

DUNES ESTATES MITIGATION MONITORING

YEAR 6 MONITORING REPORT CWA 10-2007-0032

DECEMBER 2013

Soundview Consultants

DUNES ESTATES MITIGATION MONITORING

YEAR 6 MONITORING REPORT CWA 10-2007-0032

DECEMBER 18, 2013

PROJECT LOCATION:

DUNES ESTATES
XXX STATE ROUTE 109/115
OCEAN CITY, WASHINGTON

PREPARED FOR:

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PREPARED BY:

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Table of Contents

Chapter 1. Introduction	1
Chapter 2. Mitigation Project.....	2
2.1 Project Purpose and Description.....	2
2.2 Project Location	3
2.4 Regulatory Ownership and Authorization	4
Chapter 3. Goals and Objectives.....	4
Chapter 4. Performance Standards & Success Criteria	4
4.1 Performance Standards	5
4.2 Success Criteria	6
Chapter 5. Methods	6
5.1 Vegetation Monitoring	7
5.2 Soil-Hydrology Monitoring.....	7
5.3 Permanent Photograph Points	8
5.4 Habitat Conditions and Wildlife Use	8
5.5 Maintenance	8
Chapter 6. Results	8
6.1 Created Wetlands	8
6.2 Enhanced Ponds	9
6.3 Buffers.....	9
6.4 Conservation Easement	9
Chapter 7. Recommendation	9
Chapter 8. Preparers and Conditions.....	10
Chapter 9. References	11

Figures

Figure 1. Vicinity Map	3
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Appendices

Appendix A — Mitigation Area Map
Appendix B — Monitoring Amendment (2013)
Appendix C — Tables
Appendix D — Data Forms (Year 6 – 2013)
Appendix E — Photographs

Chapter 1. Introduction

Dunes Estates has been required by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to provide suitable compensation for impacts associated with impacts to approximately 4.43 acres of wetlands and/or other waters under federal jurisdiction adjacent to the Pacific Ocean. The EPA issued an Administrative Order on Consent on January 3, 2007 that included an approved *Wetland Mitigation Plan for Dunes Estates* (WMP) prepared by AMEC Earth Consultants, Inc. (AMEC 2006, revised^a). The approved revised WMP proposed creating 3.40 acres of scrub-shrub/emergent wetland meadow, enhancing 2.96 acres of previously disturbed wetlands, and set aside 114 acres through a conservation easement or similar long-term protection document in Appendix A of the *Dunes Estates Mitigation Monitoring Year 3 Monitoring Report* (Downs and Carsner, 2011). An August 13, 2006 *Addendum to Wetland Mitigation Plan – Dunes Estates* was prepared in response to USACE comments to the revised WMP (AMEC 2006^b). The 2006 WMP addendum expanded invasive plants species to include Himalayan blackberry (*Rubus armeniacus*) and Scotch broom (*Cytisus scoparius*), modified the performance standard for areal plant cover and Olympic mudminnow (*Novumbra hubbsi*) habitat, and provided clarification of selected items.

The 2006 revised WMP included a Mitigation Approach and maps depicting the location and size of each created wetland. Calculation of the mitigation areas show a total of 3.42 acres of wetland would be created immediately west of Ocean Lane and approximately 2.96 acres of wetlands would be enhanced east of Ocean Lane. Following approval of the revised WMP, a *Dunes Estates Wetland Mitigation Monitoring Plan* (Monitoring Plan) was prepared by Port Madison Associates LLC (PMA 2008). The Monitoring Plan identified specific monitoring and photographic point locations as well as monitoring protocols to be implemented during each monitoring visits. The As-Built (Year 0), Year 1 and Year 2 monitoring reports have been completed by PMA and reviewed by the USACE. It should be noted that additional wetlands were created east of Ocean Lane, during the implementation of the mitigation plan in an area adjacent to the wetland enhancement areas. These additional wetland creation areas, while functioning well, are not included in the formal monitoring program (Appendix A).

In 2010, Soundview Consultants^{LLC} (Soundview) was contracted by GordonDerr and Dunes Estates, Incorporated (DEI) to provide compliance support and wetland mitigation monitoring services for the DEI wetland mitigation project (Subject Property) located near Ocean City, Washington. This support required extensive review of previously prepared documents and responses by agency personnel. During this review, several inconsistencies and omissions were noted in previous monitoring protocols and reports were noted. A consensus was reached with federal regulators in May, 2011 after extensive negotiations with the USACE and EPA to amend the Monitoring Plan, which also caused a substantial delay in submitting the previous Monitoring Report (Year 3). A complete copy of the 2011 revisions to the *Dunes Estates Wetland Mitigation Monitoring Plan* (Port Madison Associates, 2008) as amended by Soundview Consultants LLC is provided in Appendix B of the Year 3 Monitoring Report (Downs and Carsner, 2011). A brief summary of the agreed upon revisions to the monitoring plan includes:

1. Wetlands 4 and 5, located on the east side of Ocean Lane, were not included in the approved mitigation plan and will not be formally monitored as a “created” wetland necessary for

compliance but will be monitored as part of the enhancement area. However, these areas may be considered wetland if they develop wetland conditions over time.

2. Discontinued direct monitoring for the presence of Olympic mudminnow.
3. Discontinued monitoring to verify the installation of large woody debris.
4. Discontinued monitoring vegetative growth coverage along the enhancement pond shoreline [east side of Ocean Lane].
5. Monitoring enhancement pond depth to verify depths from 0 feet to 3 feet will be performed in monitoring years 5 and 10.
6. Monitoring of salinity will be performed again in Years 5 and 10.
7. Although concentrations of invasive plants (predominately Scotch broom) comprise less than 10% of the actual mitigation area, its presence within the Ocean Lane right-of-way creates the opportunity for infestation of the mitigation areas. A Scotch broom control management plan is to be implemented.
8. Several paired monitoring plots were relocated because of their initial and close proximity to the wetland boundary.
9. Multiple photographs taken from individual photo points will be reduced to single directional views that provide sufficient documentation of current conditions.
10. A list of Performance Standards including a determination of compliance with each Performance Standard and copies of field data forms will be provided as appendices.
11. Because of the extended delay in reviewing the mitigation plan in 2010 and obtaining approval for the recommended amendments, the Year 3 monitoring and report were not completed until 2011, which was actually Year 4.
12. In 2013, Chan Pongkhamasing of the EPA agreed to amend the monitoring cycle for Years 5 and 7 to Years 6 and 8 (Appendix B).

All other provisions of the Mitigation Plan and the Wetland Mitigation Monitoring Plan remain unchanged. In case of conflict, the provisions of this Revision shall control. This report is prepared to satisfy Year 6 monitoring requirements and includes the revisions, as approved by the EPA and USACE.

Chapter 2. Mitigation Project

This chapter provides the project details such as the purpose, description, location, and monitoring responsibility, regulatory ownership and authorization.

2.1 Project Purpose and Description

The purpose of the compensatory mitigation action is to provide compensation for direct impacts to 4.43 acres of wetland due to the development of residential lots, projected impacts to an additional 0.50 acre of wetland associated with future residential development within the subject property, and impacts associated with dredging a portion of an existing wetland (pond). This mitigation action is compensatory and is approved under the direction of an Environmental Protection Agency Administrative Order on Consent (CWA-10-2007-0032).

Required mitigation actions include the creation of approximately 3.4 acres of Palustrine Scrub-Shrub/Emergent Seasonally Flooded or Saturated wetland; enhancement of approximately 2.96 acres of

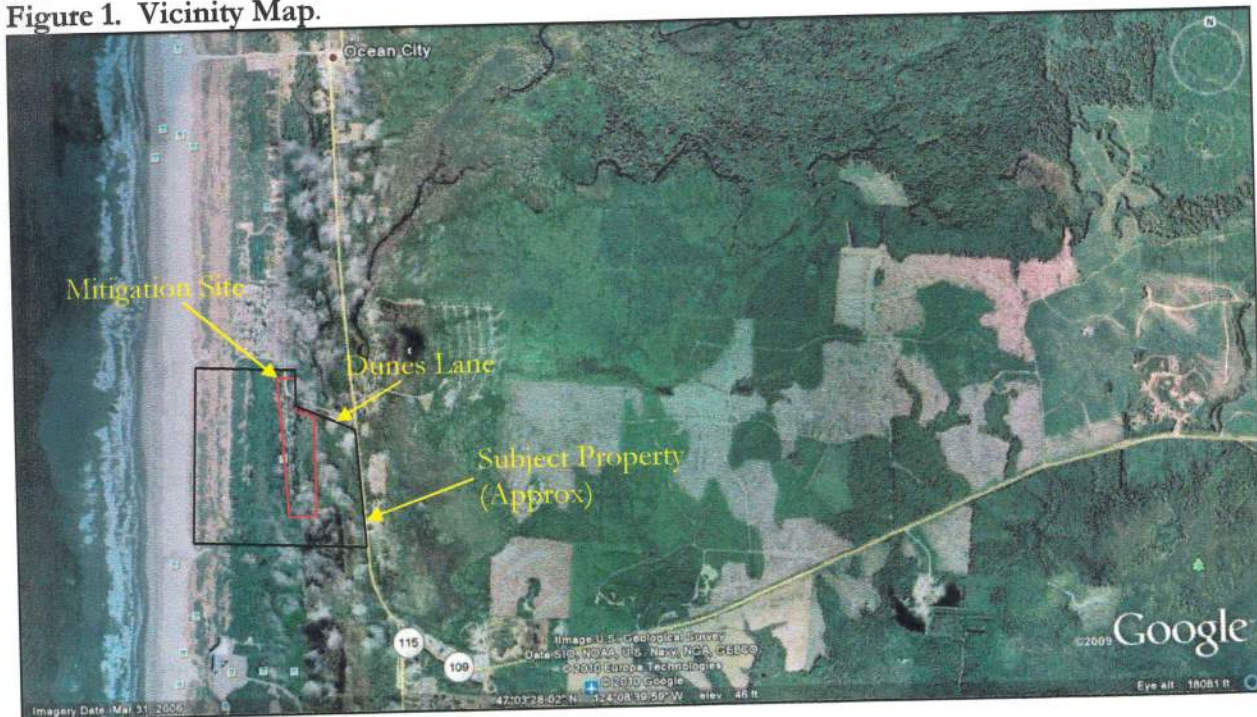
existing wetlands (ponds) by restoring pond depth to a maximum of 3.0 feet; and 114 acres set aside in a conservation easement (or similar long-term protection document) (AMEC^a, 2006). An updated (2011) spreadsheet listing the mitigation actions, goals and objectives, performance standards, and success criteria is provided in the *Wetland Mitigation Plan for Dunes Estates* (AMEC^a, 2006), the *Addendum to Wetland Mitigation Plan – Dunes Estates* (AMEC^b, 2006), and the June 20, 2011 approved mitigation modification that is presented in Appendix B of the *Dunes Estates Mitigation Monitoring Year 3 Monitoring Report* (Downs and Carsner, 2011).

