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Port of Bandon

Boat Basin and Launch Ramp Areas Submerged Aquatic Vegetation Mitigation Project

7/26/15

By

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For

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1. Introduction – The Plan

During the Joint Permit Application (JPA) process proposed by the Port of Bandon (Port) in its efforts to maintain adequate and safe depths at the launch ramp and boat basin areas, the USACE contacted the Port of Bandon and advised them to assess submerged aquatic vegetation (SAV) within areas previously identified and permitted to be used for vessel traffic and moorage. A Tier-1 survey to put forth basic information such as presence/absence and identification of SAV bed spatial distribution, approximation of the total area of the SAV bed, qualitative assessment of SAV density, and maximum and minimum depth distribution was accomplished on June 19th, 2014. Mapping and reporting was completed and submitted to the USACE. It was thus found and presented that the Launch Ramp navigation zone contained about 4920 square feet of eelgrass. In mid-December the SAV Survey Report was completed and submitted to the USACE.

After USACE feedback the Port proposed a strategy to resolve the conflict between eelgrass (*Zostera marina*) that has migrated into areas dedicated and maintained to serve the community sport and commercial fishing customers, as well as the US Coast Guard, by 1) reducing the area available to them in order to satisfy USACE/NMFS requirements and 2) transplanting eelgrass plants yet remaining in the adjusted launch ramp dredging area. The reduction resulted in an avoidance of 3659 square feet of eelgrass patch, leaving about 1265 square feet within the adjusted prism. The area within the adjusted dredge prism containing the 1265 square feet of eelgrass was referred in that Plan as the “donor site”.

A “snapshot” placed on Page 9 of the Mitigation Plan showed the proposed revised replant area, providing both the baseline and the geographic boundaries of the project. The Port proposed to remove and transplant eelgrass the same day using the “Seagrass with Sediments” method. This method consists of planting a shovelful of eelgrass with sediment and rhizomes intact, digging up clumps of plants rather than single plants, depending on how close together they were, using sharp spades with reinforced, long handles. It was noted in the Plan that very fine sands and silts would cloud the water immediately when the digging began and so collectors would have to follow shoot blades down past the sheath to the substrate sediment, uproot the entire plant by digging under it by spade and then snapping the rhizome to remove the plant, placing the spade entry adequately away from the targeted plant to obtain the entire root system. The entire root system and plant with sediment was then to be gently placed in a porous bucket underwater and then transported to its new location while remaining submerged.



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The Plan proposed steel, U-shaped staples, of adequate strength so as to not deform by the hammering impact, to be driven into the substrate (a crisscross pattern was to be used, requiring two staples per plant). The staples would be driven through the root wad to secure it, and into the substrate, providing stability while the plant system took root, and, using a rod specially fitted to mount the top of the staples and to extend above the water surface, hammer the staples below the mudline. The Plan also provided an alternative method of attaching the plant root wads to 6 – 12” lengths of rebar 2.67 and placed in an “X” pattern, with the wad, into a pre-dug hole. Hole would have to be large enough to fully bury the wad (and bar if used instead of the staples). If the rebar is used, smaller (about 6” in length) staples (bamboo) could be pressed through the sediment at about 30 degrees from horizontal to secure the wad/rebar system from wave energy. The number of plants placed in the transplant site to fill the designated transplant area was to match the current plant density, in order to average about 100% of the donor area density. This event was to take place during very low tides during the first week of August, 2015 and was expected to take about three days to complete.

2. 7/10/2015 Mitigation Project Modifications

During the project some modifications were made, primarily based on discoveries regarding factors such as sediment characteristics, eelgrass densities and unexpectedly rapid spreading of eelgrass patches in areas previously designated for planting.

The location shown in “snapshot’ placed on Page 9 of the Mitigation Plan was found to have largely been populated with recent eelgrass growth. Therefore a nearby location in the same area was selected, as shown in the drawing entitled “Exhibit C”, on Page * of this report.

The Port’s proposal to remove and transplant eelgrass the same day using the “Seagrass with Sediments” method, and transplant using wire staples or rebar with bamboo was revised as follows:

The plants were harvested by hand and small spade by pressing the spade 6 to 8 inches into the soft sediment approximately 4 inches away from the plant, and then pressing fingers beneath the plant rhizomes. Thus it was found that the effective removal with minimal damage could be accomplished. Each plant was removed in this way until all of the areas to be mitigated were cleared.

As seen in Photo 3 the harvested plants were placed, with the rhizomes down, into plastic buckets with sheaths and leaf clusters draped over the sides of the buckets. Adequate amounts of seawater were kept in the buckets to cover the plant rhizomes.

Iron bar "Ts" were welded as shown in Photo 6, and plants, each having rhizomes of 2 inches or greater (see Photo 4) in length were bound to the bar legs with a length of jute string. Plants were attached to rebar in bunches ranging from 4-15 plants. A total of about 1800 plants were prepared in this way.



