



**Hatfield Marine Science Center**

Director's Office

2030 S.E. Marine Science Dr., Newport, Oregon 97365-5296

T 541-867-0212 | F 541-867-0444 | <http://hmsc.oregonstate.edu>

Email: [hmsc@oregonstate.edu](mailto:hmsc@oregonstate.edu)

December 2, 2010

Carrie Landrum  
DSL Resource Coordinator  
State of Oregon  
775 Summer St. NE  
Salem, OR 97301

Dear Ms. Landrum:

This letter accompanies the Oregon State University Hatfield Marine Science Center's (HMSC) response to comments submitted by the Oregon Department of Fish and Wildlife (ODFW) to our amended Joint Permit Application (JPA) 45455-FP regarding erosion along the HMSC Estuary Trail. As you will see from the comments, there may be some misunderstanding by ODFW of the nature of this project. We appreciate the opportunity to respond and are available to address any additional questions you may have.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, which appears to read "George Boehlert". The signature is written in a cursive, flowing style.

George Boehlert  
Director

cc: Mr. Tom Taylor, Corps of Engineers District Engineer  
HMSC Seawater Committee

**OSU-Hatfield Marine Science Center Response to ODFW Comments to DSL  
(APP0045455)  
12/2/10**

Note: ODFW main comments are provided below in **bold** text along with relevant supporting comments in *italics*. Our response follows each of these sections, numbered consecutively.

NAME: Derek Wilson

CITY: Newport

STATE: OR

AGENCY: Oregon Department of Fish and Wildlife

COMMENTS:

- Expect adverse impact to State- or federally-listed species.
- Compensatory mitigation insufficient to compensate for adverse impacts.
- Recommend permit denial.

**The Oregon Department of Fish and Wildlife (ODFW) has reviewed the removal-fill application APP0045455 as submitted by the OSU-Hatfield Marine Science Center (HMSC). The ODFW has expressed concerns to the applicant and various HMSC staff on this permit application. However, no changes have been made by the applicant to address areas ODFW identified as impacting estuarine habitat.**

**Response:** We appreciate ODFW's desire to engage on this issue, and in fact we have actively sought their comments and expertise throughout the process. Indeed, concerns were expressed and several ideas were advanced by ODFW in various conversations since July 15, 2010, although no clear guidelines or solutions were articulated. We were informed by DSL on August 27 that they were unable to get ODFW feedback due to apparent staff re-assignment issues. At that time, DSL requested that someone with background and knowledge of this habitat type at the EPA Newport lab address the lost functions issue in the application and that ODFW would have the opportunity to comment during the public review process. EPA prepared this document ("Functional Analysis", which became part of the permit). HMSC, on September 10, requested that ODFW review the Functional Analysis prepared by EPA, but no response was received. A meeting on October 22 was initiated by HMSC on October 19 with a phone call to Derek Wilson to discuss his review of the permit application; this was after the public comment period had begun, so amendment of the permit application was not a goal of the meeting. At that meeting, the Functional Analysis was not explicitly addressed by ODFW.

**ODFW recommends denial of this permit application based on the following concerns.**

**1. The applicant does not propose mitigation for 550 cubic yards of fill into an estuarine intertidal area that is essential salmon habitat (ESH).**

**Response:** We agree with ODFW that mitigation has not been proposed, but disagree both on the designation of essential salmon habitat and the need for mitigation. Based on the Functional Analysis by USEPA and other entities referenced above, we do not agree that the estuarine intertidal project area is essential salmon habitat. This is discussed further below under #5. As for the need for mitigation, we did outline our reasoning for not proposing mitigation in an accompanying letter to the permit application; ODFW has not refuted or otherwise addressed the points made in that letter. Earlier discussions about mitigation with ODFW have included removal of a dike to the east of HMSC (although the location was not specified and the ownership of the land was not known at the time of the conversation). Mitigation credits were mentioned by DSL but the proposal was later retracted. The idea of removing the trail to allow for further erosion was offered by ODFW, although it was not clear if that was intended as a redesign of the project or as mitigation for the project, as the project is expected to negate the need for moving the trail.

Discussions concerning mitigation with DSL led to their request for a Functional Analysis; see discussion above. The completed analysis, which was included as part of the revised application for public review, suggested that the addition of gravel and cobble to the beach will result in a change from sand only that is within a Cowardin class, resulting in preservation of generally equivalent ecological functions.

