



YALE FEASIBILITY STUDY AT SADDLE DAM PARK

SUMMARY REPORT

LEWIS RIVER HYDROELECTRIC
PROJECT, WASHINGTON

JULY 2015

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Acknowledgements

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Section 1. Project Background

Introduction

PacifiCorp (Company) operates Saddle Dam Park, and the Yale Lake Reservoir located near the town of Cougar in Cowlitz County, WA. According to their licensing agreement with the Federal Energy Regulatory Commission (FERC) PacifiCorp is required to provide for public recreation use of the reservoir in concert with the production of hydroelectricity. Furthermore, the federal license agreement identifies improvements to the Yale Reservoir shoreline for recreation use as a priority goal.

This study was prepared to determine the feasibility for the development of a Boat Accessible Group Shelter and Picnic Terrace within the Saddle Dam Park, while also ensuring that PacifiCorp continues to meet objectives associated with environmental protection and habitat preservation, and the continued public enjoyment of PacifiCorp facilities.

Regulatory Requirements and Agreements

The Lewis River Hydroelectric System consists of four coordinated projects that are operated under licenses from the Federal Energy Regulatory Commission (FERC). PacifiCorp owns Swift No.1 (FERC No.2111), Yale (FERC No. 2071) and Merwin (FERC No. 935). The Public Utility District No.1 of Cowlitz County, Washington (Cowlitz PUD) owns the Swift No. 2 Project (FERC No. 2213) which lies between Swift No. 1 and Yale.

As a stipulation of the licensure, PacifiCorp is required to undertake or fund facility additions, upgrades and maintenance actions, working with neighboring landowners when appropriate, to provide for a diversity of recreation opportunities in the project area. As a result, they prepared a Recreational Resource Management Plan (RRMP, April 2004) under the authority of Title 18 Code of Federal Regulations 4.51 (f) (5), which identifies the need to define the responsibilities of parties when public recreation facilities are to be provided at a hydroelectric project. They utilize this RRMP to manage existing and future recreation resources associated with the project. Pursuant to the Swift No. 1 FERC license Article 409 and Settlement Agreement (SA) Section 11.2.2.10 (2), PacifiCorp is to provide a new day use group picnic shelter, which must be placed where users can access the shoreline to beach boats. It was determined during the development of the Lewis River Recreational Facilities Master Plan (RFMP, Dec. 2009), that there should also be the inclusion of a Picnic Terrace and associated improvements.

Site Selection

The Lewis River Settlement Agreement identifies Yale Park, Cougar Park and Beaver Bay as the site options for locating the boat access group shelter. However, during the development of the RFMP, Saddle Dam Park was deemed to be the best location on Yale Lake for the shelter based on the following reasons:

- a) The site has an open, gently sloped beach on which boats can land.
- b) The forested ridge shelters the beach from prevailing southwest winds.
- c) The beach is adjacent to deeper water and within clear view of the proposed shelter.
- d) The proposed shelter site is at the far end of the park, remote from the parking lot, which makes it an attractive destination for boaters.
- e) Saddle Dam Park's day use area currently sees fewer visitors than the other proposed sites, which makes it the best candidate to accommodate a new user group.
- f) The other proposed locations do not have areas conducive to landing boats that are not already dedicated swimming areas enclosed by booms.

Proposed Program

In order to provide the level of service and access desired for the proposed Boat Accessible Group Shelter and Picnic Terrace, the following proposed program of amenities was developed to be included in the design feasibility study.

Baseline Program Elements:

- Boat accessible group shelter sited on the lower terrace for easy access from the shoreline.
- New Anchor buoys and moorage eye cleat boulders.
- Additional ADA-accessible picnic tables along both the upper and lower terraces.
- ADA accessible pathways from the existing parking lot and existing boat launch.
- Stripe existing pavement to designate ADA accessible routes.
- New Vault Toilet
- ADA accessible Parking.
- Upgrades to the boarding float for ADA accessibility

Alternate Program Elements:

- Site the boat accessible group shelter on the upper terrace instead of the lower terrace.
- Selective tree trimming and/or removal to enhance views.
- Removal of boating obstruction such as concrete anchor blocks, tree stumps and boulders.

Design Criteria

The main design criteria by which the alternates were evaluated consist of:

- Functionality
- Safety and Security
- Maintenance
- Cost
- Accessibility
- Environmental impacts and regulations
- Constructability
- Permitting requirements

Section 2. Process

The following describes the steps taken to complete the feasibility study:

Step 1: Site Reconnaissance

MacKay Sposito, Mason Bruce & Girard, and PacifiCorp conducted a site visit to review, verify and record the existing conditions at Saddle Dam Park and observe how the park functions. Among the items reviewed were accessibility, the condition of existing furnishings, pedestrian circulation systems, vehicular circulation systems, vegetation, views, sun and shade exposure, and spatial relationships of existing facilities and slopes. The information was collected in the form of field notes, photos and rough sketches.

Step 2: Inventory and Analysis

A base map for the inventory and analysis exhibit was prepared, derived from a 2009 survey by Spurlock & Associates (prepared for the RFMP), aerial photography, and bathymetry contours provided by PacifiCorp. This information was supplemented with information discovered and verified in the field during the site reconnaissance. It is important to note that because of the rough nature of the available site data, assumptions had to be made regarding locations of some site features. In particular, the location of the Ordinary High Water Mark (OHWM), which is defined for Yale Lake as elevation 490.0 in the NGVD 29 datum, was derived using rough bathymetry contours and aerial photography and so should be considered as approximate. The location of the OHWM is the basis for regulatory setbacks which restrict the layout of proposed site elements, so establishing the true OHWM will be an important step during the implementation phase.

Once the existing conditions were inventoried and synthesized, MacKay Sposito analyzed and identified the opportunities and constraints of the site with relationship to the Proposed Program and the Design Criteria.

The results of the analysis were recorded on the exhibit "Saddle Dam Park Inventory and Analysis" (see Appendix 5). In general, the results of the Inventory and Analysis identified several opportunities and constraints which served as the basis for developing conceptual site plan alternatives.

Step 3: Permitting Overview

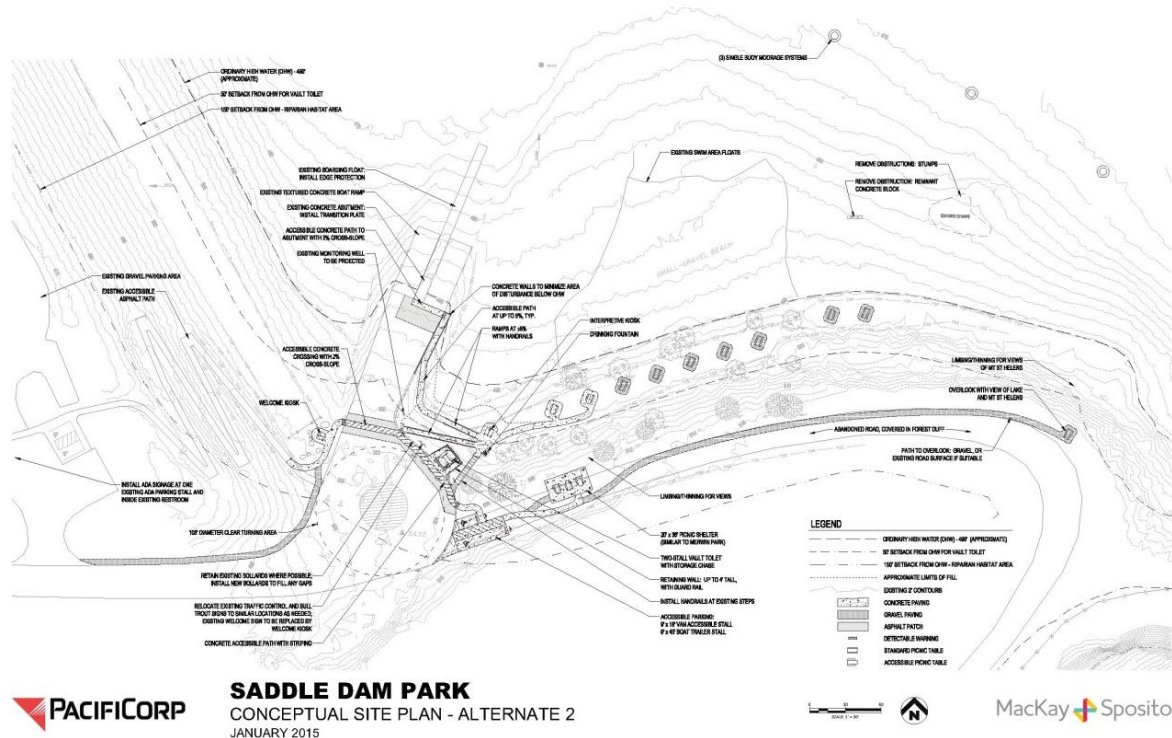
In order to identify and evaluate the permitting requirements, Mason Bruce & Girard began by reviewing the Proposed Program and conducting the site reconnaissance to familiarize themselves with the site conditions. Based on their findings and subsequent research they prepared a memorandum which identifies the likely impacts of the proposed improvements and summarizes the anticipated regulatory requirements and permitting processes that will need to be completed in order to implement the project. See Appendix 4 “Anticipated Regulatory and Permitting Summary Memorandum.” Information included in the memorandum was also valuable in informing the design decisions made during the Conceptual Site Plan development.

Although the requirements are described in detail in the memorandum, below is a general overview of the key requirements:

- Initial investigation indicates that wetlands are not likely present in the area of proposed impact.
- Given that proposed work will occur below the OHWM, the project will require State of Washington Department of Ecology (ECY) and US Army Corp of Engineers (ACOE) permits.
- Because the project will be conducted within waters of the State of Washington, and will use, divert, obstruct or change bed or flow of State Waters, it will require WDFW and USFWS approvals.
- To comply with the state of Washington’s State Environmental Policy Act, a SEPA Checklist will need to be completed and will be reviewed by Cowlitz County.
- Since the project will occur within 200 feet of the Yale Reservoir, Cowlitz County Shoreline Permits will be required.
- Cowlitz County will review the proposed project impacts to Critical Areas prior to issuing other permits. Therefore, the completion of a Critical Areas Report will be required.
- Additional miscellaneous permits that will need to be obtained through Cowlitz County include Building Permit and a Clear and Grade Permit.

Conceptual Site Plan – Alternate 2 (Refer to Appendix 6 for full size plan)

Alternate 2 diverges from the RFMP master plan in three main ways: the picnic shelter is on the upper terrace, the vault toilet is closer to the boat launch, and the boat ramp crossing is shorter but requires new paving. The latter two changes add cost due to more extensive grading and new paving, but they also improve the safety, function, and user convenience of the park.



Step 5: Cost Estimation

Upon completion of the two Conceptual Site Plan Alternates, MacKay Sposito prepared individual estimates of probable cost for each. Whenever possible, unit costs were derived from contractor bid information for recent PacifiCorp recreation projects on the Lewis River. As described above, Alternate 2 involves more cost for site grading and new paving. However those costs are nearly balanced by the more expensive boat mooring system and the larger vault toilet, and the total costs for each Alternate ended up very close at about 2% difference.

Step 6: First Client Review

Upon completion of the Conceptual Site Plan Alternates, MacKay Sposito met with PacifiCorp to review and discuss the plans, cost estimates and permitting requirements. The purpose of the meeting was to evaluate each of the alternates based on the design criteria and then identify if

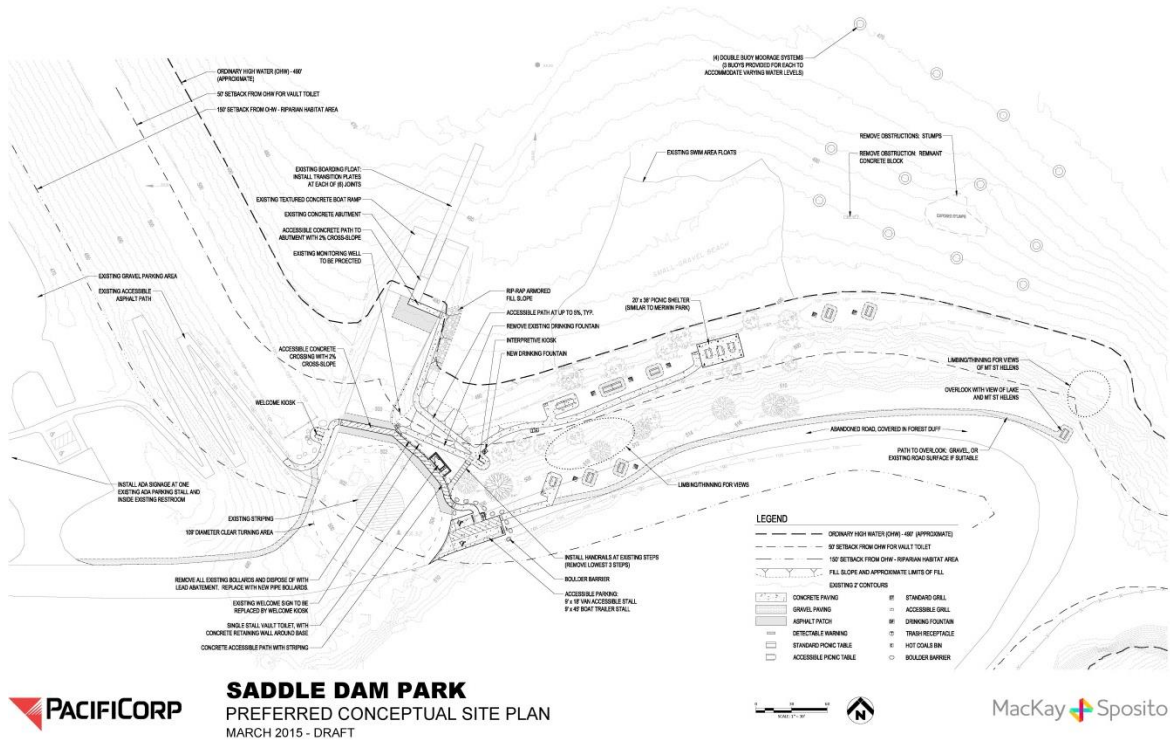
there was either: a) one preferred concept among the two presented; or b) various elements from each of the two concepts to be combined into a preferred conceptual site plan. The result was the latter case in which various preferred elements were identified in each of the two alternatives to be combined in a single preferred plan.

Meeting notes were issued in order to summarize the decisions made during the review meeting. The meeting notes included marked up versions of the Conceptual Site Plan Alternates, which highlight the elements from each alternate to be included in the Preferred Conceptual Site Plan (see Appendix 7).