2.2 Project Location

The subject property is located approximately 2 miles south of Ocean City in Grays Harbor County, Washington (Figure 1). The subject property is found in Section 15, Township 18 North, Range 12 West, Willamette Meridian (Latitude: 47°03'14.38" North; Longitude: 124°10'04.75" West).

Access to the subject property is achieved by traveling west from Olympia to Aberdeen on State Route (SR)-12, continue west through Hoquiam on SR-101, then west on SR-109 (Emerson Avenue), then continue west on SR-109 toward Ocean City, approximately 20 miles. Turn west on Dunes Lane (Dunes Estates). The subject property is found approximately 1.1 miles south of Ocean City and approximately 0.25 mile west of SR-109. The mitigation area is found south and west of Dunes Lane.

Figure 1. Vicinity Map.



2.3 Monitoring Responsibility

This section identifies the parties responsible for the mitigation action (Owner), the Owner's representative, and the consultant hired to complete the field monitoring and preparation of this monitoring report, and agency contacts responsible for reviewing and providing comments

regarding the monitoring reports and compliance with the mitigation plan performance standards and success criteria.

2.4 Regulatory Ownership and Authorization

Compensation was required by the EPA and USACE for wetland impacts along Dunes Lane in the form of wetland creation and enhancement adjacent to Ocean Lane.

Authorization for the Project was given by the USACE, Washington State Department of Ecology (DOE), Washington State Department of Fish and Wildlife (WDFW) and the City. A list of responsible parties and their contact information is provided in Table 1 (Appendix C). A list of agencies, permit type and number, and date approved is provided in Table 2 (Appendix C).

Chapter 3. Goals and Objectives

The Dunes Estates wetland mitigation plan was prepared as part of a consent decree with the EPA, USACE, and DEI as a result of unpermitted fill and excavation of wetlands between SR-109 and the Pacific Ocean in Grays Harbor County, Washington. The general goals and objectives associated with wetland creation and enhancement areas are presented below:

General Mitigation Goals are:

1. Offset unavoidable impacts of the existing and proposed project;
2. Achieve no net loss of wetland functions; and
3. Improve existing habitat.

Specific Mitigation Objectives are:

1. Create approximately 3.4 acres (148,000 square feet) of scrub-shrub/emergent wetland,
2. Enhance approximately 2.96 acres (129,000 square feet) of ponds [wetlands] by [reestablishing] the pond depth to a range between 0 and 3 feet,
3. Install a minimum of 24 pieces of large woody debris within the ponds [created wetlands] and disturbed ponds [enhanced wetland],
4. Install a minimum of five (5) brush piles containing small woody debris within the ponds [created wetlands] and disturbed ponds [enhanced wetland].

The approved creation and enhancement areas will be monitored to ensure these Goals and Objectives are being accomplished, in the spring (April-May) and late summer (late-August to mid-September) for 10 years. A report documenting the findings of the monitoring efforts will be completed and submitted to the Client, the Client's representative, USACE, and EPA within eight (8) weeks of data collection (Port Madison Associates, 2008).

Chapter 4. Performance Standards & Success Criteria

This chapter provides the performance standards and the success criteria for the mitigation project. A list of the performance standards is presented in Table 3 (Appendix C)

4.1 Performance Standards

Performance standards provide measurements to periodically gauge the progress of the project meeting the Goals and Objectives and to identify remedial actions that may be necessary to meet success criteria. For this mitigation project, the areal cover of non-invasive vegetation is the primary metric used to gauge the success of the project. The performance standards are presented below:

Vegetation

Plant growth within the mitigation area is dependent upon volunteer species and may comprise one or several of the species listed on Table 2 of the *Wetland Mitigation Plan Dunes Estates* (AMEC 2006). A copy of the potential plant list from the 2006 *Wetland Mitigation Plan Dunes Estates* is presented in Table 4 (Appendix C).

1. Year 1 – 3: Vegetation will be reviewed during the site visit, but will not be required to meet a performance standard.
2. Year 5: 10 percent coverage of vegetation from the list of species presented on Table 3 (Appendix C). (Note: Year 5 has been changed to Year 6 per 2013 agreement with EPA, see Appendix B)
3. Year 7: 10 percent coverage of vegetation from the list of species presented on Table 3 (Appendix C). (Note: Year 7 has been changed to Year 6 per 2013 agreement with EPA, see Appendix B)
4. Year 10: 10 percent coverage of vegetation from the list of species presented on Table 3 (Appendix C).

Note: Not all plants listed in Table 4 need be present (*Wetland Mitigation Plan Dunes Estates* (AMEC, 2006^a)).

Hydrology

1. Mitigation wetland [created wetlands] shall be saturated to the surface or inundated for at least 12.5% of the growing season, or approximately for 30 consecutive days between March 1 and October 31.

Olympic Mudminnow - This monitoring provision has been discontinued under agreement with the EPA and USACE (Downs and Carsner, 2011). The presence of Olympic mudminnow was documented during Year 1 and Year 2 (Port Madison Associates 2008 and 2009). Therefore, this performance standard has been met and additional monitoring is no longer required. Discontinued monitoring for the Olympic Mud Minnow was approved by the USACE and EPA as part of the 2010 monitoring revisions (Downs and Carsner, 2011).

Wildlife and Bird Habitat

1. Year 1: Birds, mammals, reptiles, amphibians, and invertebrates readily observable without trapping will be identified and recorded for use as baseline information.
2. Year 2-10: Birds, mammals, reptiles, amphibians, and invertebrates readily observable without trapping will be identified and recorded and compared against the baseline.

4.2 Success Criteria

The Dunes Estates Mitigation Plan identifies separate success criteria for the wetland creation and enhancement areas, listed below:

The success criteria for the wetland creation areas:

1. Establishment of the hydrologic [wetland] conditions,
2. Colonization of native shrub and emergent plant species, and
3. Increase of wildlife usage.

The success criteria for the wetland enhancement areas [existing ponds]:

1. Colonization of native shrub and emergent plant species.
2. Salinity will not exceed 4 parts per thousand (ppt)
3. Existing ponds will have a maximum depth of 3 feet.
4. Invasive plants will be less than 10 percent of the area.

Preservation

The success criteria includes the filing of a conservation easement, or similar covenant to protect approximately 114 acres (4,982,000 square feet) of dune and wetland area, east of Dunes Land from future development or intrusion; except for construction of roads, wells, utility lines, and parking areas. A copy of the conservation easement is presented in Appendix A of the *Dunes Estates Mitigation Monitoring Year 3 Monitoring Report* (Downs and Carsner, 2011).

Chapter 5. Methods

The monitoring and reporting methods were presented in the *Dunes Estates Wetland Mitigation Monitoring Plan* (Port Madison Associates 2008). The Year 0 (As-Built) report indicates that monitoring plots and photo points depicted on the wetland mitigation map were numbered numerically, which made it difficult to readily identify a specific plot location. For ease of identification and clarity, the wetland mitigation map the monitoring plots and photographic points have been re-labeled and separately; MP stands for monitoring plot and PP stands for photographic point (i.e. MP-x (z) or PP-x (z) where x denotes the re-numbered plot or point and (z) is the original plot or point number). Wetlands 4 and 5, on the east side of Ocean Lane and not part of the approved mitigation plan, are being monitored as buffer associated with the enhancement areas per the agreement. A copy of the monitoring map showing MP and PP is presented in Appendix A.

Several monitoring plot locations that were originally established near the wetland edge or in wetland-upland transition zones made accurate assessment of wetland conditions difficult and potentially inaccurate. When such placement of the MP's were observed, the monitoring plot was relocated and when possible, into an area that was close to the original location but provided a more accurate assessment of wetland or upland conditions. Relocation of selected monitoring plots has been approved by regulatory staff.

A total of 11 paired monitoring plots and 16 photo points were located within the wetland creation and enhancement wetlands and the adjacent upland areas. Relocated monitoring plots are identified in Table 5 (Appendix C) and the wetland monitoring map shows the location of each monitoring plot and photographic point either retained or adjusted (Appendix A).

5.1 Vegetation Monitoring

Four foot lengths of ½-inch diameter polyvinyl chloride (PVC) were used to replace missing stakes and mark monitoring plot locations that were relocated. Data for tree, shrub, and herbaceous species were collected from a 10 meter diameter circle from the center of each monitoring plot. Completed data forms are presented in Appendix D.

Monitoring for growth of invasive species within the monitoring areas include estimating areal cover of such plants as yellow flag iris (*Iris pseudoacorus*), Scotch broom, and Himalayan blackberry. Field estimates of vegetative cover are provided on the completed data forms and summarized in the Mitigation Monitoring Compliance Table (Table 3, Appendix C).

Yellow flag iris (*Iris pseudoacorus*) is the only notable invasive plant identified within the wetlands. Estimates of area cover made prior to 2013 were based on visual observations. During Year 6, individual plants were measured and determined to cover approximately 1 square foot on average. Individual plants observed within each created wetland were then counted and compared to the individual and overall wetland area to arrive at a more precise areal cover and provide documentation for compliance with the performance standard.

Photograph 1. Yellow flag iris (YFI) clumps (typical)



5.2 Soil-Hydrology Monitoring

A pit was excavated at each plot, to investigate the presence of near surface water and verify soil development. Water levels were measured as the distance above (inundation) or below ground level using a standard tape measure

5.3 Permanent Photograph Points

Permanent Photograph Points (PP) were originally established at 12 locations collecting 27 photographs, which were typically panoramic views. Through the agreement with EPA and the USACE, the number of photographs has been reduced to 12, one at each PP. The monitoring plot map also includes the location of each photographic point (Appendix A).

5.4 Habitat Conditions and Wildlife Use

Habitat conditions are expected to develop throughout the monitoring period. Brush piles and large woody debris (LWD) were counted within each constructed wetland. It is presumed that habitat conditions and wildlife use will increase over time as the site matures and provides more cover.

5.5 Maintenance

Maintenance is directed toward removing or managing the invasive plant species and in particular yellow flag iris and Scotch broom.

During the Year 3 (2011) monitoring, it was determined that maintenance of Scotch broom would be required, and three herbicide applications were applied by a Washington State licensed pesticide applicator between 2012 and 2013.

Chapter 6. Results

This chapter describes the results of the Year 6 monitoring, interim, and maintenance actions. A copy of the monitoring data for each monitoring plot is presented in Appendix D. Photographs, taken to document current site conditions, are paired with the Year 1 photographs for comparison (Appendix E). A table that summarizes compliance with the performance standard and success criteria is presented as Table 3 (Appendix C).

6.1 Created Wetlands

The results of this Year 6 monitoring study show the created wetlands had near 100 percent cover of emergent plants and are interspersed with shrub species, predominately willow (*Salix* sp.). Near surface water levels and/or areas of shallow inundation were observed in all created wetlands. The created wetlands are meeting their performance standards (Table 3). Yellow flag iris (YFI), a non-native emergent species, had been documented in the Year 0 monitoring report as occurring in the northwest corner of Wetland 2. This plant was also documented in the Year 1 monitoring report as occurring in Wetland 3 and 6, although there was no mention of the YFI in Wetland 2. The Year 2 monitoring report reports "clumps" of YFI occurring in Wetlands 1, 2, and 3. These previous reports did not provide an estimated area cover or quantity of invasive species (i.e. YFI). The YFI seemed to be present in wetlands in some years but not others, which makes it difficult to determine an actual level of prior infestation. It is not known if there was any management action implemented for the control of YFI. This Year 6 monitoring investigation, using the YFI areal cover measurement approach, revealed a field estimated cover of YFI at less than 0.1 percent of the total created wetland area. This is within the acceptable range of the performance standard (Table 3). The following photograph shows a typical YFI clump.