Mitigation was discussed at the October 22 meeting, but the only specific mitigation project mentioned was removal of the two causeways on the north end of the HMSC campus, leading to the seawater pier and ship support; this idea had been proposed by ODFW to the Port of Newport in previous discussions about the NOAA MOC-P project. The combined cost of these projects would be in the millions of dollars, and the engineering aspects would be significant. The potential impacts of this change are unknown, and comprehensive modeling would be required to address potential changes in hydrology of Yaquina Bay prior to consideration as a mitigation project; it is also unclear how removal of the causeways would result in more than short stretches of sandy beach habitat corresponding to the width of each causeway at the base. Therefore, it did not seem relevant to the proposed project, but may be appropriate to take up as a longer-term project, perhaps with a request for funds from the state legislature; we also note that the October 22 discussion occurred during the public comment period, so there was no opportunity to incorporate these ideas into the revised application.

We are also concerned with the apparent contradiction posed by the requirement that the Port of Newport install an identical dynamic revetment as mitigation for a project in the small boat harbor at South Beach. We asked about this at the October 22 meeting, but did not receive a direct answer to this question. This seems to be related to the level of understanding of the function and value of dynamic revetments, which differs among DOGAMI, DSL, and ODFW.

**The ODFW has a Fish and Wildlife Habitat Mitigation Policy that guides the department's recommendations to protect habitat (OAR 635-415-000 to 0025). The proposed cobble fill will result in an overall net loss of estuarine habitat. To be**

**consistent with ODFW's Habitat Mitigation Policy, ODFW would recommend no net loss in either habitat quantity or quality and provide a net benefit.**

**Response:** The intertidal habitat in the project area is considered by ODFW to be high quality estuary habitat; this habitat, however, is being eroded and will be lost on its present trajectory. In addition, HMSC is constructed on fill and the existing shoreline does not reflect the historical, 'natural' shoreline. The proposed fill is predominately gravel with some larger cobble; one can find examples of gravel beaches in riverine/coastal environments, including the Rogue, Elk and Sixes River on the south coast, and Neskowin, Spencer and Ecola Creeks on the north coast (Jonathan Allan, DOGAMI, personal communication, November 2010). ODFW's comments noted that "...most of the ODFW standard seining sites in the coastal areas are located in areas with little or no vegetation and dominated by sand substrate." That these gravel and larger cobble habitats may be undersampled is unfortunate; however, given that the Cowardin class does not change (according to the Functional Analysis conducted by USEPA), they may similarly retain this ecological function for salmonids.

According to the DSL website, as part of the application process, applicants must consider, in the following order: 1) avoiding the impact altogether; and 2) minimizing the impact. It is our intention to retain the existing habitat as closely as possible to minimize impacts, hence our request for a cobble/gravel revetment versus riprap, and to implement the project proactively, while there is still open beach in place. Further, we have assumed that the goal of all agencies involved is the avoidance of riprap or other 'hard' solutions, and that all partners understood that the seawater structure itself would serve as an armored vertical seawall if erosion continues. Derek Wilson, however, recently stated that "the dynamic revetment is not a soft solution – it is one step down from riprap" (personal communication, 10/22/10). ODFW staff in that meeting advocated letting the eroding shoreline come into 'equilibrium' and using an emergency request for riprap as a contingency should it endanger structures. This stated view of the function of the dynamic revetment is not consistent with published literature (e.g. Ahrens, 1990; Allan et al., 2003; Komar et al., 2003; Allan and Hart 2007). Further, there is strong evidence that the system is not approaching equilibrium, as a spruce tree recently uprooted due to the shoreline erosion was determined to be 20-23 years old (Bryan Black, OSU College of Forestry, personal communication, November 2010). The seawater storage tank, which now stands approximately 45 feet from the bay, was installed in 1990 with a conservative setback. Sea level rise is expected to drive the system further from equilibrium, further enhancing erosion. The use of riprap is not consistent with our concerns for minimal impact and preservation of an open beach habitat or our goals for public education and outreach on the hazards of over-armoring the shoreline, although we agree that if the sole purpose of the project were to prevent erosion and protect infrastructure, HMSC would be better served in the long run by riprap.