Step 7: Draft Preferred Conceptual Site Plan

Based on the comments received during the Client Review meeting, MacKay Sposito developed the Draft Preferred Conceptual Site Plan and a corresponding estimate of probable cost. The estimated cost increased by about 5% and 8% over the previous two Site Plan Alternates. This is largely due to the addition of transition plates on the boat launch. The costs of the elements selected from the two Site Plan Alternates tended to balance each other – for example the double buoy moorage system is the more expensive option, but the single vault toilet is the less expensive option.

Coast & Harbor Engineering updated the Mooring Buoy Concept Evaluation, and also provided a Boarding Float Transition Plate Concept summary (see Appendix 2).



The primary decisions from the Client Review which informed the Draft Preferred Conceptual Site Plan are summarized below:

- The shelter will be located on the lower picnic terrace for a closer connection with the beach.
- The vault toilet will be located as shown in Alternate 2, for convenient user access and better sun exposure on the exhaust pipe. The vault toilet will be a single vault model.
- The pedestrian crossing at the boat ramp will be located as shown in Alternate 2, which is more expensive due the new paving required, but is the shortest and thus safest route to cross.
- The end of the path leading to the boarding float will be supported on fill with rip-rap reinforcement as shown in Alternate 1, due to the lower cost than the concrete wall shown in Alternate 2. This will increase the impact below OHWM, and even though it will be a relatively small impact it has the potential to complicate permitting.
- The double-buoy mooring system, as shown with three buoys for varying water levels, will be used in order to accommodate the most boat-in users at a wider range of water levels.
- Transition plates will need to be added at each of the six joints in the boarding float to provide accessibility.
- Bull rail edge protection will not be added to the boarding float, due to prohibitive cost and because it is not required for accessibility.

Step 8: Second Client Review

The Draft Preferred Conceptual Site Plan and a draft of this Summary Report were presented to PacifiCorp for review and comment. Review meeting notes were issued in order to summarize the decisions made during the meeting (see Appendix 8). Following that meeting, PacifiCorp held an internal review which resulted in further direction.

Step 9: Final Conceptual Site Plan and Summary Report

Based on the feedback received through the second client review, the site plan was updated to become the Final Conceptual Site Plan (see Appendix 1). The estimate of probable cost (see Appendix 3) and summary report were also updated. The revisions resulted in an approximately 4% cost decrease from the Draft Preferred Conceptual Site Plan. The biggest influence on cost was the reduction of the buoy moorage system, but that cost savings was partially offset by other changes such adding a split rail fence and additional picnic tables.

The direction from PacifiCorp which was used to develop the Final Conceptual Site Plan is summarized below:

- Reduce the number of moorage buoys by half.
- All blue painted metal items should be considered to have lead-based paint – this includes all of the existing pipe bollards. Include removal of the bollards, lead abatement, and replacement bollards in the final plan.
- Picnic tables will be purchased new; there are no picnic tables in storage available for this project.
- Remove the roadside pathway on the west side of the dam.
- Switch boulders at the ADA parking to removable bollards to allow for maintenance access.
- Add a split rail fence at the overlook.
- Add picnic tables to the lower terrace.
- Switch from rip-rap to concrete walls to support the path to the boat ramp, as shown in the Alternate 2 Conceptual Site Plan. This will increase cost, but may simplify permitting.
- Switch from cast-in-place concrete wall to modular block retaining wall at the vault toilet.

One plan element that remained unchanged is the removal of a large remnant concrete block near the swim area. This is necessary for safety since it is in the middle of the proposed buoy moorage area. However the origins of this concrete block are currently unknown, and it is possible that it could be a cultural resource. Research will be necessary to determine if it has any historical significance before it can be removed.

Section 3. Conclusions and Recommendations

Conclusions

This process of site evaluation and site plan development has confirmed the RFMP's assertion that Saddle Dam Day Use Park is an excellent location for the boat accessible group shelter required by the Lewis River Settlement Agreement. There are challenges and constraints to the site, as all sites have, but the proposed program elements fit well and we believe the renovated park will continue to be a successful recreation destination for the established users, and provide a valuable new venue for the new boat-in user group.

Recommendations

The next step is to begin the implementation phase. This will include engaging qualified professionals to perform a site survey, develop detailed drawings for permitting, bidding, and construction, and to facilitate the permitting process.

The FERC deadline for implementation is June 26, 2015, however that date has passed and an extension request has been submitted to FERC. The main wildcard in the project schedule will be the permitting review period, which should take between 6 and 12 months. The main schedule constraint is that construction should occur between Labor Day and Memorial Day in order to not conflict with the recreation season. Because of the limited construction season, if the permitting review period extends much beyond 6 months, it will push the start of construction one year to the following construction season. Below are two rough potential timelines for the major project milestones, for the shortest and longest likely permitting period:

Project Timeline (assumed 6 month permitting period)

| | |
|----------------|--|
| August 2015: | Begin final design phase, including site survey (6 months) |
| February 2016: | Submit permitting documents (6 month review period) |
| August 2016: | Bidding (2 months) |
| October 2016: | Begin construction (6 months) |
| April 2017: | Completion of construction |

Project Timeline (assumed 12 month permitting period)

| | |
|-----------------|---|
| August 2015: | Begin final design phase, including site survey (6 months) |
| February 2016: | Submit permitting documents (12 month review period) |
| February 2017: | Permitting completed; wait for construction season (5 months) |
| July 2017: | Bidding (2 months) |
| September 2017: | Begin construction (7 months) |
| April 2018: | Completion of construction |

Section 4. Appendices

Appendix 1: Final Conceptual Site Plan

Appendix 2: Mooring Buoy Concept Evaluation and Boarding Float Transition Plate Concept



Saddle Dam Park Feasibility Study

Mooring Buoy Concept Evaluation - Final



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March 3, 2015

Presentation Outline

1. Design Criteria - General Mooring Systems Overview, Design Vessel
2. Review of exceedence criteria for Yale Reservoir
3. Existing Conditions
4. Preferred Alternative Mooring Buoy System
 1. Two-point Mooring Buoy System



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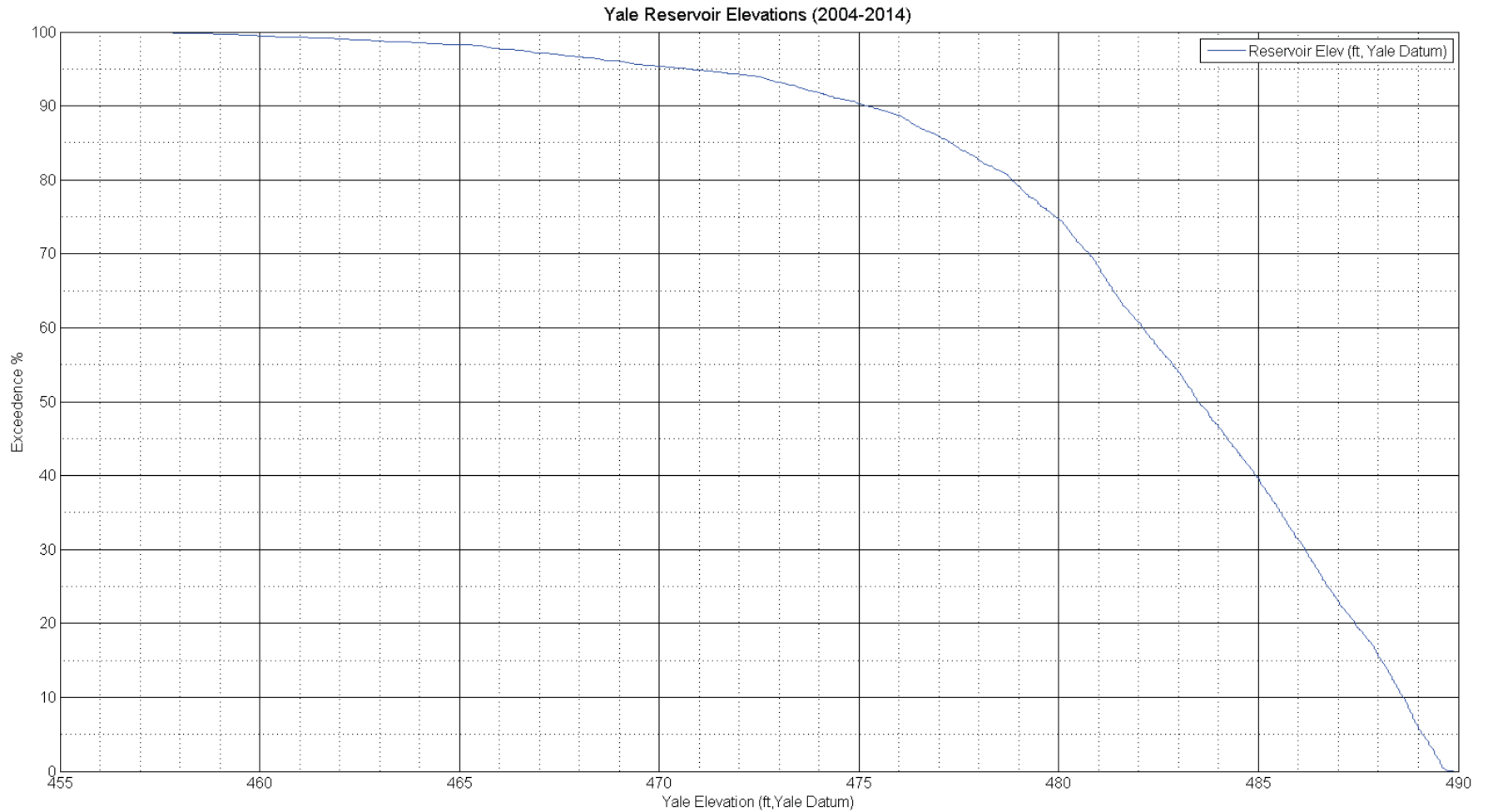
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Design Criteria

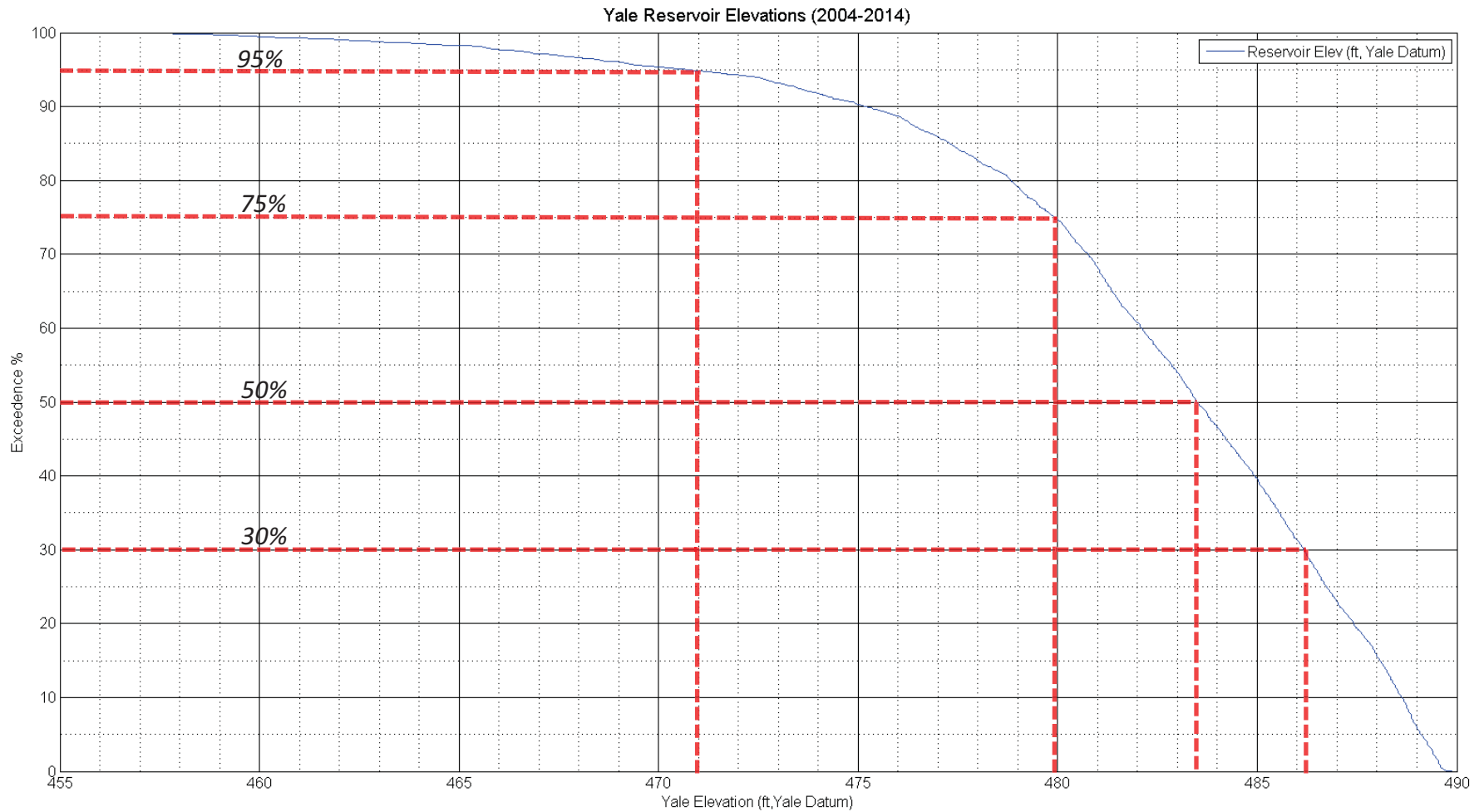
- Purpose:
 - Provide Transient, Day Use Recreational Moorage for recreational Vessels
- Location
 - Adjacent to swim area (east of delineators)
- Max Vessel Size
 - 23' Ski Boat or fishing boat
- Design Water Level Range
 - Use of buoys assumed to be summer boating season = June 1 to September 15
- Mooring System
 - Two point mooring system preferred



Yale Reservoir Exceedence Plot – All Year (2004 – 2014)



Yale Reservoir Exceedence Plot – All Year (2004 – 2014)



Design Water Surface Elevations – All Year 2004-2014

| Design Water level [ft Yale Datum] | Daily Low Water Exceedance [%] |
|---|---|
| 486.2 | 30 (Design) |
| 483.5 | 50 |
| 480.0 | 75 |
| 470.8 | 95 |

Note: Design water levels based on Yale Lake Reservoir Dam water level data statistics (2004 to 2014)



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Design Contour Elevations – All Year 2004-2014

| Design Water level [ft Yale Datum] | Daily Low Water Exceedance [%] |
|---|---|
| 482.2 | 30 (Design) |
| 479.5 | 50 |
| 476.0 | 75 |
| 466.8 | 95 |