6.2 Enhanced Ponds

The results of this Year 6 monitoring study show the enhanced ponds were inundated throughout the year. Depth and salinity levels were measured on April 16, 2013. The depth of the south enhancement pond was measured on two locations and the depth of the north enhancement pond was measured at five locations. All measurements were less than 30 inches and met the performance standard. Salinity levels were measured at one location in the south enhancement pond and at two locations in the north enhancement pond. All salinity levels were recorded as 0.0 parts per thousand (ppt) and met the performance standard. The ponds exhibited approximately 60 percent cover of aquatic macrophytes, predominately pondweed. Large woody debris and brush piles were observed within the ponds and along the shoreline. Areas graded and labeled as Wetlands 4 and 5 associated with the northern pond, were becoming dominated with red alder seedlings and were visually monitored as buffer areas.

6.3 Buffers

The buffer areas extend around the created wetlands and enhanced ponds but do not include the Ocean Lane right-of-way. Numerous native pioneer tree, shrub, and herbaceous species are becoming established within the wetland buffers in areas disturbed by the mitigation action. Most buffer areas contain undisturbed native vegetation.

The spraying of the Scotch broom has significantly reduced this plant density to approximately 2% of the buffer areas. Scotch broom seedlings have sprouted within the Ocean Lane right-of-way and outside of the mitigation monitoring areas. The total Scotch broom cover within the Ocean Lane ROW is estimated at 20% cover, which is significantly less than the 80% reported in the Year 3 Monitoring Report (Downs and Carsner 2013). The remaining area of infestation are primarily located on the stockpiled hills between wetlands.

6.4 Conservation Easement

A conservation easement was recorded at the Grays Harbor Assessor's office on August 28, 2007. No further monitoring of this condition is necessary. As previously reported, a copy of the conservation easement is presented in Appendix A of the *Dunes Estates Mitigation Monitoring Year 3 Monitoring Report* (Downs and Carsner, 2011).

Chapter 7. Recommendation

Soundview Consultants management recommendations are as follows:

1. Continue monitoring for yellow flag iris. No control efforts are necessary at this time as the total areal cover is at 0.1% and less than the 10% maximum allowed. However, the individual specimens may be removed by hand at the Owner's discretion.
2. Although the Scotch broom cover has been substantially reduced, with most remaining plants located outside the mitigation areas, a control of the new seedlings should be implemented. Our recommendation is to chemically treat the Scotch broom within the Ocean Lane ROW.
3. No other recommendations are considered necessary at this time.

Chapter 8. Preparers and Conditions

All field inspections, and supporting documentation, including this *Dunes Estates Mitigation Monitoring - Year 6 Monitoring Report* prepared for the *Environmental Protection Agency, U.S. Army Corps of Engineers, and Dunes Estates, Inc.* were prepared by, or under the direction of, Jeremy Downs and Jim Carsner of Soundview Consultants. Jeremy Downs is the Project Manager and a Wetlands Specialist, and Jim Carsner is a Senior Scientist and Professional Wetland Scientist. Any deviations and/or alterations of the proposed project and/or management recommendations provided in this document must be approved by the aforementioned parties at Soundview Consultants.

Sincerely,




December 18, 2013

Jeremy Downs
Senior Biologist/Environmental Planner

Date

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December 18, 2013

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Senior Scientist

Date

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Chapter 9. References

AMEC Earth Consultants, Inc. 2006^a. *Wetland Mitigation Plan for Dunes Estates-Revised*

AMEC Earth Consultants, Inc. 2006^b. *Addendum to Wetland Mitigation Plan – Dunes Estates*

Downs, Jeremy and Jim Carsner, 2011. *Dunes Estates Mitigation Monitoring: Year 3 Monitoring Report*. Gig Harbor, WA

Environmental Protection Agency. 2007. *Administrative Order on Consent*. Docket No. CWA-10-2007-0032. Region 10. 1200 Sixth Avenue. Seattle, WA 98101

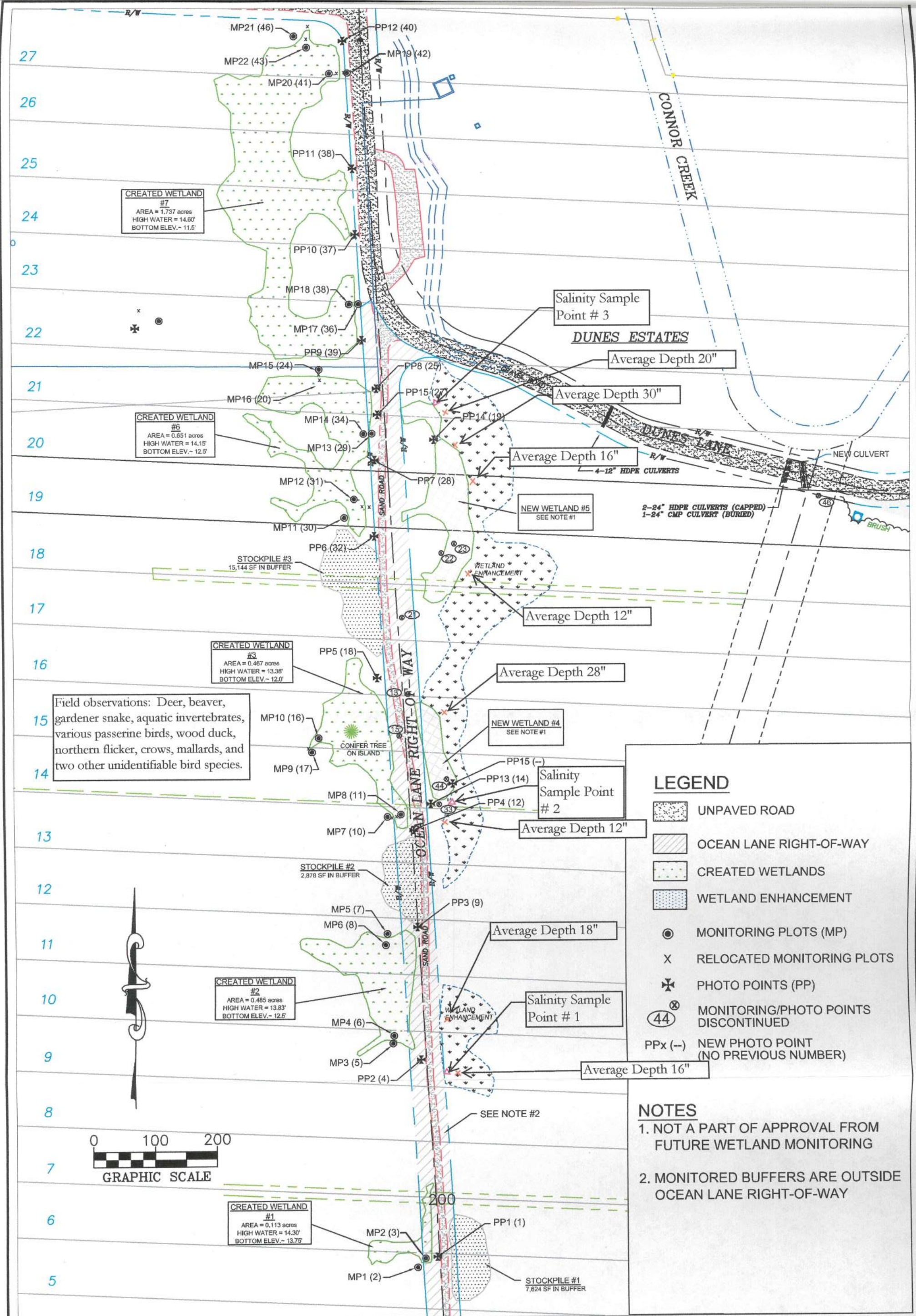
Port Madison Associates LLC. 2008. *Dunes Estates Wetland Mitigation Monitoring Plan*

Port Madison Associates LLC. 2008. *Dunes Estates Wetland Mitigation Monitoring Report – Year 0*.

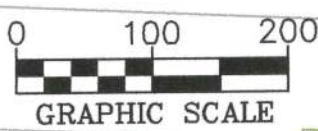
Port Madison Associates LLC. 2009. *Dunes Estates Wetland Mitigation Monitoring Report – Year 1*.

Appendix A — Mitigation Area Map

Mitigation Monitoring Plots (MP) and Photographic Points (PP)



Field observations: Deer, beaver, gardener snake, aquatic invertebrates, various passerine birds, wood duck, northern flicker, crows, mallards, and two other unidentifiable bird species.



LEGEND

- UNPAVED ROAD
- OCEAN LANE RIGHT-OF-WAY
- CREATED WETLANDS
- WETLAND ENHANCEMENT
- MONITORING PLOTS (MP)
- RELOCATED MONITORING PLOTS
- PHOTO POINTS (PP)
- MONITORING/PHOTO POINTS DISCONTINUED
- PPx (-) NEW PHOTO POINT (NO PREVIOUS NUMBER)

NOTES

1. NOT A PART OF APPROVAL FROM FUTURE WETLAND MONITORING
2. MONITORED BUFFERS ARE OUTSIDE OCEAN LANE RIGHT-OF-WAY

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SOURCE:
BERGLUND, SCHMIDT & ASSOC., INC.
 professional engineers and land surveyors
 216 EAST FIRST STREET TEL.: (360)532-7630
 ABERDEEN, WA. 98520 FAX: (360)532-9682

DATE: 05/19/2011
 JOB: 1045.0001
 BY: JC
 SCALF: SEE SCALE BAR
 FIGURE: 3

Appendix B — Monitoring Amendment (2013)

Jessica Carter

From: Pongkhamsing, Chan <Pongkhamsing.Chan@epa.gov>
Sent: Friday, February 22, 2013 1:35 PM
To: Jim Carsner
Cc: Kristina.G.Tong@usace.army.mil
Subject: RE: Dunes Estates monitoring reports (UNCLASSIFIED)

Hi Jim,

Thank you for contacting us with your questions on this matter.

Section 6.0 of the Administrative Order on Consent (AOC) mitigation plan requires monitoring of vegetation in years 1, 2, 4, 6, 8, and 10. It appears that year 6 would be this year, year 8 would be 2015 and year 10 would be 2017, as you suggested and that would be consistent with the Compliance Schedule in Attachment 2 of the AOC which required Respondents to begin the 10 year monitoring plan by 9/15/2007 and to end the monitoring plan on 9/15/2017. So those would appear to be acceptable submittal dates and consistent with the AOC.

