	None	2.1 J		2.1	2.2	15.0	1.7 J	2.0
Total Solids (percent)	None	None			41	48.4			
N-Ammonia (mg-N/kg)	None	None							
Sulfide (mg/kg)	None	None							
DOC (mg/l)	None	None		24	22	26			
Total PCBs (f) (mg/kg OC)	12	65					0.32 J		
Grain Size (%)									
Gravel	None	None	2.4					3.1	6.0
Sand	None	None	4.0					5.6	4.5
Silt	None	None	49.4					57.5	46.4
Clay	None	None	44.3					33.9	42.9
Fines	None	None	93.7					91.4	89.3

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:				SD2-04	SD2-05
Sample ID:				SD2-04	SD2-05
Depth:				(0-10cm)	(0-10cm)
Sample Date:	SQS (a)	CSL (b)		11/21/2000	11/21/2000
Metals (mg/kg)					
Arsenic	57	93		5 U	5 U
Cadmium	5.1	6.7	U	0.2 U	0.2 U
Chromium	260	270		36.0	38.2
Copper	390	390		33.0	40.9
Lead	450	530		8	8
Mercury	0.41	0.59		0.20	0.17
Silver	6.1	6.1	U	0.3 U	0.3 U
Zinc	410	960		57.5	66.5
Bulk Organotin (ug/kg)					
Tributyltin (as TBT ion)	79 (c)	156 (c)		3.8 J	28
Tributyltin (as chloride)	None	None			
Tetrabutyltin	None	None	U	5.9 U	5.8 U
Dibutyltin (as Chloride)	None	None	J	1.2 J	7.1
Butyltin (as Chloride)	None	None	UJ	5.9 U	5.8 UJ
Porewater Organotin (ug/L)					
Tributyltin (as TBT ion)	0.15 (d)	None			
Tributyltin (as chloride)	None	None			
PAHs (mg/kg OC) (e)					
Naphthalene	99	170		1.3	3.6
Acenaphthylene	66	66		0.95 J	2.8
Acenaphthene	16	57		0.79 J	3.4
Fluorene	23	79		1.3	5.2
Phenanthrene	100	480		4.7	36
Anthracene	220	1200		2.6	5.2
2-Methylnaphthalene	38	64		1.2	2.4
LPAH (f, g)	370	780		12	56
Fluoranthene	160	1200		11	41
Pyrene	1000	1400		14	32
Benzo(a)anthracene	110	270		4.2	11
Chrysene	110	460		6.8	25
Benzo(b)fluoranthene	None	None			
Benzo(K)fluoranthene	None	None			
Total Benzofluoranthenes (f, h)	230	450		9.1	33
Benzo(a)pyrene	99	210		3.3	8.6
Indeno(1,2,3-c,d)pyrene	34	88		1.7	3.7
Dibenz(a,h)anthracene	12	33		1.0 U	1.2
Benzo(g,h,i)perylene	31	78		1.2	2.4
HPAH (f, i)	960	5300		51	159

TABLE 4
SEDIMENT SAMPLES ANALYTICAL RESULTS

Location:				SD2-04		SD2-05	
Sample ID:				SD2-04		SD2-05	
Depth:				(0-10cm)		(0-10cm)	
Sample Date:	SQS (a)	CSL (b)		11/21/2000		11/21/2000	
SVOCs (mg/kg OC) (e)							
1,2-Dichlorobenzene	2.3	2.3	U	1.0	U	0.90	U
1,3-Dichlorobenzene	None	None					
1,4-Dichlorobenzene	3.1	9	U	1.0	U	0.90	U
1,2,4-Trichlorobenzene	0.81	1.8	U (j)	1.0	U (j)	0.90	U (j)
Hexachlorobenzene	0.38	2.3	U	0.05	U	0.05	U
Dimethylphthalate	53	53		1.1		2.6	
Diethylphthalate	61	110	U	1.0	U	0.90	U
Di-n-Butylphthalate	220	1700		1.2		2.0	
Butylbenzylphthalate	4.9	64	U	1.0	U	0.90	U
bis(2-Ethylhexyl)phthalate	47	78	U	7.4	U	14	
Di-n-octyl phthalate	58	4500	U	1.0	U	0.90	U
Dibenzofuran	15	58		1.5		5.7	
Hexachlorobutadiene	3.9	6.2	U	0.05	U	0.05	U
N-Nitrosodiphenylamine	11	11	U	1.0	U	0.90	U
SVOCs (ug/kg)							
Phenol	420	1200					
2-Methylphenol	63	63					
4-Methylphenol	670	670					
2,4-Dimethylphenol	29	29					
Pentachlorophenol	360	690					
Benzyl Alcohol	57	73					
Benzoic Acid	650	650					
Conventionals							
Total Organic Carbon (percent)	None	None	J	1.9	J	2.1	J
Total Solids (percent)	None	None					
N-Ammonia (mg-N/kg)	None	None					
Sulfide (mg/kg)	None	None					
DOC (mg/l)	None	None					
Total PCBs (f) (mg/kg OC)	12	65					
Grain Size (%)							
Gravel	None	None		2.7		3.6	
Sand	None	None		16.5		7.3	
Silt	None	None		46.1		48.1	
Clay	None	None		34.6		41.0	
Fines	None	None		80.7		89.1	

TABLE 5
MARINE RAILWAY SAMPLE ANALYTICAL RESULTS

Location:	Railway		Basins				
Lab ID	V144F		V144D				
Date Collected:	1/22/1998		1/22/1998	SQS (a)		CSL (b)	
Metals							
Arsenic	110			57		93	
Cadmium	7		**2600**	5.1		6.7	
Chromium	77		**8900**	260		270	
Copper	10,600		**24000**	390		390	
Lead	1610		**15000**	450		530	
Mercury	28.7		**2500**	0.41		0.59	
Nickel	180		**12000**	None		None	
Silver	2 U		**180000**	6.100		6.100	
Zinc	4090		**2400**	410		960	
			2100				
Bulk Organotin (ug/kg)							
Tributyltin (as TBT ion)	19600			79	(i)	156	(i)
PAHs (mg/kg OC) (d)			**3300**				
Naphthalene	65 M		**1200**	99		170	
Acenaphthylene	34 U		**870**	66		66	
Acenaphthene	185,000 M		**2500**	16		57	
Fluorene	330		**12000**	23		79	
Phenanthrene	850		**9500**	100		480	
Anthracene	160 M		**6100**	220		1200	
2-Methylnaphthalene	110 M		**2600**	38		64	
LPAH (c)(e)	186,405		**19000**	370		780	
			4900				
Fluoranthene	950		**1200**	160		1200	
Pyrene	34 U		**2500**	1000		1400	
Benzo(a)anthracene	440		**2600**	110		270	
Chrysene	550		**2500**	110		460	
Benzo(b)fluoranthene	385 M		**1400**	None		None	
Benzo(k)fluoranthene	315 M		560	None		None	
Total Benzofluoranthenes (f)	700		**1000**	230		450	
Benzo(a)pyrene	175 M			99		210	
Indeno(1,2,3-c,d)pyrene	130 M			34		88	
Dibenz(a,h)anthracene	34 U (h)			12		33	
Benzo(g,h,i)perylene	125 M			31		78	
HPAH (c)(g)	3070			960		5300	
SVOCs (mg/kg OC)							
1,2-Dichlorobenzene	34 U (h)			2.3		2.3	
1,4-Dichlorobenzene	34 U (h)			3.1		9	
1,2,4-Trichlorobenzene	34 U (h)			0.81		1.8	
Hexachlorobenzene	34 U (h)			0.38		2.3	
Dimethylphthalate	90 U (h)			53		53	
Diethylphthalate	34 U			61		110	
Di-n-Butylphthalate	34 U			220		1700	
Butylbenzylphthalate	34 U (h)			4.9		64	
bis(2-Ethylhexyl)phthalate	180			47		78	
Di-n-octyl phthalate	34 U			58		4500	
Dibenzofuran	150			15		58	
Hexachlorobutadiene	70 U (h)			3.9		6.2	
N-Nitrosodiphenylamine	290			11		11	
SVOCs (ug/kg)							
Phenol	1.4 U			420		1200	
2-Methylphenol	1.4 U			63		63	
4-Methylphenol	0.68 U			670		670	
2,4-Dimethylphenol	2 U		**58000**	29		29	
Pentachlorophenol	3.4 U			360		690	
Benzyl Alcohol	3.4 U			57		73	
Benzoic Acid	6.8 U			650		650	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)							
Method WA HCID							
Gas Range	1600			None		None	
Diesel Range	16,000			None		None	
Oil Range	17,000			None		None	

TABLE 5
MARINE RAILWAY SAMPLE ANALYTICAL RESULTS

U = Indicates compound was analyzed for, but was not detected at the given detection limit.
M = Indicates an estimated value of analyte detected and confirmed by analyst with low spectral match parameters.
Boxed results exceed the SQS.
Shaded results exceed the CSL.

(a) SMS sediment quality standard (Chapter 173-204 WAC).
(b) SMS cleanup screening level (Chapter 173-204 WAC).
(c) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
  (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
  (ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(d) All organic data (except phenols, benzyl alcohol, and benzoic acid) are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present. TOC was not analyzed in the marine railway sample. An assumed TOC of 2% was used to normalize data.
(e) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(f) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(g) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
(h) Method detection limits exceed the SQS or CSL criteria.
(i) 79 µg/kg equals site-specific no effects TBT bulk sediment screening level.
156 µg/kg equals site-specific potential adverse affects TBT bulk sediment screening level.

TABLE 6
INTERIM ACTION SEDIMENT CLEANUP LEVELS

Analyte	SQS (a)
Metals (mg/kg dry weight)	
Arsenic	57
Cadmium	5.1
Chromium	260
Copper	390
Lead	450
Mercury	0.41
Silver	6.1
Zinc	410
Bulk Organotin (ug/kg dry weight)	
Tributyltin (as TBT ion)	79 (b)
PAHs (mg/kg OC) (c)	
Naphthalene	99
Acenaphthylene	66
Acenaphthene	16
Fluorene	23
Phenanthrene	100
Anthracene	220
2-Methylnaphthalene	38
LPAH (d, e)	370
Fluoranthene	160
Pyrene	1000
Benzo(a)anthracene	110
Chrysene	110
Total Benzofluoranthenes (d,f)	230
Benzo(a)pyrene	99
Indeno(1,2,3-c,d)pyrene	34
Dibenz(a,h)anthracene	12
Benzo(g,h,i)perylene	31
HPAH (d,g)	960
SVOCs (mg/kg OC) (c)	
Dimethylphthalate	53
Diethylphthalate	61
Di-n-Butylphthalate	220
Butylbenzylphthalate	4.9
bis(2-Ethylhexyl)phthalate	47
Di-n-octyl phthalate	58
Dibenzofuran	15
N-Nitrosodiphenylamine	11

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).

(b) 79 µg/kg equals site-specific no effects TBT bulk sediment cleanup level.

(c) All organic data are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.

(d) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:

(i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.

(ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.

(e) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.

(f) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.

(g) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH

TABLE 1
SUMMARY OF SEDIMENT INVESTIGATIONS
WELDCRAFT STEEL & MARINE

	Sample Descriptions		Analysis								
Sample #	**Area**	**Depth (below mudline)**	**Metals**	**SVOCs**	**TOC**	**Bulk TBT**	**Porewater TBT**	**PCBs**	**PAHs**	**Grain Size**	**Conventionals (a)**
Phase II ESA											
SD-OF	Outfall	0-10cm	x	x	x	x		x			
SD-MW	Marine Way Dock	0-10cm	x	x	x	x					
SD-TL	Tammi Lift	0-10cm	x	x	x	x					
Railway	Marine Railway Upper Intertidal	0.5 ft	x	x		x					
Supplemental Sediment Investigation											
SD2-01	West of Marine Way Dock	0-10cm	x	x	x	x				x	
SD2-02	Southwest of Marine Way Dock	0-10cm	x	x	x	x				x	
SD2-03	West end of Marine Way Dock	0-10cm	x	x	x	x				x	
SD2-04	East of Marine Way Dock	0-10cm	x	x	x	x				x	
SD2-05	Near bulkhead east of Marine Way Dock	0-10cm	x	x	x	x				x	
Sediment Remedial Investigation											
RIFS-01	West of Marine Way Dock	0-10cm	x	x	x	x	x		x	x	x
RIFS-01 (0-4)	West of Marine Way Dock	0.1-4ft	x			x					
RIFS-01 (4-8)	West of Marine Way Dock	4-8ft									
RIFS-02	West of Marine Way Dock	0-10cm	x	x	x	x	x		x	x	x
RIFS-02 (0-4)	West of Marine Way Dock	0.1-4ft	x			x					
RIFS-02 (4-8)	West of Marine Way Dock	4-8ft	x			x					
RIFS-03	East of Marine Way Dock	0-10cm					x				
RIFS-03 (0-4)	East of Marine Way Dock	0.1-4ft	x			x					
RIFS-03 (4-8)	East of Marine Way Dock	4-8ft	x			x					
RIFS-04	West of Marine Way Dock	0-10cm					x				
RIFS-04 (0-4)	West of Marine Way Dock	0.1-4ft	x			x					
RIFS-04 (4-8)	West of Marine Way Dock	4-8ft	x			x					
RIFS-05	West of Marine Way Dock	0-10cm			x	x	x				
RIFS-06	East of Marine Way Dock	0-10cm			x	x	x				
RIFS-07	West of Marine Way Dock	0-10cm					x				
RIFS-07 (0-4)	West of Marine Way Dock	0.1-4ft									
RIFS-07 (4-8)	West of Marine Way Dock	4-8ft									

SVOCs = Semivolatile Organic Compounds
TOC = Total Organic Carbon
TBT = Tributyltin
PCBs = Polychlorinated Biphenyls
PAH = Polycyclic aromatic Hydrocarbons

(a) Conventionals include N-ammonia, sulfide, and dissolved carbon.

WAC 197-11-960 ENVIRONMENTAL CHECKLIST

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable: Gate 2 Boatyard (former Weldcraft Steel & Marine site)

2. Name of applicant: Port of Bellingham

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

Applicant:
Port of Bellingham
Mr. Fred Seeger
Director of Facilities
P.O. Box 1670
Bellingham, WA 98227
360-676-2500

Authorized Agent:
Mr. Larry Beard
Landau Associates
130 2nd Ave. S
Edmonds, WA 98020
425-778-0907

4. Date checklist prepared: April 15, 2003

5. Agency requesting checklist: Port of Bellingham

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

This proposed project consists of remediation of contaminated sediments, construction of marine habitat for restoration and mitigation purposes, beneficial reuse of clean sediment from maintenance dredging for marine habitat construction, and in-water improvements to an existing boatyard. As a result, the project would be constructed during the period from September 1, 2003 to February 15, 2004, which is the in-water construction period designated by Washington Department of Fish and Wildlife (WDFW), National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS) for the protection of marine fisheries. The designated construction period corresponds to that period identified by the resource agencies when Endangered Species Act (ESA) listed fish species are not present at the project site.

Project activities would occur throughout the available period. As indicated below in Table 1, project activities, which consist of in-water dredging, backfill, and structure removal, repair and replacement work, as described in Section A.11 below, are expected to take about 5 months.

TABLE 1: ESTIMATED DURATION OF PROJECT IN-WATER ACTIVITIES

Project Component	Estimated Duration
Bulkhead Replacement	6 to 8 weeks
Dredging	3 to 4 weeks
Backfilling	1 week
Marine Railway Removal	1 to 2 weeks
Pile Removal	1 week
150-ton Travel Lift Installation	8 to 10 weeks
Wharf and Bulkhead Repairs	2 to 4 weeks
Fender Pile Replacement	1 week
Marine Habitat Construction	4 to 8 weeks

The duration and total period of each element of the in-water work (Table 1) would be affected by a number of factors, including:

- Type of equipment and construction procedures used by the contractor
- Sequencing of work elements
- Availability and delivery schedule for construction materials
- Length of daily in-water work periods, which may be affected by minimum vessel draft requirements and ongoing boatyard activities.

Dredging and backfill placement rates, which may be affected by engineering controls, site access limitations, and water quality considerations, would generally occur during daylight hours. However, sediment removal within the marine railway well may occur at night to maximize the amount of contaminated sediment removed "in the dry" during extreme low tides.

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

No future activities are anticipated at this time. The sediment cleanup element of the project is proposed as an interim action under the Model Toxics Control Act (MTCA) and will be performed under an agreed order with the Washington State Department of Ecology (Ecology). It is intended that the interim action achieve final cleanup for sediment. However, post-construction sediment quality compliance monitoring will be conducted and additional sediment cleanup may be required if sediment quality standards are not achieved throughout the site.

Also, subsequent cleanup of upland portions of the site may be required, but preliminary upland remedial investigation (RI) results indicate that localized and limited upland contamination (primarily from a former gasoline underground storage tank) does not extend to the vicinity of the proposed project. Any subsequent upland cleanup or site improvements will be addressed as a separate project.

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

Environmental information that has been prepared that is directly related to this proposal includes:

- Report, Phase I Environmental Site Assessment, Weldcraft Steel & Marine Site, Bellingham, Washington. Landau Associates; September 20, 1993.
- Report, Phase II Environmental Site Assessment Weldcraft Steel & Marine Site, Bellingham, Washington. Landau Associates; June 25, 1998.
- Anchor Environmental. 2000. Bellingham Bay Comprehensive Strategy, Final Environmental Impact Statement. October. (Note: Weldcraft Steel & Marine site addressed as a priority sediment cleanup site within FEIS)
- Letter Report, Supplemental Sediment Investigation Results, Weldcraft Steel & Marine, Bellingham, Washington. Landau Associates; January 17, 2001.
- Report, Phase III Environmental Site Assessment, Weldcraft Steel & Marine, Bellingham, Washington. Landau Associates; January 31, 2001.
- Draft Work Plan, Remedial Investigation and Feasibility Study, Weldcraft Steel and Marine Facility, Bellingham, Washington. Landau Associates; March 28, 2001.
- Technical Memorandum, Maintenance and Decommissioning Activities Weldcraft Steel & Marine Facility, Bellingham, Washington. Landau Associates; June 23, 2001.
- Draft Work Plan, Upland Remedial Investigation, Weldcraft Steel & Marine Facility, Bellingham, Washington. Landau Associates; April 5, 2002.
- Joint Aquatic Resources Permit Application (JARPA). Landau Associates; December 20, 2002.
- JARPA March 2003 Addendum. Landau Associates; March 14, 2003.
- Biological Evaluation and Essential Fish Habitat Assessment (BE/EFHA). Landau Associates; December 20, 2002.
- BE/EFHA March 2003 Addendum. (*In prep.*) Landau Associates; March __, 2003.
- Interim Action Work Plan, Weldcraft Steel & Marine, Bellingham, Washington. Landau Associates, April 3, 2003. Public Review Draft.