From HMSC's perspective, we have been actively seeking the optimal balanced solution for our shoreline that will both protect infrastructure and habitat. Over the course of six years, consistent with our mission as well as our role as a state entity, we have actively engaged scientists and managers in a collaborative approach, from numerous state and

federal agencies including DOGAMI, DSL, ODFW, and EPA and coordination through the Northwest Regional Implementation Team of Coastal America. Over this timeframe, a significant milestone in this collaborative process was achieved in securing a permit to install a dynamic revetment, which was meant to preserve similar functions of the habitat while halting the erosion that threatens not only infrastructure but also the habitat itself; ODFW offered no comment at that juncture, nor was mitigation required. A further milestone has been in the success of the innovative solution as measured by a lack of erosion on the site three years post-implementation.

Concerning the “functions and values” of the habitat, we note that HMSC was requested to analyze these parameters of the habitat. Specifically, DSL requested that USEPA conduct an analysis of differences between sand and gravel/cobble habitats; the analysis found that the change was within a Cowardin class, which was the reason that mitigation was not proposed. We do understand that mitigation to replace beach habitat would be required for riprap, as the change would not be within a Cowardin class. ODFW’s comments suggest that they disagree with the professional assessment provided in the USEPA analysis without reference to that document or to scientific evidence that would support their position.

We believe that we have achieved, through a collaborative process, a practical and innovative, if imperfect solution that will result in a minimum net loss in habitat quality while preserving quantity and provide a significant net benefit over ODFW’s recommendation of inaction (i.e. denial of the permit, and/or letting the system erode into “equilibrium” and eventually resorting to the installation of a “hard” engineered solution such as riprap or a seawall).

**2. The permit would allow additional fill of 40 cubic yard of rock annually into inter tidal estuarine habitat again with no mitigation.**

*And supporting text:* A final concern is with the request to annually replenish the revetment with up to 40 cubic yards of gravel/cobble. ODFW does not believe this should be considered maintenance and thus would require a permit and associated mitigation for any additional fill into essential salmon habitat.

Response: It was suggested by ODFW staff that replenishment of the project be requested (August 10, personal communication). Their concern was for the cost and effort for all parties of conducting the full permit process; this request may be removed from our application, if the agency has changed its view on this matter.

**3. Actual erosion rates are much less than described in the application. And supporting text:**

In several sections of the application the erosion rate is stated as being up to 13 feet during the winter of 2009-10 for approximately 500 linear feet. This information portrays an erosion rate with immediate dire consequences. However, actual erosion rates are much less than described in the application. The reported 13 feet of erosion actually occurred over at least a three year period (rather than one) and occurred at a single point where erosion was most extreme (personal communication with Walter Nelson, EPA). At

the far end of the 500 foot section proposed for bank armoring, erosion was actually less than one foot per year with some areas not eroding at all. While ODFW recognizes a need to protect the seawater system infrastructure, the application portrays a much worse scenario than actually exists.

**Response:**

The application states, “Erosion had been occurring at a slower rate to the south of the project area, but in the winter of 2009-2010, weather conditions resulted in rapid erosion of up to 13 ft along approximately 500 linear ft of shoreline.” ODFW is correct that the above passage is misleading, as it was meant to convey that total erosion over three years was up to 13 feet, and that the erosion had rapidly accelerated in the last year, rather than occurring at a constant rate. We have only observational data to ascertain how much erosion took place in each year, but do have measurements to quantify total cumulative erosion for the time period. The correct wording should have been that between November 2007 and February 2010, a period of 26 months, there was a loss of approximately 13 linear feet of shoreline at the northern end of the project.

As of 2/5/2010, the erosion rates decreased as one moved to the south along the shoreline. Measurements taken at the same series of transect locations across the proposed project area on November 15, 2010 confirmed recent visual observations that erosion rates have now slowed at the northern end and have increased in the southern end of the project area. The annualized loss rates at the central and southern end of the proposed project (Stakes 4, 4a, 4b, 4c, 5) now range from 0.7 to 7.5 ft per year (Table 1).

Table 1.