From my records, the monitoring reports we've received are the following:

Yr 1 - submitted 2/26/2009

Yr 2 - submitted 12/11/2009

Yr 3 - submitted 10/31/2011

Scotch broom update - submitted 5-9-12

Is this consistent with your records?

Gratitude,

Chan Pongkhamsing
CWA 404 Enforcement Coordinator
Aquatic Resources Unit
Ecosystems, Tribal, and Public Affairs Office
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, ETPA-083
Seattle, Washington 98101
(206) 553-1806

Appendix C — Tables

Table 1: Responsible Parties

Table 2: Authorization Matrix.

Table 3: Mitigation Goals, Objectives, and Performance Standards

Table 4: Volunteer Plant List

Table 5: Wetland Monitoring Plots - relocated

Table 1. Responsible Parties.

Owner	Owner Representative
Dunes Estates, Inc. P.O. Box 667 Sequim, WA 98382 Contact: Cy Frick Telephone: 360.809.8000	GordonDerr 2025 First Avenue, Suite 500 Seattle, WA 98121-3140 Contact: Brent Carson Telephone: 206.382.9540
Consultant	Environmental Protection Agency
Soundview Consultants LLC 2907 Harborview Drive Gig Harbor, WA 98335 Contact: Jeremy Downs Telephone: 253.514.8952 Fax: 253-514-8954	Environmental Protection Agency Office of Ecosystems, Tribal & Public Affairs 1200 Sixth Avenue, Suite #900 ETPA – 083 Seattle, WA 98101-1128 Contact: Chan Pongkamsing Telephone: 206.553.1806
U.S. Army Corps of Engineers	Washington Department of Ecology
U.S. Army Corps of Engineers Enforcement Section Attn: Op-Rg 4735 East Marginal Way South Seattle, WA 98134-2385 Contact: Kristina Tong Telephone: 206.764.6913	Washington Department of Ecology Shorelands and Environmental Assistance Program P.O. Box 47775 Olympia, WA 98504-7775 Contact: Paula Ehlers Telephone: 360.407.6300
Washington Department of Fish and Wildlife	Grays Harbor County
Washington Department of Fish and Wildlife Coastal 48 Devonshire Road Montesano, Washington 98563 Contact: Amy Spoon Telephone: 360.249-1228	Grays Harbor County Department of Public Services 100 West Broadway, Suite 31 Montesano, Washington 98563-3614 Contact: Curt Crites Telephone: 360.249.4222

Table 2. Authorization Matrix.

Agency	Authorization Type	Authorization Number	Approved
Environmental Protection Agency	Administrative Order	CWA 10-2007-0032	January 3, 2007
U.S. Army Corps of Engineers	NWP32	199900487	
Washington Department of Ecology	NPDES Permit	WAR 009393	November 16, 2005
	401 Certification	COE #199900487	February 13, 2007
	Shoreline Substantial Development Permit	2006-SW-02979	October 6, 2006
Washington State Department of Fish and Wildlife	Hydraulic Project Approval	109094-1	May 21, 2007
Grays Harbor County	Grade and Fill Permit	2007-0896	April 6, 2007
	Shoreline Substantial Development Permit	20060958	August 15, 2006

Table 3: Mitigation Goals, Objectives, and Performance Standards

Mitigation Actions	Commitment	Comment
Creation	148,000 square feet of wetland	To be determined in Year 10.
Enhancement	129,000 square feet of ponds and adjacent uplands	To be determined in Year 10.
Grading created wetland	Grade 0-3 ft	Grading for the created wetland was completed and reported in the Year 0 monitoring report. To be verified in Year 5 and Year 10.
Large Woody Debris (LWD)	24 pieces of LWD to be placed in [enhancement] ponds or wetland areas.	Figure 5 of the Wetland Mitigation Plan – Dunes Estates (AEMC ^b , 2006) shows the approximate location of LWD to be placed within the [enhancement] ponds. Although no physical counts or survey of LWD was performed, photographs provided in the Year 0 and year 1 reports show that a minimum of 24 pieces of LWD have been placed within the [enhancement] ponds as well as the created wetlands. This performance standard has been met. Year 6 – LWD was counted and 36 pieces of LWD were placed throughout Wetland 1, 2, 3, 6, and 7.
Brush Piles	5 brush piles to be placed in [enhancement] ponds or wetland areas.	Figure 5 of the Wetland Mitigation Plan – Dunes Estates (AEMC ^b , 2006) shows the approximate location of brush piles within the [enhancement] ponds. Although no physical counts or survey of brush piles was performed, photographs provided in the Year 0 and year 1 reports show that a minimum of 5 brush piles have been placed within the [enhancement] ponds as well as the created wetlands. This performance standard has been met Year 6 – brush piles were counted and 10 brush piles were placed throughout Wetland 1, 2, 3, 6, and 7.
Permanent Protection	Conservation easement for mitigation area and 114 acres of undisturbed natural area.	A conservation easement was recorded on August 8, 2007 at the Grays Harbor County Assessor's office and is found in Appendix A of the Year 3 monitoring report (Downs and Carsner, 2011).

Wildlife and Bird Habitat	Species observed without trapping				
	<i>Bird</i>	<i>Mammal</i>	<i>Reptile</i>	<i>Amphibian</i>	<i>Invertebrates</i>
Year 0	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded
Year 1	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded
Year 2	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded
Year 3	mallard	Beaver, coyote (scat)	Garter snake	Red legged frog	None observed
Year 6	Crow, chickadee, mallard	Coyote (scat)	None observed	None observed	None observed
Year 8					
Year 10					

Success Criteria	Comment	Success Met/(Not Met)
Increase mudminnow habitat	Monitoring to be discontinued per agreement with EPA and USACE (5/2011) because the Performance Standard required that "Olympic mudminnow will be present in a representative sampling along the shorelines of the ponds within one year of construction. (Mitigation Plan Page 23f [R])". Olympic mudminnow was confirmed in the Year 0 and Year 1 Dunes Estates Wetland Mitigation Monitoring Reports (page 6, Section 5.2 and page 9, Section 5.9, respectively) as prepared by Port Madison Associates. Notably, over 300 Olympic mudminnow were captured in the initial monitoring effort confirming presence of the targeted species within the allotted time requirement confirming the standard was achieved.	Met: 2/26/2009 - Monitoring for mud minnow will be discontinued per 5/2011 agreement with EPA and USACE
Colonization of native plants (within the mitigation area)	Wetland plants, predominately pondweeds (<i>Potamogeton</i> sp.) are becoming established within the [enhancement] ponds and emergent plants and shrub species are becoming established in the created wetlands as demonstrated in the photographs. Buffer area being colonized by pioneer species as noted in the photographs – this excludes the Ocean Lane ROW.	Colonization of plants within the created and [enhanced] wetland as well as the buffer has occurred. This condition has been met.
Pond depth at a maximum of 3 feet	Monitoring protocol has been changed from monitoring depth of siltation to depth of [Enhancement] ponds per 2011 agreement with EPA and USACE and Year 5 was amended to Year 6 per 2013 agreement with EPA.. Year 0: The depth of the ponds were shown to be between 0 and 3 feet. Year 6: The south pond depth was recorded at two locations with measurements of 16 inches and 18 inches. The north pond depth was recorded at four locations with measurements of 12 inches, 28 inches, 12 inches, 16inches, 30 inches, and 20 inches. All depth measurements are less than 3 feet (36 inches) and meet this performance standard.	Met:: Year 0; 2/26/2009: Met: Year 6; 4/16/2013 Year 10: to be determined
Invasive plants <10 percent of area	Year 3: Scotch broom comprises approximately 8% of buffer area but approximately 80% of the Ocean Lane right-of-way (ROW). Maintenance actions, the buffer areas and Ocean Lane ROW were sprayed in once in late 2011, once in 2012, and once in 2013. Year 6: Scotch broom seedlings comprise approximately 2% of buffer area but seedlings comprise approximately 20% of the Ocean Lane right-of-way.	This criterion has been met within the mitigation area. Reduction of the plant within the Ocean Lane ROW may be necessary to reduce future infestation within the mitigation area.
	Year 3: Yellow flag iris was estimated to cover less than 0.01% of the mitigation area and is limited to a few plants that comprise an estimated average of 5 square feet in each created wetland. Year 6: Yellow flag iris comprises approximately 0.1% of the wetland mitigation area. No other non-native invasive plants were identified in the wetland areas.	This criterion is being met and no additional management is required at this time. This plant will be monitored during future monitoring events.
Salinity ≤4 ppt	The Performance Standard required "The salinity of waters containing Olympic mudminnow will not exceed 4 parts per thousand. (Mitigation Plan Page 23c [R])". The pond salinity was documented to meet the performance standard in Year 0 (Section 2.2 of the Monitoring Plan, in Sections 3.2 of the Year 0 and Year 1 Dunes Estates Wetland Mitigation Monitoring Reports, and in Section 5.3 of the	Met:: Year 0; 2/26/2009: Met: Year 6; 4/16/2013 Year 10: to be determined

Year 2 Dunes Estates Wetland Mitigation Monitoring Report. Notably, refractometer data shows no indication of saline intrusion into the ponds confirming the standard was achieved.
Year 6 salinity was measured at one location in the south pond and two locations in the north pond. The results showed all salinity levels to be at 0.0 ppt. This performance standard has been met .

MITIGATION PERFORMANCE STANDARDS - CREATION

Performance Standards	Conditions	Comment		
		<i>Plants</i>	<i>Hydrology (wetland criteria)</i>	<i>Wildlife (food/nest/cover)</i>
Creation:				
Year 0	Not applicable	Not applicable	Not applicable	Not applicable
Year 1	Pioneer species, as listed in Table 2 [Table 3 of this report] of the Wetland Mitigation Plan – Dunes Estates (AMEC 2006) will become established. There are no criteria for establishment of specific species, number, or percent areal cover.	Wetland: From species list, number, and percent areal cover – no criteria		
		Buffer: From species list, number, and percent areal cover – no criteria		
Year 2	Not all species listed in Table 2 may become established. There are no criteria for specific species, number, or percent areal cover.	Wetland: From species list, number, and percent areal cover – no criteria		
		Buffer: From species list, number, and percent areal cover – no criteria		
Year 3	Not all species listed in Table 4 may become established. There are no criteria for specific species, number, or percent areal cover.	Wetland: From species list, number, and percent areal cover – no criteria but the created wetlands have 100% areal cover of established plants.	Wetlands were saturated to the surface or were inundated during the time of the site investigation. This criterion has been met (10/2010).	Water fowl was observed on the created wetlands and placement of LWD suggests that food and cover are being provided. Met (10/2010).
		Buffer: From species list, number, and percent areal cover – no criteria	Buffers did not show any signs of hydrology, as expected. This criterion was met (10/2010).	Scat and feathers were observed within the buffer area suggesting that the area is used by wildlife. This criterion was met (10/2010).
Year 6	Species list, number, and percent areal cover 10% cover from species list	A total of 0 tree, 3 shrub, and 10 herbaceous species were identified within the wetlands. Average areal cover of the combined plant species in wetlands was estimated 100%. This criterion exceeds the Performance Standard of 10 percent cover and has been met.	N/A	N/A