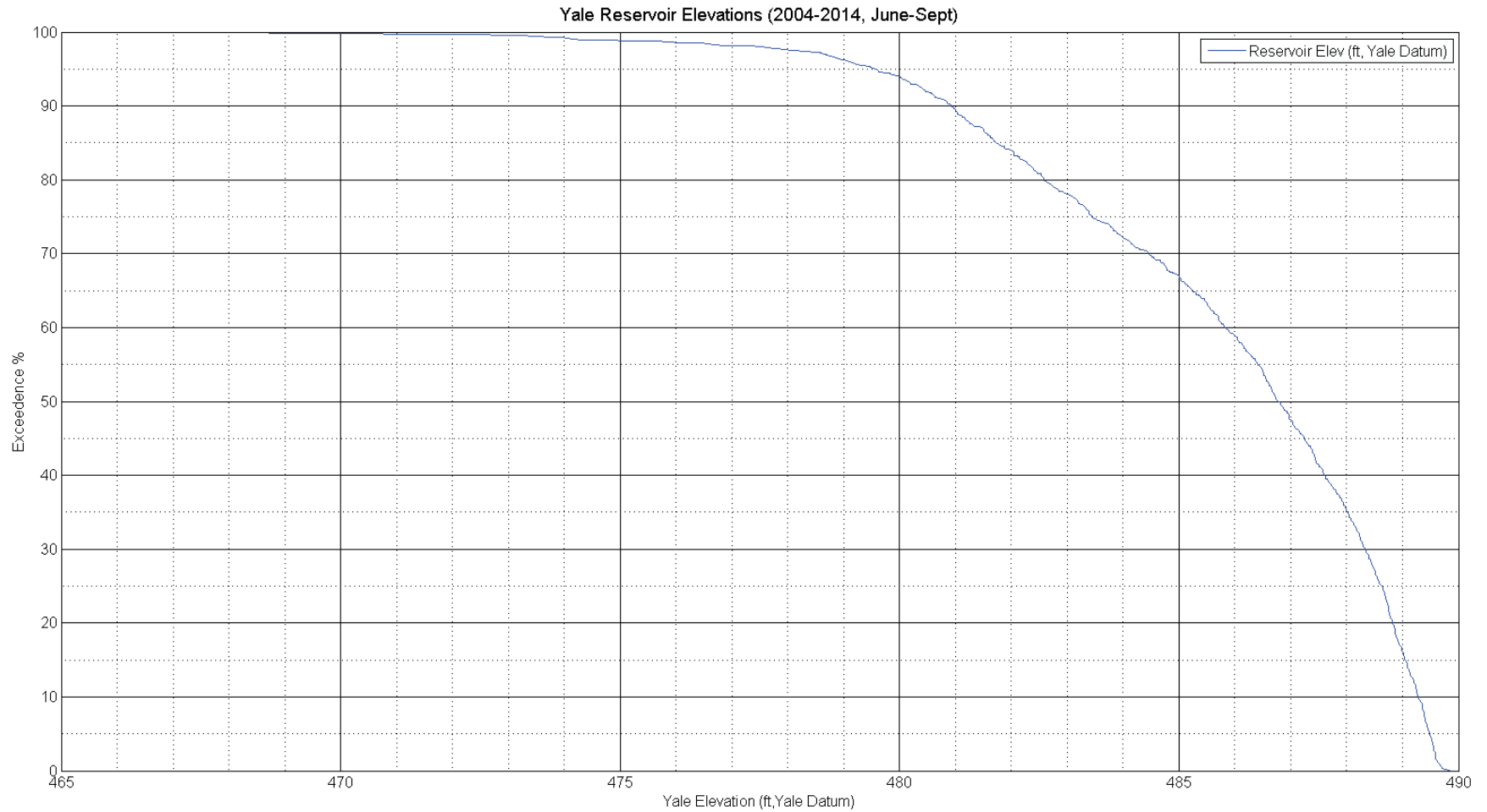
Note: 4' depth contour is the depth required for safe moorage of vessel (to prevent grounding) at the design low water level (i.e. Design Low Water Level 470.8' = Required depth contour of 466.8') with safety margin below design draft



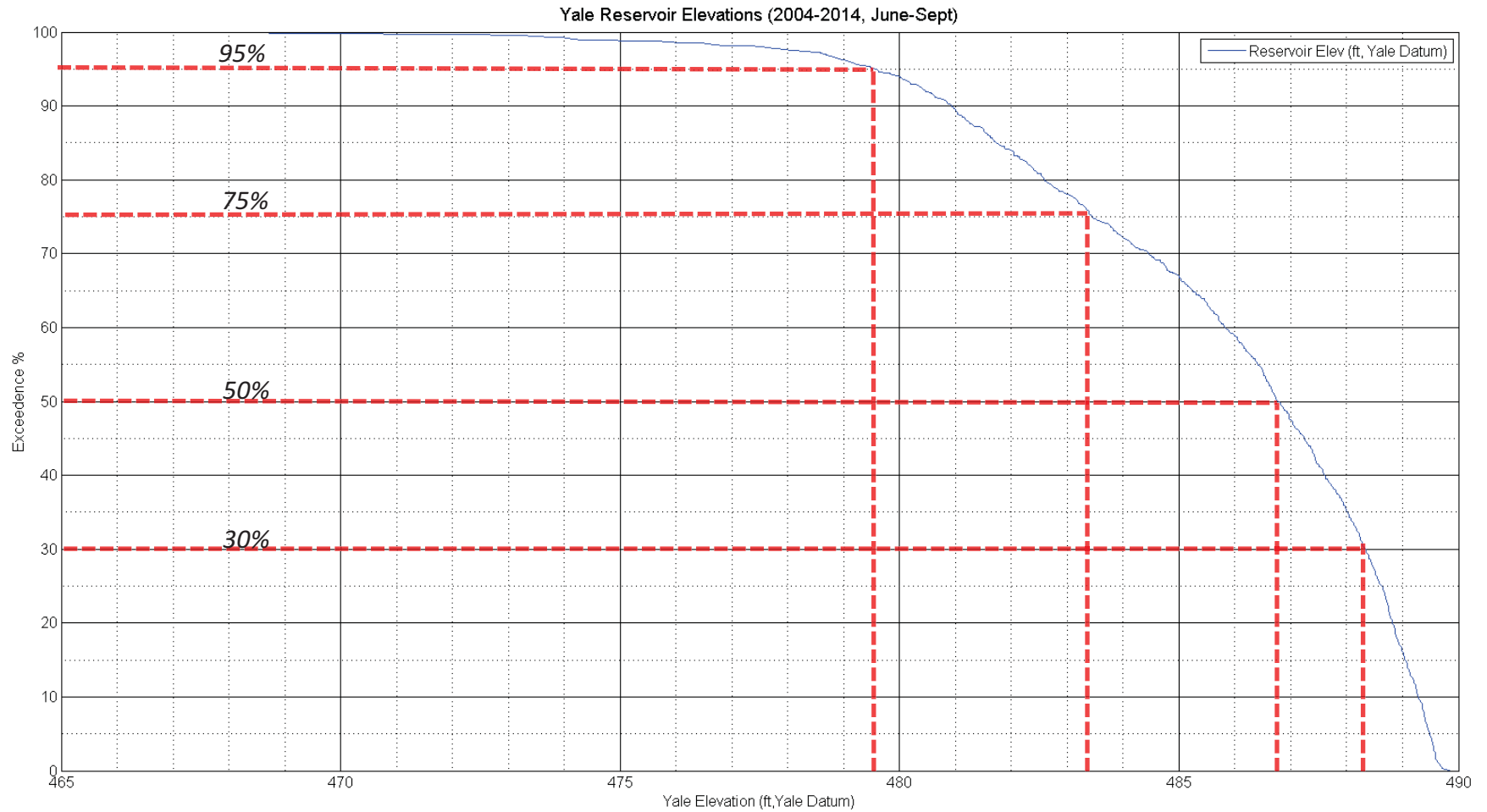
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Yale Reservoir Exceedence Plot – Summer (2004 – 2014)



Yale Reservoir Exceedence Plot – Summer (2004 – 2014)



Design Water Surface Elevations – Summer (June through Sept) 2004-2014

| Design Water level [ft Yale Datum] | Daily Low Water Exceedance [%] |
|---|---|
| 488.3 | 30 (Design) |
| 486.8 | 50 |
| 483.5 | 75 |
| 479.6 | 95 |

Note: Design water levels based on Yale Lake Reservoir Dam water level data statistics (2004 to 2014)



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Design Contour Elevations – Summer (June through Sept) 2004-2014

| Design Water level [ft Yale Datum] | Daily Low Water Exceedance [%] |
|---|---|
| 484.3 | 30 (Design) |
| 482.8 | 50 |
| 479.5 | 75 |
| 475.6 | 95 |

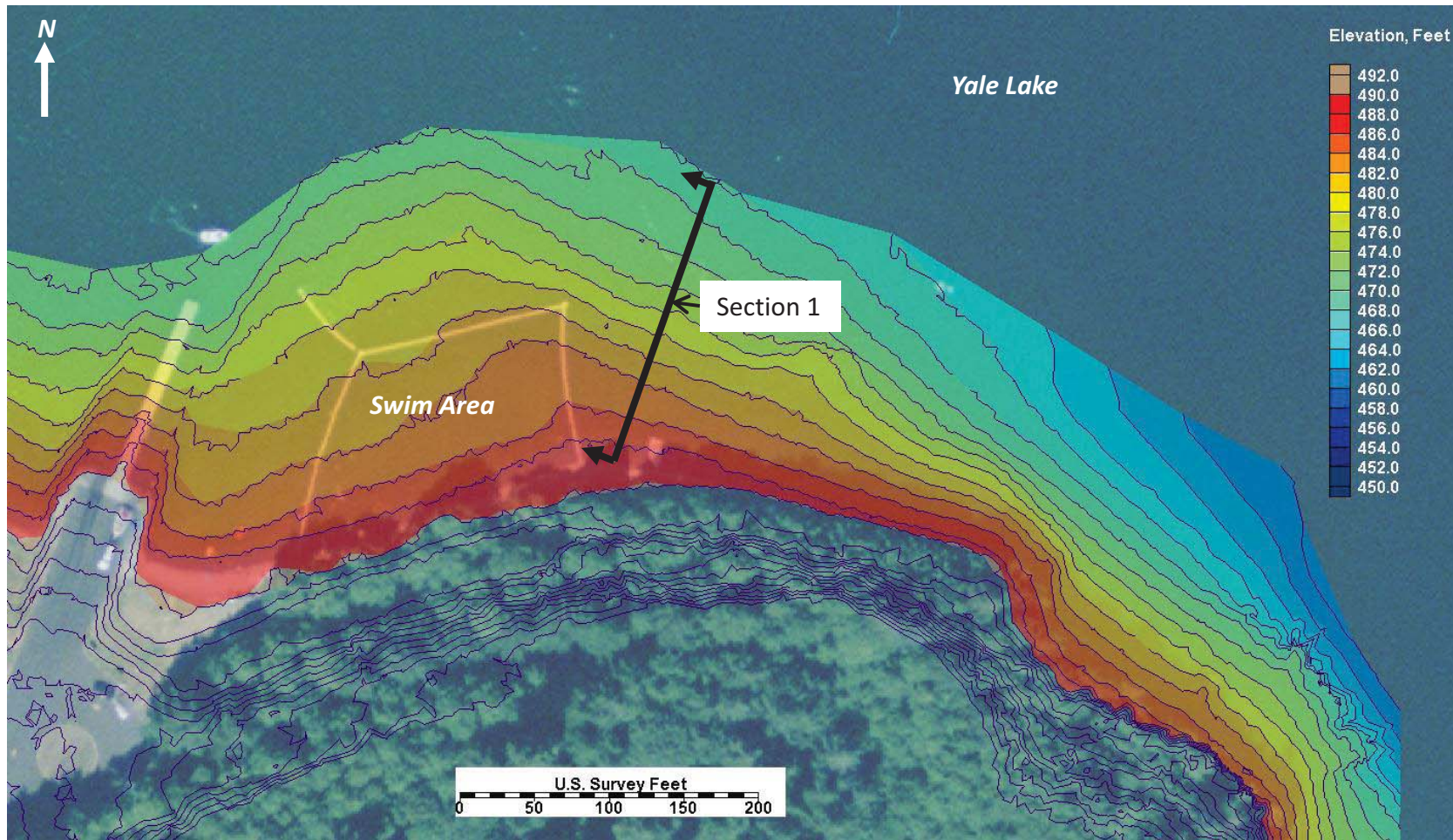
Note: 4' depth contour is the depth required for safe moorage of vessel (to prevent grounding) at the design low water level (i.e. Design Low Water Level 479.6' = Required depth contour of 475.6') with safety margin below design draft



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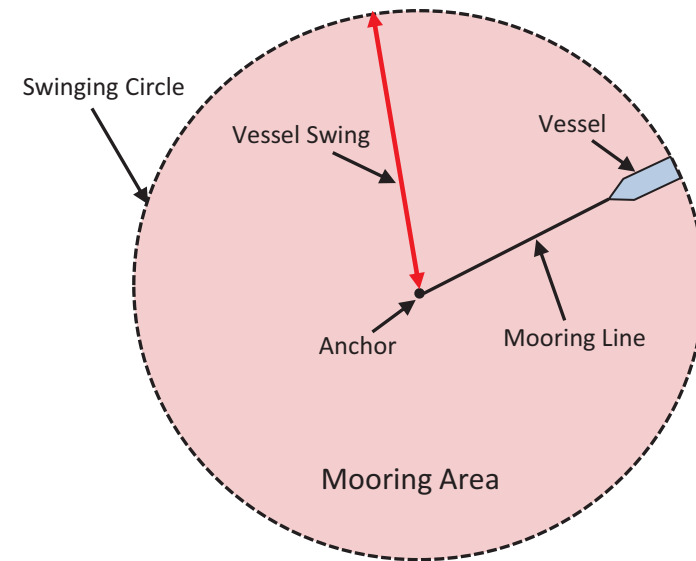
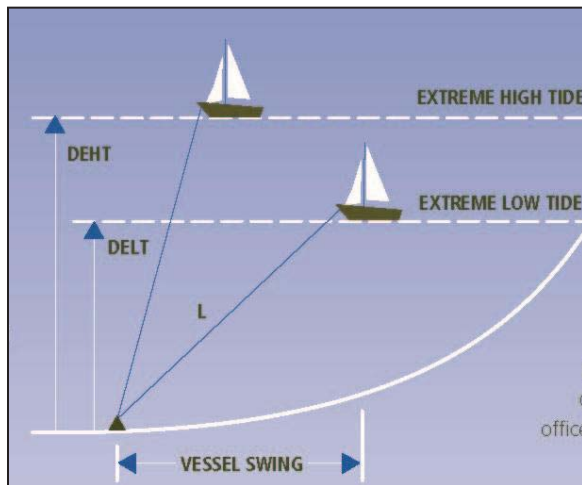
Existing Conditions – Topography and Bathymetry