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

There are no other applications pending for approvals and no current proposals that would directly affect the property covered by this proposal. The cleanup of upland portions of the shipyard site and future expansion of the

shipyard are likely to occur in the future, but are not active proposals at this time.

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

The following government approvals or permits would be needed for this proposal:

- MTCA Agreed Order from Ecology
- Clean Water Act (CWA) Section 404 Individual Permit from U.S. Army Corps of Engineers (USACE)
- CWA Section 10 Permit from USACE
- CWA Section 401 Water Quality Certification from Ecology
- Endangered Species Act Biological Approval from NMFS and USFWS
- Hydraulic Project Approval (HPA) from WDFW, and Substantial Development Permit from the City of Bellingham for the elements of the project that are not part of the MTCA interim cleanup action
- Substantive compliance with provisions of Hydraulic Project Approval (HPA) from WDFW, and Shoreline Substantial Development and Critical Areas Ordinance from the City of Bellingham for the MTCA interim cleanup action elements of the project.

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

This project consists of a Model Toxics Control Act (MTCA) interim action sediment cleanup, construction of new marine habitat, navigation dredging maintenance, and repair/replacement of in-water structures. The proposed project is primarily designed to clean up the in-water portions of a boatyard facility in Squalicum Outer Harbor that has been in operation for over 50 years. The Port recently evicted the prior tenant and entered into a new lease agreement with Seaview Boatyard North, Inc. in April 2002 to operate the boatyard. This change has provided the opportunity to address problems associated with the prior tenant's operations, including upland and in-water contamination, dilapidated structures, and non-compliance with current regulatory requirements.

The project site is shown on Figures 1 (Vicinity Map), 2 (Project Area Site Plan), and 3 (Existing Site Conditions).

All proposed project work, except for a very small area within the upper portion of the marine railway well, would be conducted in or over Ordinary High Water (OWH), which is about 10 ft MLLW in Bellingham Bay. Therefore, all project work would be conducted within 200 ft of OHW or below. This project would include the following five major in-water construction elements:

- **Sediment dredging** to remove contaminated sediment and to restore previously authorized and constructed navigation depths to -12 ft MLLW, which is a minimum vessel draft requirement for access to the boatyard (Figures 4 and 5, dredge cross sections Figures 6 and 7, backfill and post-dredging areas Figures 8 and 9). A total of up to 8,000 cubic yards (cy) will be dredged, of which 7,600 cy are for sediment remediation and 400 cy are to restore navigation depths.

- **Installation of a galvanized steel sheetpile bulkhead to replace (i.e., encapsulate) a timber bulkhead** along the east shoreline (Figures 10 and 11). About 180 ft of the 368 ft length of bulkhead replacement is required to implement the remediation of contaminated sediment. The remainder of the bulkhead replacement is to prevent additional sloughing of upland soil into the marine environment resulting from the poor condition of the existing bulkhead.

- **Installation of two 125-ft long finger piers to support a new 150-ton travel lift** to replace the existing marine railway, and filling of railway well (Figures 10 and 12). Removal of the existing marine railway is required for remediation of contaminated sediment. he new travel lift piers will replace the function of the existing marine railway, but because it is not an in-kind replacement, it is

considered part of site redevelopment rather than sediment cleanup. The travel lift piers will have less environmental impact than the existing marine railway, as described in Section B(3)(a)(2).

- **Backfilling** as required for both contaminated sediment cleanup and site redevelopment purposes. Backfill areas and volumes for sediment cleanup and site redevelopment are described in detail in Section B(3)(a)(2).

- **Construction of new marine habitat** along the Squalicum Outer Harbor breakwater (Figures 15 and 16). New marine habitat would be constructed to provide compensatory mitigation for habitat impacts associated with project dredging and backfilling activities, and to provide significant habitat restoration beyond compensatory mitigation requirements.

Additional maintenance and repair activities would occur over or in water as part of this project (most repair activities would be conducted out of the water, either during low tide or from over-water structures). These activities consist of:

- **Repair of the existing timber bulkhead** along 205 ft of Segment C at the north shoreline (Figures 10, 13a and 13b) to prevent continued sloughing of upland soil into the area to be dredged for sediment remediation purposes.

- **Repair/replacement of damaged timber piles** associated with the existing wharf and timber bulkhead in Segment C (Figures 10, 13a and 13b) and the north travel lift float for site improvement purposes.

- **Repair/replacement of selected structural elements** of the existing wharf along Segment C for site improvement purposes.

The proposed project provides significant environmental benefit beyond the sediment remediation and habitat mitigation/restoration elements described above. The project will remove 215 creosote-treated pilings and about 9,000 ft^2 of creosote-treated timbers from the marine environment that are associated with the marine railway and timber bulkhead. As a result, this project is strongly supported by the Whatcom County Marine Creosote Piling Remediation Program being administered by the City of Bellingham, through a grant from the Washington State Department of Ecology (Contact: Barry Wenger, Ecology, Bellingham Field Office, 360-738-6245). Additionally, the new 150-ton travel lift piers will shade about 330 ft^2 less marine habitat than the existing marine railway, and the shading will be less severe because the height of the travel lift piers over the marine substrate is significantly greater than the existing marine railway.

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

The location of this proposal is 2652 Harbor Loop Drive, Bellingham, Washington, 98225 (street address). The proposal site is located in Section 25, Township 38 North, Range 2 East in Whatcom County, and includes the waterfront and in-water areas shown on Figures 1, 2, and 3.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: Relatively flat upland and deep subtidal (greater that –10 ft MLLW) portions of the site with moderately sloping intertidal and shallow subtidal areas.

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

The upland portion of the site is relatively flat with a surface elevation of between 13 and 15 ft MLLW. The bathymetric surface of the marine portion of the site generally ranges from elevation 5 to -12 ft MLLW, with slopes ranging from generally flat in the deeper subtidal areas to about 6:1 (horizontal:vertical) in the intertidal and shallow subtidal areas. The habitat mitigation/restoration area is gently sloping, ranging from about -9 ft near the breakwater to -12 ft at the outer edge.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Sediments to be dredged consist primarily of sand, silt, and clays. There are no agricultural soils at the site.

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

There are no surface indications or history of unstable soils in the immediate vicinity.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

No upland fill or grading would occur as a result of this project. In-water fills would consist of about 3,300 cubic yards (cy) of a sand and gravel mixture with a relatively low percentage of fines that would be imported from upland sources (likely a commercial sand and gravel pit) to backfill the former marine railway well behind the bulkhead and the marine areas dredged below -13 ft MLLW for sediment remediation. About 30,000 cy of Squalicum Waterway dredge materials would be used to construct the new marine habitat site. About 460 cy of imported pea gravel from commercial upland sources would also be used to fill the area between the existing timber-pile and new sheet-pile bulkheads, and between the new bulkhead lagging and existing lagging along Segment C of the bulkhead.

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

All earth-moving activities would take place in the water. No long-term in-water erosion is expected to result from in-water dredging, construction, or boatyard use. All in-water dredging and construction at the proposed boatyard project area would be conducted within the breakwater, in an area of limited currents, on flat or gently sloping contours. Clean backfill from upland sources would be placed to restore a relatively flat grade at about -13 ft MLLW. Marine side slopes around the perimeter of the dredged area would be constructed at about 2H to 1V. These slopes were selected to be stable from erosion and slumping.

At the new marine habitat site, stability analyses were conducted to predict erosion during annual and 5-year waves at the most sensitive tidal stage. These analyses showed that the upper bench elevations should be stable between -4 and -6 ft MLLW. Based on these evaluations, Squalicum Waterway dredge materials should be sufficiently strong to resist erosion from ambient waves. Colonization of the habitat surface by eelgrass, which is expected to occur, would provide further protection from erosion over time.

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

About 3,600 ft^2 of fill would be placed over/around the marine railway well and between the new sheetpile and former timber bulkhead. The fill around the railway well (approximately 2,700 ft^2) would be covered with asphalt.

This would result in less than 5 percent of the site surface (nearshore water portion only) being covered in impervious surfaces after project completion. All storm water runoff generated from impervious surfaces would be collected, treated and discharged consistent with applicable storm water regulations.

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

Proposed measures to reduce or control erosion from in-water activities are described in section B.1.f.

2. Air

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

During construction, exhaust would be generated by construction equipment (such as powered barges, tugs, dredging equipment, and pile-driving equipment) and worker support vehicles. This exhaust would cause minor and short-term degradation to air quality near the proposal site, while construction equipment was in operation. There are many such sources of similar emissions in the surrounding port-industrial area. Emissions from this proposal would add incrementally to the air quality impacts of these other multiple sources. During operation, the proposal may continue to cause minor incremental decreases in air quality due to travel lift operations and perhaps minor increases in impacts from worker support vehicles, to the extent a more active shipyard site might generate minor additional employment and onshore use.

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

The proposal is in an active port-industrial area where many mobile emitters (tugs, vessels, trucks, automobiles, locomotives, and other generally mobile sources) operate. Additionally, other fixed emission sources (smaller industrial sources of fugitive and stack emissions) are located on the port-industrial waterfront. These nearby emitters are not expected to impact this proposal.

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

Construction equipment and worker vehicles would be equipped with standard emission control devices; no other measures are required.

3. Water

a. Surface:

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

The project is located on and in Bellingham Bay, an urbanized marine body of water forming a portion of the inland marine waters of western Washington.

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

All work would be conducted over, in, or adjacent to Ordinary High Water (OWH), which is about 10 ft MLLW in Bellingham Bay; therefore, all project work would be conducted within 200 ft of OHW. As described above (and repeated here to facilitate the assessment of water-related impacts), this project would include the following five

major in-water construction elements:

- Sediment dredging to remove contaminated sediment and to restore previously authorized and constructed navigation depths to -13 ft MLLW (i.e., -12 ft MLLW plus 1 ft overdredge), which is a minimum vessel draft requirement for access to the boatyard (Figures 4 through 9)

- Replacement (i.e., encapsulating) of the timber bulkhead along the east shoreline in Segments A and B with a steel sheet pile bulkhead (Figures 10 and 11)

- Removal of the existing marine railway structure and construction of two finger piers in its place for a new 150-ton travel lift (Figures 10 and 12)

- Backfilling as required

- Construction of new marine habitat along the Squalicum Outer Harbor breakwater (Figures 15 and 16).

Additional maintenance and repair activities would occur over or in water as part of this project (most repair activities would be conducted out of the water, either during low tide or from over-water structures). These activities consist of:

- Repair of the existing timber bulkhead along Segment C at the north shoreline (Figures 10 and 13)

- Repair/replacement of damaged timber piles associated with the existing wharf and timber bulkhead in Segment C and the north travel lift float (Figure 14)

- Repair/replacement of selected structural elements of the existing wharf along Segment C (Figure 13).

The following subsections provide detailed descriptions of these proposed in-water activities.

Sediment Dredging: Up to about 7,600 cy of sediment (primarily sand, silt, and clay) would be dredged from in-water areas to achieve MTCA sediment cleanup goals. Chemicals of concern and their concentrations and distribution have been evaluated in a series of investigations under MTCA. The dredge volume includes an allowance for dredging up to 1 ft of material (overdredge) below the design dredge depth. Contaminated sediment removal areas would include the impacted area west of the new sheet pile bulkhead and the entire marine railway well area east of the new sheet pile bulkhead (Figure 4). The vertical extent of contamination is limited to the upper 4 ft of sediment. The proposed sediment dredging depths (Figure 5) and cross sections (Figures 6 and 7) were developed to remove the upper 4 ft of sediment within the identified zone of contamination, to the extent practicable, given existing site constraints.

To achieve minimum vessel draft requirements for access to the new boatyard facilities, about 400 cy of additional sediment dredging to -10 ft MLLW would be conducted to within about 25 ft of the new sheetpile bulkhead across the alignment of the marine railway where the new travel lift structure would be constructed. This area of additional sediment dredging beyond that required for sediment cleanup is indicated on Figure 5 and Cross Section A-A' on Figure 6. The original USACE permitted dredge depth was -12 ft MLLW with a 1 ft allowable overdredge, so the proposed dredging effort represents maintenance dredging to restore previous permitted and constructed vessel drafts.

Sediment dredging would be conducted using barge-mounted mechanical clamshell dredge equipment, with the dredged material placed on an adjacent barge and dewatered prior to offloading. Straw bales or geotextile filter material would be placed at the weep holes in the sides of the barge if needed to limit loss of material and control turbidity. Land-based excavation equipment would be used to excavate sediment and remove debris within the marine railway well, with such equipment removing intertidal sediment near the bulkhead line "in the dry" during

low tide and potentially placing excavated material directly into shore-based containers or trucks.

Dredged sediment would be transported to an upland facility licensed to accept solid waste. The specific disposal location would be selected by the contractor during project bidding. The most probable sediment disposal facilities are the Columbia Ridge Landfill in Arlington, Oregon; the Roosevelt Regional Landfill in Roosevelt, Washington; and, the Richmond Landfill in Richmond, British Columbia, Canada.

Galvanized Steel Sheetpile Bulkhead Installation: The new sheetpile bulkhead would be driven a few feet (typically 3 ft) in front of the existing timber lagging to provide sufficient clearance to facilitate installation and accommodate the variable alignment and occasional outward tilting of the existing timber bulkhead. The galvanized steel sheetpile sections would be driven to design depth with an impact or vibratory hammer mounted on a land- or barge-based crane, depending on site constraints and the contractor's preference. The new bulkhead would be anchored by tieback rods connected to anchors installed along the upland portion of the site. The existing timber bulkhead would remain in place behind the new bulkhead structure. Space between the existing and new bulkhead would be backfilled with imported fill material to match existing upland site grades. The filling of this narrow band of existing intertidal habitat along the existing bulkhead (about 900 ft²), combined with the filling of the existing marine railway well area (about 2,700 ft²), results in the filling/loss of about 0.08 acres of intertidal habitat in this area of the site. This habitat loss would be mitigated by construction of new marine habitat along the Squalicum Outer Harbor breakwater. The construction of the new galvanized steel bulkhead would remove 110 creosote-treated piles and about 3,600 ft^2 of creosote-treated timber lagging from the marine environment through encapsulation behind the new bulkhead.

Demolition of Marine Railway and Construction of Finger Piers: In conjunction with sediment dredging activities, the existing marine railway would be demolished and disposed at an appropriate offsite location to allow replacement with two approximately 125-ft (from the new bulkhead) finger piers along the railway alignment to accommodate the new travel lift. The various components of the marine railway would be cut or dismantled using both barge-mounted and land-based mechanical equipment and brought to an upland area of the site for size reduction and salvaging and/or disposal. The creosote-treated timber piles associated with the railway (approximately 95 piles outside the railway well, with about 10 mooring piles located north of the railway) would be pulled or cut off and capped with clean sediment below the final dredge mudline elevation. Unless suitable for salvaging and reuse by the contractor for upland use, the piles and timbers would be cut to appropriate lengths and disposed of at an appropriate upland landfill facility. The steel components of the marine railway platform and the steel rails would be salvaged or recycled. As previously discussed, land-based excavation equipment would be used to remove sediment and debris within the marine railway well. Any timber piles and structural components within or near the railway well area that might interfere with installation of the new steel sheetpile bulkhead/tieback system, or the new travel lift pier structure would be cut off or removed. The marine railway well area behind the new sheetpile bulkhead would then be backfilled with imported backfill material up to about 14 ft MLLW to match existing upland site grades.

The new finger piers for the 150-ton travel lift would be installed following completion of sediment dredging activities. As shown on Figures 10 and 12, each concrete finger pier would be 6 ft wide and approximately 145 ft long, with an average 125-ft length extending out beyond the alignment of the new bulkhead, which extends out into the water approximately 3 ft further than the former timber-pile bulkhead. Each finger pier would have a 2.5-ft wide steel or aluminum open-grated walkway and a handrail attached to the outer edge of each pier. The two finger piers would be supported by 36 two-ft diameter, open-ended, galvanized or coated steel pipe piles driven to an appropriate embedment depth below the final mudline with an impact hammer and leads mounted on a barge-based crane. The top elevation of the finger piers would be about 14 ft MLLW to match existing site grades.

Backfilling: Selected areas of the site would be backfilled with clean imported granular fill material. The fill material would typically be a sand and gravel mixture with a relatively low percentage of fines (less than about 4 to 5 percent material passing the U.S. No. 200 sieve) to limit turbidity and facilitate placement. The areas to be backfilled include:

- Areas that are dredged to remove contaminated sediment to depths below a neat line elevation of -13 ft MLLW that would be backfilled up to -13 ft MLLW. (Note: this would not include areas that have a design dredge elevation of -13 ft MLLW and are dredged to a slightly lower elevation). The post sediment dredging and backfilling contours are shown on Figure 9. These areas would likely be backfilled with about 1,600 cy of imported granular fill material delivered to the site by barge and placed with a clamshell bucket. Because of the low percentage of fines, the imported backfill material is predicted to settle freely through the water column and spread evenly onto the sediment surface to be backfilled.

- The marine railway well area behind the new sheetpile bulkhead that would backfilled up to about 14 ft MLLW and paved to match existing upland site grades. This area would likely be backfilled with about 1,200 cy of imported granular fill material delivered to the site by truck, and placed and compacted with conventional earthwork equipment to meet the project requirements for structural backfill to support wheel loads associated with the new 150-ton travel lift hoist. (It is possible that the lower portions of the excavation would be backfilled with quarry spalls to facilitate compaction of the overlying structural fill material.)