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After the rebar plugs were so constructed, they were placed in plastic totes (see Photos 7 & 8), and then sea water was poured into each one of the totes until all plants were completely submerged. The totes were staged in the Port of Bandon maintenance shop for planting the following morning.

This work was completed by about 2 PM, August 1st, 2015.

On August 2nd, 2015, at about 6:20 A (approaching lowest tide), the replant phase of the project began (see Photos 9 & 10). Each plug was planted by placing the pointer and index finger over the rhizome while grasping the plug and pressing it into the soft sediment. The top of the rebar “T” was then pressed to about 2” below mudline.

The plugs were spaced approximately 4’ X 3’ in the transplant site (see Exhibit C, producing an approximately 105’ X 12’ replant area, w/ 3’ offset from existing eelgrass patches), in order to fill the adjusted designated transplant area and match the donor site plant density. This harvesting and transplanting event took place during very low tides, and took a total of three days to complete.

Significant growth had occurred since the 2014 SAV Survey, approximately indicated in Exhibit C. The area proposed to be the Transplant Site in the 7/10/2015 Mitigation Plan has since experienced growth of eelgrass patches at least to “low” densities. Therefore, during the 6/29 – 7/02/15 Transplant Project, with tides unusually low, the new Transplant area was selected, as shown in Exhibit C and Key.



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Digitized Event Photos



Beginning 5:45 A Saturday, August 1st, one team of three began harvesting donor site areas and continued until all were removed (see Exhibit C and Key).





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Eelgrass bunches were staged as shown in Photo 5, and then bound to the “T” welded rebar as seen in Photo 6.



The loaded totes shown in Photo 8 were covered and secured until the planting event during the next lowest minus tide the following morning (August 2nd, 2015).



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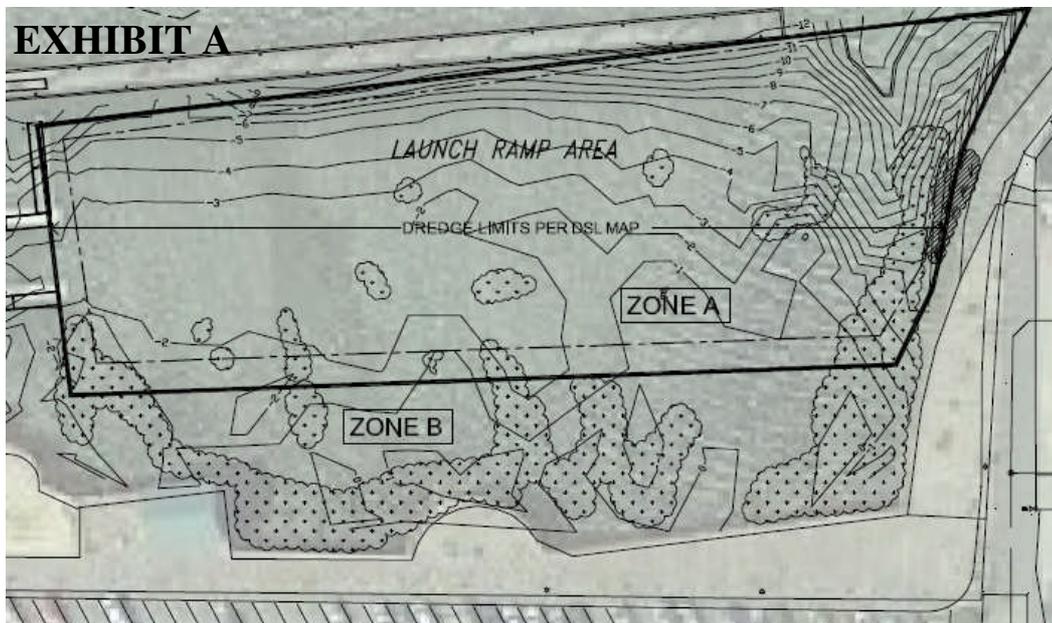
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Planters worked side by side with the inside planter leading, planting one row each, keeping 3' away from each other, from west to east on the first leg to plant the 1st and 2nd rows, and then back from east to west to plant the 3rd and 4th rows.