Background of Mooring Buoy Analysis

Single Point Mooring Area depends on:

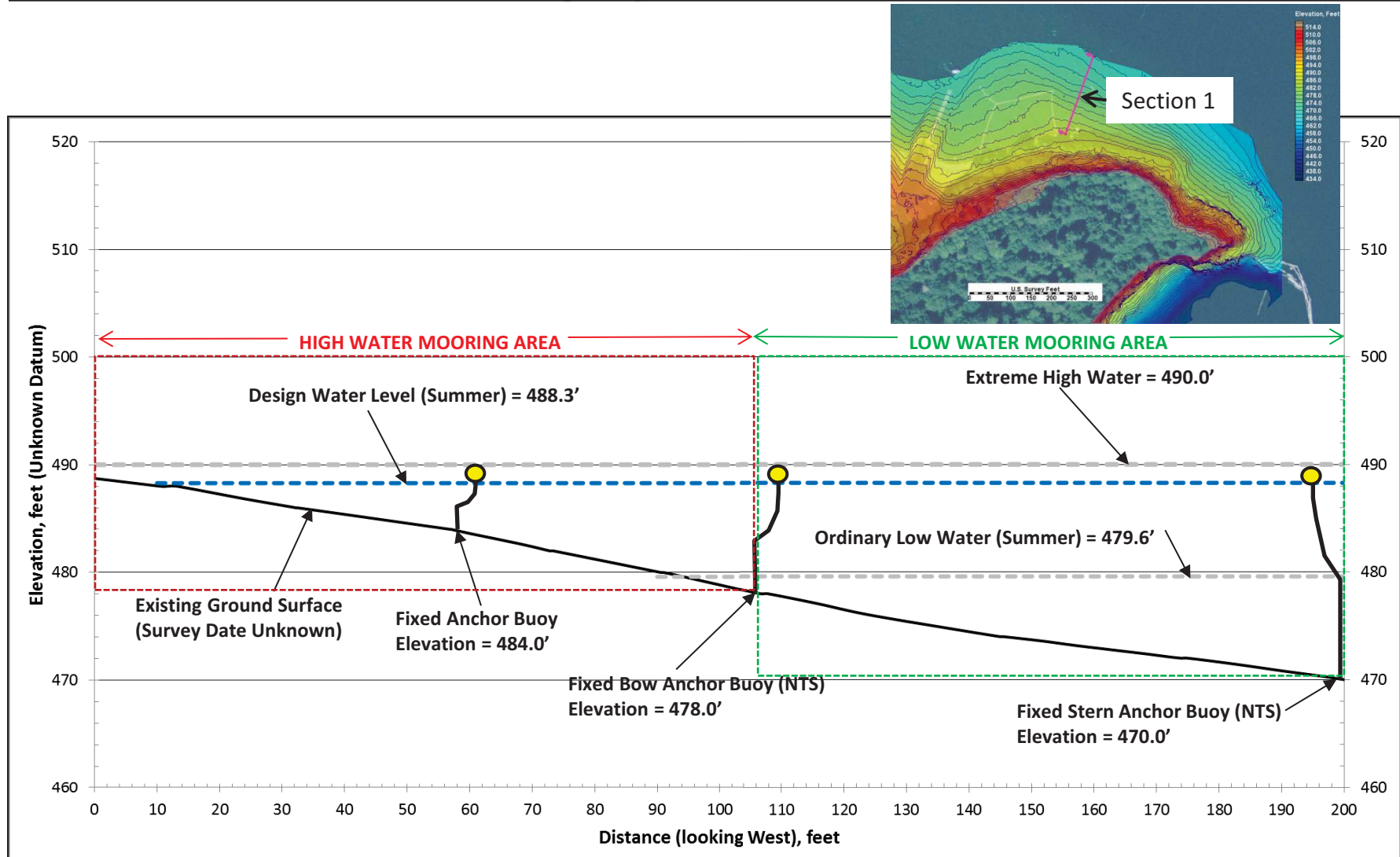
- Target Vessel Size
- Water Depth
- Buoy Location
- Water Level Variation
- Winds, waves and currents
- Anchorage-Mooring Line System Type



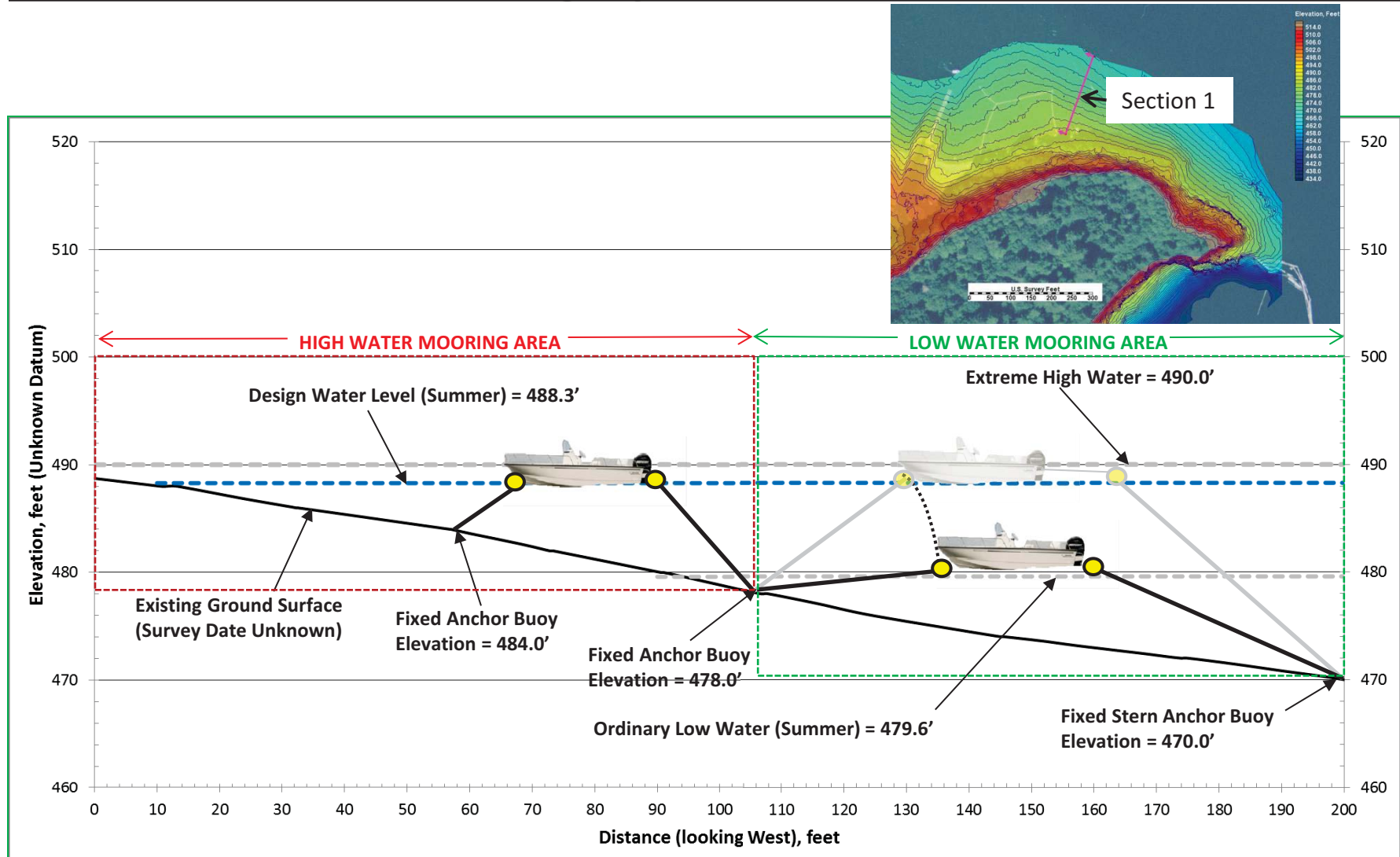
Mooring Line Length (L) is a function of the extreme high tide level and a predetermined ratio of anchor line to water depth

Vessel Swing is a function of the mooring line length (L) and the design vessel length.

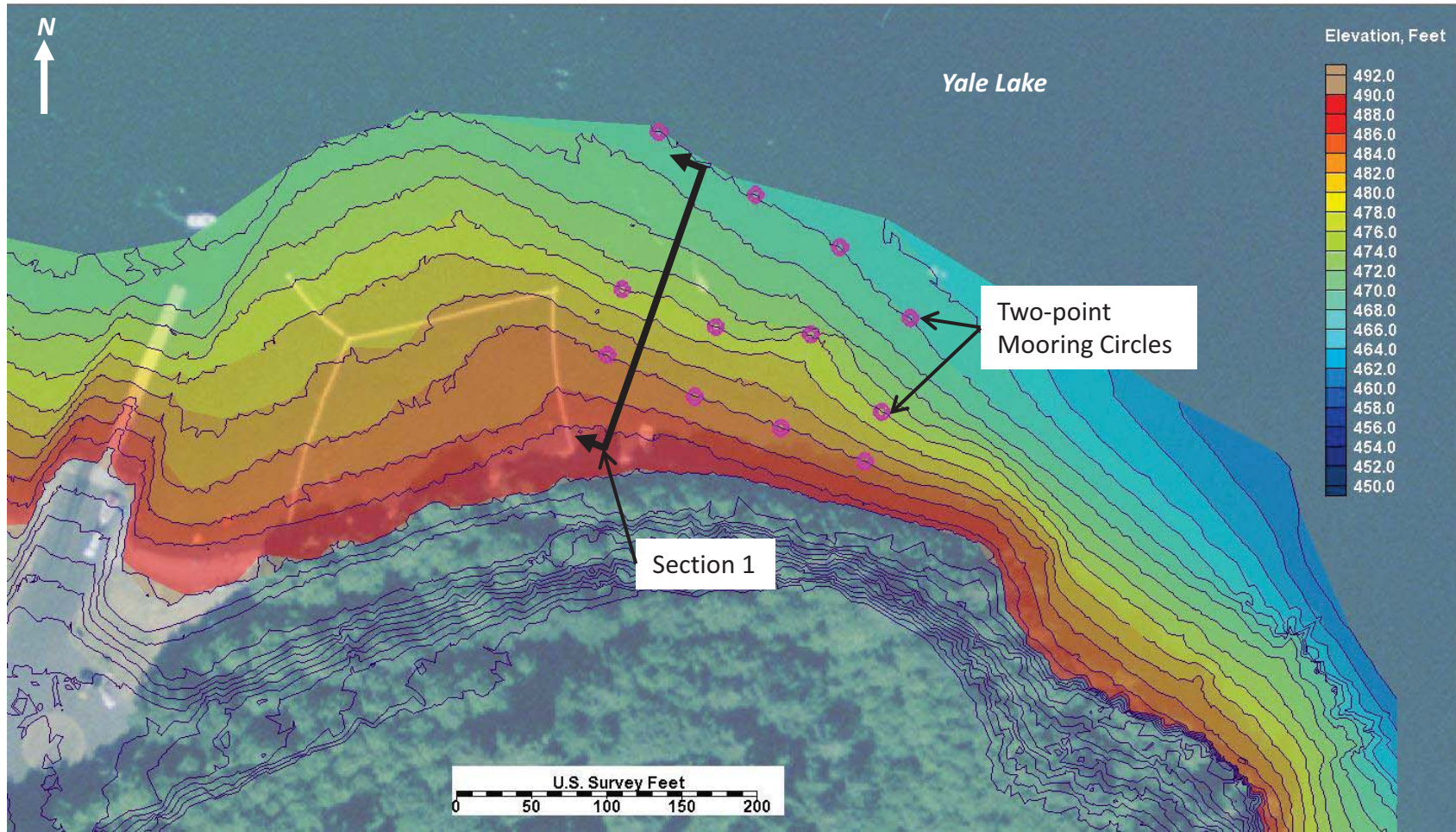
Multi-Point Mooring System – Section 1



Multi-Point Mooring System – Section 1



Preferred Alternative – Two-Point Mooring Buoy



Mooring System Type

- **2-Point**
 - May require 3 buoy locations to provide use at full range of operating water levels
 - Spacing between adjacent buoys lines should be spaced based on single point mooring system layout in the event boats don't use a 2-point mooring system
- **General**
 - Install buoys along swim area delineator to mark swim area and prevent vessels from entering swim area.
 - Concrete block anchor is not feasible given the range of mooring line angles.
 - During periods of high pool, additional mooring can be conducted using bow anchor and stern tied to the buoy nearest the shoreline.