- The nominal 3-ft-wide space between the existing timber bulkhead and the new sheetpile bulkhead that would backfilled up to about 14 ft MLLW to provide a barrier between the creosote-treated timber piles and lagging. This area would be backfilled with about 400 cy of a free-flowing granular fill material (such as pea gravel) to match existing upland site grades (Figure 11). Fill material would be delivered to the site by truck and placed with conventional earthwork equipment.

Additional Piling/Bulkhead Repairs and Replacement: Lagging repair under the wharf along Segment C will be conducted to prevent further sloughing of upland soil from beneath bulkhead lagging that is damaged for marine borers. The repairs would consist of installing vertical metal channels along existing piles and attaching ammoniacal copper zinc arsenate (ACZA)-treated wood lagging between the channels, water-ward of the failing lagging (Figures 13a and b). The space between the old and new lagging will be backfilled with a clean granular material to further isolate the old creosote-treated lagging from the marine environment. The filling of this narrow band of existing intertidal habitat along the existing bulkhead (about 120 ft^2) results in the filling/loss of about 0.003 acres of intertidal habitat in this area of the site.

The existing timber bulkhead along Segment C also contains two timber piles (Nos. 79 and 85) with less than 90 percent remaining cross sectional area that would be repaired. Repairs would be effected by removing the wharf decking near each damaged pile, using land-based pile driving equipment to install galvanized steel H-piles on both sides of each damaged pile, and installing a galvanized channel to secure these H-piles to the existing tieback rod.

Timber piles at the site with less than 90 percent remaining cross sectional area would be repaired/replaced as appropriate. The locations of the deteriorated timber piles are indicated on Figure 10 (as well as on other plan views), and include:

- 2 piles along the bulkhead in Segment C (to be repaired)
- 6 piles under the wharf in Segment C (to be repaired/replaced)
- All 16 fender piles along the south side of the wharf in Segment C (to be replaced)
- 5 of the 15 piles supporting the north travel lift float (to be replaced)
- 3 piles along the bulkhead in Segment C (to be isolated behind the new bulkhead).

Certain timber piles no longer in use would be pulled/vibrated out of the sediment, if practicable, or cut off slightly below the final mudline elevation. These include about 140 piles associated with the marine railway (i.e., piles supporting the railway and piles within the marine railway well) and about 20 derelict pile stubs located adjacent to the Segment C bulkhead. Additionally, all of the piles supporting the north travel lift float would need to be removed and replaced to allow temporary relocation of the float during sediment dredging activities. Creosote-treated piles removed from the marine environment may be temporarily stockpiled on the upland portion of the site, with runoff from the stockpile area to be collected and treated by the boatyard stormwater treatment system.

Existing deteriorated timber pier piles would be repaired, removed and/or replaced by one or a combination of the following methods. Piles may be cut at or slightly below the mudline and a new pile secured directly on top, fully extracted with or without replacement, or removed by cutting off the pile below the mudline. Replacement timber piles and pile sections would be treated with ACZA, a wood preservative.

Piles deemed to be repairable may be repaired using a fiberglass or steel casing that is subsequently filled with concrete; such casings would extend from approximately 2 ft below the mudline up to the bottom of the pile caps.

Replacement piles would be ACZA-treated timber piles (or steel piles if appropriate). Replacement piles would be driven to design depth using barge- or land-based pile driving equipment, as determined to be most appropriate by the contractor. The choice of pile materials would depend on available funds and the intended application.

Wharf rehabilitation would include repair/replacement of selected timber pile caps, stringers, decking, and bullrailing. New timber cross bracing would also be added to the wharf as needed. Most of these activities would occur above the mean higher high water elevation.

Proposed Habitat Restoration/Mitigation: The project would incorporate compensatory habitat creation along a portion of the existing riprap breakwater on the west (seaward) side of Squalicum Outer Harbor (Figures 2, 15, and 16). Habitat would consist of a shallow subtidal bench between -4 ft and -6 ft MLLW. The slope of the habitat bench surface would not exceed about 10H:1V, and in most areas would be flatter than about 20H:1V. An outer slope of about 5H:1V would descend to an existing mudline elevation of approximately -12 ft MLLW. The goal of the marine habitat design is to create about 2 acres of intertidal and shallow subtidal habitat above -10 ft MLLW, including at least 1 acre of habitat between -4 and -6 ft MLLW. This new habitat would result in compensation for the approximate 0.5 acres of habitat affected by project impacts, plus additional habitat to concurrently fulfill enhancement and restoration objectives and ensure maintenance of compensatory habitat over time.

Habitat would be constructed using about 30,000 to 35,000 cy of Squalicum Waterway dredged material designated for beneficial reuse and made available through a separate USACE maintenance dredging project scheduled for the fall of 2003 (Contact: Hiram Arden, USACE, Seattle District; Phone 206-764-3401).

Habitat construction material would be placed in a series of relatively thin lifts, with a designated waiting period between placement of successive lifts to allow the material to consolidate and gain strength. Habitat material would likely be transferred to the outer breakwater area using bottom-dump barges, which would be used to place the majority of the habitat material up to approximately -4 ft MLLW. Above that elevation, or when tides drop to depths too shallow to operate a bottom-dump barge, the habitat material may need to be placed with mechanical clamshell equipment operating from a barge.

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

Up to about 7,600 cy of sediment (primarily sand, silt, and clay) would be removed from the marine environment and disposed of at a licensed upland solid waste facility to achieve MTCA sediment cleanup goals. Chemicals of concern and their concentrations and distribution have been evaluated in a series of investigations under MTCA. The dredge volume includes an allowance for up to 1 ft of overdredge below the design dredge depth. Contaminated sediment removal areas would include the impacted area west of the new sheet pile bulkhead and the entire marine railway well area east of the new sheet pile bulkhead (Figure 4). The vertical extent of contamination is limited to the upper 4 ft of sediment. The proposed sediment dredging depths (Figure 5) and cross sections (Figures 6 and 7) were developed to remove the upper 4 ft of sediment within the identified zone of contamination, to the extent practicable, given existing site constraints.

To achieve minimum vessel draft requirements for access to the new boatyard facilities, an additional 400 cy of sediment dredging to -10 ft MLLW would be conducted to within about 25 ft of the new sheetpile bulkhead across the alignment of the marine railway where the new travel lift structure would be constructed. This area of additional sediment dredging is indicated on Figure 5 and Cross Section A-A' on Figure 6.

Selected areas of the site would be backfilled with clean imported granular fill material (about 3,300 cy would be placed over 0.38 acre at the project site). The fill material would typically be a sand and gravel mixture with a relatively low percentage of fines (less than about 4 to 5 percent material passing the U.S. No. 200 sieve) to limit turbidity and facilitate placement. Imported granular fill material would be placed in:

- Areas that are dredged to remove contaminated sediment to depths below a neat line elevation of -13 ft MLLW that would be backfilled up to -13 ft MLLW. The post-sediment dredging and backfilling contours are shown on Figure 9. These areas would receive about 1,600 cy of fill.

- The marine railway well area behind the new sheetpile bulkhead that would backfilled up to about 14 ft MLLW and paved to match existing upland site grades. This area would receive about 1,200 cy of fill. Lower portions of the excavation may be backfilled with quarry spalls to facilitate compaction of the overlying structural fill material.

- The nominal 3-ft-wide space between the existing timber bulkhead and the new sheetpile bulkhead that would backfilled up to about 14 ft MLLW to provide a barrier between the creosote-treated timber piles and lagging. This area would receive about 400 cy of fill (e.g., pea gravel) to match existing upland site grades (Figure 11).

- The nominal 4 inch-wide space between the existing Segment C timber bulkhead and the new timber lagging used for repair would backfilled up to about 14 ft MLLW. This area would receive up to about 80 cy of fill (e.g., pea gravel), as shown on Figure 13b.

New marine habitat would be constructed over approximately 3 acres, using about 30,000 to 35,000 cy of Squalicum Waterway dredged material designated for beneficial reuse and made available through a separate USACE maintenance dredging project scheduled for the fall of 2003. The Puget Sound Dredge Material Management Office (DMMO) has determined that all of the Squalicum Waterway maintenance dredge materials are suitable for unconfined, open-water disposal or beneficial reuse. Only sediment from Squalicum Channel dredge material management units (DMMUs) that comply with NMFS sediment quality no-effects goals for TBT, PAH, and PCB would be used for habitat site fill. Based on available data from the Squalicum Channel Puget Sound Dredge Disposal Analysis (PSDDA) sediment characterization report, DMMUs C3 and C5 through C11 are most appropriate for use as habitat backfill. It is expected that most of the available dredge material would be fine-grained silt to clayey silt material with greater than about 90 percent material passing the U.S. No. 200 sieve.

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

No surface water withdrawals or diversions are part of this project.

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

The proposal does not lie within a 100-year floodplain.

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

The proposal does not involve any direct discharges of waste materials to surface waters. Mitigation measures would be employed during construction to reduce or eliminate suspended soil, fill material, or dredged material generated during construction activities in the water, or the leaching of treatment chemicals from pilings to the

water column. These mitigation measures (which are also effective for the protection of biological resources) are described in Section B.5.d.

b. Ground:

1) Would ground water be withdrawn, or would water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No ground water would be withdrawn, nor would water be discharged to ground water as part of this proposal.

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

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

c. Water runoff (including stormwater):

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

Runoff from adjacent upland areas is not part of this proposal and would not be affected by this proposal. Storm water runoff generated in upland areas within the boat yard is collected, treated to meet Ecology stormwater discharge standards, and discharged through a grassy swale into Bellingham Bay. Existing stormwater discharges would not be affected by this proposal. Runoff from boat pressure wash activities is collected, treated and reused in a closed loop system that does not result in any discharge from the site.

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

No waste materials would enter ground or surface waters as a result of proposal construction or operation.

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

This proposed project has significant mitigation incorporated into it to reduce the impacts of existing contamination on water resources. Key project components would, by their very nature, improve local surface water quality. The removal of contaminated dredged sediments and pilings, and replacement with clean backfill and inert bulkhead materials all serve to reduce impacts from chemical hazards to the surface water column. No adverse impacts are anticipated to ground or runoff water during construction or operation of this proposal. Minor short-term impacts to surface water may occur during construction, but mitigation measures proposed in Section B.5.d to protect biological resources (controls at barge, dredge equipment selection, piling material selection, monitoring for turbidity, silt fencing, etc.) would substantially reduce such impacts.

4. Plants

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

——— **deciduous tree:** alder, maple, aspen, other

——— **evergreen tree:** fir, cedar, pine, other

——— **shrubs**

——— **grass**

——— **pasture**

——— **crop or grain**

——— **wet soil plants:** cattail, buttercup, bullrush, skunk cabbage, other

——— **water plants:** water lily, eelgrass, milfoil, other

X ——— **other types of vegetation:** Marine macroalgae (*Laminaria* spp.)

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

Based on observations during a pre-construction survey, small quantities of unattached marine algae (e.g., *Laminaria* spp.) have drifted into the project site. Attached macroalgae are unlikely to be present because of a lack of suitable (i.e., cobble and rock) substrate and inadequate light penetration at subtidal depths.

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

No threatened or endangered plant species are known to be present, based on threatened and endangered species lists obtained from USFWS and the WDFW Priority Habitats and Species database.

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

Because little or no vegetation is found on the site, no preservation measures are proposed. The new marine habitat site was designed to encourage colonization by eelgrass, which is common in Bellingham Bay and in the shoreline drift and beach wrack along the breakwater.

5. Animals

a. Circle any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: heron, eagle, songbirds, Western gull, herring gull, European starling
mammals: none
fish: salmon, trout, herring, shellfish

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

Based on federal (NMFS and USFWS) and state (WDFW Priority Habitats and Species) information obtained in August and October 2002, threatened and endangered animal species and their habitats may be present in the general Bellingham Bay project vicinity. Species (and habitat) that may be present in greater Bellingham Bay include: Puget Sound chinook salmon, bull trout, bald eagle, marbled murrelet, Steller sea lion, humpback whale, and leatherback sea turtle. Of these species, only bald eagle, chinook salmon, and bull trout are likely to be observed on or near the site.

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

Because chinook salmon and bull trout migrate as juveniles along intertidal estuarine shorelines, the project site and new habitat restoration area may be considered migratory corridors. However, few, if any, juvenile salmonids are expected to be present in the project areas during construction because in-water activities would be scheduled outside the period of juvenile salmon migration, as defined by NMFS, USFWS, and WDFW (September 1 to February 15) to limit potential disturbance to juvenile salmonids feeding in the area. Adult salmonids are not likely to be in the area because they tend to forage offshore in deeper water.

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

Project construction would occur primarily during daylight hours within the period established by NMFS (September 1 to February 15) to limit disturbance to juvenile salmonids feeding in the area.

The project would incorporate habitat restoration along a portion of the existing riprap breakwater on the west (seaward) side of Squalicum Outer Harbor (Figures 2, 13, and 14). Habitat would consist of a shallow subtidal bench between -4 ft and -6 ft MLLW, with a 5H:1V outer slope descending to an existing mudline elevation of approximately -12 ft MLLW. The goal of the marine habitat design is to create about 2 acres of intertidal and shallow subtidal habitat above -10 ft MLLW, including about 1 acre of habitat between -4 and -6 ft MLLW. This new habitat would compensate for about 0.5 acres of project-impacted habitat, plus create additional habitat to concurrently fulfill enhancement and restoration objectives and ensure maintenance of compensatory habitat over time.

Removal and isolation of contaminated sediment and creosote-treated wood from the boatyard is anticipated to have significant, long-term beneficial effects on fish, bird, marine mammal, and aquatic invertebrate habitat and associated prey species. Improvement to site sediment quality from contaminant removal would provide 33,300 ft² of clean marine substrate that would benefit benthic, epibenthic, and pelagic animals, including juvenile salmon and their prey species, and improve water quality. Sediment Quality Standards were designed to protect the most sensitive marine organisms (i.e., sediment-dwelling invertebrates) at the most sensitive life stages (i.e., egg, larval, and settlement stages); post-cleanup sediment quality would be well within the range of values demonstrated to have no adverse effects on these organisms. Pelagic vertebrates, such as salmon, that spend only a small fraction of their life in the nearshore estuarine environment, would benefit from exposure to clean intertidal and shallow subtidal sediment and associated prey resources throughout the approximately 0.76-acre restored area.

Existing adverse effects on sediment and water quality from the creosote timbers comprising the bulkhead, mooring and pier piles, and the marine railway would be eliminated. As a result of bulkhead replacement, about 110 creosote-treated piles and about 3,600 ft² of creosote-treated lagging would have been removed from direct contact with the marine environment. Replacement of the marine railway with a 150-ton travel lift would further remove 5,300 ft² of creosote timbers and 105 creosote piles from the marine environment. Marine railway removal and creosote bulkhead isolation are especially important parts of this remediation project because these structures comprise a significant part of intertidal habitat available to juvenile salmonids and other aquatic resources within the project site. This project is also strongly supported by the Whatcom County Marine Creosote Piling Remediation Program being administered by the City of Bellingham, through a grant from the Washington State Department of Ecology, because of the significant reduction of creosote in the marine environment that will be achieved from proposed timber removal and isolation.

The proposed project would also have significant, beneficial, long-term effects on juvenile and adult chinook and chinook habitat from the creation of 2 acres of high-quality, fine-grained marine habitat within the action area. In addition to the creation of high-quality habitat for many estuarine-dependent fish, the new habitat site would enhance the existing, low-quality coarse-grained habitat along the breakwater by covering a portion of the riprap with silty sand substrate beneficial for benthic and epibenthic colonization.

Long-term, beneficial changes in shading would occur upon replacement of the marine railway with a travel lift. The existing marine railway extends over and through the water column from about 15 ft MLLW to below -10 ft MLLW. The marine railway shades about 2,500 ft², including about 50 ft² of intertidal habitat between -2 and -4 ft MLLW and about 2,100 ft² of subtidal habitat between -4 and -11 ft MLLW. The marine railway would be removed and replaced by a travel lift. The travel lift would be mounted on two narrow piers above 15 ft MLLW, with far fewer steel pile supports that would shade less than 2,150 ft² (0.05 ac) of habitat, which is about 330 ft² (<0.01 acre) less shaded area than the former marine railway. The travel lift's distance from the water, narrow piers, open metal grating, and greatly reduced pile supports would cover less habitat and shade less densely over a smaller total area than the marine railway. Thus, light penetration would be greatly improved in intertidal and shallow subtidal areas of the project site, resulting in greater potential algal productivity.

The new marine habitat would provide greatly improved passage conditions for juvenile salmonids along a potential migratory corridor. The new marine habitat site would provide a large (1- to 2-acre) area of habitat that would provide shallow-water refuge from large aquatic predators. If eelgrass and marine algae colonize the new habitat as anticipated, additional refuge from aquatic and avian predators would be available along the corridor. The new marine habitat site would convert about 2.5 acre of deep subtidal habitat into about 2-acre shallow subtidal habitat between -10 and -4 ft MLLW. The marine habitat would provide long-term, high quality substrate for production of epibenthic and benthic prey organisms for fish, including juvenile salmonids, away from boatyard activities.

Conservation measures to further avoid, minimize, or mitigate detrimental environmental impacts from project activities on aquatic resources include the following:

- Straw bales or geotextile filter material would be placed at the weep holes in the sides of the barge if needed to limit loss of material and control turbidity.

- To further limit turbidity, mechanical (e.g., open clamshell) equipment would be used to excavate contaminated sediment. Additionally, land-based excavation equipment would be used to excavate sediment and remove debris within the marine railway well, with such equipment removing intertidal sediment near the bulkhead line "in the dry" during low tide and potentially placing excavated material directly into shore-based containers or trucks.