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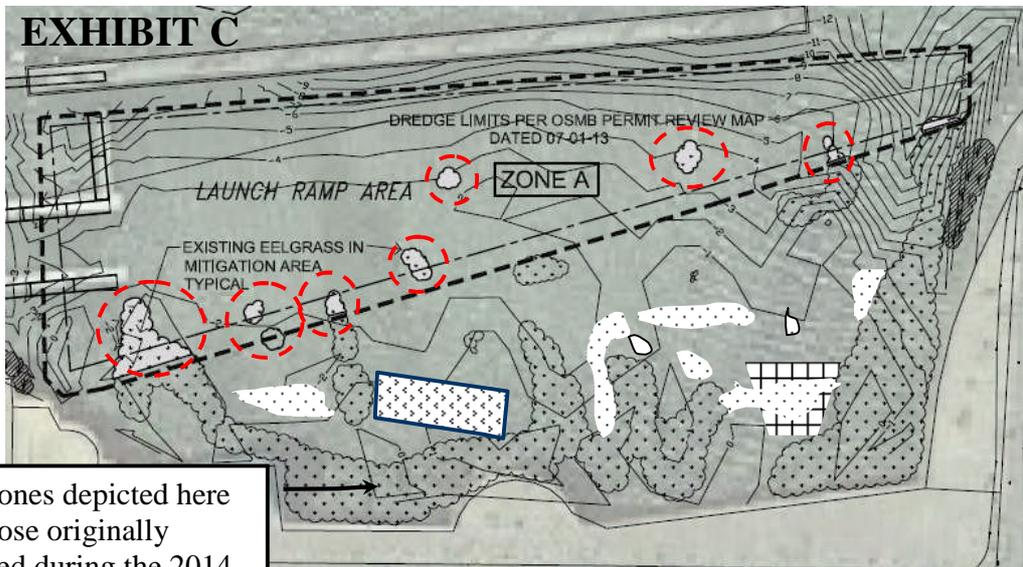
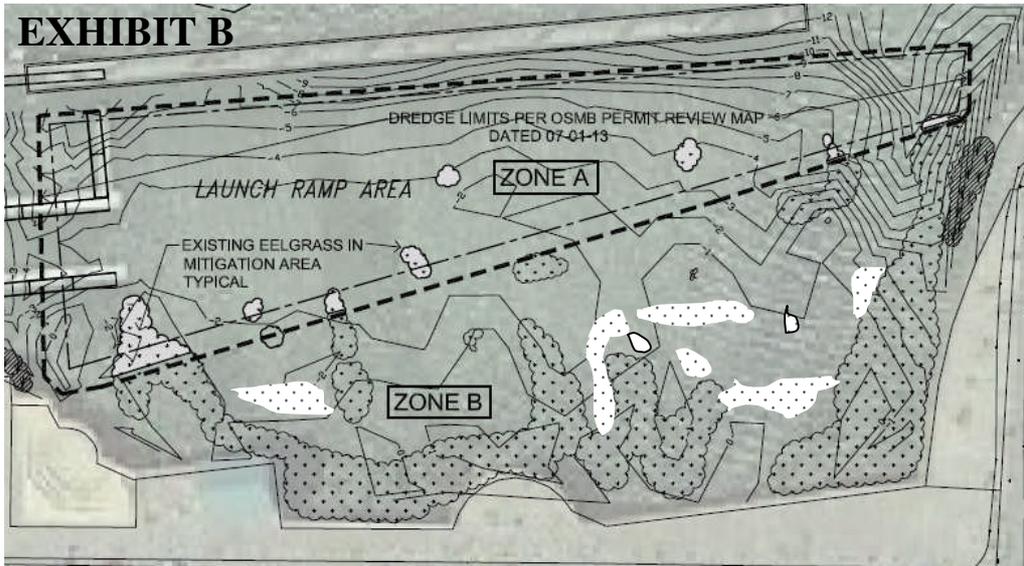
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KEY	
	New Growth Since 2014 Survey
	Removed
	Transplant Area
	Proposed Transplant Area

The zones depicted here are those originally mapped during the 2014 SAV Survey.



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3. Monitoring Plan

The Port had proposed to initiate its Transplanted Eelgrass Survival Rate by taking pre-and post-photos at the transplant site, and then assess the completed plantation, as well as an adjacent “Control Area”, utilizing success criteria, by initially surveying and mapping the sections of eelgrass beds, categorizing them by density classes. Spatial coordinates (latitudes/longitudes to the 1/10,000 of a minute) of the transplant and control areas were proposed to be produced, locating the study area grids with an accuracy of ± 0.61 ft. latitude and ± 0.47 ft. longitude at any point within the study areas. The study grid was to be located initially by indexing from the NW grid corner (surveyed), and measuring from thence the rest of the grid. Corners were to be measured to and adjusted to assure about 140.5 sq. feet per area coverage. Red or white-painted stakes were to be placed to mark grid corners, and photographed from the point designated in the Preliminary Eelgrass Study Areas “snapshot”. The grid was then to be placed on an engineered and dimensioned CAD drawing within 30 days after the transplant has been completed.

4. 7/10/2015 Monitoring Plan Modifications

During the project the Port found that pre and post-photographing at the transplant site in not practicable. Even during the lowest tide the turbidity, reflection and light refraction makes it difficult to impossible to survey the new plantation. It has been observed however, that the spatial configuration of the new plantings can be surveyed during the lowest tides (approximately -1.5' MLLW) by wading in to the patch. It is the intention of the Port to thus ascertain the location of the plantation in early to mid-September, documenting the corners of this retangular area by GPS. The coordinates will be placed on the Survey Report form proposed on Page 8 of the 7/10/2015 Monitoring Plan, as a footnote.

The proposed Success Determination and Contingency Planning is not modified from the submitted 7/10/2015 Monitoring Plan.