Buoy System Anchorage Requirements

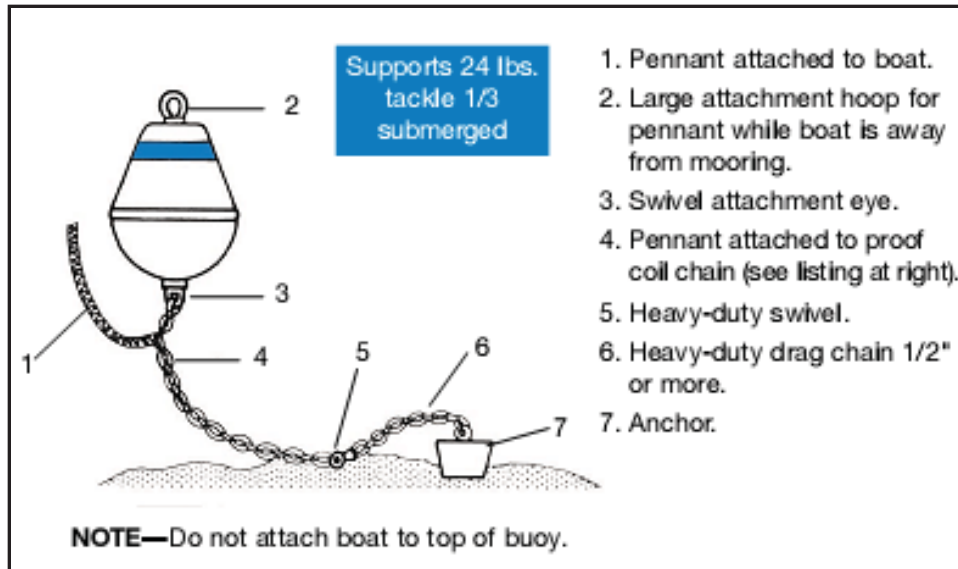
- Anchorage System
 - Helical Anchor – preferred system
 - Multiple anchors required for larger vessels
 - Can be installed using divers; higher cost for depths greater than 50 to 60'
 - Used with semi-taut mooring system
 - Concrete Block – backup system if soil conditions not adequate
 - Used with catenary mooring system
- Mooring Line Scope
 - Steeper Scope required for helical anchor; flatter for concrete block
 - Semi-taut mooring line
 - 2H:1V or steeper at lowest design water level. Used for layouts
- Mooring Line Type & Configuration
 - No drag on bottom
 - Combination of synthetic rope, chain and midline float



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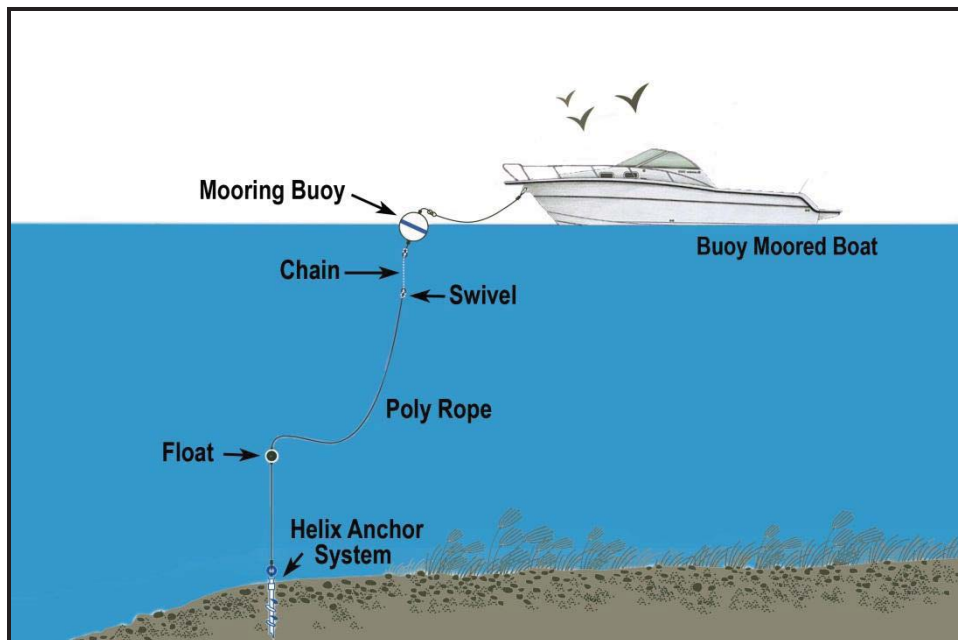
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Example Mooring Buoy Anchorage Systems



Buoy with Chain & Concrete Anchor

- Can be installed in most river bed geotechnical conditions
- Low probability of anchor movement
- Lower cost of installation



Buoy with Seaflex & Helical Anchor

- Less impact on river bed
- Low probability of anchor movement
- Easy to install, slightly higher cost
- Feasibility of helix anchor will depend upon type of substrate at installation site

Mooring Systems – Helical Anchor System



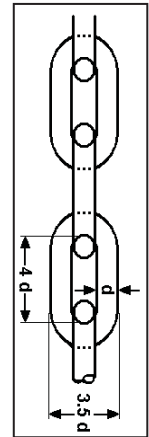
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Example Mooring Buoy Anchorage Systems

○ Chain

- Strength, durability and weight
- It can handle large forces caused by severe environmental conditions
- Smaller anchors may be used
- Periodic inspections of the system can be less frequent
- In very deep water the chain may be too heavy for a floating aid or mooring buoy
- For long mooring lines, especially in shallow water, it can dredge the bottom damaging the sea-bottom environment



○ Rope

- Recommended for small buoys in sheltered locations
- It's lighter than the chain therefore can be used in very deep water
- Thank for its elasticity the rope is able to absorb the energy of the movements of a buoy under adverse environmental conditions (i.e. excessive wave and winds)
- It can easily be cut and chanced by any sharp edges presented by rocks or sea shells
- It may suffer abrasive damage from sand particles in suspension in the water resulting in reduction in breaking load.
- It should only be used in that part of the system that does not come into contact with the seabed or the buoy body.





Saddle Dam Park Feasibility Study

Mooring Buoy Concept Evaluation - Final



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March 3, 2015



Saddle Dam Park Feasibility Study

Boarding Float Transition Plate Concept



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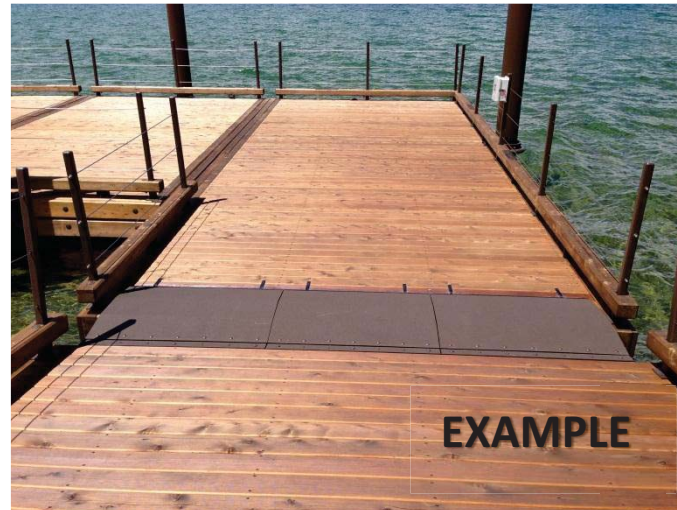
March 3, 2015

Installation Example and Cost Estimate



COST ESTIMATE:

- Purpose: Reduce gaps between boarding floats to be ADA compliant
- Solution: Retrofit with transition plates
- Total = \$2,000-\$2,500 per each plate installed



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Appendix 3: Estimate of Probable Cost – Final Conceptual Site Plan

FINAL CONCEPTUAL SITE PLAN

| CSI Sec. | ITEM | QTY. | UNIT | UNIT COST | TOTAL | REMARKS | SUBTOTAL |
|--------------|---|--------|------|------------|----------|---------------------------------------|----------------|
| 02230 | SITE PREPARATION & DEMOLITION | | | | | | 33,195 |
| | Construction Survey Staking | 1 | LS | \$3,000.00 | \$3,000 | | |
| | Tree Protection Fence | 700 | LF | \$3.00 | \$2,100 | | |
| | Clear and Grub Vegetation | 12,100 | SF | \$0.30 | \$3,630 | | |
| | Bollard Removal & Haul | 39 | EA | \$200.00 | \$7,800 | includes lead abatement | |
| | Remove Stumps and Concrete Block (below OHW) | 1 | LS | \$1,200.00 | \$1,200 | | |
| | Remove Steps | 1 | LS | \$300.00 | \$300 | | |
| | Remove Drinking Fountain | 1 | LS | \$500.00 | \$500 | | |
| | Remove Asphalt Paving | 225 | CY | \$40.00 | \$9,000 | Assumed 3" depth AC, 9" base | |
| | Remove Existing Tables and Grills | 1 | LS | \$2,500.00 | \$2,500 | | |
| | Saw Cut Paving | 255 | LF | \$3.00 | \$765 | | |
| | Move Existing Boulders | 3 | EA | \$300.00 | \$900 | At Welcome Kiosk | |
| | ADA Compliance As-Builts | 1 | LS | \$1,500.00 | \$1,500 | | |
| 02300 | EARTHWORK | | | | | | 5,008 |
| | Strip & Stockpile Topsoil | 35 | CY | \$20.00 | \$700 | 1" avg. depth assumed | |
| | Excavation | 84 | CY | \$14.00 | \$1,176 | | |
| | Place Site Backfill | 84 | CY | \$23.00 | \$1,932 | | |
| | Place Import Backfill | 40 | CY | \$30.00 | \$1,200 | | |
| 02310 | EROSION & SEDIMENT CONTROL | | | | | | 4,100 |
| | Straw Wattle Sediment Barrier | 700 | LF | \$3.00 | \$2,100 | | |
| | Biofilter Bag Protection | 50 | EA | \$16.00 | \$800 | | |
| | Construction Entrance | 1 | EA | \$1,200.00 | \$1,200 | | |
| 02667 | WATER SYSTEM | | | | | | 1,200 |
| | Plumbing and Disinfection for Drinking Fountain | 1 | LS | \$1,200.00 | \$1,200 | | |
| 02741 | ASPHALT PAVING | | | | | | 10,745 |
| | Hot Mix AC Paving (3" depth) | 1,640 | SF | \$3.25 | \$5,330 | | |
| | Base Rock for AC Paving (9" Depth) | 45 | CY | \$75.00 | \$3,375 | | |
| | Pavement Striping and ADA Stencil | 1 | LS | \$1,800.00 | \$1,800 | | |
| | Concrete Wheel Stop | 2 | EA | \$120.00 | \$240 | | |
| 02745 | CRUSHED STONE PAVING | | | | | | 2,295 |
| | Crushed Stone Paving (3" depth) | 51 | Ton | \$45.00 | \$2,295 | 113 lb./cf | |
| 02751 | CEMENT CONCRETE PAVING | | | | | | 100,900 |
| | Concrete Paving - Vehicular | 235 | SY | \$180.00 | \$42,300 | 5" conc., reinforced, incl. base rock | |
| | Concrete Paving - Pedestrian | 490 | SY | \$115.00 | \$56,350 | 4" conc., no rebar, incl. base rock | |
| | Detectable Warning | 5 | EA | \$450.00 | \$2,250 | Embedded | |
| 02832 | SEGMENTAL RETAINING WALLS | | | | | | 1,430 |
| | Modular Block Wall at Vault Toilet | 65 | SF | \$22.00 | \$1,430 | price per face foot of wall | |

| CSI Sec. | ITEM | QTY. | UNIT | UNIT COST | TOTAL | REMARKS | SUBTOTAL |
|--------------|--|-------|------|-------------|----------|--|---------------|
| 02870 | SITE FURNISHINGS | | | | | | 96,210 |
| | Picnic Shelter (Natural Structures Wrangell 20' x 36') | 1 | LS | \$38,500.00 | \$38,500 | \$18.5k shelter and delivery, \$20k installation | |
| | Single Stall Pre-Cast Concrete Vault Toilet (CXT Gunnison) | 1 | LS | \$17,900.00 | \$17,900 | \$13.9k restroom and delivery, \$4k installation | |
| | Handrail at Existing Stairs and Ramps | 46 | LF | \$60.00 | \$2,760 | | |
| | Guardrail at Walls | 45 | LF | \$80.00 | \$3,600 | | |
| | Cedar Split Rail Fence at Overlook | 110 | LF | \$25.00 | \$2,750 | | |
| | Trash Receptacle | 2 | EA | \$650.00 | \$1,300 | | |
| | Grill | 3 | EA | \$500.00 | \$1,500 | | |
| | Hot Coals Bin | 2 | EA | \$850.00 | \$1,700 | | |
| | Steel Pipe Bollard | 23 | EA | \$200.00 | \$4,600 | | |
| | Removable Bollard | 2 | EA | \$600.00 | \$1,200 | | |
| | Boulder Barrier (imported boulders) | 20 | TON | \$60.00 | \$1,200 | Average 2.5 tons per boulder | |
| | Drinking Fountain | 1 | EA | \$4,000.00 | \$4,000 | | |
| | Picnic Tables | 16 | EA | \$900.00 | \$14,400 | | |
| | ADA Signs for Parking and Restroom | 4 | EA | \$200.00 | \$800 | | |
| | Interpretive Kiosk (By Others) | 2 | LS | \$0.00 | \$0 | By others | |
| | | | | | | | |
| | BOAT LAUNCH AND MOORAGE IMPROVEMENTS | | | | | | 39,000 |
| | Buoy Moorage | 6 | EA | \$4,500.00 | \$27,000 | Double-buoy system | |
| | Transistion Plate at Abutment | 6 | EA | \$2,000.00 | \$12,000 | | |
| | | | | | | | |
| 02900 | LANDSCAPING | | | | | | 22,180 |
| | Place stockpiled topsoil | 37 | CY | \$20.00 | \$740 | 4" depth in seeded and shrub areas | |
| | Import and place topsoil | 56 | CY | \$120.00 | \$6,720 | 4" depth in seeded and shrub areas | |
| | Soil Preparation for Seeded and Shrub Areas | 7,500 | SF | \$0.40 | \$3,000 | Includes 1" compost, lime, and fine grading | |
| | Rough Lawn Seed Mix | 4,700 | SF | \$0.20 | \$940 | | |
| | Native Shrub Planting (Upper Terrace) | 2,800 | SF | \$1.50 | \$4,200 | 1 gallon pots, avg. 3' on center | |
| | Place Bark Mulch | 18 | CY | \$60.00 | \$1,080 | 2" depth | |
| | Tree Limbing / Thinning for Views | 1 | LS | \$2,000.00 | \$2,000 | | |
| | Establishment & Maintenance | 1 | LS | \$3,500.00 | \$3,500 | 1 year | |
| | | | | | | | |
| 03330 | CAST-IN-PLACE CONCRETE | | | | | | 9,600 |
| | Retaining Walls at path to boat ramp | 240 | SF | \$30.00 | \$7,200 | price per face foot of wall | |
| | Kiosk Footings | 2 | EA | \$1,200.00 | \$2,400 | | |

SUBTOTAL

\$325,863

Mobilization (10% of construction cost)

10.0%

\$32,586

Estimated Base Construction Cost

\$358,449

ADDITIONAL COST FACTORS:

Construction Contingency

10.0%

\$35,845

Cowlitz County Sales Tax

7.7%

\$27,601

Total Estimated - Alternate 1

\$421,895

ASSUMPTIONS:

1. Prevailing Wage Labor Rates Apply.
2. All materials include labor, installation, and warranty period costs, unless noted otherwise.
3. Does not include permitting costs.

Appendix 4: Anticipated Regulatory and Permitting Summary Memorandum

Mason, Bruce & Girard, Inc.