- Based on DREDGE modeling, no short-term water quality impacts are anticipated at the point of dredging for any of the dredging activities. But, if water quality monitoring parameters are exceeded during sediment dredging, backfilling, or habitat bench construction activities, appropriate corrective actions will be taken. Monitoring frequency may be temporarily increased until data indicate that releases are being adequately controlled. Corrective actions could include modification of sediment dredging or handling procedures, modification of backfilling procedures, implementation or modification of engineering controls (such as a silt curtain), suspension of the activity causing the exceedance until water quality criteria are achieved, or allowance of a short-term water quality exceedance (e.g., if the exceedance is minor and the result of turbidity from clean backfill).

- As part of the compliance monitoring program, water quality monitoring would be conducted during the dredging operations to verify that water quality is maintained within standards, and to trigger contingency actions, as appropriate. Confirmation samples would be collected and analyzed for the constituents of concern to verify that sediment cleanup activities achieve project objectives. Additionally, the contractor would be required to conduct a post-dredging bathymetric survey to confirm that minimum design dredge depths have been achieved.

- To control the potential release of contaminated sediment during transfer to a disposal site, options currently include:

    (a) Offloading the material from the barge at a designated upland location along the north side or near the northeast corner of the site, and transfer to lined rail cars for transport to a licensed upland landfill disposal facility. The offloading area would be lined to facilitate containment and collection of any material spillage during the material transfer operations.

    (b) Transporting the material by barge to an upland landfill that has facilities for offloading the barge and transferring the material to the upland disposal facility.

- To limit the potential flow of muddy runoff into the bay, stockpile areas for backfill material would be located on grass or gravel upland areas, with silt fencing installed around the material.

- To reduce the short-term risk of high-pH exposure to fish from wet concrete, any wet concrete used for pile repairs would be contained within a form or sleeve (made of either steel or fiberglass) with a

geotextile fabric secured over the sleeve to contain any spillage, to prevent direct contact with seawater and limit leaching. Forms and impervious material would remain in place until the concrete is cured.

- To minimize exposure of aquatic organisms to PAHs in creosote, PAH-contaminated sediment would be removed and areas dredged below -13 ft MLLW would be backfilled with clean fill material. The removal of more than 215 creosote-treated piles and isolation of PAH-contaminated timbers would reduce or eliminate long-term PAH-exposure to aquatic organisms.

- ACZA-treated piles would replace creosote-treated piles wherever wood supports are necessary. New ACZA-treated piles would be dried by the manufacturer before transporting them to the site for pile replacement. ACZA-treated piles stockpiled on site would be placed within the boatyard's stormwater interception and treatment area, so any runoff from the piles before installation would be captured and treated before entering marine waters.

- Steel piles and framing members and pre-cast concrete decking panels would be used in place of treated wood for the new marine travel lift.

6. Energy and natural resources

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

Project construction activities would require the expenditure of electricity, diesel fuel, and gasoline in support of both construction and operation during the life of the project. Electricity would be required to run power tools and equipment, and proposal area lighting. Diesel fuel would be required to operate dredging, piledriving, and other construction equipment, diesel-powered construction and operation support vehicles, and the travel lift. Gasoline would be required to operate worker vehicles and small motors during both construction and operation. Natural gas or electricity would be required for heating during on-water project operations. The amount of energy expended by this proposal would be very minor and easily accommodated by existing energy resources in the area.

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

The project would not affect the potential or actual use of solar energy by adjacent properties.

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

The proposal would include energy conservation features normally incorporated in construction equipment and shipyard operational equipment associated with the travel lift and other improvements. No other energy conservation measures are warranted or proposed.

7. Environmental health

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

The project would require the operation of combustion engines during construction in association with crane and piledriving operations, as well as worker commuting activities. During operation, a replacement travel lift would be in service, and worker and client vehicles would operated in the area. These activities would result in the release of minor and allowable amounts of related emissions into the air. The operation of combustion engines in association with crane and piledriving operations during construction and the travel lift during operation could

potentially cause direct or indirect releases (or spills) to the surface waters of the project area. Contaminated sediments will be disturbed during dredging, and to a lesser degree during the removal of deteriorated piles. This may result in releases of chemicals into the water column as described above under the description of the project's potential impacts to water. All work would be performed in accordance with a project health and safety plan to protect worker safety during construction.

1) Describe any emergency services that might be required.

The proposal would not require emergency services beyond the fire, rescue, and emergency response services readily available to serve the Bellingham port-industrial area, which are fully adequate to support the proposal.

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

The potential for environmental health hazards to occur as a result of construction or operation of the proposed improvements would be minor. Therefore, no proposed measures would be required nor warranted, other than spill prevention plans, stormwater pollution prevention plans, employee right-to-know measures, and waste management provisions that might be required by Ecology, and other relevant state health and safety compliance requirements with the potential to reduce such hazards. Additionally, standard safety precautions associated with heavy equipment operations, including precautions directed at reducing and controlling air emissions and releases of fuels and other contaminants, would be adhered to on the project site.

b. Noise

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

There are no substantial sources of noise in the area with the potential to affect the proposed project. The project is located in a port-industrial area, where noise levels are relatively high (compared to residential and commercial uses) and consistent with industrial activities, such as ship building and repair, warehousing with substantial truck and rail operations, and other such uses.

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

Project-related noise would be generated during construction by the project as a result of dredging operations, crane operations during removal of damaged pilings, and piledriving activities during sheetpile bulkhead and piling installation. These impacts would be short-term and typical for sound levels created during the construction of industrial facilities, which typically ranges from 78 to 89 dBA at 50 ft (EPA 1971). Supporting vehicle operations would also generate minor project-related noise during construction, but these impacts would be negligible.

Construction-generated noise is exempt between the hours of 7:00 a.m. and 10:00 p.m. at residential property receivers and during all hours at commercial and industrial receivers. Construction activities associated with the proposed project (except for possible excavation of the marine railway well) are not planned after 10:00 p.m. or before 7:00 a.m. If they occur, however, noise levels measured at the property boundary would be lower than the dBA standards established in the WAC for the nearby industrial properties and substantially below the dBA standard at the nearest residential use.

During operation, the proposal would generate noise from a variety of sources, including travel lift operations (which would similar to current operations, except the travel lift would be larger and would generate slightly higher noise levels), some in-water boat repair activities, and support vehicle operations. This noise would be generally consistent with existing noise levels at the site as well as background noise associated with industrial areas.

Whereas there may be a slight increase in noise levels due to the larger travel lift and the potential increase in workers/clients using the area as a result of the development of a more efficient shipyard, noise levels at and around the proposed project site would remain within acceptable levels.

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

Equipment at the proposed site would be equipped with standard noise reduction equipment, such as mufflers. All noise generated by the project (with the exception of piledriving operations) would be similar to that typically generated at the shipyard and within the greater Bellingham port-industrial area. The most significant project noise would be piledriving operations, which would be conducted during daylight hours as allowed by local noise ordinances to reduce noise impacts.

Because noise levels generated by proposal development and operation would be within regulatory limits and would be consistent with surrounding uses and noise environments, no measures to mitigate noise impacts are proposed or warranted.

8. Land and shoreline use

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

The area of the site is generally industrial. A commercial boatyard currently occupies the site; adjacent properties include a pier, marina, yacht club, and supporting port-related facilities.

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

The site has never been used for agriculture.

c. Describe any structures on the site.

A timber bulkhead along the site waterfront supports the upland fill areas of the boatyard. The timber bulkhead is constructed of creosote-treated wood piles that support horizontal wood siding (i.e., lagging) with tieback rods and deadman anchors at most pile locations (Figure 11). About 176 ft of bulkhead along the north side of the site is covered by an existing wharf. The bulkhead alignment has been subdivided into three segments (A, B, and C) for Port planning purposes, as indicated on Figure 3. The bulkhead lengths for Segments A, B, and C are approximately 144 ft, 222 ft, and 258 ft, respectively.

A creosote-treated timber pile-supported marine railway extends from the upland railway well area (approximately 30 ft wide by 100 ft long) into the water about 235 ft beyond the timber bulkhead. A row of creosote-treated timber mooring piles is located just north of the marine railway. The marine railway is constructed on bents alternately supported by two and three timber piles, with timber pile caps and stringers supporting two steel rails. The marine railway platform that travels on the two steel rails is constructed with steel framing and creosote-treated timber decking. The sides of the railway well are supported by creosote-treated timber piles and lagging supplemented with concrete side walls along a portion of the structure.

A 35-ton travel lift is supported by piers on pairs of timber piles with timber cross bracing. Each pier is about 6 ft wide (including the walkway). Timber and steel carrier beams extend about 77 ft beyond the timber bulkhead. A large timber structure extends about 350 ft beyond the timber bulkhead and is secured to the north travel lift pier by 15 timber piles. A smaller timber float is secured to the south travel lift pier.

A wharf along the north side of the site (30 x 176 ft) within Segment C is a creosote-treated timber pile-supported structure with timber decking, stringers, pile caps, and cross bracing. The wharf extends several feet beyond the underlying timber bulkhead. A small building sits on the eastern side of the wharf and extends upland onto a gravel-surfaced area. The wharf west of Segment C is not part of the project area.

Upland areas east of the bulkhead in Segment B contain several small sheds, several buildings, open storage and work areas, parking areas, and a grass bioswale (Figure 3). The north third of the boatyard is a gravel-surfaced storage area; the rest is paved with asphalt concrete. The upland area adjacent to Segment A contains structures and paved parking areas associated with the Squalicum Yacht Club and the Bellingham Yacht Club.

Several active and abandoned stormwater outfall pipes extend through the timber bulkhead on the north and east sides of the site. The origin and use of these outfalls are being investigated as part of the MTCA upland cleanup. The Port has previously performed maintenance activities on the site stormwater system to limit potential contaminant releases to site sediment and surface water resulting from stormwater discharges. In addition, Seaview Boatyard North constructed a closed, self-treating boatyard water treatment system that retains, treats, and recycles water from the pressure wash facility. Seaview Boatyard North also constructed new improvements to treat site stormwater runoff from paved areas outside the pressure wash facility, including a grassy swale that treats stormwater runoff to Ecology standards prior to release into the marine environment.

Squalicum Harbor marina and docks are directly south of the site. A riprap breakwater extends along the seaward side of the boatyard, from the project site south to Squalicum Creek.

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

Yes, the marine railway and numerous creosote-treated timber piles would be demolished and/or removed. The primary purpose for removal of the marine railway is to allow access to underlying sediment for contaminant removal. In conjunction with sediment dredging activities, the components of the existing marine railway would be demolished and disposed of at an appropriate offsite location to allow construction of the new 150-ton travel lift finger piers along the railway alignment. The location of the existing marine railway is shown on Figures 3 and 4, the alignment of the new travel lift piers is shown on Figure 10, and a generalized section of the new travel lift pier structure is shown on Figure 12.

The various components of the marine railway would be cut or dismantled using both barge-mounted and land-based mechanical equipment and brought to an upland area of the site for size reduction and salvaging/disposal activities. The creosote-treated timber piles located beyond the bulkhead line (approximately 105 piles, including the 10 mooring piles located north of the railway) would be pulled or cut off below the final dredge mudline elevation. The amount of creosote-treated wood that would be removed from the marine environment by dismantling the marine railway is about 5,300 ft². Unless suitable for salvaging and reuse by the contractor, the piles and timbers would be cut to appropriate lengths and disposed of at an appropriate upland landfill facility. The steel components of the marine railway platform and the steel rails would be salvaged or recycled. As previously discussed, land-based excavation equipment would be used to excavate sediment and remove debris within the marine railway well as part of sediment dredging activities. Any timber piles and structural components within or near the railway well area that might interfere with installation of the new steel sheetpile bulkhead/tieback system or the new travel lift pier structure would be cut off or removed. The marine railway well area behind the new sheetpile bulkhead would then be backfilled with imported backfill material up to about 14 ft MLLW to match existing upland site grades.

The proposed site activities would eliminate about 215 of creosote-treated piles from the marine environment (including those supporting the marine railway), replace at least 27 creosote-treated piles with piles that have less impact on sediment and water quality, and eliminate about 8,900 ft² of creosote-treated limber lagging and railway timbers from the marine environment.

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

The current zoning classification of the site is Commercial.

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

The current comprehensive plan designation of the site is CBD West, 3.

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

The City of Bellingham Shoreline Master Program designates Bellingham Bay as “urban maritime.”

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

Habitat for federally listed species (Puget Sound chinook salmon and bull trout), in the form of water column and intertidal substrate, is present at the proposed site. Essential Fish Habitat (designated under the Magnuson-Steven Fishery Management Act) for Pacific salmon and Pacific groundfish is also present.

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

Approximately 35 to 40 employees would work at the completed project. No people would reside at the site of the completed project.

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

The project would not displace any people.

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

No displacement impacts would occur as a result of the project; therefore, no measures are warranted with respect to displacement impacts.

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

The proposal is compatible with existing and projected land uses and plans; therefore, no land use impacts exist and no associated mitigation measures are warranted.

9. Housing

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

No housing units would be provided under this project.

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

No housing units would be eliminated by this project.

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

No impacts to housing would occur as a result of this project; therefore, no related mitigation measures are warranted.

10. Aesthetics

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

exterior building material(s) proposed?

The height of any structures proposed as part of the in-water improvements at the site would be the negligible and not higher than the abutting upland fill. The proposal would allow the replacement of the existing travel lift with a larger capacity (and taller) travel lift, but this improvement would not represent a structure, since the travel lift would be mobile.

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

The proposed improvement would not obstruct any views. Views from residential areas on the bluff to the east would be slightly altered by the addition of the two track ways for the travel lift that would be constructed as part of the project. However, this view alteration would be very minor and consistent with the port-industrial character of the area. Views of the shore from the waterside also would be slightly altered along the westerly facing shoreline of the project, as a sheetpile bulkhead would replace the existing timber bulkhead.

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

There are no significant aesthetic impacts imposed by this proposal; therefore, no related mitigation measures are proposed.

11. Light and glare

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

The proposal would entail the replacement of a timber-pile bulkhead with a galvanized steel sheetpile bulkhead. This would increase the potential for glare (from the waterside) associated with the proposed site; however, the impacts of this potential glare would be small. Galvanized steel, while possessing some reflective characteristics, is not highly reflective, appearing somewhat brighter (although not significantly glare producing) than wooden timbers. The site would remain lighted for some nighttime work. However, site lighting would not be appreciably changed under this project.

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

Light and glare from the finished project would not be a safety hazard or interview with views.

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

There are no off-site sources of light or glare that would affect this proposal.

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

The project is not anticipated to generate light and glare impacts that would warrant mitigation; therefore none is proposed.

12. Recreation

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

The project is located in Squalicum Outer Harbor. Marina moorage facilities for recreational boat are located adjacent to the proposed project site. The immediate nearshore area of the site is used by recreationally important fish species (salmon, shellfish, etc.); however, the immediate area of the proposed project (like most of the Bellingham industrial waterfront) is not used for the harvesting of these resources. The open-water areas of Bellingham Bay and the nearby municipal pier is far more frequently used for recreational fishing than the

industrial waterfront.

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

The proposed project would not displace any existing recreational uses.

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

The proposed project would not generate significant impacts on recreational resources or opportunities; therefore, no measures to mitigate such impacts are proposed.

13. Historic and cultural preservation

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

There are no known places or objects listed on or proposed for any preservation registers known to be on or next to the site.

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

There are no landmarks or evidence of historical, archeological, scientific, or cultural importance known to be on or next to the site.

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

There are no impacts on known or suspected historical, archeological, scientific, or cultural resources; therefore, no measures to reduce or control such impacts are proposed.

14. Transportation

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

The site is accessed via Roeder Avenue to Squalicum Way and then to Harbor Loop Drive. The existing street system and access to the system would not change under the proposed site improvements.

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

The area is currently served by Bus Route 46 of the Whatcom Transportation Authority. The nearest transit stop is designated as the Squalicum Harbor stop, and is located approximately 1,000 ft north of the site.

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

The completed project would not add or eliminate any parking spaces.

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

The proposal would not require any new roads or streets, or related improvements.

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

The project would use the existing street system described above to provide access to the site via trucks and automobiles. The project would also use the water approaches to the site for boat access to the ship repair and building facilities. The completed site would not require rail or air transport.

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

There would be no immediate impact on vehicular trips per day to the site as a result of the proposed site improvements. It is possible that with the improved efficiency of the shipyard, more business would ultimately be attracted to the shipyard, creating a need to hire more shipyard workers. However, this indirect impact would not be sufficiently substantial to cause significant increases in vehicle trips or the need for transportation/transit improvements.

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

The proposed project would not cause significant transportation impacts; therefore no mitigation is proposed.

15. Public services

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

The project would not result in an increased need for fire protection, police protection, health care, schools, or other public services.

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

The proposed project would not cause significant public service impacts; therefore no mitigation is proposed.

16. Utilities

a. Underline utilities currently available at the site: <u>electricity, natural gas, water, refuse service, telephone, sanitary sewer,</u> septic system, other.

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

The proposed project improvements would not require additional utilities to be extended to the site. During construction, diesel crane, dredging, and pile driving powered equipment; electrical power tools; cutting torches (with acetylene or other portable power source brought to site); and other portable resources would be used at the site. There would be additional workers using the site and either using water supply and sanitary facilities at the site or portable wash-up and sanitary facilities. In addition, workers would generate more solid waste. However, the impact on these services would be negligible.

During operation, the use of these services would be expected to remain approximately the same as existing use. Even if a more efficient shipyard operation ultimately attracts some additional employment and clients, the surplus capacity of public services in the proposed project area would readily accommodate the added demand caused by this increase in business.