Stake number	Distance to scarp Nov-07	Distance to scarp 11/30/09	Distance to scarp 12/8/2009	Distance to scarp 2/5/2010	Distance to scarp 11/16/2010	total loss (ft)	estimated loss rate ft/yr
1	13	4	4	0	0	13	4.3
2	15	9	7	4.4	4.4	10.6	3.5
3	22	20	18	17	15.9	6.1	2.0
4	32	29	28	25	24.3	7.7	2.6
5	6	5	4.5	4.3	1.4	4.6	1.5
Supplemental transects				Scarp location 2/5/10	Scarp location 11/15/10		
4a				25.9	25.3	0.6	0.7
4b				30.8	27.6	3.2	4.0
4c				9.8	3.8	6	7.5

The extension of rapid erosion to the south argues against the suggestion by ODFW that the linear extension of the project to 500 ft distance is not needed, or that the system is approaching equilibrium. Given such erosion, it would be highly likely that a shorter project would be rapidly flanked, potentially negating stabilization to the north.

Fig.1



Figure 1 is a graphic showing the changes in the position of the shore between 2002 and 2009. Changes were defined based on the location of the vegetation line/beach juncture in both sets of photos. In a few places this can be challenging to do, in other places it is much clearer. On the whole, the general pattern is one of erosion with the degree of change varying from negligible ( $\sim 1$  m over a 7 year period, i.e.  $\sim <0.14$  m/yr (0.5 ft/yr)) to as much as -11.3 m ( $\sim 1.6$  m/yr (5.2 ft/yr)). In the area where the existing gravel beach

has been created, the erosion has effectively ceased. In contrast, the area to the immediate east and southeast of the HMSC facilities is clearly continuing to erode and in some areas the erosion is quite significant (this is demonstrated when one examines the changes in successive aerial images as well as field observations of the site).

Jonathan Allan, Coastal Geomorphologist with DOGAMI, stated in an email on November 17, 2010, “It is my opinion that the erosion is not likely to diminish in the near future. As indicated in my original comments on the site, the beach is affected by a combination of wind waves that propagate out of the east as well as strong northwesterly winds. Both directions generate steep, high frequency wind waves that are highly erosional (due to their frequency) at the shore. In addition, the northwesterly winds result in significant oblique wave approach that is capable of removing (particularly on outgoing tides) or redistributing the sand elsewhere.” We reiterate that shoreline armoring elsewhere in Yaquina Bay has likely contributed to this change; our choice of an energy absorbing dynamic revetment rather than an energy reflecting riprap solution is the most reasonable solution in this circumstance.

**4. The proposed armoring extends beyond areas needed to protect buildings or other infrastructure. *And supporting text:***

The proposal calls for the dynamic revetment to extend for approximately 500 linear feet. The proposed distance is excessive and goes well beyond the immediate threat of the sea water system infrastructure. ODFW does not see a need to extend the revetment for 500 feet other than to protect an existing estuary trail. The department does not view the trail as essential infrastructure. If erosion occurs that threatens the trail, ample room exists to adjust the trail location.

**Response:** While we appreciate ODFW’s concern for our seawater structure, we disagree with ODFW concerning the estuary nature trail, which we consider to be extremely important infrastructure. Each year, HMSC sees some 12,000 K-12 schoolchildren and 150,000 members of the public, who learn valuable information about the marine and estuarine environments. With our mission of research, education and outreach through collaborative partnerships, the nature trail serves as our outdoor ‘facility’, allowing outreach and education specialists from Oregon Sea Grant, Oregon Coast Aquarium, USFWS and OSU to guide visitors and students through experiential learning to increase citizen appreciation for ocean and estuary issues. The popular trail is one of the few public access points to the estuary, and continues to present enormous opportunity to reach a diverse audience and increase public awareness and appreciation for marine issues through formal programs and informal learning with interpretive signage. Since the erosion is at the trailhead, virtually all of the trail will be unavailable; the ADA accessibility has already been lost due to earlier erosion.

HMSC has taken a holistic approach to managing its shoreline. On August 17, during a discussion about the importance of revegetating the upper intertidal along the estuary trail, ODFW staff expressed an interest in serving on an HMSC inter-agency committee to develop a master plan for the estuary trail and campus shoreline, including possible revegetation efforts, outreach and education, public access to mudflats and ADA



accessibility, and potential sources of funding and prioritization; we are moving ahead with plans to convene this committee. At the October 22 meeting, however, ODFW suggested that we let the erosion “come into equilibrium”; given the long lead time for permits, we asked how we could rapidly protect structures like the seawater tank if erosion accelerates. ODFW stated that we could rapidly get an emergency permit for putting in riprap as a protective measure. This would in effect guarantee i) additional hard, reflective surfaces in Yaquina Bay, and ii) no estuary nature trail, to the detriment of OSU-HMSC’s mission of educating the public and to our long-standing interpretive trail informing the public about issues related to Yaquina Bay. It would also remove long-standing safe and convenient public access to the tideflats, which have been used historically for a variety of activities including recreational harvest and birding. HMSC provides parking for the public for trail use.