707 S.W. Washington Street, Suite 1300
Portland, OR 97205-3530

MEMORANDUM

DATE: January 30, 2015

TO: Jessica Kimmick (PacifiCorp)

FROM: Alexis Casey (MB&G)

SUBJECT: Yale Feasibility Study at Saddle Dam Day Use Park
Anticipated Regulatory and Permitting Summary Memorandum

Project Description

The proposed Saddle Dam Day Use Park Improvement Project (Project) is located on the southwestern side of Yale Reservoir in Cowlitz County, Washington, approximately 27 miles east of Woodland, Washington. Pursuant to Section 11.2.2.5 of the Lewis River Settlement Agreement, PacifiCorp will improve the recreation facilities at the Saddle Dam Day Use Park and address Americans with Disabilities Act (ADA) accessibility to the recreational facilities where possible. The proposed improvements for Saddle Dam Park, which are outlined in PacifiCorp's Recreation Resources Management Plan (RRMP) and depicted in Lewis River Recreational Facilities Master Plan (Master Plan), include the following elements:

- New day use group picnic shelter located on the lower terrace accessible by boat from the shoreline.
- New anchor buoys and moorage eye cleat boulders.
- Additional ADA-accessible picnic tables along both the upper and lower terraces.
- ADA-accessible pathways from the parking lot and existing boat launch.
- Striping of the existing pavement to designate ADA-accessible routes.
- New vault toilet.
- ADA-accessible parking.
- Upgrades to the boarding float for ADA accessibility.

Alternative Project elements that may be incorporated into the final project design include the following:

- Constructing the new day use group picnic shelter on the upper terrace.
- Selective tree trimming and/or tree removal to enhance views of Mt. St. Helens and Yale Reservoir.
- Removal of certain boating obstructions (i.e., concrete block, tree stumps, boulders).

For purposes of permitting for the Project, the full pool elevation for Yale Reservoir (490 feet above mean sea level (MSL)), will constitute the Ordinary High Water Mark (OHWM) for the Reservoir. The following elements will likely involve impacts to areas below the OHWM of Yale Reservoir.

- New anchor buoys.
- Upgrades to the boarding float.
- Moorage eye cleats.
- Small amount of fill material to construct the ADA path where it will connect to the boat launch.

The site currently provides vehicle access for boats, picnicking, and swimming along Yale Reservoir. Construction of the proposed Project will occur in 2016.

This memo is intended to provide a brief overview of the necessary permits required for construction improvements at Saddle Dam Park, and potential design changes needed to avoid impacts to sensitive resources. MacKay and Sposito, Inc. has prepared a separate technical memorandum to address the engineering and design constraints for the proposed Project.

Required Federal, State and County Permits

A preliminary site visit was conducted by Alexis Casey, Mason, Bruce & Girard, Inc. (MB&G) Biologist, on December 16, 2014 to inspect the Project area for wetlands, waters, and critical areas. MB&G confirmed the presence of Yale Reservoir and several critical areas (discussed below). In addition, the preliminary site visit indicated that wetlands are not likely to be present within the area of potential impact (API) identified in the Master Plan. An additional site visit will be needed once the API is finalized to confirm that wetlands are not present. If wetlands or additional waters are observed during the site visit, a follow-up wetland delineation and associated reporting may be necessary.

DOE and ACOE permits

As currently proposed, installation of the new anchor buoys, upgrades to the boarding float, installation of moorage eye cleats on boulders, and construction of a portion of the ADA path immediately adjacent to the boat launch will occur below the OHWM of Yale Reservoir. Due to the proposed work within waters, the Project will require discharge authorizations from the U.S. Army Corps of Engineers (ACOE) and Washington Department of Ecology (DOE) (corresponding to Sections 404 and 401 of the Clean Water Act, respectively). Given the observations noted above regarding wetlands, a Wetland Delineation Report would not be required unless wetlands are identified during subsequent site visits. It is likely that the impacts below the OHWM of Yale Reservoir can be authorized under a Nationwide Permit (NWP) No. 42 (Recreational Facilities) from the ACOE. In addition, the following NWPs may apply to the proposed Project: NWP No. 10 (Mooring Buoys), NWP No. 18 (Minor Discharges), NWP No. 25 (Structural Discharges), and/or NWP No. 33 (Temporary Construction, Access, and Dewatering). A Joint Aquatic Resources Permit Application (JARPA) would need to be submitted in an application for the Section 404 and Section 401 permits. The JARPA will need to include a discussion of alternatives for the proposed Project in order to document that the proposed design is the best practicable alternative with the least amount of impact to waters.

It is anticipated that the Project will result in minimal waters impacts. For potential permanent impacts to jurisdictional waters (Yale Reservoir), it is expected that vegetation enhancement will compensate for the potential minor permanent loss of waters resources. Therefore, we do not anticipate the need for a formal compensatory wetland or waters mitigation plan for this Project. Both a National Pollutant Discharge Elimination System (NPDES) Permit and a Stormwater Pollution Prevention Plan (SWPPP) will be required by DOE if the project results in disturbance of more than one acre.

WDFW and USFWS approvals

The Project will require Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) because portions of the Project will be conducted within waters of the State of Washington (new anchor buoys, mooring eye cleats/boulders, fill for ADA path near boat launch) and will use, divert, obstruct, or change the bed or flow of State waters. The JARPA will also serve as an application for the HPA.

PacifiCorp wildlife biologist Kendal Emerson has noted that the closest, known, active bald eagle (*Haliaeetus leucocephalus*) nest is located east of Saddle Dam Park within Clark County and greater than 5,000 feet from the Project area. Kendal Emmerson did note that bald eagles utilize the Project area for foraging. If a bald eagle nest is subsequently located in proximity to the Project area, restrictions may be placed on the timing and types of activities permitted to occur during Project construction as required under the Bald and Golden Eagle Protection Act (BGEPA). These restrictions would include limiting work during the breeding season (January 1- August 15) if the Project is within 660 feet of the active nest. Washington state has revised its Bald Eagle Protection Rules (WAC 232-12-292) such that the U.S. Fish and Wildlife Service (USFWS) is now solely responsible for consultation and permit issuance under the BGEPA when there is a potential for disturbance to bald eagles.

Following the issuance of USFWS Biological Opinion (BiOp) 1-3-06-F-0177 (USFWS 2006) for the FERC Relicensing of the Lewis River Hydroelectric Projects, the USFWS designated additional critical habitat for Bull trout (*Salvelinus confluentus*) not previously considered in the BiOp. Direct effects of the proposed Project to bull trout and their habitats are covered and were considered in the BiOp; however, potential effects to critical habitat, as it is designated today, for this species was not specifically addressed. A brief letter requesting Informal Consultation for potential impacts to bull trout critical habitat would need to be prepared and submitted to USFWS. Consultation with the USFWS may also be required if in-water work is proposed to occur following the seasonal closure of the park. The standard in-water work window for the Reservoir is July 16- August 15.

Kendal Emmerson indicated that tree removal restrictions are outlined in PacifiCorp's Wildlife Management Plan (WMP) which documents PacifiCorp's commitments to wildlife regulatory agencies in coordination with the Terrestrial Coordination Committee (TCC). The TCC is a committee of stakeholders which includes representatives from WDFW, USFWS, Cowlitz County Public Utility District (PUD), and the Rocky Mountain Elk Foundation (RMEF). The WMP permits removal of deciduous trees (i.e., red alder [*Alnus rubra*] or vine maple [*Acer circinatum*]) and coniferous trees less than 20 inches at diameter breast height (DBH). Special coordination and approval from the TCC would be required if the proposed Project will remove coniferous trees greater than 20 inches DBH; trees in excess of 20 inches DBH are present upslope from the lower picnic terrace. Limbing of deciduous or coniferous trees would not require approval.

SEPA Checklist

To comply with the state of Washington's State Environmental Policy Act (SEPA), a SEPA Checklist will need to be submitted that addresses the project plans and potential impacts. Cowlitz County will be the lead agency reviewing the SEPA Checklist.

Shoreline Permits

Since the Project is proposed to occur within 200 feet of Yale Reservoir, Shoreline Permits are required from Cowlitz County. The Project area shoreline has been designated a Conservancy Management District per the Cowlitz County Shorelines Management Master Plan (SSMP). The proposed Project will fall under the **Recreation** Use category and is subject to the following conditions:

- Except for those facilities which require a location adjacent to a body of water, all facilities shall be prohibited within 10 feet of the OHWM as measured on a horizontal plane; buildings exceeding 35 feet in height above average grade level must be at least 50 feet from the OHWM, as measured on a horizontal plane.
- **Parking areas shall be prohibited within 20 feet of the OHWM as measured on a horizontal plane.**

- A recreational facility or structure which detracts from the character of the local environment shall be prohibited.
- Access roads to recreational facilities shall comply with regulations under the use activity Roads.
- Parking facilities shall be prohibited within twenty (20) feet of the shoreline as measured on a horizontal plan and surface runoff must meet all city, county, and state requirements in view of water quality.
- Little or no major change of environment by man-made structures, contrivances shall be permitted.

Upgrades to the boarding float will also fall under the Marinas Use category and will need to meet the requirements below. For the purposes of the Cowlitz County SSMP, public recreation docks fall under the Marinas Use.

- Any person proposing to undertake a marina development, construction, expansion and/or alteration, or any phase thereof which constitutes a complete project, shall apply for a permit.
- A permit for marina development, construction, expansion and/or alteration or, any phase thereof which constitutes a complete project, may be granted subject to the following regulations:
 - The latest revision 'Criteria Governing the Design of...Marinas...for Protection of Fish and Shellfish Resources' adopted by the Washington State Department of Fisheries in 1971, which criteria are incorporated herein by reference, and are to be adjusted to local tidal levels.
 - Parking facilities shall be set back from the ordinary high water mark at its location following marina development by a minimum of twenty (20) feet measured on a horizontal plane to provide public access to and viewing from the immediate shoreline area.
 - Sewage pump-out and treatment facilities shall be installed within two years of the establishment of the US. Coast Guard regulations on marine sanitation devices or at the beginning of operations of any new marina or of an expansion of any 'existing' marina, whichever date is latest.
 - Development of marina shall comply with state and local health agencies, regulations.
 - A single, joint-use moorage facility shall be required of any subdivisions, motels, multi-family residences, or commercial and industrial enterprises in close proximity to each other.
 - Special attention shall be given to the design development of operational procedures for fuel handling and storage in order to minimize accidental spillage and provide satisfactory means for handling those spills that do occur.

The signage components of the proposed Project will fall under the Outdoor Advertising, Signs and Billboards Use category and will need to meet the following requirements:

- Off-premise outdoor advertising will be limited to areas of high-intensity land use such as commercial and industrial areas.
- Outdoor advertising, signs and billboards shall be allowed, provided, if they are:
 - Official in nature.
 - A commercial sign advertising commodities for sale, non-illuminating, 32 square feet or less in size, and does not exceed ten (10) feet at its highest point from the ground.
 - A real estate sign offering for sale, lease, or rent, non-illuminating, 32 square feet or less in size, and does not exceed ten (10) feet at its highest point from the ground.
 - Of any nature placed on the side of a building, 32 square feet or less in size, and non-illuminating.

- Not obstructing or degrading a view or scenic vista.
- Integral in nature marking monuments, historic or cultural places, and
- Does not obstruct sight distance to motorized travelers.

If the proposed Project meets the Recreation, Marinas, and Outdoor Advertising, Signs and Billboards Use requirements above, the proposed Project will qualify for a Shoreline Substantial Development Permit. The JARPA and SEPA Checklist, in conjunction with project plans, will serve as the application for a Cowlitz County Shoreline Substantial Development Permit.

Critical Areas

Cowlitz County will review the proposed Project's potential impacts to Critical Areas prior to issuing other permits. The County is charged with making a determination of which Critical Areas are on site. However, MB&G has made preliminary determinations based on the December 16, 2014 site visit and the County's Environmental and Planning Internet Clearance (EPIC) mapping. The proposed Project's likely requirements with respect to each type of Critical Area are discussed below.

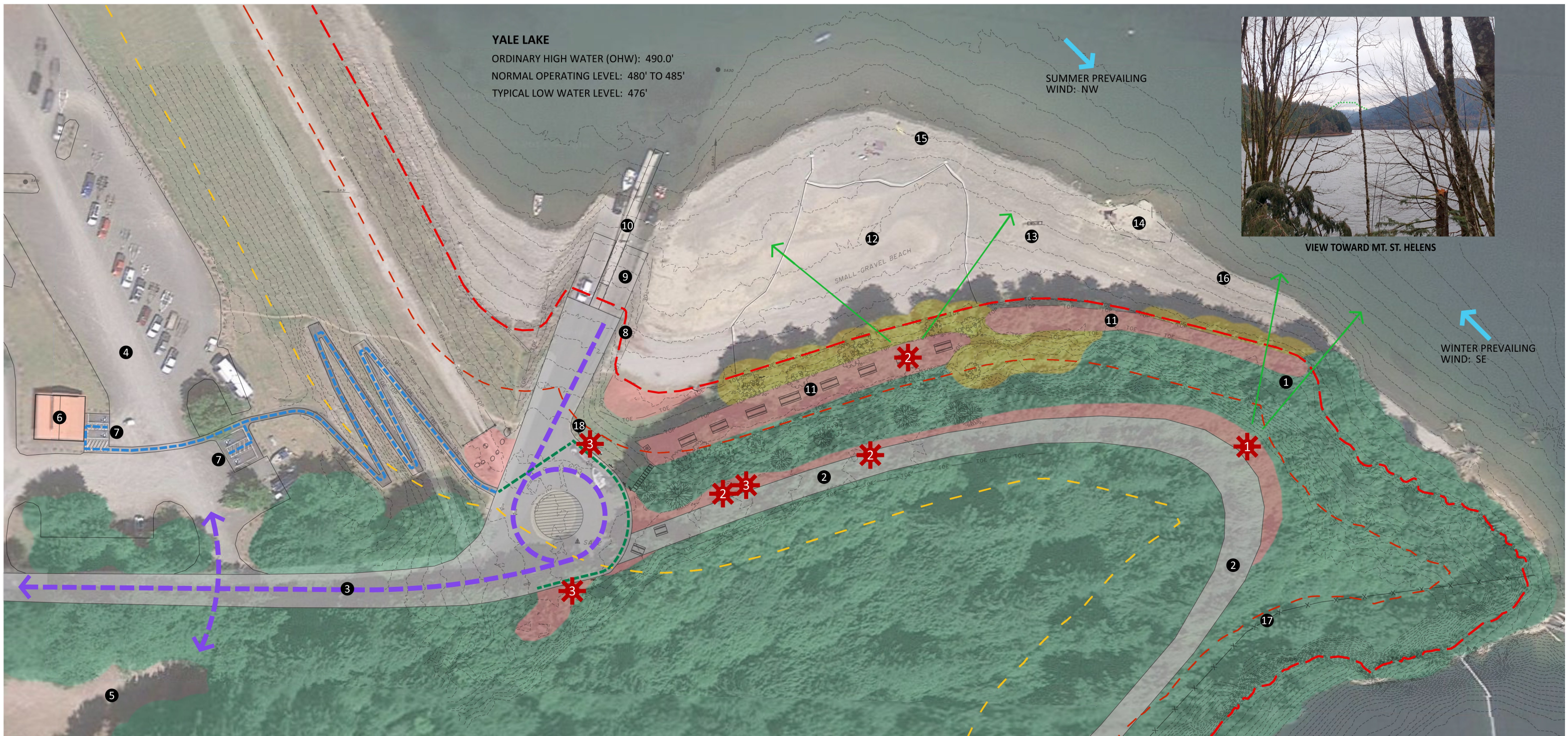
Fish and Wildlife Habitat Conservation Area: Yale Reservoir is a Type S (Type 1) waters inventoried as "shoreslines of the state." As such, the proposed Project will impact a Classification 5 (Waters of the State) Fish and Wildlife Habitat Conservation Area and its 150 foot Riparian Habitat Area (RHA) buffer. In addition, the Reservoir is a Classification 1 Fish and Wildlife Habitat Conservation Area due to the presence of Columbia River Distinct Population Segment (DPS) Bull trout, a federally listed threatened species. The Project area may also be considered a Classification 2 Fish and Wildlife Habitat Conservation Area because it provides foraging habitat for bald eagle, a state priority species. Due to the proposed Project's in-water and shoreline work in the Fish and Wildlife Habitat Critical Area, a Level Two Critical Areas Assessment will likely be required.