C. SIGNATURE

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

Signature:

Larry Beard
Authorized Agent

Date Submitted: March 17, 2003

Site:	Gate 2 Boatyard, Squalicum Harbor Port of Bellingham
Address:	2652 Harbor Loop Drive (Intersection Squalicum Way and Harbor Loop Drive) Bellingham, Washington 98225
Directions:	(From Seattle, Washington) I-5 North Exit No. 253 (Lakeway Dr.) Right on King St. Right on Lakeway Dr./E. Holly St. Left on "F" St. Right on Roeder Ave. Left on Squalicum Way Left on Harbor Loop Drive
Latitude:	48° 45' 47"
Longitude:	122° 30' 36"

0 2000 4000

Approximate Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

VICINITY MAP

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 1 OF 16

Port of Bellingham/Gate 2 Boatyard/JARPA Figures | T:\001\027\155\JarpaFig1.dwg (A) "Figure 1-corp" 3/7/2003

Site: Gate 2 Boatyard, Squalicum Harbor
Port of Bellingham

Latitude: 48° 45' 47"
Longitude: 122° 30' 36"

Address: 2652 Harbor Loop Drive
(Intersection Squalicum Way and
Harbor Loop Drive)
Bellingham, Washington 98225

0 400 800

Approximate Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

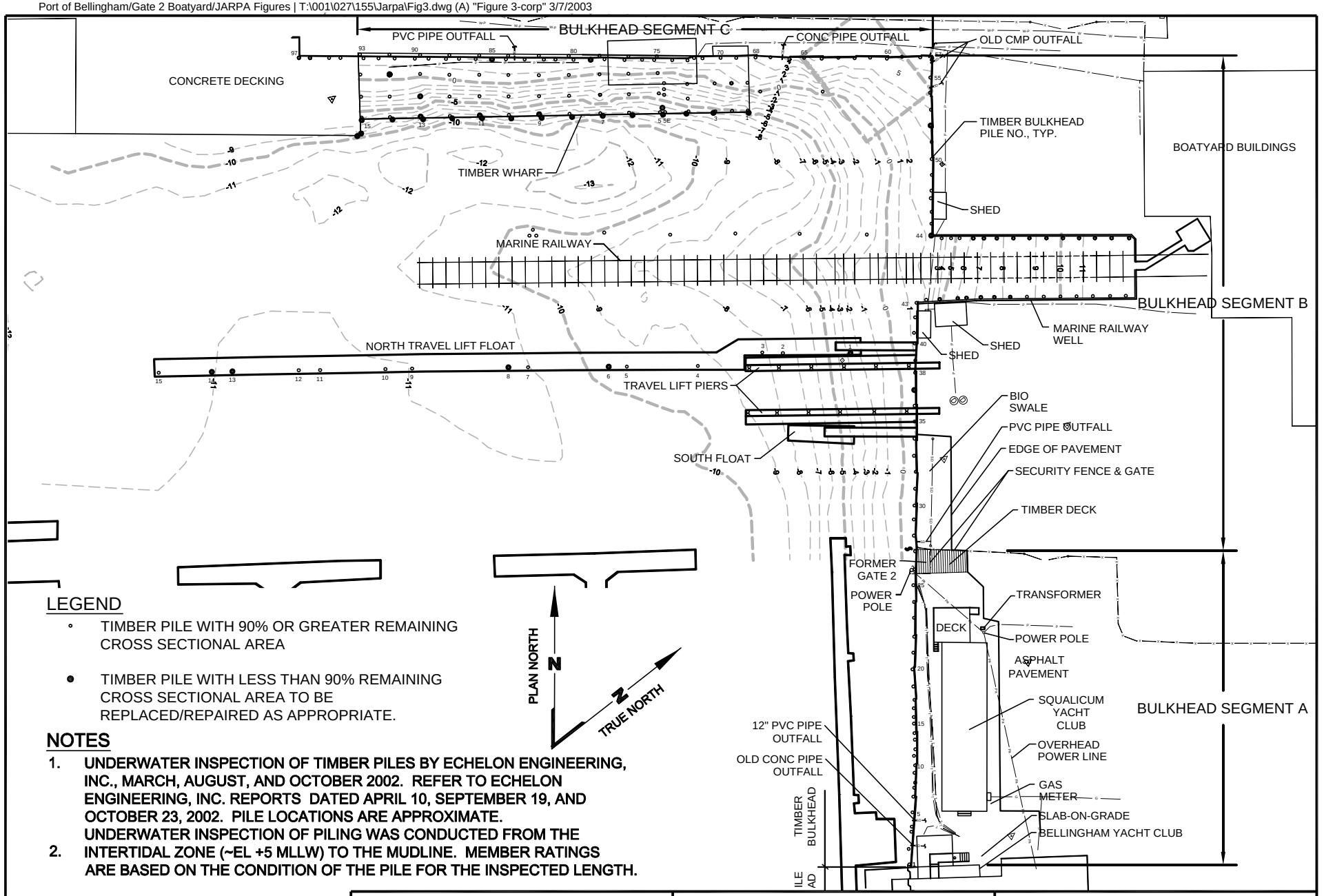
APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

PROJECT AREA SITE PLAN

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 2 OF 16

Port of Bellingham/Gate 2 Boatyard/JARPA Figures | T:\001\027\155\JarpaIFig2.dwg (A) "Figure 2-corp" 3/7/2003



LEGEND

- ° TIMBER PILE WITH 90% OR GREATER REMAINING CROSS SECTIONAL AREA
- • TIMBER PILE WITH LESS THAN 90% REMAINING CROSS SECTIONAL AREA TO BE REPLACED/REPAIRED AS APPROPRIATE.

NOTES

1. UNDERWATER INSPECTION OF TIMBER PILES BY ECHELON ENGINEERING, INC., MARCH, AUGUST, AND OCTOBER 2002. REFER TO ECHELON ENGINEERING, INC. REPORTS DATED APRIL 10, SEPTEMBER 19, AND OCTOBER 23, 2002. PILE LOCATIONS ARE APPROXIMATE.
2. UNDERWATER INSPECTION OF PILING WAS CONDUCTED FROM THE INTERTIDAL ZONE (~EL +5 MLLW) TO THE MUDLINE. MEMBER RATINGS ARE BASED ON THE CONDITION OF THE PILE FOR THE INSPECTED LENGTH.

0 60 120

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

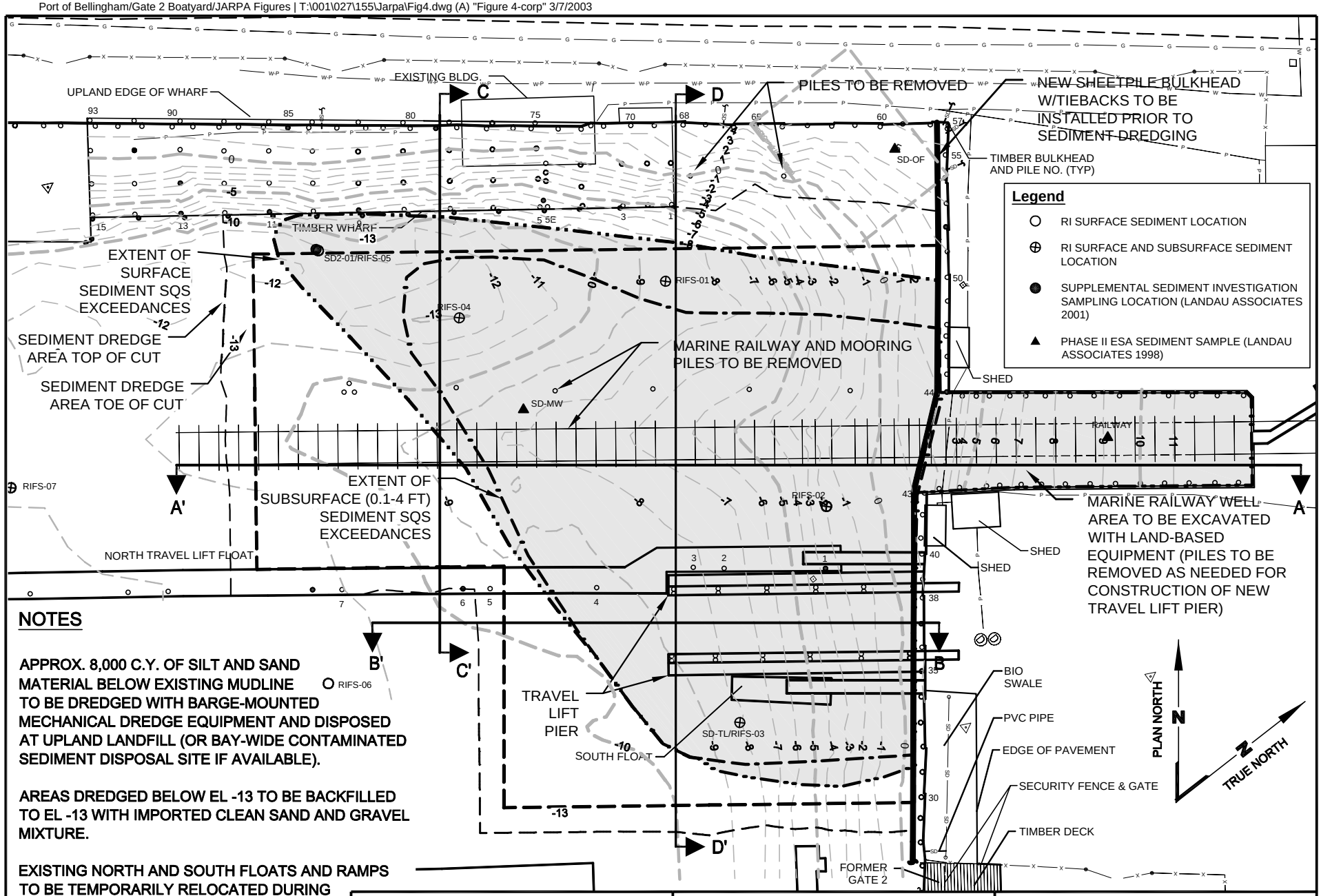
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

EXISTING SITE CONDITIONS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 3 OF 16



NOTES

APPROX. 8,000 C.Y. OF SILT AND SAND MATERIAL BELOW EXISTING MUDLINE TO BE DREDGED WITH BARGE-MOUNTED MECHANICAL DREDGE EQUIPMENT AND DISPOSED AT UPLAND LANDFILL (OR BAY-WIDE CONTAMINATED SEDIMENT DISPOSAL SITE IF AVAILABLE).

AREAS DREDGED BELOW EL -13 TO BE BACKFILLED TO EL -13 WITH IMPORTED CLEAN SAND AND GRAVEL MIXTURE.

EXISTING NORTH AND SOUTH FLOATS AND RAMPS TO BE TEMPORARILY RELOCATED DURING DREDGING ACTIVITIES.

0 40 80

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

ADJACENT PROPERTY OWNERS:
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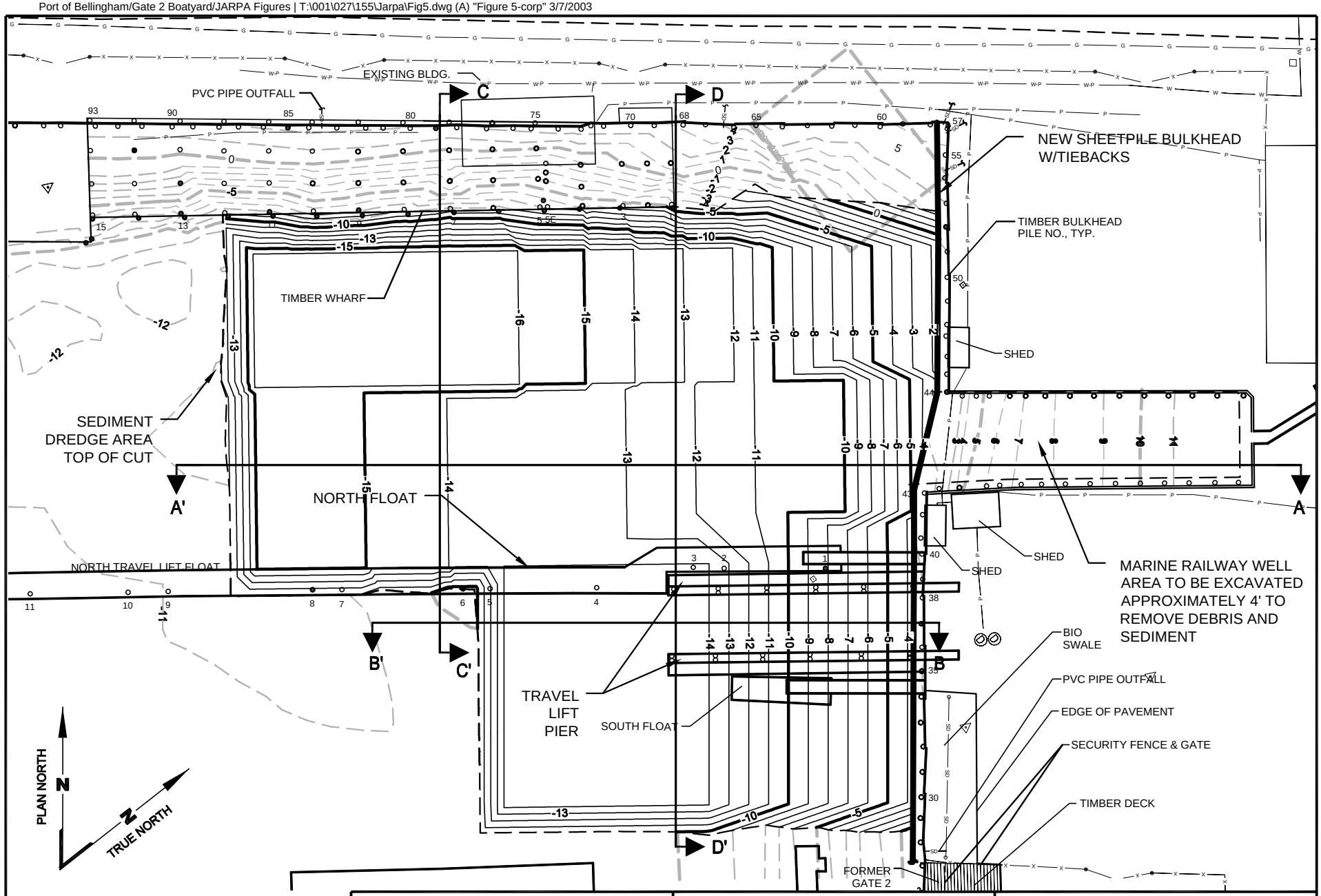
APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

SEDIMENT DREDGING AREAS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 4 OF 16



PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

ADJACENT PROPERTY OWNERS:
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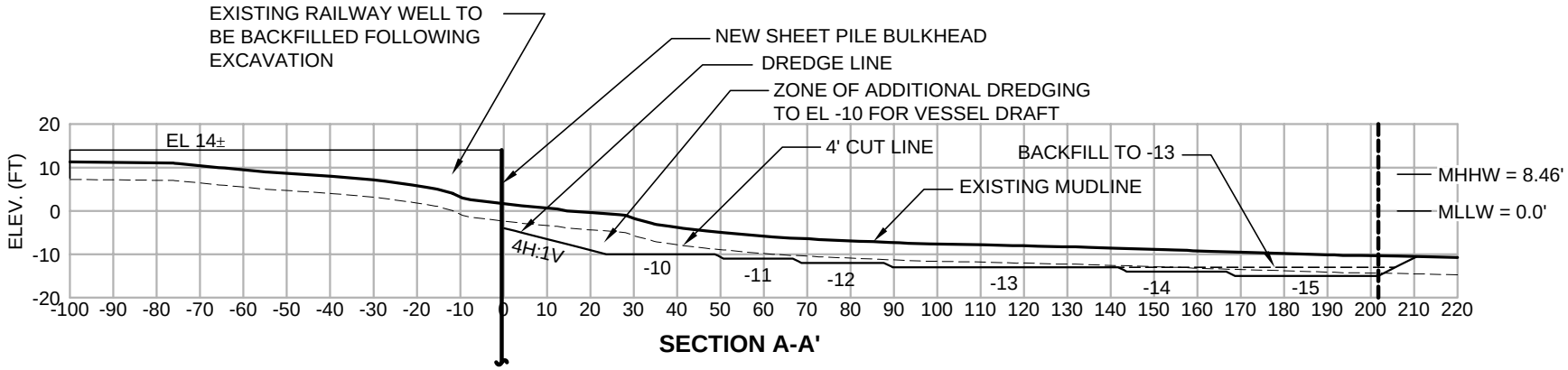
APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

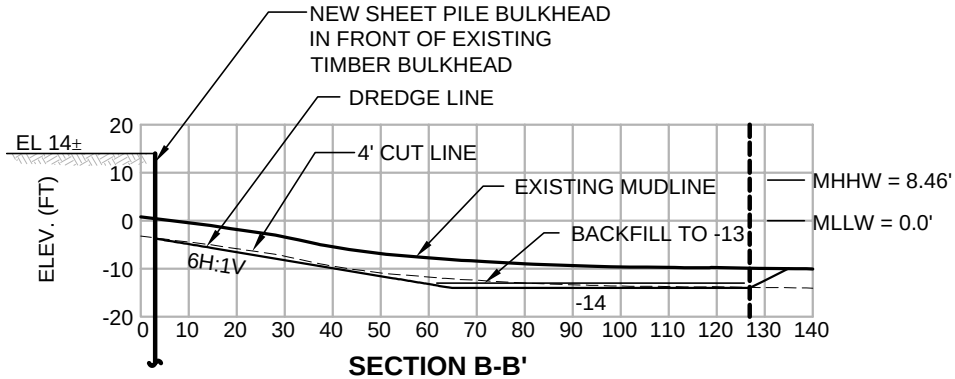
POST SEDIMENT DREDGING CONTOURS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 5 OF 16



SECTION A-A'



SECTION B-B'

0 40 80

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

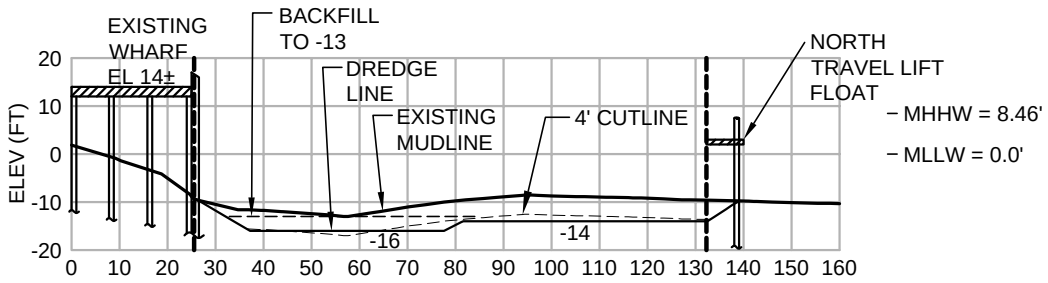
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