Performance Standard	Conditions	A total of 3 tree, 5 shrub, and 11 herbaceous species were identified within the wetland buffer. Average areal cover of the combined plant species in buffer area was estimated 70%. This criterion exceeds the Performance Standard of 10 percent cover and has been met.	N/A	N/A
Year 8		Species list, number, and percent areal cover 40% cover from species list		
Year 10		Species list, number, and percent areal cover 80% cover from species list		

MITIGATION PERFORMANCE STANDARDS - ENHANCEMENT

Performance Standards	Conditions	Comment		
<i>Enhancement:</i>		<i>Plants</i>	<i>Hydrology (wetland criteria)</i>	<i>Wildlife (food/nest/cover)</i>
Year 0	Not applicable	Not applicable	Not applicable	Not applicable
Year 1	Pioneer species will become present	No criteria	Photographs show that plants on the list are becoming established	Met
Year 2	Established species will become dominant	Species list, number, and percent areal cover – no criteria	Photographs show that plants on the list are becoming more dominant.	Met
Year 3	Volunteer aquatic plants and buffer plants will become established – no specific criteria.	[Enhancement] ponds: From species list, number, and percent areal cover – no criteria but the [enhancement] pond has approximately 10% areal cover of pondweeds...	[Enhancement] ponds were inundated during the time of the site investigation. This criterion has been met (10/2010).	Water fowl was observed on the [Enhancement] ponds and placement of LWD suggests that food and cover are being provided. Met (10/2010)
		Buffer: From species list, number, and percent areal cover – no criteria	Except for a couple of isolated areas at the north end of the north [enhancement] pond, the buffers did not show any signs of hydrology, as expected. This criterion was met (10/2010).	Scat and feathers were observed within the buffer area suggesting that the area is used by wildlife. This criterion was met (10/2010).
Year 6	Species list, number, and percent areal cover 10% cover from species list	Monitoring within the enhancement ponds or enhancement buffer areas were not recorded but visually observations indicated that there were a minimum of 3 tree, 3 shrub, and several herbaceous species with an estimated 70 percent areal cover. Vegetation within the enhancement ponds were not included in the monitoring program.	Except for a couple of isolated areas at the north end of the north [enhancement] pond, the buffers did not show any signs of hydrology, as expected. This criterion was met (2013).	Observations of mallard ducks, coyote scat, and feathers within the buffer area suggest that the area is used by wildlife. This criterion is still being met (2013).
Year 8		Species list, number, and percent areal cover 40% cover from species list		
Year 10		Species list, number, and percent areal cover 80% cover from species list		

MITIGATION PERFORMANCE STANDARD

Performance Standards	Conditions	Comment
<i>Hydrology</i>	Wetland Criteria	All created wetland areas exhibited signs of wetland hydrology either by showing surface saturation and a high water table to areas of inundation at the time of the site investigation.
Non-native invasive (Buffer)	10 percent maximum	<ul style="list-style-type: none"> • Buffer area outside the Ocean Lane road prism comprise approximately 2% Scotch broom. The road prism, which is outside the monitoring area has been sprayed but Scotch broom seedlings area present, which may require continued spraying because of the extensive seed bank present. Himalayan blackberry was also observed within the road prism and isolated areas of the wetland buffer but comprise less than 0.01% of the wetland buffer. • This performance standard is met but control of Scotch broom along the Ocean Lane road prism within the buffer may be necessary to prevent further intrusion into the buffer areas.
Non-native invasive (Wetland)*	10 percent maximum	<ul style="list-style-type: none"> • Isolated plants of yellow flag iris are found within several created wetland areas and none were observed within the [enhancement] ponds. Yellow flag iris was determined to comprise less than 0.1% of the wetland enhancement and creation areas. No other non-native invasive plant was observed within the wetland areas. • This performance standard is met.
Contingency Measures	<ol style="list-style-type: none"> 1. If ponds >3 ft. depth 2. Salinity >4 ppt 3. Other 	<ol style="list-style-type: none"> 1. Year 6 measurements show pond depth is less than 3 feet at each of the monitoring stations and does not require any action at this time. 2. Year 6 salinity measurements were all 0.0 ppt and does not require any action at this time. 3a. Control of yellow flag iris not required: less than 0.1% total areal cover. 3b. Control of Scotch broom recommended for 2014 to help prevent additional growth of seedlings. ,

* Yellow flag iris (*Iris pseudacorus*) is an invasive plant found with several created wetlands. Estimates of area cover made prior to 2013 were based on visual observations. During Year 6, individual plants were measured and determined to cover approximately 1 square foot on average. Individual plants observed within each created wetland were then counted and compared to the individual and overall wetland area to arrive at areal cover and provide documentation for compliance with the performance standard and were calculated to be cover approximately 0.1% of the total created wetland area.

OLYMPIC MUDMINNOW PERFORMANCE STANDARDS

	Criteria	Monitoring Period	Salinity (<5 ppt)	Comment	Performance Standard (Met/Not Met)
Mud Minnow Habitat [Enhancement Ponds only]	Presence	Year 0	Not applicable	The Performance Standard required "The salinity of waters containing Olympic mudminnow will not exceed 4 parts per thousand. (Mitigation Plan Page 23c [R])". The pond salinity was documented to meet the performance standard in Section 2.2 of the Monitoring Plan, in Sections 3.2 of the Year 0 and Year 1 Dunes Estates Wetland Mitigation Monitoring Reports, and in Section 5.3 of the Year 2 Dunes Estates Wetland Mitigation Monitoring Report.	Mud minnow habitat: Met and monitoring discontinued per agreement with EPA and USACE.
		Year 1	No data reported	"Notably, refractometer data shows no indication of saline intrusion" into the ponds confirming the standard was achieved. However, salinity will be verified again in Years 6 and 10.	Salinity: Although no data was reported, the Year 1 and Year 2 monitoring reports state that there were no indications of salt water intrusion into the [enhancement] ponds.
		Year 2	No data reported	"Notably, refractometer data shows no indication of saline intrusion" into the ponds confirming the standard was achieved. However, salinity will be verified again in Years 6 and 10.	NA
		Year 6	0.0 ppt	Salinity was measured at one location in the south pond and two locations in the north pond. The results showed all salinity levels to be at 0.0 ppt.	This performance standard has been met
		Year 10			
Pond Depth	0 – 3.0 feet	Year 0		Confirmed to be between 0 and 3.0 feet	Met
		Year 1		Not measured	--
		Year 6		The south pond depth was recorded at two locations with measurements of 16 inches and 18 inches. The north pond depth was recorded at four locations with measurements of 12 inches, 28 inches, 12 inches, 16 inches, 30 inches, and 20 inches. All depth measurements are less than 3 feet (36 inches) and meet this performance standard.	
		Year 10			
LWD	24 Pieces	Year 0		No counts made but photographs indicate that	Met

				the quantity exceeds the 24 pieces required.	
		Year 6		A total of 36 pieces of LWD were counted in the created wetlands. This exceeds the 24 pieces of LWD required in the mitigation plan.	Met
		Year 10			
Brush Piles	5 separate piles	Year 0		No counts made but photographs indicate that the quantity exceeds the 5 brush piles required.	Met
		Year 6		A total of 10 brush piles were counted in the created wetlands. This exceeds the 5 brush piles required in the mitigation plan.	Met
		Year 10			

Table 4: Volunteer Plant List

(Source: AMEC, 2006)

Table 2 List of Expected Colonizing Plant Species¹

Common Name (Scientific Name)	Indicator Status ²	Successional Status	Plant Community ³
Trees			
red alder (<i>Alnus rubra</i>)	FAC	Mid	PFO / UPL
cascara (<i>Rhamnus purshiana</i>)	FAC-	Mid / Late	PFO / UPL
Sitka spruce (<i>Picea sitchensis</i>)	FAC	Mid / Late	PFO
shore pine (<i>Pinus contorta</i>)	FAC	Mid / Late	PFO / UPL
Pacific willow (<i>Salix lucida</i> var. <i>lasianдра</i>)	FACW+	Early / Mid	PSS / PFO
western red cedar (<i>Thuja plicata</i>)	FAC	Late	PFO / UPL
western hemlock (<i>Tsuga heterophylla</i>)	FACU-	Late	UPL
Shrubs			
vine maple (<i>Acer circinatum</i>)	FAC-	Mid / Late	PFO / PSS / UPL
western crabapple (<i>Malus fusca</i>)	FACW	Early / Mid	PSS
California wax-myrtle (<i>Myrica californica</i>)	FACW	Early / Mid	PSS
salal (<i>Gaultheria shallon</i>)	FACU	Mid / Late	UPL
Pacific blackberry (<i>Rubus ursinus</i>)	FACU	Early / Mid	UPL
Hooker willow (<i>Salix hookeriana</i>)	FACW-	Early / Mid	PSS
Douglas spirea (<i>Spiraea douglasii</i>)	FACW	Early / Mid	PSS
evergreen huckleberry (<i>Vaccinium ovatum</i>)	UPL	Early / Mid	UPL
Herbs			
coastal strawberry (<i>Fragaria chiloensis</i>)	UPL	Early	UPL
lupine (<i>Lupinus</i> sp.)	NI	Early	UPL
Pacific silverweed (<i>Potentilla anserina</i> ssp. <i>Pacifica</i>)	OBL	Early	PEM
clover (<i>Trifolium</i> sp.)	NI	Early	PEM / UPL
Rushes			
jointed rush (<i>Juncus articulatus</i>)	OBL	Early	PEM
Baltic rush (<i>Juncus balticus</i>)	FACW+	Early	PEM
mud rush (<i>Juncus gerardii</i>)	FACW+	Early	PEM
Sedges			
Cusick's sedge (<i>Carex cusickii</i>)	OBL	Early	PFO / PSS / PEM
slough sedge (<i>Carex obnupta</i>)	OBL	Early	PFO / PSS / PEM
sand dune sedge (<i>Carex pansa</i>)	OBL	Early	PFO / PSS / PEM
inflated sedge (<i>Carex vesicaria</i>)	OBL	Early	PFO / PSS / PEM
common spikerush (<i>Eleocharis macrostachya</i>)	OBL	Early	PFO / PSS / PEM
swamp horsetail (<i>Equisetum fluviatile</i>)	OBL	Early	PFO / PSS / PEM
slough sedge (<i>Carex obnupta</i>)	OBL	Early	PFO / PSS / PEM
Grasses			
American dunegrass (<i>Elymus mollis</i>)	FACU	Early	UPL
Grass spp.	Varies	Early	PEM / UPL
Ferns			
sword fern (<i>Polystichum munitum</i>)	FACU	Early	UPL
Shoreline Species			
Cusick's sedge (<i>Carex cusickii</i>)	OBL	Early	PEM
slough sedge (<i>Carex obnupta</i>)	OBL	Early	PEM
sand dune sedge (<i>Carex pansa</i>)	FAC	Early	PEM