The Critical Areas report will also need to assess the number, species, and size of trees removed within RHA buffer (150 feet from full pool elevation [490 feet] of Yale Reservoir). Trees proposed for limbing or removal will either need to be surveyed or GPS'd so that they can be incorporated into the project plans. A site restoration plan will be required commensurate with the level of ground disturbance.

Miscellaneous County Permits

Construction of the new vault toilet will likely trigger Cowlitz County Building and Engineering Review of project plans. Cowlitz County requires a 50 foot setback from vault toilets to the OHWM of Yale Reservoir. In addition, if the proposed Project involves grading more than 100 cubic yards of material, Cowlitz County will also require a Clear and Grade Permit.

Appendix 5: Inventory and Analysis



YALE LAKE
 ORDINARY HIGH WATER (OHW): 490.0'
 NORMAL OPERATING LEVEL: 480' TO 485'
 TYPICAL LOW WATER LEVEL: 476'

SUMMER PREVAILING WIND: NW

VIEW TOWARD MT. ST. HELENS

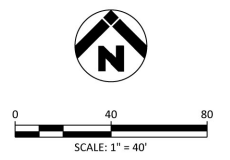
WINTER PREVAILING WIND: SE

LEGEND

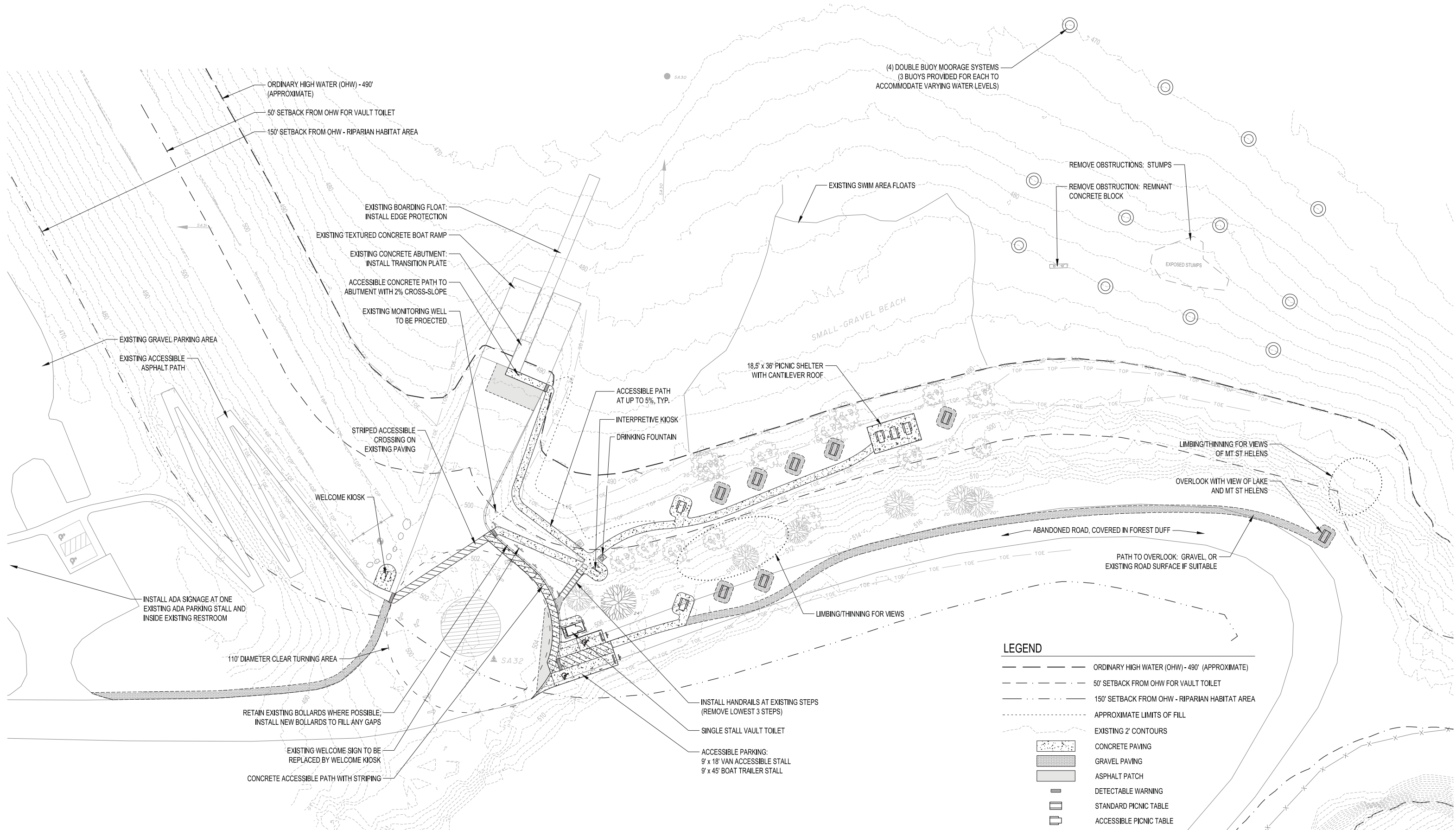
- 2' CONTOURS (BATHYMETRY FROM PACIFICORP)
- ORDINARY HIGH WATER (OHW) - 490.0'
- 50' SETBACK FROM OHW FOR VAULT TOILET
- 150' SETBACK FROM OHW - RIPARIAN HABITAT AREA
- VEHICULAR ACCESS
- EXISTING ADA ACCESSIBLE ROUTE
- POTENTIAL ADA ACCESSIBLE ROUTE
- VIEWS
- WIND DIRECTION
- MIXED CONIFER/DECIDUOUS FOREST WITH MATURE DOUGLAS FIRS
- DECIDUOUS TREES (ALDER, MAPLE)
- RELATIVELY LEVEL AREAS

KEY NOTES

- 1** RECENTLY FALLEN MATURE FIR OPENS VIEW OF MT. ST. HELENS
- 2** OLD ASPHALT ROAD (BLOCKED BY BOLLARDS), COVERED IN FOREST DUFF
- 3** ASPHALT DRIVE
- 4** GRAVEL PARKING LOT
- 5** OVERFLOW PARKING
- 6** ACCESSIBLE RESTROOM - REQUIRES ADDITIONAL SIGNAGE
- 7** ACCESSIBLE PARKING - REQUIRES ADDITIONAL SIGNAGE
- 8** FILL FOR NEW ACCESSIBLE PATH TO BOAT LAUNCH WILL LIKELY EXTEND BELOW OHW
- 9** CONCRETE BOAT RAMP
- 10** BOARDING FLOAT - REQUIRES TRANSITION PLATE AND EDGE PROTECTION FOR ADA ACCESSIBILITY
- 11** GRASSY TERRACE
- 12** SWIM AREA
- 13** CONCRETE BLOCK - UNDERWATER OBSTRUCTION
- 14** SHORT STUMPS - UNDERWATER OBSTRUCTION
- 15** BEACH WEST OF STUMPS: SILT, GRAVEL, COBBLE, A FEW SMALL BOULDERS (MOSTLY ROUND)
- 16** BEACH EAST OF STUMPS: SILT, SAND, GRAVEL, COBBLE, SMALL AND MEDIUM BOULDERS (MOSTLY ANGULAR)
- 17** CHAIN LINK FENCE BLOCKS ACCESS TO DAM
- 18** MONITORING WELL LOCATION
- POTENTIAL VIEWPOINT AND PICNIC TABLE WITH VIEW OF LAKE AND MT. ST. HELENS
- POTENTIAL LOCATIONS FOR PICNIC SHELTER
- POTENTIAL LOCATIONS FOR VAULT TOILET

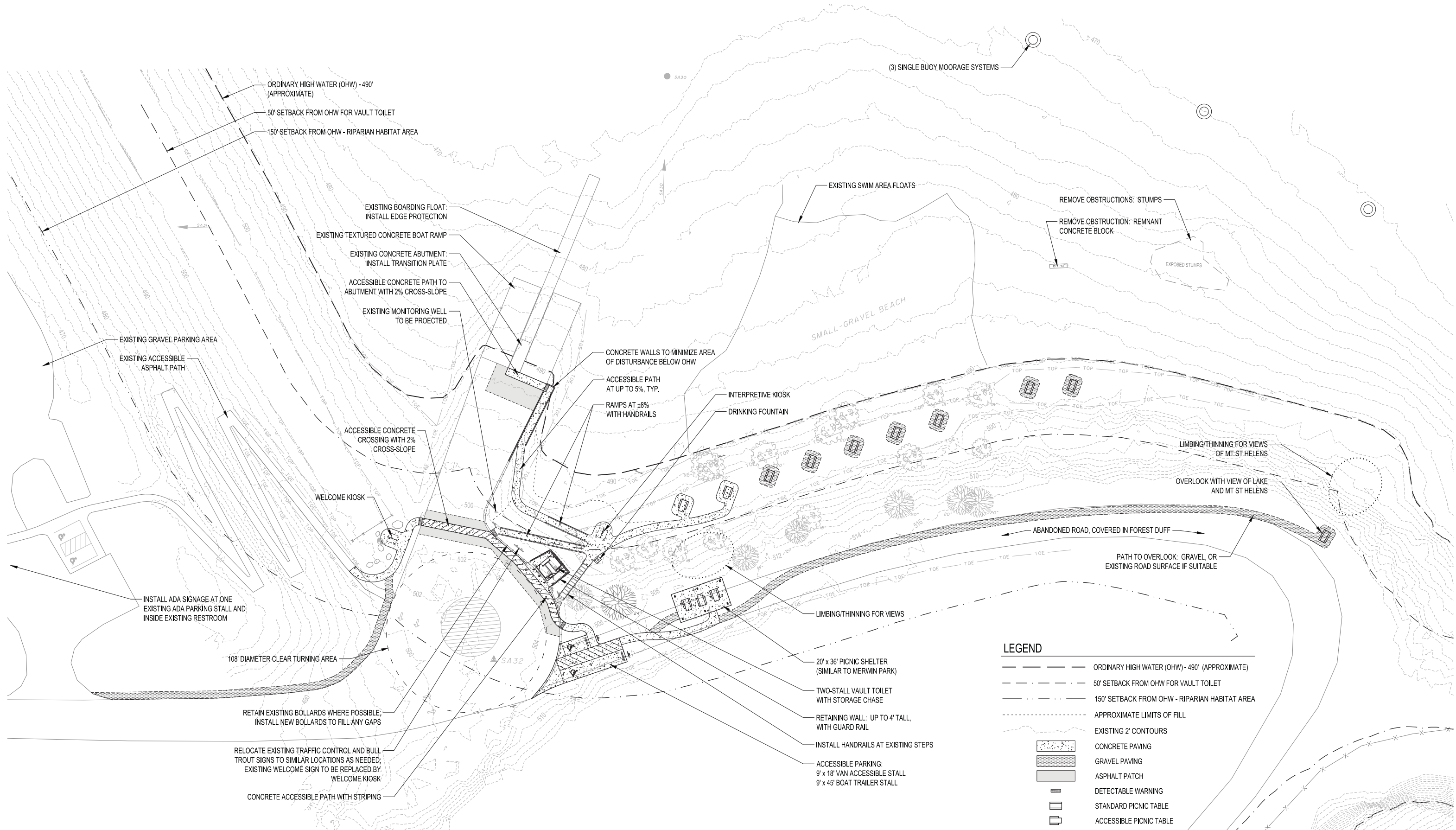


Appendix 6: Conceptual Site Plans – Alternates 1 and 2



LEGEND

| | |
|--|--|
| | ORDINARY HIGH WATER (OHW) - 490' (APPROXIMATE) |
| | 50' SETBACK FROM OHW FOR VAULT TOILET |
| | 150' SETBACK FROM OHW - RIPARIAN HABITAT AREA |
| | APPROXIMATE LIMITS OF FILL |
| | EXISTING 2' CONTOURS |
| | CONCRETE PAVING |
| | GRAVEL PAVING |
| | ASPHALT PATCH |
| | DETECTABLE WARNING |
| | STANDARD PICNIC TABLE |
| | ACCESSIBLE PICNIC TABLE |



Appendix 7: Review Meeting Notes – Draft Conceptual Site Plan Alternates, including diagrams of preferred elements

MEETING NOTES

PROJECT: 15936 Saddle Dam Park Feasibility Study

RE: Review Meeting – Draft Conceptual Site Plan Alternatives

DATE: February 10, 2015

LOCATION: MacKay Sposito

ATTENDEES: Jessica Kimmick (PacifiCorp)
Alexis Casey (MB&G)
Shane Phillips (CHE)
John Dawson (CHE)
Andrew Holder (MSi)

Meeting notes issued 2-26-2015.

The two Alternative Conceptual Plans were presented and discussed. See the attached diagrams for the preferred components of the two alternative plans, which will be combined into the Final Conceptual Site Plan.

Moorage

1. Jessica prefers the double-buoy system in Alternate 2, because it has the flexibility for varying water levels, resists wind better, and accommodates more boat-in users.
2. With the double-buoy system, as shown with three buoys for varying water levels, two boats can moor at each set of three buoys, when the water level is high (see the attached diagram).
 - a. One boat uses the two buoys closer to shore as intended for the double buoy system, while another boat can use the third buoy as if it were a single buoy system.
 - b. The outer row of buoys would need to be spaced properly to function as single-buoy moorage.