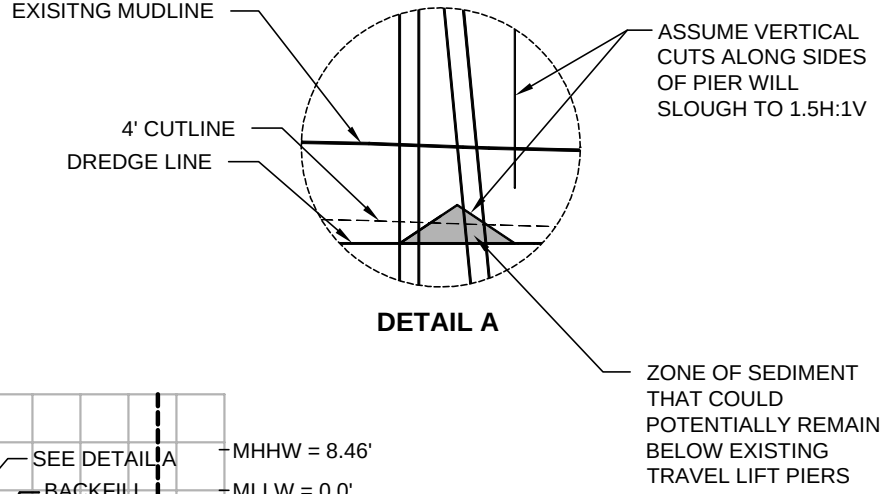
SEDIMENT DREDGING CROSS SECTIONS

DATUM: MLLW=0.0'
DATE: 3/6/03

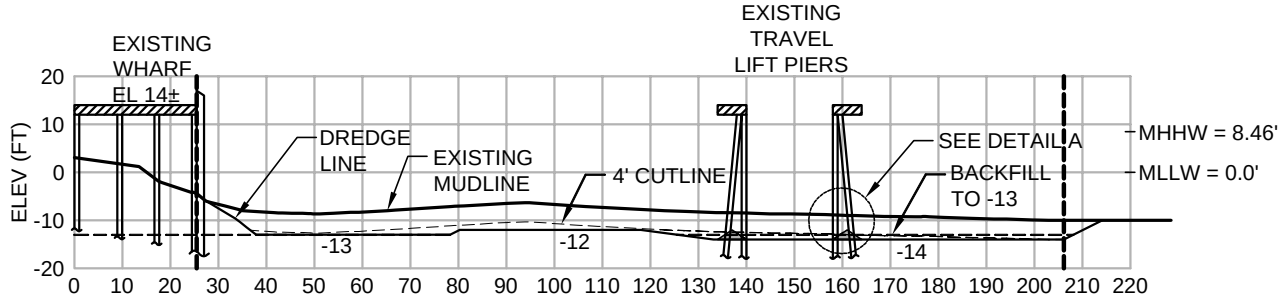
FIGURE 6 OF 16



SECTION C-C'



DETAIL A



SECTION D-D'

0 40 80

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

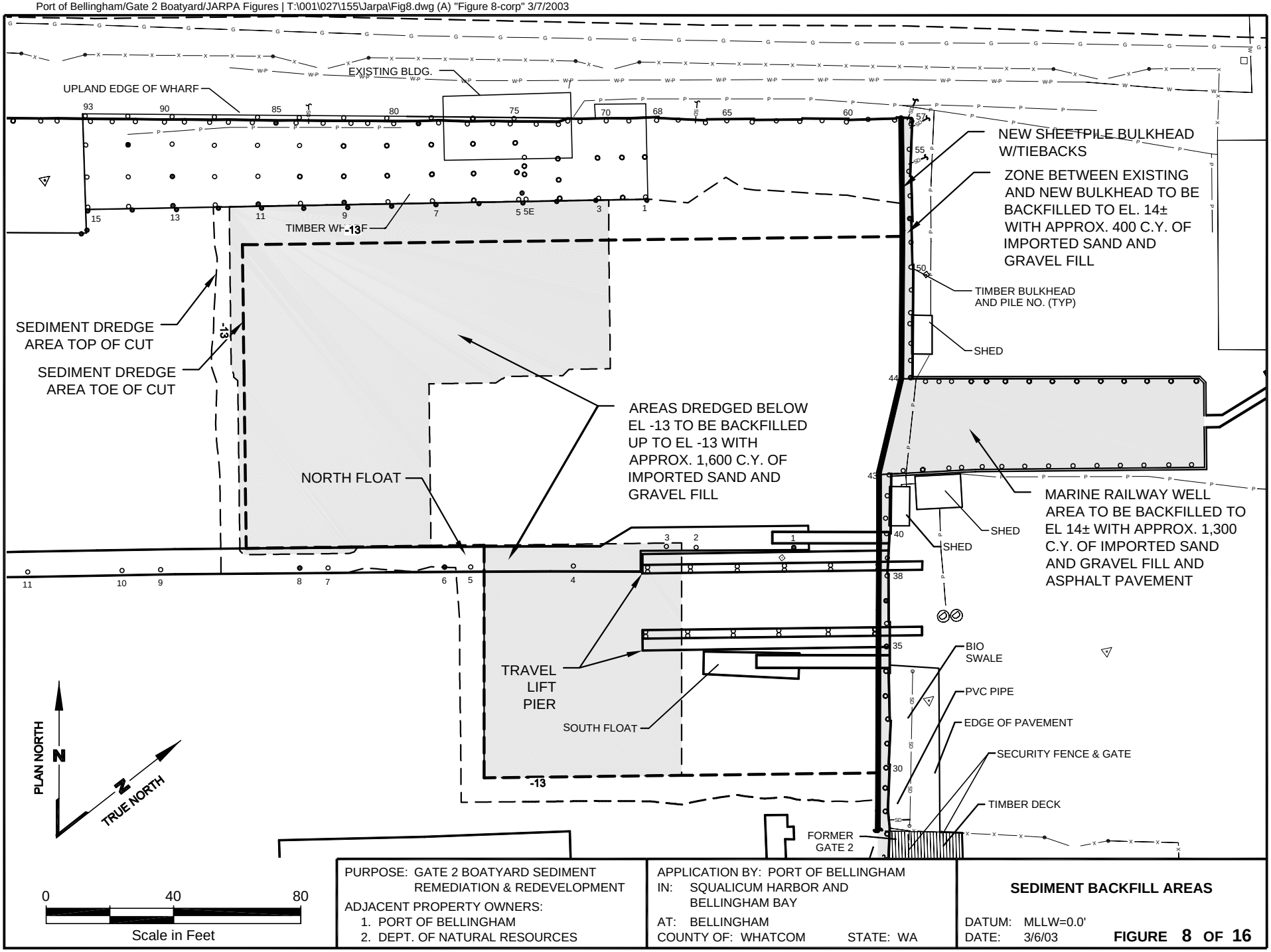
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

SEDIMENT DREDGING CROSS SECTIONS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 7 OF 16



0 40 80

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

ADJACENT PROPERTY OWNERS:
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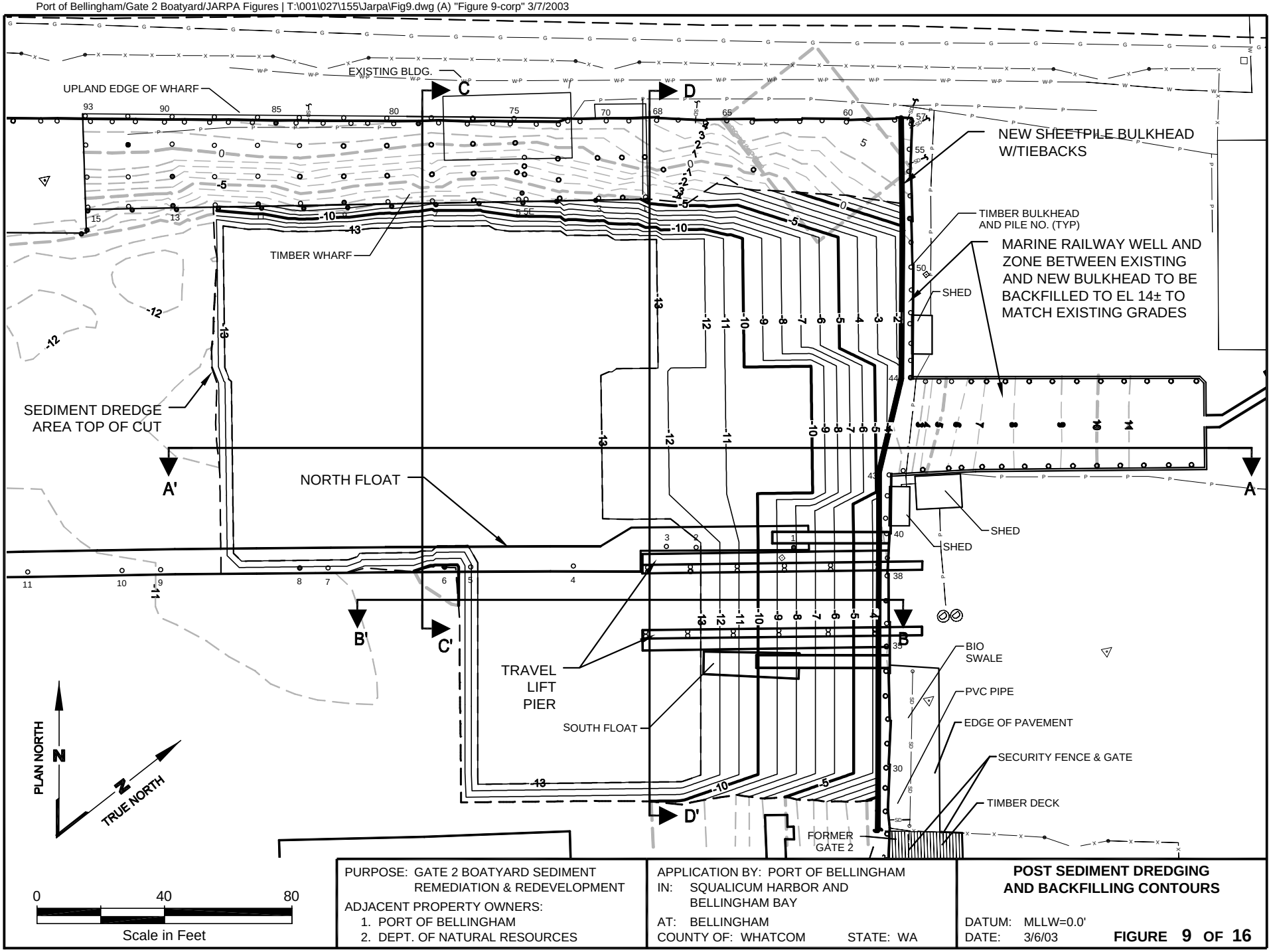
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

SEDIMENT BACKFILL AREAS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 8 OF 16



PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

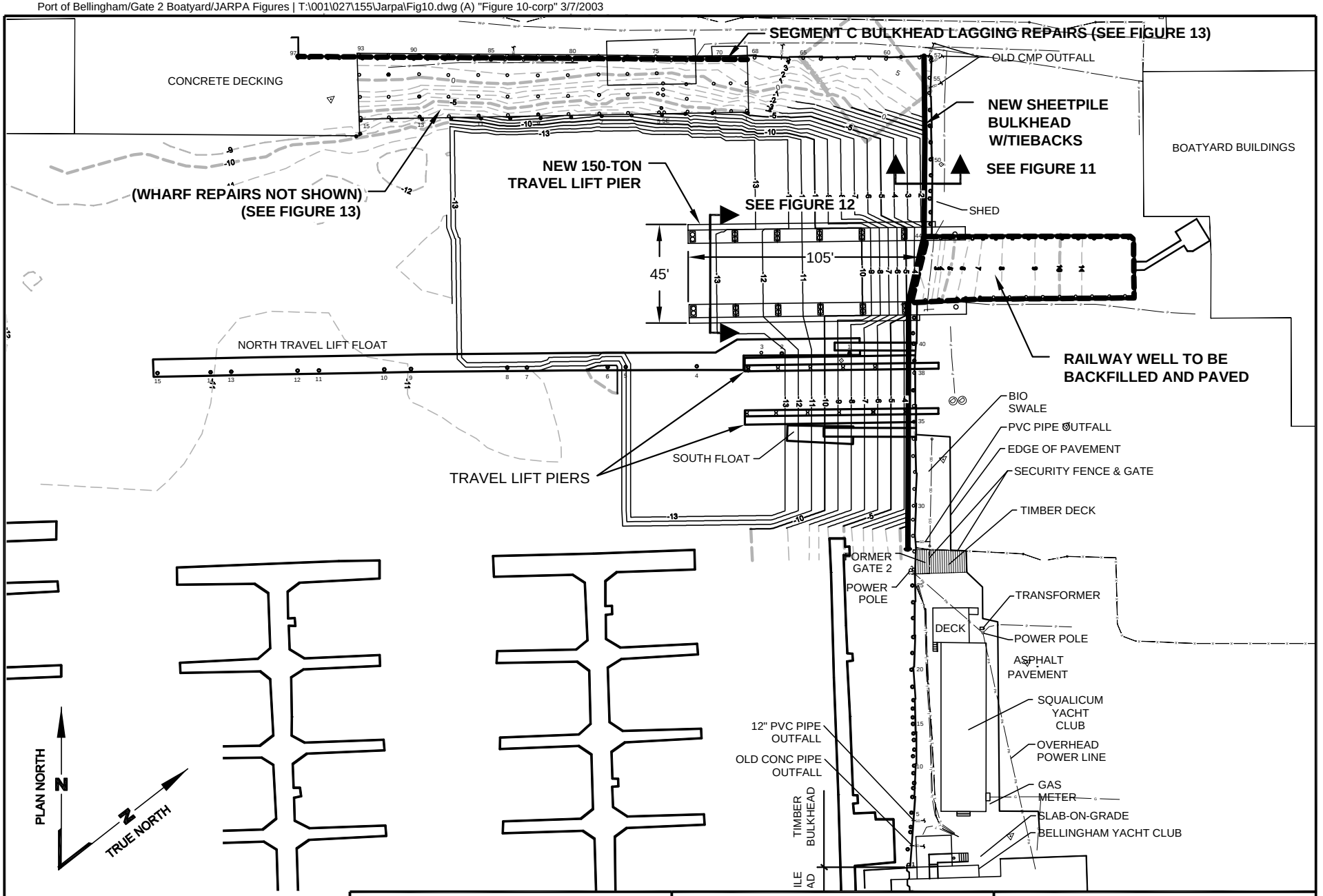
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

POST SEDIMENT DREDGING AND BACKFILLING CONTOURS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 9 OF 16



PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

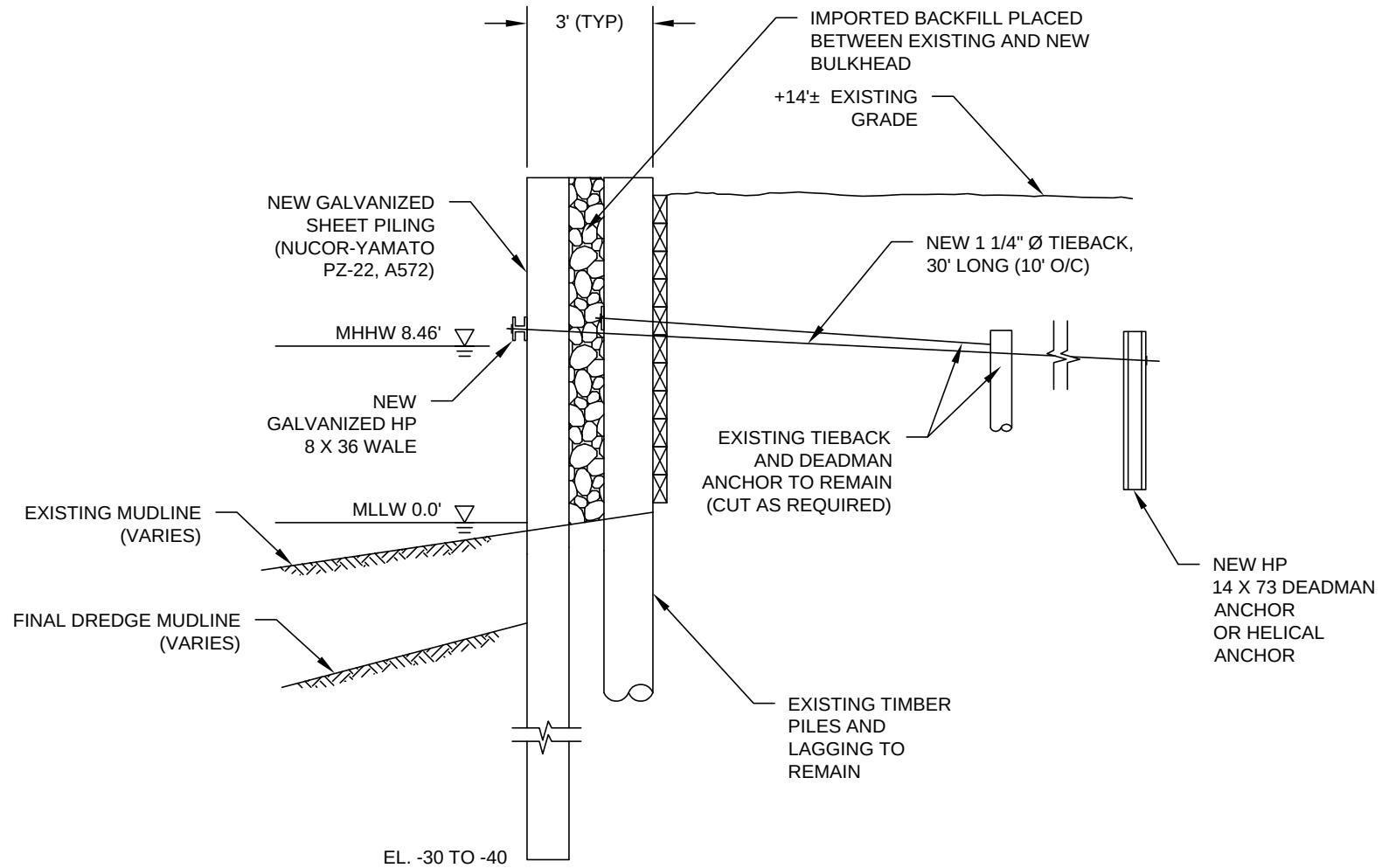
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