Finally, local support for the estuary trail is evident in the South Beach Peninsula Transportation Refinement Plan (Newport, Oregon, February 9, 2010) which states: *“Based on strong stakeholder support, this plan proposes to extend the Yaquina Estuary Trail from its current terminus near SE 25th Street south and east along the Yaquina Bay shoreline to connect to Idaho Point and other planned trails in the South Beach area. The trail would provide important recreational and educational opportunities for residents and visitors alike...”*

The mission of ODFW is “to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations”. We believe that our missions intersect at the HMSC Nature Trail, and the State of Oregon and its public will benefit by preserving the only interpretive estuarine trail on Yaquina Bay, with educational material that will support and enhance the public’s understanding of the need for innovative, holistic approaches to coastal management.

**5. The application has inaccurate information on impacts to ESA listed coho salmon and other juvenile fish. And supporting text:**

The application states in attachment 3, page 4, paragraph 1 that effects to juvenile salmonids would be minimized because of the “intermittent availability of the habitat”, “no vegetation to provide refuge from predators” and “loss of food from the affected area is inconsequential”. The ODFW finds these claims to be inaccurate and misleading. Based on years of ODFW estuary seining studies conducted along the Oregon coast, juvenile coho and other salmonids have consistently been found, often in high densities, in estuary habitat very similar to the proposed revetment site. In fact, most of the ODFW standard seining sites in the coastal estuaries are located in areas with little to no vegetation and dominated by sand substrate. Estuary habitat is of critical importance to juvenile salmonids including areas that are “intermittently” available as they provide an area with abundant feed and an area to spread out and avoid predators.

Open sand habitats have high ecological value for infaunal invertebrates such as small clams, crabs, burrowing shrimp, amphipods and polychaete worms as well as foraging resident and migratory fish species including sculpin, perch, sole and juvenile salmon. Additionally, open tideflats can be densely colonized by diatoms and various other algae

which make up the “microphytobenthos” layer, a living layer of microscopic organisms that inhabit the surface.

The proposed revetment would have significant impacts to ESA listed coho salmon and does require appropriate mitigation as guided by the ODFW Mitigation Policy.

**Response:** We appreciate the ODFW comments but point out two issues with their analysis. The first is that there may be a misunderstanding of the project design. We interpret the above statements to mean that ODFW is concerned about impact to the tideflat habitat. We agree that tideflats are important in estuarine food chains in general, and are likely to be of high importance to salmonids. The proposed project is designed to have minimal impact to the tideflat by extending from the scarp at the terrestrial boundary across the intertidal sand beach, only extending to a maximum of 2 m onto the present boundary of the sand flat, defined as the point on the intertidal transect where the gradient becomes flat and moist sand is encountered. Due to project design, we feel that the net impacts to the food chain of the adjacent sand flat will not be significant.

We emphasize that the great majority of the proposed project area is above the elevation level of the tideflat, and would be located on the intertidal beach face, where the sand dries out at low tide. This area, which constitutes the supralittoral or subterrestrial zone of sand beaches, is typically depauperate with regard to both abundance and diversity of infaunal organisms. This pattern is well documented in the scientific literature of sand beaches worldwide (See for example Nelson 1985; McLachlan and Erasmus 1983, and references therein for a review of biotic patterns on sand beaches). These zones tend to have few marine species, since few marine species have successfully adapted to the extreme drying conditions that occur. One such group are the semi-terrestrial talitrid group of amphipods that typically occur near the upper intertidal boundary where they utilize the wrack line as an opportunistic source of food. These organisms are present in the existing gravel beach area created in the previous project, so at least qualitatively, they do not appear to be excluded from a pebble beach as long as sand is present at the terrestrial interface.

We are unaware of published scientific data which quantifies the use of this supralittoral zone on either estuarine sand beaches or estuarine cobble beaches by salmonids, or any data to determine whether gravel/cobble beach is more or less utilized by salmonids. We concur that tideflats are important components of primary and secondary production in estuaries in general, and are likely to be of high importance to salmonids. There is not clear evidence of marked fish use of this area, and ODFW’s comments seem to refer to similar habitats in similar estuaries as opposed to sampling in Yaquina Bay.