- c. Up to 8 boats could be moored at the same time this way.
3. Helical anchors for the buoys are preferred since they are easier to permit. Concrete block anchors will be used as a contingency in case the soil is too rocky to drive the helical anchors into. From what we saw on the surface, the helical anchors should work.
4. Overnight camping is not allowed at Saddle Dam Park, including on boats, though we should expect some users to stay overnight on their boats.
5. None of the six joints in the boarding float meet ADA requirements; the gaps are too big. Jessica provided photos of each joint which I will forward to CHE. Transition plates will need to be added at each joint.
6. Jessica prefers to not add bull rail edge protection to the boarding float. The cost for on-site retrofitting is prohibitive, and edge protection is not required for ADA. There are pros and cons for using bull rails, and the preference to use them varies between agencies.

Permitting

7. We should expect a 6 month to 1 year permit review period.
8. Removing the old concrete block and stumps that are in the buoy moorage area will be fine to permit since removing those obstacles would make it safer for users.
9. Besides the buoy anchors and removing obstacles, the only proposed impact below OHWM is the rip-rap slope to support the accessible path to the boarding float shown in Alternate 1. Alternate 2 shows a concrete retaining wall to support the path, which would be mostly or entirely outside of OHWM, depending on the final surveyed location of the OHWM.
 - a. The Corps of Engineers may require mitigation for impact below OHWM, including the rip-rap slope shown in Alternate 1.
 - b. We will need to demonstrate that we are avoiding or minimizing impacts below OHWM, so if the wall (minimal impact) is an option we'll need a solid justification if we decide to go with the rip-rap slope.
 - c. The impact of the rip-rap slope below OHWM would be fairly minimal – around 15 cy of net fill.

Preferred Elements to Combine for Final Conceptual Site Plan

(See also the attached diagrams)

10. Shelter in the Alternate 1 location on the lower terrace.

11. Vault toilet in the Alternate 2 location where it is easily reached and gets sun exposure, but as a single vault. The smaller single vault will help with grading and reduce the length of handrails required on the switchback path below.
12. Pedestrian crossing at the top of the boat ramp and the welcome kiosk location as shown in Alternate 2.
13. Path in front of the ADA stall as shown in Alternate 2.
14. The rip-rap for the path to the boat ramp, as shown in Alternate 1, is preferred due to the lower cost compared to a concrete wall. However this would increase impact below OHWM and may make permitting difficult and/or trigger mitigation. See the discussion in item 9 above.
15. Picnic tables on the grassy terrace beyond the shelter as shown on Alternate 2.
16. Arrange a few of the picnic tables to make groups of two in a row for larger groups.
17. Double buoy moorage system as shown in Alternate 1, with helical anchors.

Remaining Questions for PacifiCorp:

- A. What are the restrictions on excavation in earthen dam? Need 5' depth for vault toilet.
- B. Any restrictions for the monitoring well besides not directly disturbing it?
- C. What level of access will be needed for the old road (where the ADA parking is shown)?
- D. Do the blue bollards contain lead paint?
- E. What style of picnic tables is desired? Keep any of the existing tables?
- F. Are there as-built drawings for water and electric?
- G. Is any lighting desired, such as a beacon light at the boat ramp, or security lighting?
- H. When is the park open for the season?
- I. What is the existing buoy for, near the swim area? Does it mark a hazard?

Preferred components to combine into the Final Conceptual Site Plan, based on the 2-10-2015 Review Meeting

Double-buoy system preferred

Adjust spacing of outer row to function as single-buoy moorage when the other two rows are in use at higher water levels

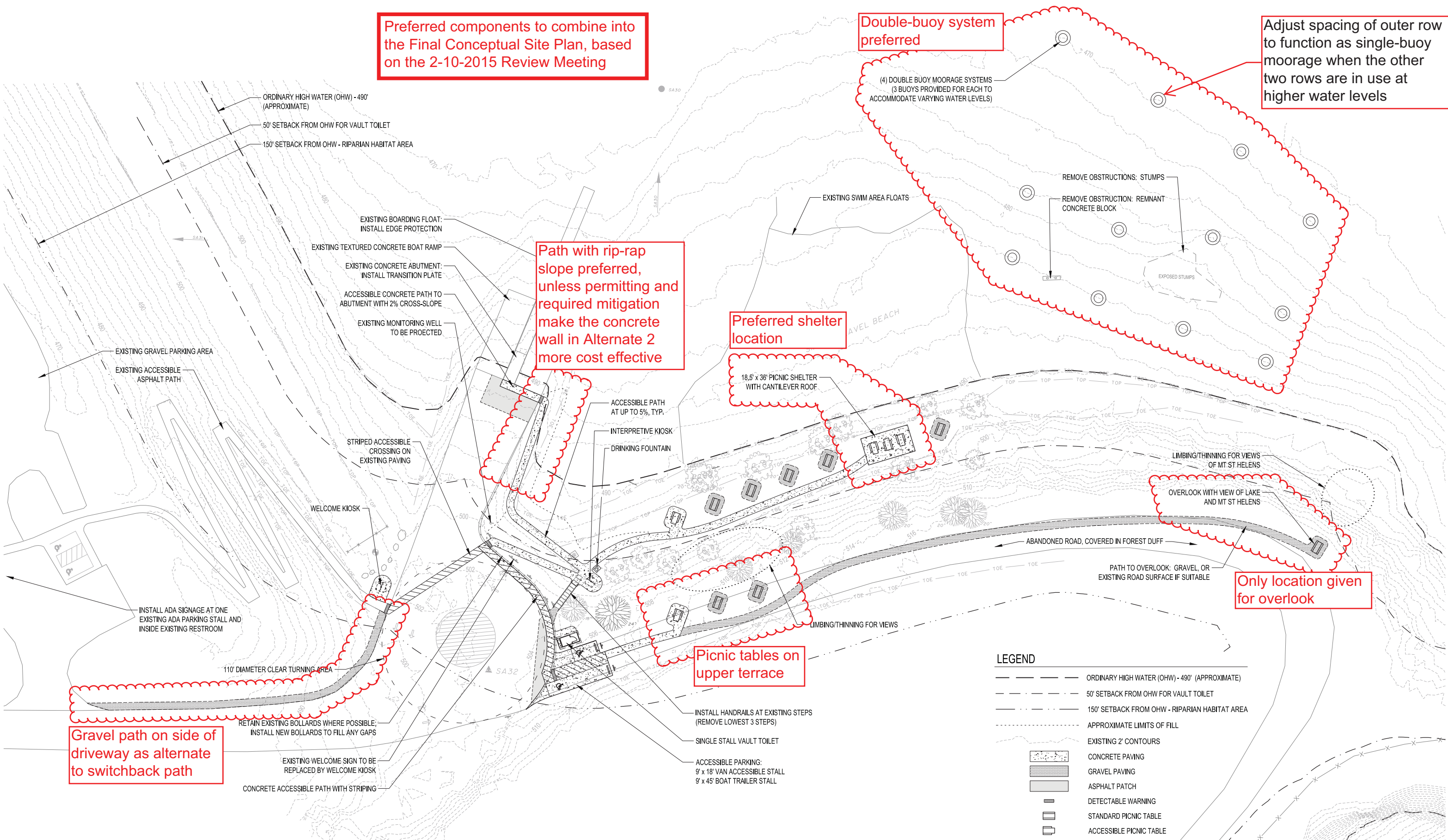
Path with rip-rap slope preferred, unless permitting and required mitigation make the concrete wall in Alternate 2 more cost effective

Preferred shelter location

Only location given for overlook

Gravel path on side of driveway as alternate to switchback path

Picnic tables on upper terrace

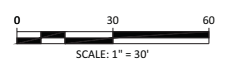


LEGEND

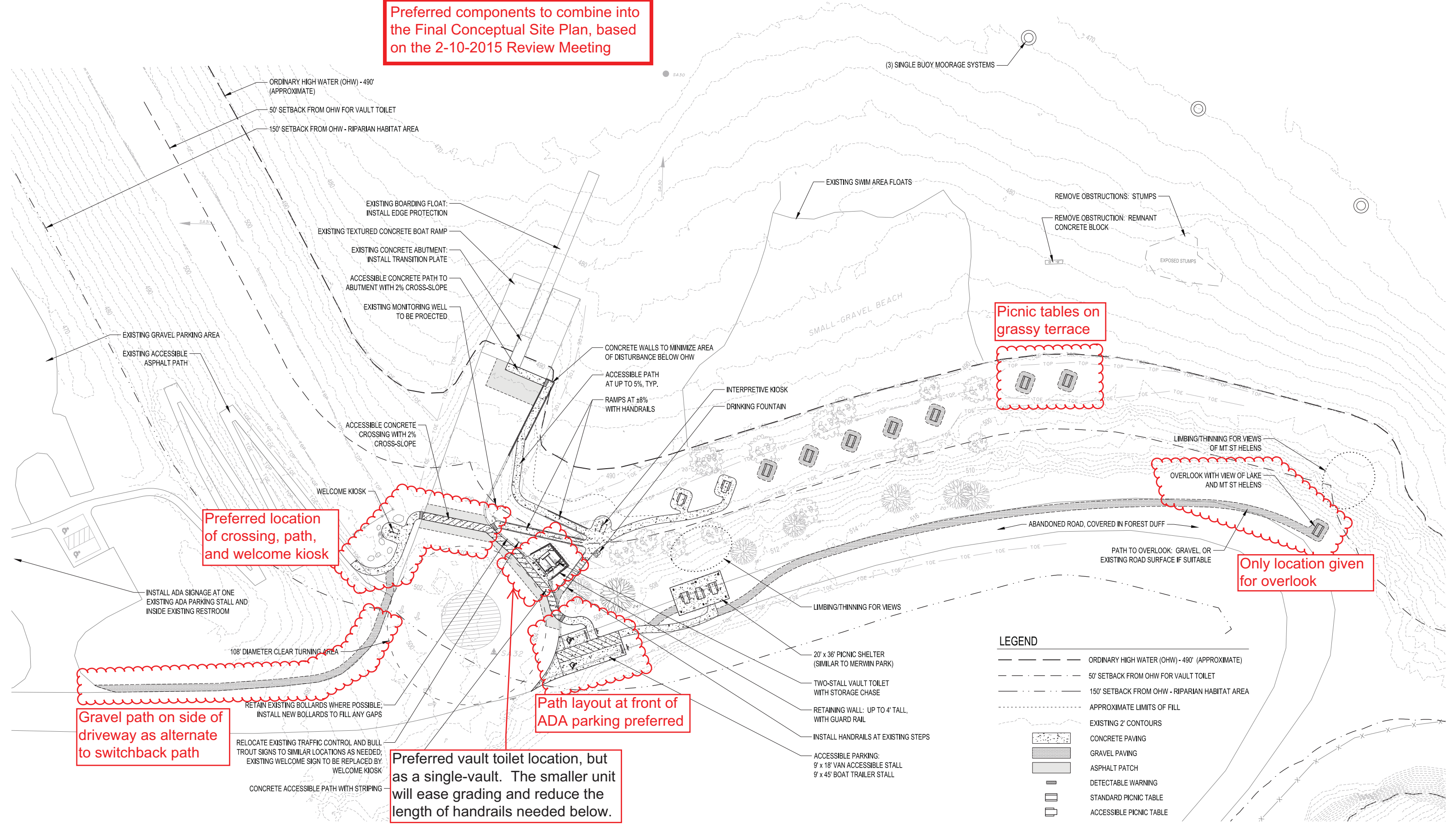
- ORDINARY HIGH WATER (OHW) - 490' (APPROXIMATE)
- - - 50' SETBACK FROM OHW FOR VAULT TOILET
- - - 150' SETBACK FROM OHW - RIPARIAN HABITAT AREA
- APPROXIMATE LIMITS OF FILL
- EXISTING 2' CONTOURS
- [Pattern] CONCRETE PAVING
- [Pattern] GRAVEL PAVING
- [Pattern] ASPHALT PATCH
- [Symbol] DETECTABLE WARNING
- [Symbol] STANDARD PICNIC TABLE
- [Symbol] ACCESSIBLE PICNIC TABLE



SADDLE DAM PARK
 CONCEPTUAL SITE PLAN - ALTERNATE 1
 JANUARY 2015



Preferred components to combine into the Final Conceptual Site Plan, based on the 2-10-2015 Review Meeting



Preferred location of crossing, path, and welcome kiosk

Picnic tables on grassy terrace

Only location given for overlook

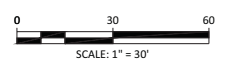
Gravel path on side of driveway as alternate to switchback path

Path layout at front of ADA parking preferred

Preferred vault toilet location, but as a single-vault. The smaller unit will ease grading and reduce the length of handrails needed below.



SADDLE DAM PARK
 CONCEPTUAL SITE PLAN - ALTERNATE 2
 JANUARY 2015



Appendix 8: Review Meeting Notes – Draft Preferred Conceptual Site Plan

MEETING NOTES

PROJECT: 15936 Saddle Dam Park Feasibility Study

RE: Final Review Meeting – Draft Preferred Conceptual Site Plan

DATE: April 10, 2015

LOCATION: MacKay Sposito

ATTENDEES: Jessica Kimmick (PacifiCorp)
Bryan Cole (MSi)
Andrew Holder (MSi)

Meeting notes issued 4-24-2015.

Comments

1. Dave Preston has reviewed the preferred plan and has no comments.
2. Todd Olson has reviewed the preferred plan and has no comments.
3. No comments received yet (as of 4-24-2015) from Engineering.
4. Jessica has set a deadline of April 20 for PacifiCorp comments.
5. Jessica's comments:
 - a. At this point the project will not meet the FERC construction deadline. Include a rough permitting/construction schedule in the report.
 - b. All blue-painted metal items on site should be considered to have lead paint – this includes all the pipe bollards. Include removal, lead abatement, and replacement bollards in the final package.

- c. The picnic tables will be purchased new; the stored picnic tables are not available for this project.

Final Submittal

6. We'll provide the final plan, report, and supporting materials as (3) spiral bound hardcopies, and in pdf format.

Remaining Questions for PacifiCorp:

- A. What are the restrictions on excavation in earthen dam? Need 5' depth for vault toilet.
- B. Any restrictions for the monitoring well besides not directly disturbing it?
- C. What level of access will be needed for the old road (where the ADA parking is shown)?
- D. Should any of the existing tables be re-used?
- E. Are there as-built drawings for water and electric?
- F. Is any lighting desired, such as a beacon light at the boat ramp, or security lighting?
- G. What is the existing buoy for, near the swim area? Does it mark a hazard?
- H. What is the FERC license schedule for this project?