PLANNED SITE IMPROVEMENTS

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 10 OF 16



0 4 8

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

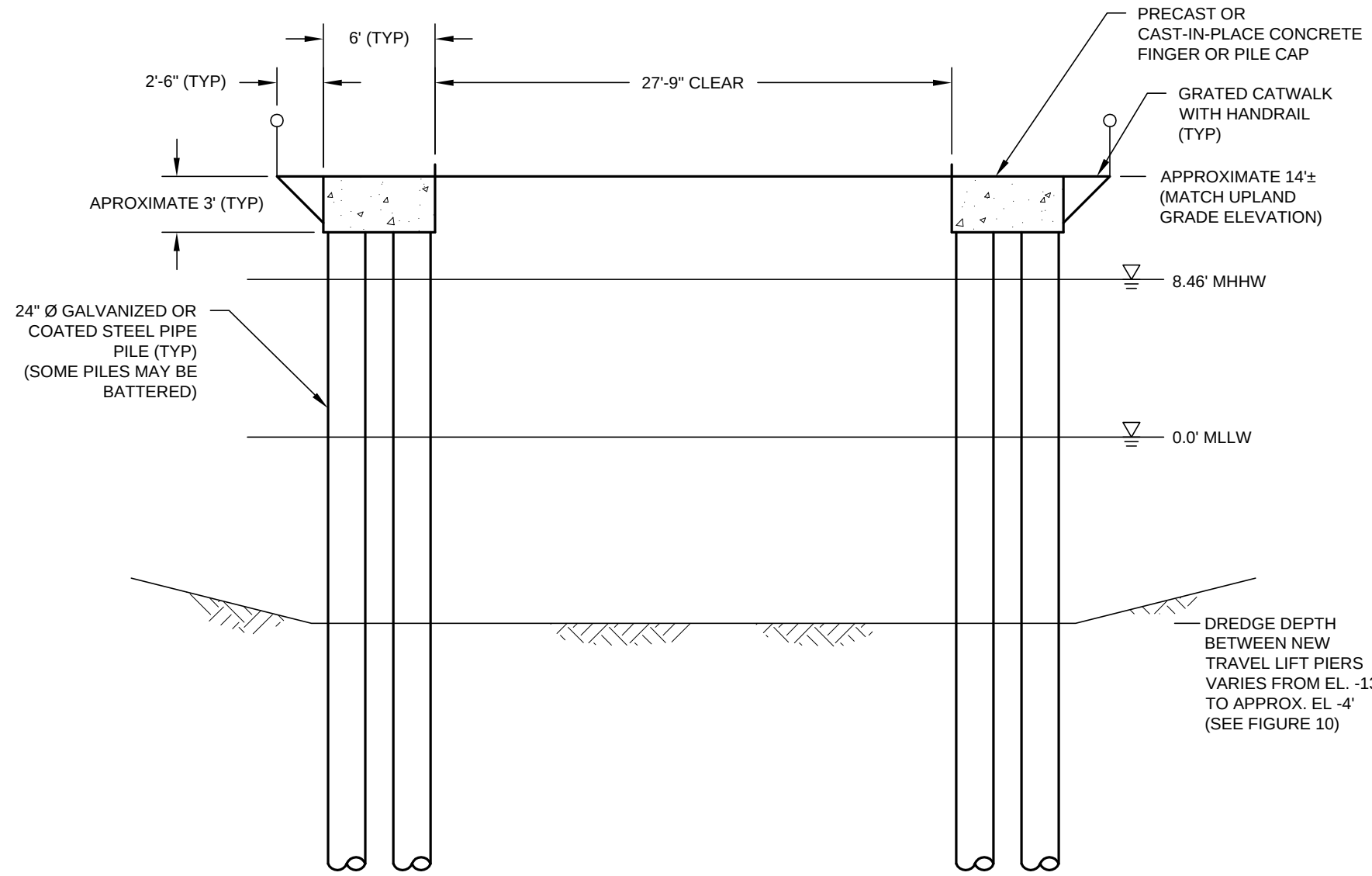
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

NEW SHEET PILE BULKHEAD

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 11 OF 16



0 8 16

Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

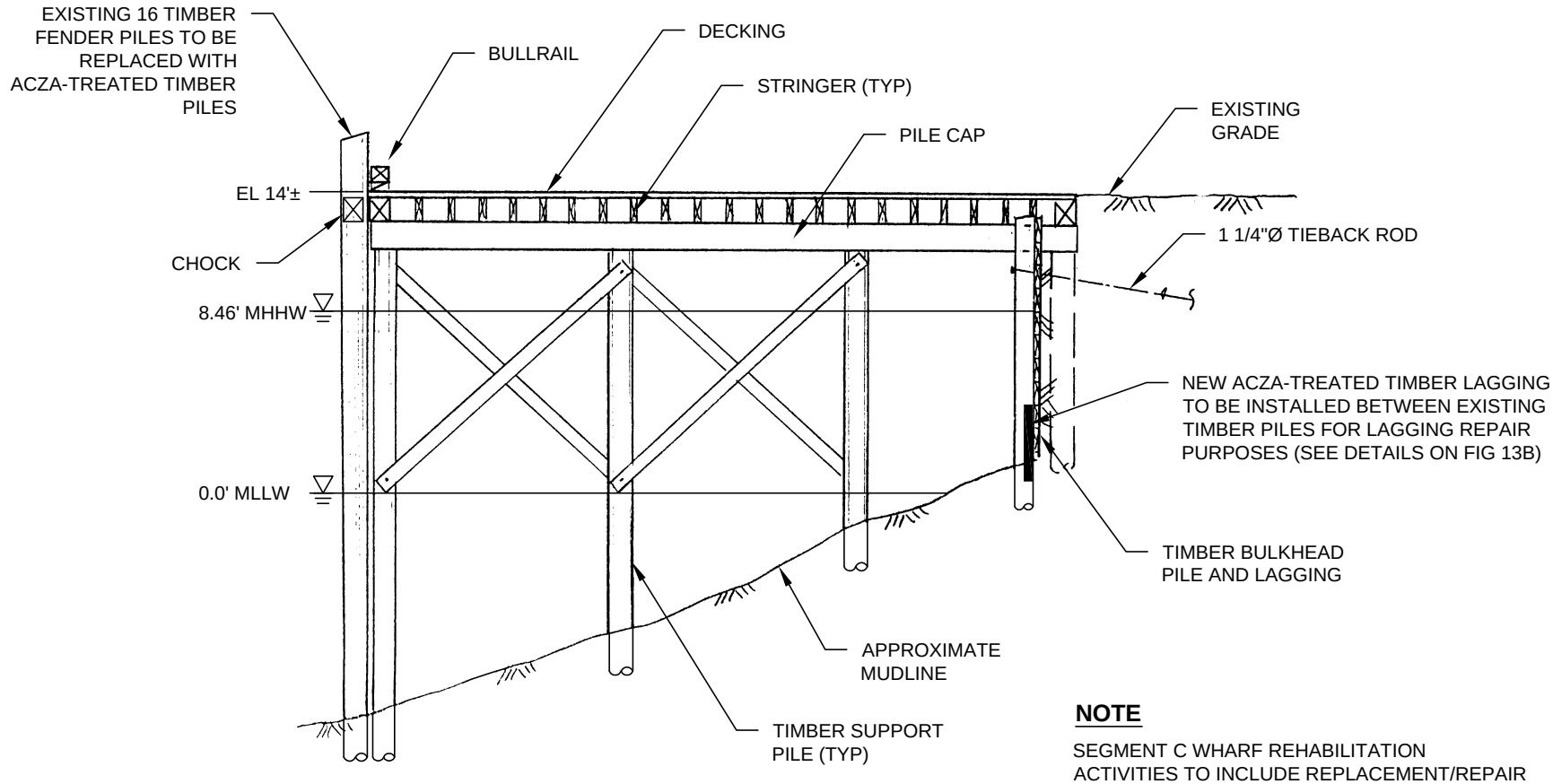
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

150 TON TRAVEL LIFT PIER CROSS SECTION

DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 12 OF 16



NOTE

SEGMENT C WHARF REHABILITATION ACTIVITIES TO INCLUDE REPLACEMENT/REPAIR OF CERTAIN PILE CAPS, STRINGERS, DECKING AND BULLRAILING, AS WELL AS INSTALLATION OF ADDITIONAL CROSS-BRACING TIMBERS.

0 8 16

Approximate Scale in Feet

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT

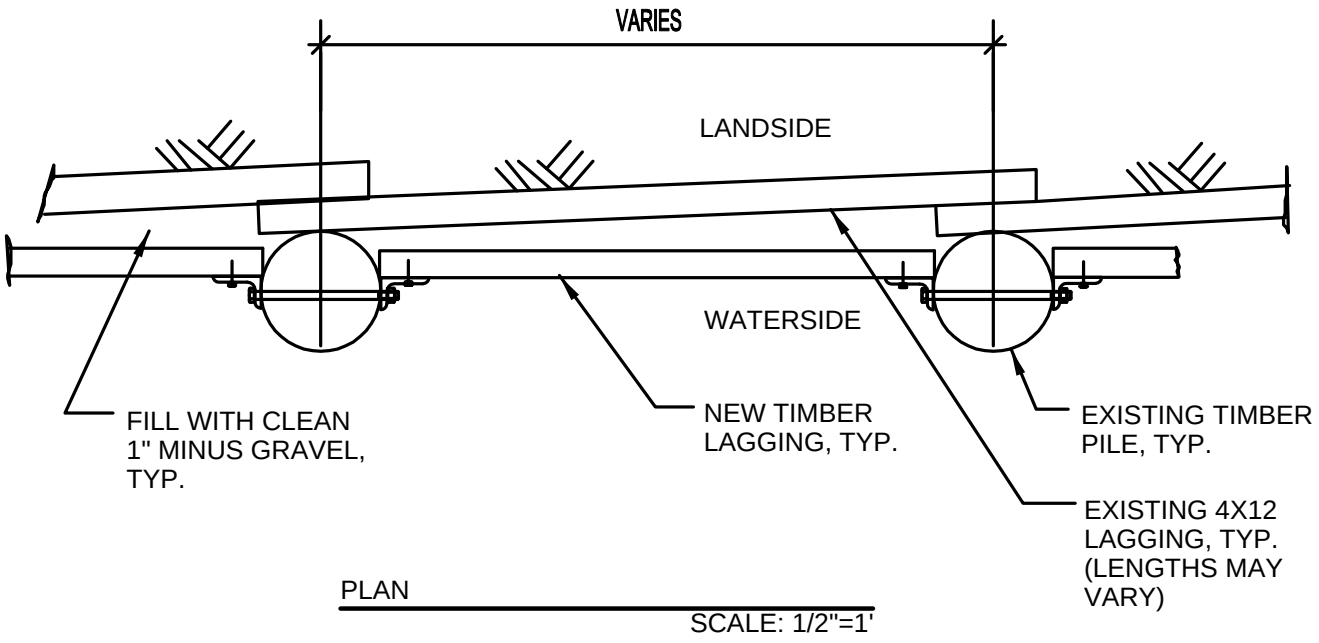
ADJACENT PROPERTY OWNERS:
1. PORT OF BELLINGHAM
2. DEPT. OF NATURAL RESOURCES

APPLICATION BY: PORT OF BELLINGHAM
IN: SQUALICUM HARBOR AND BELLINGHAM BAY
AT: BELLINGHAM
COUNTY OF: WHATCOM STATE: WA

SEGMENT C WHARF CONFIGURATION AND BULKHEAD REPAIR

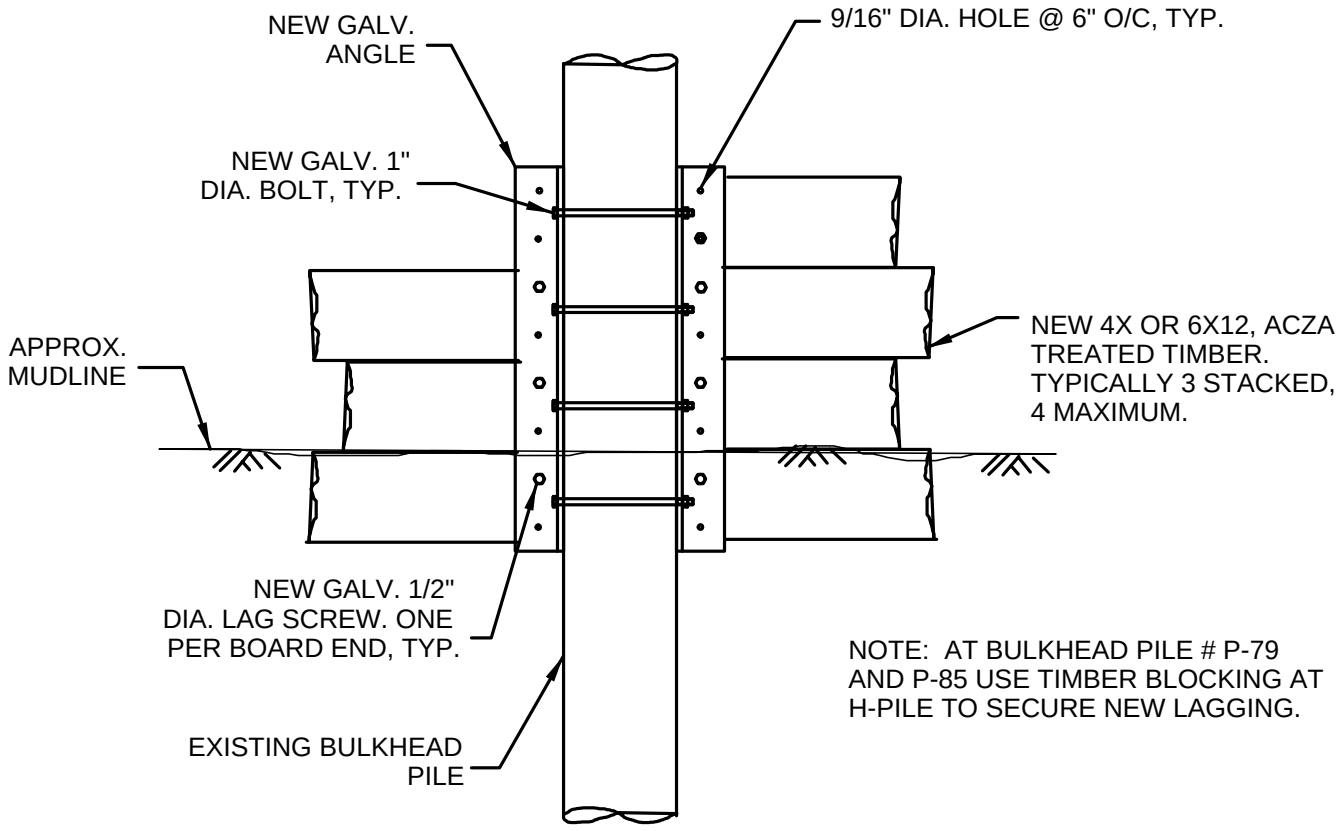
DATUM: MLLW=0.0'
DATE: 3/6/03

FIGURE 13a OF 16



PLAN

SCALE: 1/2"=1'



NOTE: AT BULKHEAD PILE # P-79 AND P-85 USE TIMBER BLOCKING AT H-PILE TO SECURE NEW LAGGING.