Table 5: Wetland Monitoring Plots - relocated

Wetland	MP (new)	MP (old)	Comment
3	MP-7	10	Moved approximately 10 feet west from original location
	MP-8	11	Moved approximately 10 feet east from original location
	MP-9	17	Moved approximately 10 feet south from original location
6	MP-11	30	Moved approximately 10 feet west of original location
	MP-12	31	Moved approximately 20 feet northwest of original location
	MP-15	24	Moved approximately 10 feet north of original location
	MP-16	20	Moved approximately 10 feet south of original location
7	MP-19	42	Moved approximately 6 feet east of original location
	MP-20	41	Moved approximately 10 feet west of original location
	MP-21	44	Moved approximately 100 feet southwest of original location
	MP-22	43	Moved approximately 15 feet southwest of original location

Appendix D — Data Forms (Year 6 – 2013)

**(WETLAND 4 AND WETLAND 5 –
NOT PART OF THE APPROVED
WETLAND MITIGATION – NO DATA
COLLECTED FROM THESE AREAS)**

DUNES ESTATES

DATE: 2013

MONITORING PLOT: Plant Summary			
Wetland: x			
Upland: x			
Trees	FAC-Status	Wetland	Upland
<i>Alnus rubra</i>	FAC		X
<i>Picea sitchensis</i>	FAC		X
<i>Pinus contorta</i>	FAC		X
Shrub/Sapling			
<i>Alnus rubra</i>	FAC	X	X
<i>Gaultheria shallon</i>	FACU		X
<i>Malus fusca</i>	FAC		X
<i>Salix hookeriana</i>	FACW	X	X
<i>Salix lucida</i>	FAC	X	X
<i>Vaccinium ovatum</i>	FACU		X
Herbs			
<i>Achillea millefolium</i>	FACU		X
<i>Agrostis capillaries</i>	FAC		X
<i>Agrostis sp.</i>	FAC		X
<i>Alisma plantago-aquatica</i>	OBL	X	
<i>Argentina anserina</i>	OBL	X	
<i>Callitriche sp.</i>	OBL	X	
<i>Carex obnupta</i>	OBL	X	
<i>Eleocharis obtuse</i>	OBL	X	
<i>Eleocharis palustris</i>	OBL	X	
<i>Epilobium ciliatum</i>	FACW		X
<i>Epilobium sp.</i>	FAC		X
<i>Equisetum hyemale</i>	FAC		X
<i>Festuca occidentalis</i>	NO (UPL)		X
<i>Fragaria chiloensis</i>	NL (UPL)		X
<i>Galium trifidum</i>	FACW		X
<i>Galium trifidum</i>	FACW	X	X
<i>Gnaphalium microcephalum</i>	NL (UPL)	X	
<i>Hippuris vulgaris</i>	OBL	X	
<i>Holcus lanatus</i>	FAC		X
Invasive			
<i>Cytisus scoparius</i>	NL (UPL)		X
<i>Iris pseudacorus</i>	OBL	X	

DUNES ESTATES

DATE: 10/18/13

Wetland: 1		MONITORING PLOT: 1 (2)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 1 (1)		Wetland:			
		Upland: x			
Trees		FAC-Status	Quantity	Height (feet) (feet)	Percent Cover
<i>Alnus rubra</i>		FAC		10	15
<i>Pinus contorta</i>		FAC		15	10
Shrub/Sapling					
<i>Vaccinium ovatum</i>		FACU		5'	5
<i>Gaultheria shallon</i>		FACU		3'	70
Herbs					
<i>Holcus lanatus</i>		FAC			5
<i>Taraxacum officinale</i>		UPL			5
<i>Polystichum munitum</i>		FACU			2
<i>Agrostis sp.</i>		FAC			2
<i>Carex obnupta</i>		OBL			1
<i>Leymus (Elymus) mollis</i>		FACU			1
Invasive					
<i>Cytisus scoparius</i>		NL (UPL)		6'	0
Hydrology		Saturation Depth (inches)			None
		Free water (inches)(inches)			None

Wildlife

Comment: *Cytisus scoparius* found as seedling along Ocean Lane. *Carex obnupta* found growing sparsely within the plot.

DUNES ESTATES

DATE: 10/18/13

Wetland: 1		MONITORING PLOT: 2 (3)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 1 (1)		Wetland: x			
		Upland:			
Trees	FAC-Status	Quantity	Height (feet) (feet)	Percent Cover	
Shrub/Sapling					
<i>Salix lucida</i>	FAC		10	20	
<i>Salix hookeriana</i>	FACW		10	20	
Herbs					
<i>Carex obnupta</i>	OBL			70	
<i>Argentina anserina</i>	OBL			5	
<i>Calitriche sp.</i>	OBL			0	
<i>Galium trifidum</i>	FACW			1	
<i>Juncus acuminatus</i>	OBL			1	
<i>Juncus articulatus</i>	OBL			0	
<i>Eleocharis obtuse</i>	OBL			0	
<i>Lotus corniculatus</i>	FAC			0	
<i>Veronica scutellata</i>	OBL			0	
<i>Ranunculus flammula</i>	FACW			0	
Invasive					
<i>Iris pseudacorus</i>	OBL			0.3*	
Hydrology				Saturation Depth (inches)	
				Free water (inches)(inches)	
				1	
				3	

Wildlife

Comment: * for entire wetland area

Iris pseudacorus was observed within the wetland, averaging 1 square foot per plant and 13 plants were counted within this wetland of approximately 0.3 percent of the area of this created wetland.

DUNES ESTATES

DATE: 10/18/13

Wetland: 2	MONITORING PLOT: 3 (5)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 2 (4)	Wetland: Upland: x			
Trees	FAC-Status	Quantity	Height (feet) (feet)	Percent Cover
<i>Pinus contorta</i>	FAC		15	10
Shrub/Sapling				
<i>Vaccinium ovatum</i>	FACU		5	30
<i>Gaultheria shallon</i>	FACU		3	30
<i>Alnus rubra</i>	FAC		10	15
Herbs				
<i>Holcus lanatus</i>	FAC			0
<i>Taraxacum officinale</i>	UPL			0
<i>Agrostis sp.</i>	FAC			10
<i>Carex obnupta</i>	OBL			1
Invasive				
<i>Cytisus scoparius</i>	NL (UPL)		dead	0
Hydrology	Saturation Depth (inches)			none
	Free water (inches)(inches)			none

Wildlife

Comment: Dead *Cytisus scoparius* stems were observed along the bank and within the Ocean Lane right-of-way. *Carex obnupta* found growing sparsely within the plot.

DUNES ESTATES

DATE: 10/18/13

Wetland: 2		MONITORING PLOT: 4 (6)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 2 (4)		Wetland: x			
Upland:					
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover	
Shrub/Sapling					
<i>Salix hookeriana</i>	FACW		5'	10	
<i>Salix lucida</i>	FAC		5'	<5	
<i>Alnus rubra</i>	FAC		5'	5	
Herbs					
<i>Carex obnupta</i>	OBL			70	
<i>Argentina anserina</i>	OBL			10	
<i>Galium trifidum</i>	FACW			<5	
<i>Juncus acuminatus</i>	OBL			<5	
<i>Juncus articulatus</i>	OBL			<5	
<i>Eleocharis obtuse</i>	OBL			5	
<i>Lotus corniculatus</i>	FAC			5	
<i>Veronica scutellata</i>	OBL			10	
<i>Ranunculus flammula</i>	FACW			5	
Invasive					
<i>Iris pseudacorus</i>	OBL			0.4*	
Hydrology	Saturation Depth (inches)			surface	
	Free water			0	

Wildlife

Comment: * for entire wetland area – not included on MP-6(8)
Iris pseudacorus was found as individual plants scattered randomly within the wetland and averaged approximately 1 square foot per plant. A total of 77 *I. pseudacorus* plants were counted within the wetland for approximately 0.4% of this created wetland.

DUNES ESTATES

DATE: 10/18/13

Wetland: 2		MONITORING PLOT: 5 (7)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 3 (9)		Wetland:			
		Upland: x			
Trees		FAC-Status	Quantity	Height (feet)	Percent Cover
<i>Pinus contorta</i>		FAC		30	20
<i>Picea sitchensis</i>		FAC		20	10
Shrub/Sapling					
<i>Gaultheria shallon</i>		FACU		3	5
<i>Alnus rubra</i>		FAC		8'	5
<i>Malus fusca</i>		FAC		10'	0
Herbs					
<i>Lotus corniculatus</i>		FAC			0
<i>Leymus mollis</i>		FACU			1
<i>Rumex acetosella</i>		FACU			0
<i>Potentilla anserine</i>		OBL			0
<i>Holcus lanatus</i>		FAC			1
<i>Agrostis sp.</i>		FAC			5
Invasive					
<i>Cytisus scoparius</i>		NL (upl)		Dead	0
Hydrology		Saturation Depth (inches)			none
		Free water			none

Wildlife

Comment: Dead *Cytisus scoparius* stems were observed along the bank and within the Ocean Lane right-of-way. *Pseudotsuga menziesii* was inadvertently inserted into previous MP-5(7) forms.

DUNES ESTATES

Wetland: 2	MONITORING PLOT: 6 (8)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 3 (9)	Wetland: x Upland:			
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover
Shrub/Sapling				
<i>Salix hookeriana</i>	FACW		4	10
<i>Salix lucida</i>	FACW		4	<1
Herbs				
<i>Argentina anserina</i>	OBL			20
<i>Carex obnupta</i>	OBL			80
<i>Juncus acuminatus</i>	OBL			0
<i>Juncus articulatus</i>	OBL			0
<i>Leymus mollis</i>	FACU			0
<i>Lotus corniculatus</i>	FAC			1
Invasive				
<i>Iris pseudacorus*</i>	OBL			see MP-4(6)
Hydrology	Saturation Depth (inches)			1
	Free water			3

Wildlife

Comment: *Iris pseudacorus* coverage is reported on MP-4(6). *Salix hookeriana* species previously reported has been changed to *Salix hookeriana* because *S. piperi* is not a listed species and this is a pseudonym of *S. hookeriana*.

DUNES ESTATES

DATE: 10/18/13

Wetland: 3	MONITORING PLOT: 8 (11)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 4 (12)	Wetland: x Upland:			
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover
Shrub/Sapling				
<i>Salix hookeriana</i>	FACW		5	20
<i>Salix lucida</i>	FACW		8	10
Herbs				
<i>Callitriche</i> sp.	OBL			0
<i>Argentina anserina</i>	OBL			10
<i>Galium trifidum</i>	FACW			10
<i>Juncus acuminatus</i>	OBL			0
<i>Juncus articulatus</i>	OBL			0
<i>Juncus bufonis</i>				0
<i>Lotus corniculatus</i>	FAC			0
<i>Veronica scutellata</i>	OBL			0
<i>Carex obnupta</i>	OBL			20
<i>Eleocharis palustris</i>	OBL			60
Invasive				
<i>Iris pseudacorus</i> *	OBL			0.2*
Hydrology	Saturation Depth (inches)			surface
	Free water			1"

Wildlife

Comment: * for entire wetland area – not included on MP-10(16)
Iris pseudacorus was found as individual plants scattered randomly within the wetland and averaged approximately 1 square foot per plant. A total of 32 *I. pseudacorus* plants were counted within the wetland for approximately 0.2% of this created wetland.