The second issue is that the gravel beach resulting from the proposed project will be unacceptable and not equivalent habitat for salmonids. Research by Toft (Toft et al. 2004, 2007) provides quantitative data comparing fish usage, including salmonids, between sand beaches and cobble beaches in Puget Sound. Quoting from Toft et al. 2004, “Minimal differences were found in fish densities between cobble beaches, sand beaches, and rip-rap that only extended into the upper intertidal”. There was no

statistically significant difference in salmonid density between sand and cobble beach sites. Examination of stomach contents indicated that for Chinook salmon, the only significant difference observed was a decrease in terrestrially derived insect food where riparian vegetation had been removed in rip-rap projects. No alteration to the vegetation zone which would represent a source of terrestrial insects is proposed. Based on this quantitative research study, we suggest that cobble and sand beach can be equivalent habitats for salmonids.

The summary statement that the project “would have significant impacts to ESA listed coho salmon” contradicts NOAA’s Biological Opinion for the adjacent Port of Newport project for the NOAA MOC-P. That report states that “*ODFW identified stream complexity and water quality as the top two limiting factors for the Yaquina population (ODFW 2007)*”, and other passages are silent about the value of intertidal habitat. Of the issues listed of concern for the OC coho salmon in the Biological Opinion, no mention is made of intertidal habitats. We believe that ODFW’s misinterpretation of the project site as “tidal flat” may contribute to their assessment of potential impacts.

**6. The 550 cubic yards of rock material is foreign to the location where it will be placed and is thereby likely to favor exotic over native species. And supporting text:**

The addition of large volumes of rock to an area that naturally had a sand substrate will be a disadvantage to the native species in the area and favor establishment of exotic species. This is a particular concern in this area because of the large volume of ship traffic in close proximity, which could serve as a conduit to bring in foreign organisms.

**Response:** We appreciate and share ODFW’s concern for introduction of exotic species into the Yaquina Bay estuary, and actively monitor for and manage non-native species on our campus. All of the hard substrate in the proposed project will be placed in the intertidal region, and much of the material would be placed in the high intertidal. It seems unlikely that non-native organisms transported by ships are adapted to life in the exposed intertidal zone. We would be interested to see the data sources used in ODFW’s evaluation. Observation of the existing dynamic revetment area shows that epifaunal organisms only are apparent on the rocks at the very bottom of the project area. We suggest that the incremental risk from the addition of additional cobble and gravel substrate into the Yaquina estuary as a result of the project is negligible, especially when compared to riprap as an alternative.

**To summarize, ODFW does recognize the need to protect the seawater system infrastructure but believes that 500 feet in revetment goes well beyond the scope of protecting the immediate building in question. The proposed revetment would have significant impacts to ESA listed coho salmon and does require appropriate mitigation as guided by the ODFW Mitigation Policy. As discussed during an October 22nd meeting between ODFW and HMSC staff, ODFW believes there are opportunities for resolution that would both protect important infrastructure and mitigation for estuary impacts consistent with the HMSC desire to avoid rip rap and allow dynamic processes to the extent feasible.**

We appreciate that ODFW recognizes the importance of protecting the critical infrastructure in question. As for the length of the revetment, we are open to a project that is less extensive, although we anticipate the need for additional action in the future; as shown by the acceleration in the erosion at the south end of the project area in the last year (Table 1, Figure 1), we anticipate that an additional permit would be required soon if that area is not included in the present permit. We do not, however, understand the need for mitigation in the context of the guidelines provided by DSL, or see how any mitigation proposed thus far, such as the removal of the causeways, removal of the estuary trail, purchase of mitigation credits or removal of a tide gate/dike will result in the desired habitat type. Considering the amount of development along the Newport waterfront, it would be challenging to find an appropriately long stretch of developed waterfront that could be converted into stable sandy beach habitat. Finally, we hope that we have correctly interpreted the common goal of all agencies involved as the avoidance of riprap or other 'hard' solutions and the need for a comprehensive, holistic approach to management of our campus shoreline; if this is not the case, i.e. if mitigation is required for a 'soft', innovative solution even when the change is within a Cowardian class, and if loss of the community's only estuary trail is considered to be a necessary component of this project, then we agree with ODFW that HMSC will be better served with a permanent, armored shoreline focused only on protecting one piece of infrastructure.

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