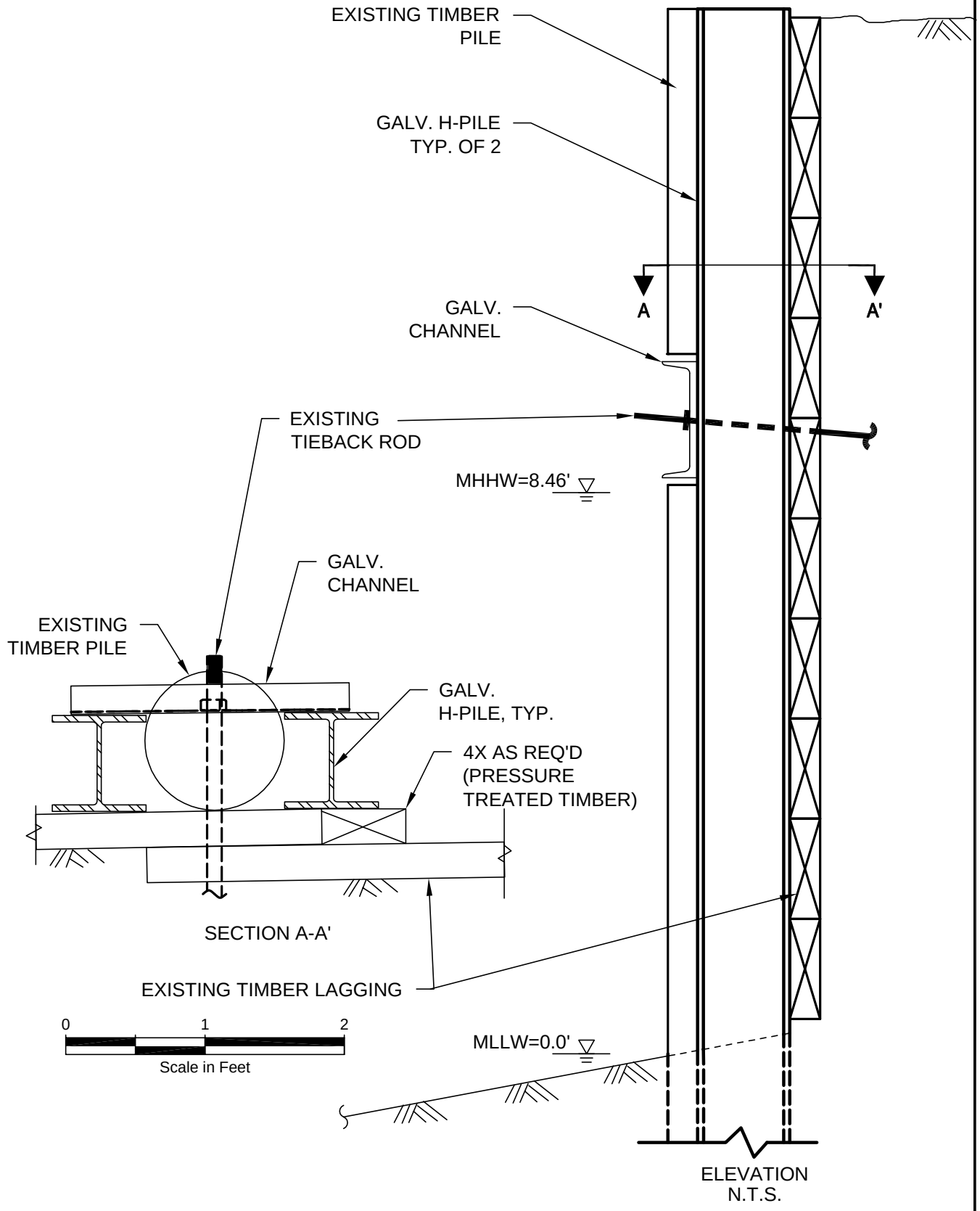
ELEVATION

SCALE: 1/2"=1'

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT ADJACENT PROPERTY OWNERS: 1. PORT OF BELLINGHAM 2. DEPT. OF NATURAL RESOURCES	APPLICATION BY: PORT OF BELLINGHAM IN: SQUALICUM HARBOR AND BELLINGHAM BAY AT: BELLINGHAM COUNTY OF: WHATCOM STATE: WA	**TIMBER LAGGING REPAIR DETAIL** DATUM: MLLW=0.0' DATE: 3/6/03

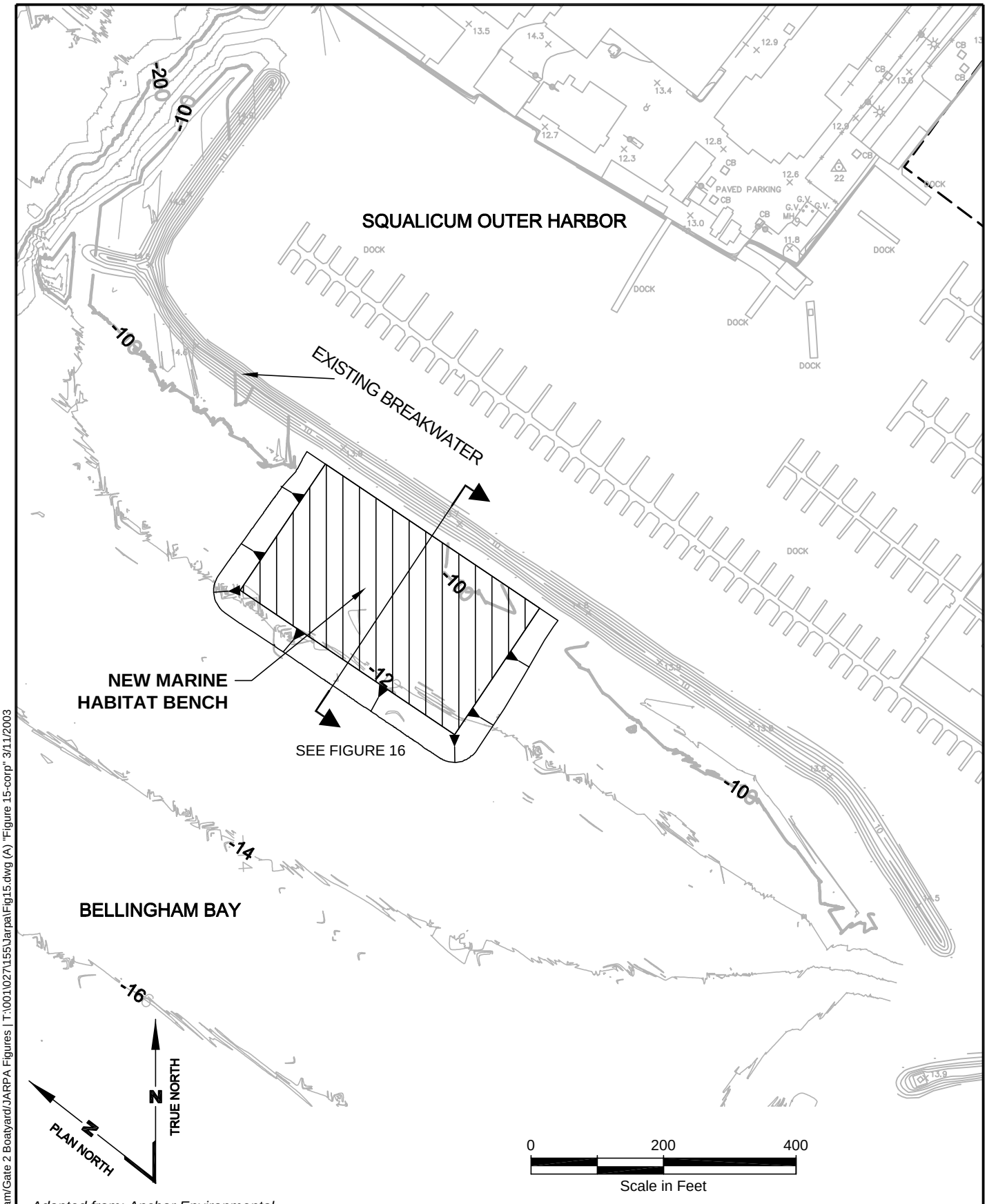
FIGURE 13b OF 16

JOB# CLIENT/SITE/REPORT | T:\001\027\155\Jarpa\Fig13b.dwg (A) "Figure 13b-corp" 3/7/2003



JOB# CLIENT/SITE/REPORT | T:\001\027\155\Jarpa\Fig14.dwg (A) "Figure 14-corp" 3/7/2003

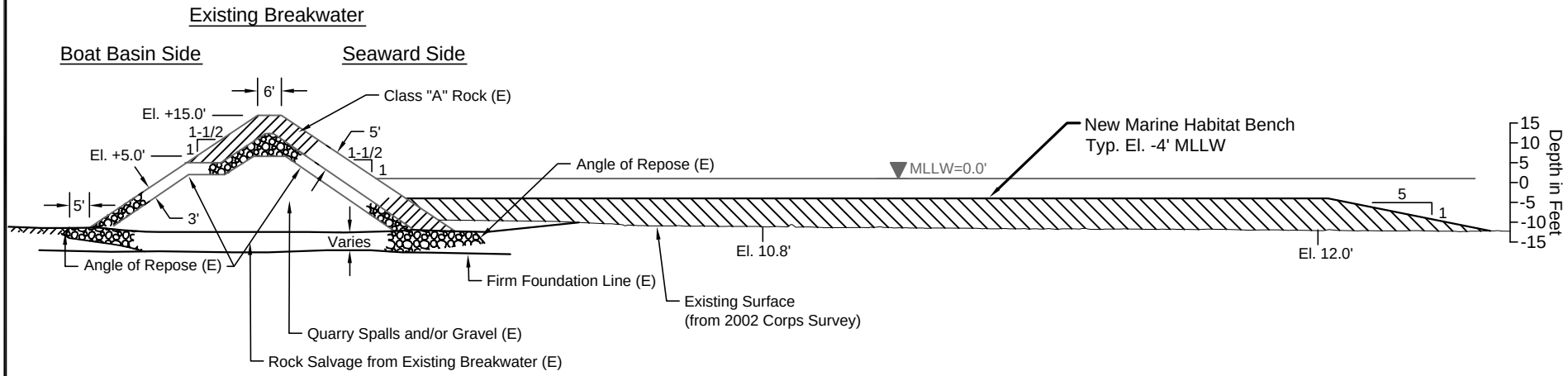
PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT ADJACENT PROPERTY OWNERS: 1. PORT OF BELLINGHAM 2. DEPT. OF NATURAL RESOURCES	APPLICATION BY: PORT OF BELLINGHAM IN: SQUALICUM HARBOR AND BELLINGHAM BAY AT: BELLINGHAM COUNTY OF: WHATCOM STATE: WA	**TIMBER BULKHEAD PILE REPAIR DETAIL** DATUM: MLLW=0.0' DATE: 3/6/03 **FIGURE 14 OF 16**



Adapted from: Anchor Environmental

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT ADJACENT PROPERTY OWNERS: 1. PORT OF BELLINGHAM 2. DEPT. OF NATURAL RESOURCES	APPLICATION BY: PORT OF BELLINGHAM IN: SQUALICUM HARBOR AND BELLINGHAM BAY AT: BELLINGHAM COUNTY OF: WHATCOM STATE: WA	**NEW MARINE HABITAT** DATUM: MLLW=0.0' DATE: 3/6/03 **FIGURE 15 OF 16**

Port of Bellingham/Gate 2 Boatyard/JARPA Figures | T:\001\027\155\Jarpa\Fig15.dwg (A) "Figure 15-corp" 3/11/2003



(E)=Existing

Adapted from: Anchor Environmental

PURPOSE: GATE 2 BOATYARD SEDIMENT REMEDIATION & REDEVELOPMENT ADJACENT PROPERTY OWNERS: 1. PORT OF BELLINGHAM 2. DEPT. OF NATURAL RESOURCES	APPLICATION BY: PORT OF BELLINGHAM IN: SQUALICUM HARBOR AND BELLINGHAM BAY AT: BELLINGHAM COUNTY OF: WHATCOM STATE: WA	**NEW MARINE HABITAT SITE CROSS SECTION** DATUM: MLLW=0.0' DATE: 3/6/03 **FIGURE 16 OF 16**

PORT OF BELLINGHAM
Washington State

April 25, 2003

Mr. Jorge Vegas
Interim Director of Planning
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

Ms. Barbara Ritchie
Environmental Review Section
Washington State Department of Ecology
P.O. Box 47703
Olympia, WA 98504-7703

RE: ENVIRONMENTAL REVIEW OF PROPOSED GATE 2 BOATYARD (FORMER WELDCRAFT STEEL & MARINE SITE) PROJECT
BELLINGHAM, WASHINGTON

Dear Sir/Madam,

In accordance with WAC 197-11 State Environmental Policy Act (SEPA) Rules, the Port of Bellingham (Port), as SEPA lead agency for the proposed Gate 2 Boatyard project, has completed the environmental review for the proposed project, which is described as follows:

> The Port is addressing environmental cleanup, facility maintenance and repair, and redevelopment at a boatyard facility in Squalicum Outer Harbor. Actions will include removal of contaminated sediment, minor maintenance dredging, repair or replacement of dilapidated structures, and construction of new marine habitat. Sediment cleanup, much of the repair and replacement work, and construction of the new marine habitat will be conducted as an interim action under the Model Toxics Control Act (MTCA), consistent with the requirements of the Sediment Management Standards (SMS).

As the SEPA lead agency, the Port has issued a Mitigated Determination of Non-Significance (MDNS) for this proposed project under the provisions of WAC 197-11-340(2) of the SEPA rules. These provisions require that the attached MDNS and environmental checklist be sent to agencies with jurisdiction, the Washington State Department of Ecology, affected tribes, and any local agency or subdivision whose public services may be changed as a result of this project.

1801 Roeder Avenue / P.O. Box 1677 / Bellingham, WA 98227-1677
(360) 676-2500 / FAX (360) 671-6411 / www.portofbellingham.com

Notice of this MDNS will be published in the Bellingham Herald on April 27, 2003 and May 4, 2003, and posted at the project site. A public meeting on the MDNS will be conducted on May 15, 2003 in conjunction with Ecology's public meeting for the agreed order (AO) on the Weldcraft Steel & Marine MTCA interim action and site-wide remedial investigation/feasibility study. Any person, tribe, or agency may submit comments on the project within 30 days of the April 29, 2003 MDNS issue date, by May 28, 2003, which is 16 days longer than the minimum SEPA public review period. For your information, the MDNS was submitted to the following agencies:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- NOAA Fisheries
- Washington State Department of Ecology
- City of Bellingham
- Washington State Department of Natural Resources
- Washington State Department of Fish and Wildlife
- Lummi Nation
- Nooksack Tribe
- Whatcom County

If you have any questions regarding this proposed project or the MDNS issued with regard to this project, please contact me at (360) 676-2500.

Sincerely,

Michael G. Stoner
Director of Environmental Programs
SEPA Responsible Official

cc: Allan Chapman, Lummi Nation
Bob Donnelly, NOAA Fisheries
Hal Hart, Whatcom County
Robert J. Kelly, Nooksack Tribe
Jeff Krausmann, U.S. Fish and Wildlife Service
Fran McNair, Washington State Department of Natural Resources
Mary O'Herron, Washington State Department of Ecology
Randel Perry, U.S. Army Corps of Engineers
Brian Williams, Washington State Department of Fish and Wildlife

Enclosure: MDNS
SEPA checklist

WAC 197-11-970 MITIGATED DETERMINATION OF NON-SIGNIFICANCE

Description of Current Proposal: The Port of Bellingham is addressing environmental cleanup, facility maintenance and repair, and redevelopment at a boatyard facility in Squalicum Outer Harbor. Actions will include removal of contaminated sediment, minor maintenance dredging, repair or replacement of dilapidated structures, and construction of new marine habitat. Sediment cleanup and much of the repair and replacement work, and construction of the new marine habitat, will be conducted as an interim action under the Model Toxics Control Act (MTCA), consistent with the requirements of the Sediment Management Standards (SMS).

This project will include five new major in-water construction elements including: 1) sediment dredging for contaminated sediment cleanup and to reestablish previously authorized vessel drafts, 2) installation of a steel sheetpile bulkhead to replace (encapsulate) a timber bulkhead, 3) removal of the existing marine railway and replacement with two 125-ft long finger piers to support a new 150-ton travel lift, 4) backfilling for contaminated sediment clean-up and site redevelopment, and 5) construction of new marine habitat along the Squalicum Outer Harbor breakwater as mitigation for project impacts. Additional maintenance and repair activities will occur over or in-water, including repair of 205 ft of existing timber bulkhead, repair/replacement of damaged timber piles, and repair/replacement of existing wharf structural elements for site improvement purposes.

The proposed project provides significant environmental benefit in addition to the MTCA/SMS sediment remediation and habitat mitigation/restoration elements. The project will remove 215 creosote-treated pilings and about 9,000 ft^2 of creosote-treated timbers from the marine environment. The new travel lift piers will reduce shading of marine habitat by about 330 ft^2 compared to the existing marine railway. Additionally, the shading will be less severe because the height of the travel lift piers over the marine substrate is significantly greater than the existing marine railway.

Proponent: Port of Bellingham

Location of Current Proposal: 2652 Harbor Loop Drive
Bellingham, Washington 98225

The proposal site is located in Section 25, Township 38 North, Range 2 East in Whatcom County, and includes waterfront and in-water areas.

Lead Agency: Port of Bellingham

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

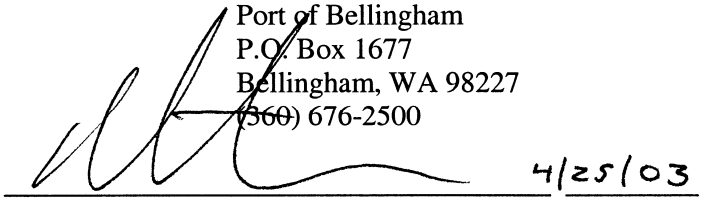
Mitigation Requirements:

Mitigation requirements negotiated with National Oceanic and Atmospheric Administration (NOAA) Fisheries, Washington State Department of Fish and Wildlife (WDFW), and U.S. Army Corps of Engineers (USACE) include:

1. Habitat restoration consisting of at least 1 acre of shallow subtidal habitat to be constructed from deep subtidal habitat along the portion of the existing riprap breakwater on the west (seaward) side of Squalicum Harbor to compensate for about 0.5 acre of impacted habitat at the proposal site.
2. A mitigation report shall be submitted for review by USACE and describe the intertidal and subtidal habitat restoration site, including a brief discussion of impacts, mitigation goals, performance standards to measure mitigation success, a monitoring plan, and contingency measures.
3. In addition to the intertidal habitat survey conducted in the fall of 2002 to establish baseline conditions in the project area, a pre-construction survey shall be conducted to document the exact location and extent of existing vegetation within the habitat restoration area footprint.
4. Post-mitigation monitoring shall be conducted in the habitat restoration area annually for three years following construction, and once each in post-construction years 5 and 10. Monitoring will include confirmation of site bathymetry to post-construction design elevations, and documentation of abundance and diversity of epibenthic organisms. Seining to document the presence of juvenile salmon shall be conducted in post-construction year 1 and, depending on the results, possibly in post-construction years 2 and 3.
5. A corridor of native upland vegetation, approximately 650 ft^2 in area, shall be planted along the entire edge of the Segment A bulkhead and the unpaved portions of the Segment B bulkhead.

Mitigated Determination of Non-Significance (MDNS) Comment Period: This MDNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 30 days from April 29, 2003, the date this document is being made publicly available. **Comments must be submitted by May 28, 2003 to the Responsible Official or the Washington State Department of Ecology (Ms. Mary O'Herron, Bellingham Field Office, 1204 Railroad Ave, Suite 200, Bellingham 98225).**

Responsible Official: Michael G. Stoner
Director of Environmental Programs
Port of Bellingham
P.O. Box 1677
Bellingham, WA 98227
(360) 676-2500



4/25/03

Signature Date

Appeals: There is no agency appeal.