DUNES ESTATES

DATE: 10/19/13

Wetland: 6	MONITORING PLOT: 13(29)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 7 (28)	Wetland: Upland: x			
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover
<i>Picea sitchensis</i>	FAC		40	40
Shrub/Sapling				
<i>Vaccinium ovatum</i>	FACU		5'	10
<i>Gaultheria shallon</i>	FACU		3	<5
<i>Alnus rubra</i>	FAC		8	5
Herbs				
<i>Holcus lanatus</i>	FAC			0
<i>Taraxacum officinale</i>	UPL			<5
<i>Agrostis capillaries</i>	FAC			60
<i>Plantago lanceolata</i>	FAC			<1
<i>Lotus corniculatus</i>	FAC			<1
<i>Rumex acetosa</i>	FACU			<1
Invasive				
<i>Cytisus scoparius</i>	NL (UPL)		Dead	0
Hydrology	Saturation Depth (inches)			none
	Free water			none

Wildlife
Comment:

DUNES ESTATES

DATE: 10/19/13

Wetland: 6	MONITORING PLOT: 14(34)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 7 (28)	Wetland: x Upland:			
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover
Shrub/Sapling				
<i>Salix lucida</i>	FACW			10
<i>Gaultheria shallon</i>	FACU			0
Herbs				
<i>Carex obnupta</i>	OBL			70
<i>Juncus acuminatus</i>	OBL			0
<i>Juncus articulatus</i>	OBL			0
<i>Impatiens capensis</i>	FACW			0
<i>Eleocharis obtuse</i>	OBL			30
<i>Juncus effusus</i>	FACW			0
<i>Veronica scutellata</i>	OBL			0
<i>Sparganium sp.</i>	OBL			0
<i>Hippuris vulgaris</i>	OBL			0
<i>Oenanthe sarmentosa</i>	OBL			0
<i>Argentina anserina</i>	OBL			<1
Invasive				
<i>Iris pseudacorus</i>				0*
Hydrology	Saturation Depth (inches)			surface
	Free water (inches)			6

Wildlife

Comment: **Iris pseudacorus* coverage is reported on MP-12(31).

DUNES ESTATES

DATE: 10/19/13

Wetland: 6	MONITORING PLOT: 15 (24)		INVESTIGATOR: Jim Carsner		
PHOTO POINT: 8 (25)	Wetland: Upland: x				
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover	
<i>Picea sitchensis</i>	FAC		20	5	
Shrub/Sapling					
<i>Gaultheria shallon</i>	FACU		3	10	
<i>Pinus contorta</i>	FAC		seedling	<1	
Herbs					
<i>Leymus mollis</i>	FACU			60	
<i>Plantago lanceolata</i>	FACU			0	
<i>Fragaria chiloensis</i>	NL (UPL)			0	
<i>Taraxicum officale</i>	FACU			0	
<i>Juncus sp.</i>	FAC			0	
<i>Agrostis sp.</i>	FAC			<1	
<i>Lupinus latifolius</i>	FAC			0	
<i>Achillea millefolium</i>	FACU			0	
<i>Rumex acetosa</i>	FAC			<1	
Invasive					
<i>Cytisus scoparius</i>	NL (UPL)		dead	0	
Hydrology	Saturation Depth (inches)			none	
	Free water			none	

Wildlife

Comment: *Cytisus scoparius* was observed along the bank and within the Ocean Lane right-of-way. *C. scoparius* dominated the road prism associated with Ocean Lane.

DUNES ESTATES

DATE: 10/19/13

Wetland: 6	MONITORING PLOT: 16 (20)	INVESTIGATOR: Jim Carsner		
PHOTO POINT: 8 (25)	Wetland: x Upland:			
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover
Shrub/Sapling				
<i>Salix hookeriana</i>	FACW		4	15
<i>Salix lucida</i>	FACW		6	<1
Herbs				
<i>Carex obnupta</i>	OBL			60
<i>Juncus acuminatus</i>	OBL			00
<i>Juncus articulatus</i>	OBL			20
<i>Argentina anserina</i>	OBL			5
<i>Lotus corniculatus</i>	FAC			0
<i>Galium trifidum</i>	FACW			0
<i>Veronica americana</i>	OBL			0
<i>Eleocharis obtuse</i>	OBL			0
<i>Trifolium repens</i>	FAC			0
<i>Epilobium sp.</i>	FAC			0
Invasive				
<i>Iris pseudacorus</i>				0*
Hydrology	Saturation Depth (inches)			surface
	Free water (inches)			+1/2"

Wildlife

Comment: **Iris pseudacorus* coverage is reported on MP-12(31).

DUNES ESTATES

DATE: 10/19/13

Wetland: 7		MONITORING PLOT: 17 (35)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 9 (39)		Wetland:			
		Upland: x			
Trees		FAC-Status	Quantity	Height (feet)	Percent Cover
<i>Alnus rubra</i>		FAC		15	50
Shrub/Sapling					
Herbs					
<i>Holcus lanatus</i>		FAC			20
<i>Taraxacum officinale</i>		UPL			0
<i>Epilobium sp.</i>		FAC			0
<i>Rubus ursinus</i>		FACU			<1
<i>Leymus mollis</i>		NL (UPL)			40
<i>Agrostis capillaries</i>		FAC			20
<i>Festuca occidentalis</i>		NO (UPL)			15
<i>Juncus effuses</i>		FACW			0
<i>Hypochaeris radicata</i>		FACU			0
<i>Rumex acetosa</i>		FAC			0
Invasive					
<i>Cytisus scoparius</i>		NL (UPL)		Dead	0
Hydrology		Saturation Depth (inches)			none
		Free water			none

Wildlife
Comment:

DUNES ESTATES

DATE: 10/19/13

Wetland: 7		MONITORING PLOT: 19 (42)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: 12 (40)		Wetland: Upland: x			
Trees		FAC-Status	Quantity	Height (feet)	Percent Cover
<i>Alnus rubra</i>		FAC		10	<1
Shrub/Sapling					
<i>Gaultheria shallon</i>		FACU			0
Herbs					
<i>Holcus lanatus</i>		FAC			20
<i>Taraxacum officinale</i>		UPL			<1
<i>Lotus corniculatus</i>		FAC			0
<i>Plantago lanceolata</i>		FACU			5
<i>Fragaria chiloensis</i>		NL (UPL)			0
<i>Equisetum hyemale</i>		FAC			5
<i>Agrostis sp.</i>		FAC			40
<i>Hypochaeris radicata</i>		FACU			5
<i>Rubus ursinus</i>		FACU			0
<i>Potentilla anserine</i>		OBL			<1
<i>Rumex acetosa</i>		FAC			1
<i>Epilobium ciliatum</i>		FACW			<1
<i>Trifolium repens</i>		FAC			<1
<i>Galium trifidum</i>		FACW			<1
Invasive					
<i>Cytisus scoparius</i>		NL (UPL)			<1
Hydrology		Saturation Depth (inches)			none
		Free water			none

Wildlife
Comment:

DUNES ESTATES

DATE: 10/19/13

Wetland: 7		MONITORING PLOT: 20 (41)		INVESTIGATOR: Jim Carsner	
PHOTO POINT 12 (40)		Wetland: x			
Upland:					
Trees	FAC-Status	Quantity	Height (feet)	Percent Cover	
Shrub/Sapling					
<i>Spiraea douglasii</i>	FACW			5	
<i>Salix hookeriana</i>	FACW			<1	
<i>Salix lucida</i>	FACW			5	
Herbs					
<i>Carex obnupta</i>	OBL			80	
<i>Oenanthe sarmentosa</i>	OBL			0	
<i>Juncus acuminatus</i>	OBL			0	
<i>Juncus articulatus</i>	OBL			0	
<i>Eleocharis obtuse</i>	OBL			30	
<i>Alisma plantago-aquatica</i>	OBL			0	
<i>Sparganium sp.</i>	OBL			0	
<i>Mentha spicata</i>	FACW			5	
<i>Argentina anserina</i>	OBL			5	
<i>Oenanthe sarmentosa</i>	OBL			10	
Invasive					
<i>Iris pseudacorus</i>	OBL			0*	
Hydrology		Saturation Depth (inches)			
		Free water (inches)		4"	

Wildlife

Comment: **Iris pseudacorus* was not observed within the wetland.

DUNES ESTATES

DATE: 10/19/13

Wetland: 7		MONITORING PLOT: 21 (45)		INVESTIGATOR: Jim Carsner	
PHOTO POINT: NA		Wetland: Upland: x			
Trees		FAC-Status	Quantity	Height (feet)	Percent Cover
<i>Picea sitchensis</i>		FAC		50	50
<i>Alnus rubra</i>		FAC		60	20
Shrub/Sapling					
<i>Vaccinium ovatum</i>		FACU		5'	10
<i>Gaultheria shallon</i>		FACU		3	20
Herbs					
<i>Holcus lanatus</i>		FAC			0
<i>Taraxacum officinale</i>		UPL			<5
<i>Leymus mollis</i>		NL (UPL)			5
<i>Agrostis sp.</i>		FAC			30
<i>Polystichum munitum</i>		FACU			<1
<i>Carex obnupta</i>		OBL			0
<i>Hypochaeris radicata</i>		FACU			<5
<i>Mentha spicata</i>		FACW			<1
<i>Carex sp.</i>		FACW			<1
Invasive					
<i>Cytisus scoparius</i>		NL (UPL)		dead	0
Hydrology		Saturation Depth (inches)			none
		Free water			none

Wildlife

Comment:

Appendix E — Photographs

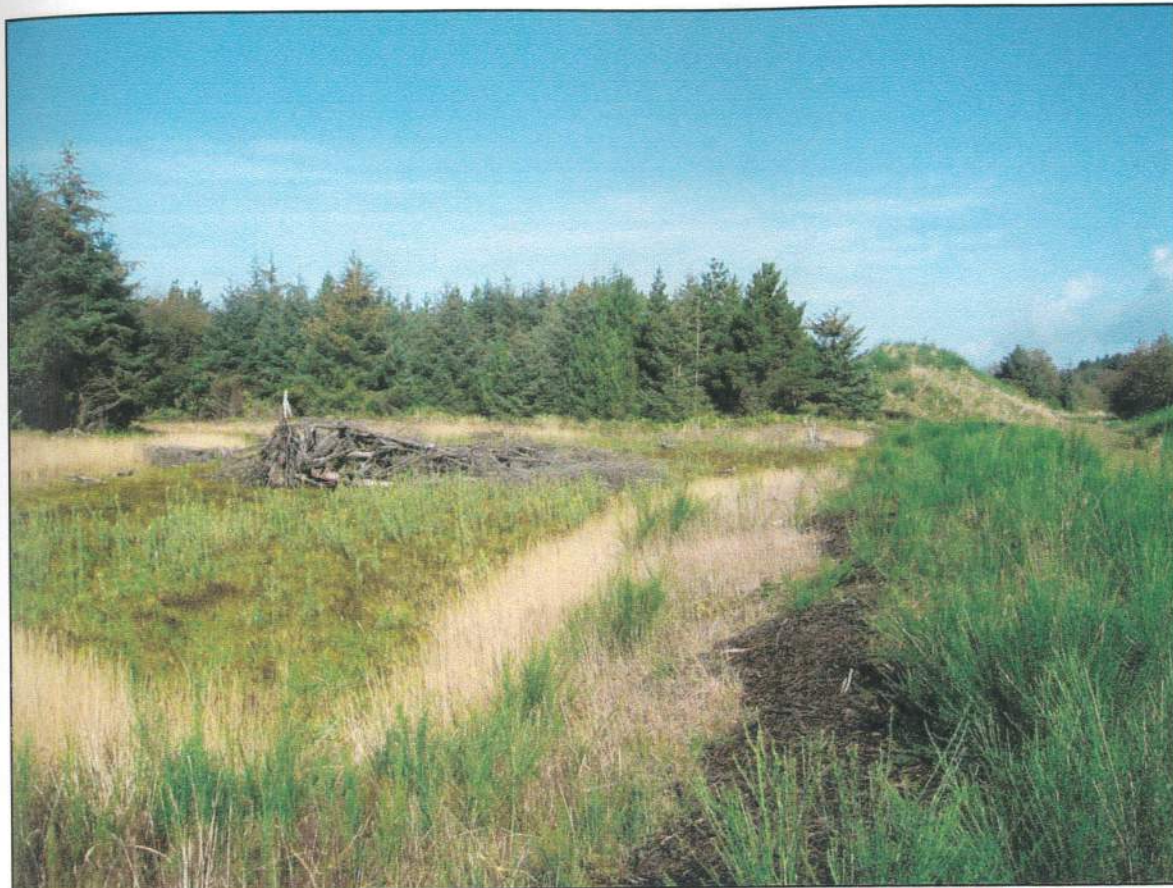
As-Built and Year 6 (2013)



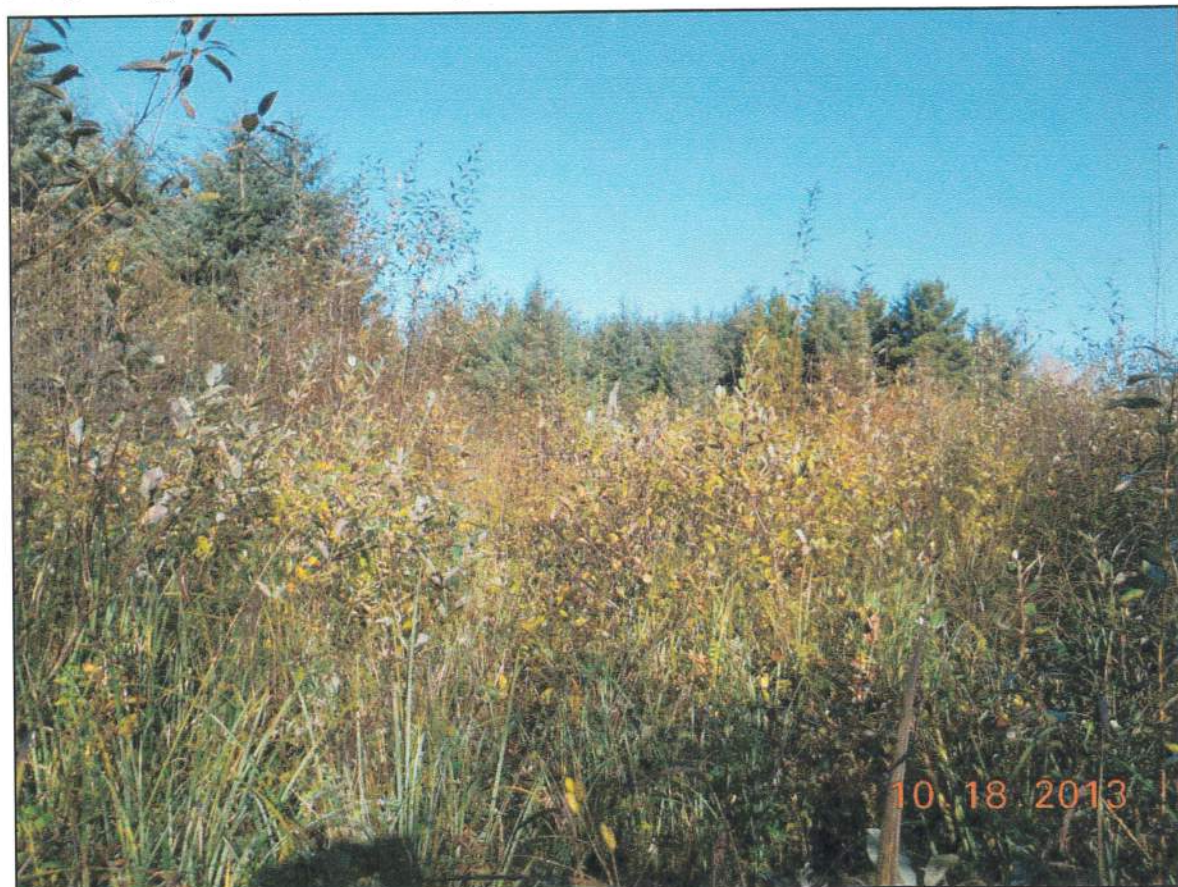
Photopoint 1 (1): Wetland 1, Post construction; looking westerly from southeast corner.



Photopoint 1 (1): Wetland 1, Year 6 looking westerly from southeast corner.



Photopoint 2 (4): Wetland 2, Year 1 looking north from southwest corner.



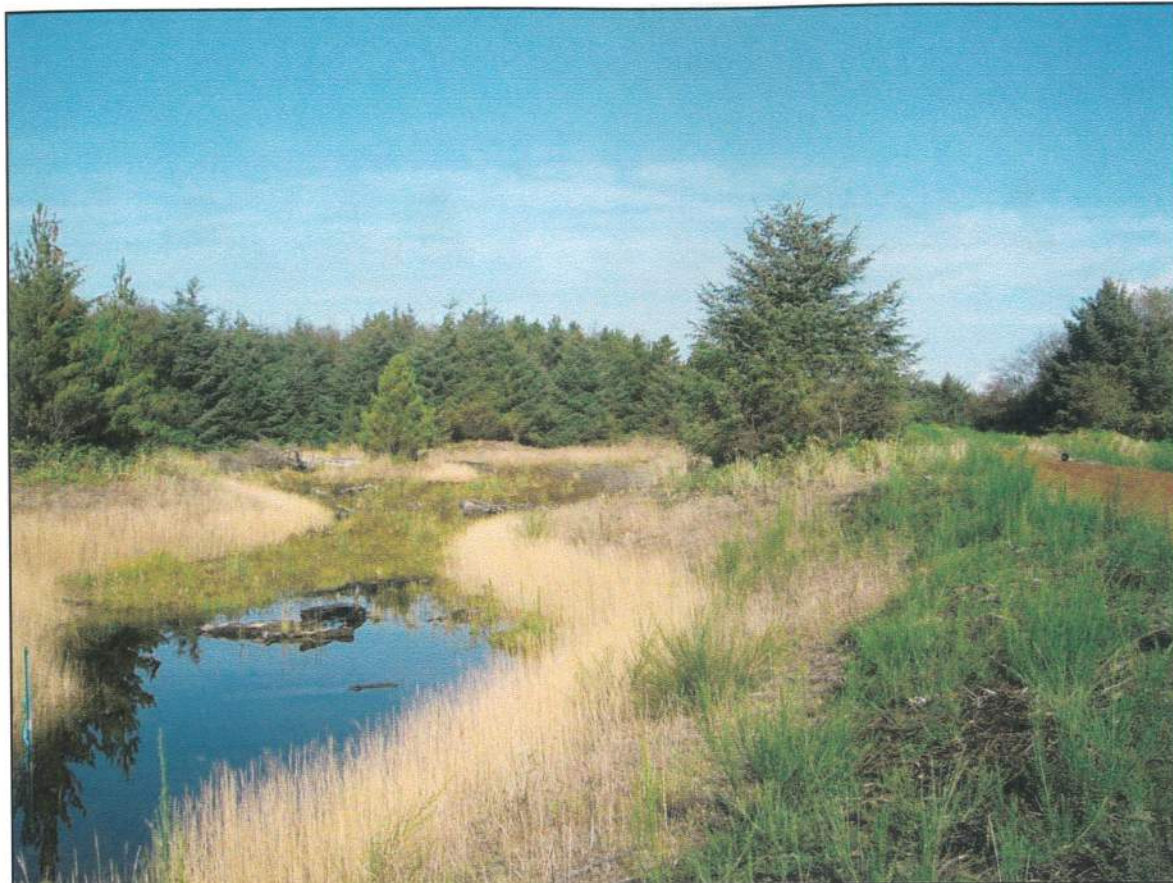
Photopoint 2 (4): Wetland 2, Year 6 looking north from southwest corner.



Photopoint 3 (9): Wetland 2, post-construction looking south from northwest corner.



Photopoint 3 (9): Wetland 2, Year 6 looking south from northeast corner.



Photopoint 4 (12): Wetland 3, Year 1 looking north from southeast corner.



Photopoint 4 (12): Wetland 3, Year 6 looking north from southeast corner.



Photopoint 5 (18): Wetland 3, Year 1 looking south from northeast corner.



Photopoint 5 (18): Wetland 3, Year 6 looking south from northeast corner.



Photopoint 6 (32): Wetland 6, Year 1 looking north from southeast corner.



Photopoint 6 (32): Wetland 6, Year 6 looking north from southeast corner.



Photopoint 7 (28): Wetland 6, Year 1 looking south from mid-point of wetland.



Photopoint 7 (28): Wetland 6, Year 6 looking south from mid-point of wetland.



Photopoint 7 (28): Wetland 6, Year 1 looking north from mid-point of wetland



Photopoint 7 (28): Wetland 6, Year 6 looking north from mid-point of wetland.



Photopoint 8 (25): Wetland 6, Year 1 looking south from northeast corner of wetland.



Photopoint 8 (25): Wetland 6, Year 6 looking south from northeast corner of wetland.



Photopoint 8 (25): Wetland 6, Year 1 looking west from northeast corner of wetland.



Photopoint 8 (25): Wetland 6, Year 6 looking west from northeast corner of wetland.



Photopoint 9 (39): Wetland 7, Year 1 looking west from southeast corner of wetland.



Photopoint 9 (39): Wetland 7, Year 6 looking west from southeast corner of wetland.



Photopoint 10 (37): Wetland 7, Year 1 looking northwest along east center of wetland.



Photopoint 10 (37): Wetland 7, Year 6 looking northwest along east center of wetland.



Photopoint 11 (36): Wetland 7, Year 1 looking southwest along east center of wetland.



Photopoint 11 (36): Wetland 7, Year 6 looking southwest along east center of wetland.



Photopoint 12 (40): Wetland 7, Year 6 looking southwest from northeast corner of wetland.



Photopoint 12 (40): Wetland 7, Year 6 looking southwest from northeast corner of wetland.