FIDALGO BAY EELGRASS MITIGATION PROJECT

Port of Anacortes

Bob Elsner, Director of Engineering

P.O. Box 297

Anacortes, WA 98221

(360) 299-1822

June 13, 2008





TABLE OF CONTENTS

Introduction – Paper Highlights

In July of 2008 the Port of Anacortes will break ground on Project Pier 1, the redevelopment of its major port marine terminal and one of the largest commercial shipyards in Puget Sound. Permitting and approval of the proposed alterations to the aquatic portions of the site required an innovative and complex approach to mitigating the environmental impacts of the project, particularly the removal of an eelgrass bed and critical habitat within areas to be dredged for the improved shipyard facility. The Port developed new approaches to interagency agreements for advance off-site mitigation, created new technical tools for the measurement of biological "success" of the constructed mitigation site, and overcame agency uncertainties about approval of advance mitigation for future port development projects.

Project methods and approaches developed by the Port of Anacortes can be utilized by other ports contemplating a need for advance mitigation of eelgrass impacts at one large site or multiple development sites. The Fidalgo Bay Eelgrass Mitigation site is an example of port leadership in developing an innovative, cost-effective, and predictable approach to securing present and future mitigation credits for project-related eelgrass impacts.

Goals and Objectives

The challenge in implementing aquatic habitat mitigation for the Pier 1 project was to:

- Simultaneously integrate federal, state, and local requirements for aquatic habitat mitigation while staying within the project schedule and budget;
- Overcome significant regulatory uncertainties about advance mitigation or "banking" for eelgrass impacts;
- Develop a new type of cooperative lease mechanism for locating a mitigation area for a port project on (non-port) state-owned aquatic lands within Fidalgo Bay;
- Establish a regulatory and biological basis for eelgrass mitigation "credits" for future port projects.
- Identify a beneficial use source to supply cost-effective fill material for construction of the site.
- Procure appropriate materials and design and construct the advance mitigation site one year in advance of the project-related impacts with a reasonable certainty of meeting agreed parameters of biological success.

Discussion

Background

The Port of Anacortes is the only public cargo port in Skagit County, and is located on the northern portion of Fidalgo Island, approximately 93 nautical miles eastward of the Pacific Ocean in Northern Puget Sound. Anacortes is about 50 miles north of Seattle and 90 miles south of Vancouver, B.C., within Puget Sound. Adjacent areas of Guemes Channel and Fidalgo Bay support significant fisheries resources, and the Port's facilities support commercial and recreational fishing fleets that target salmon and Dungeness crab populations in the northern Puget Sound and the North Pacific.

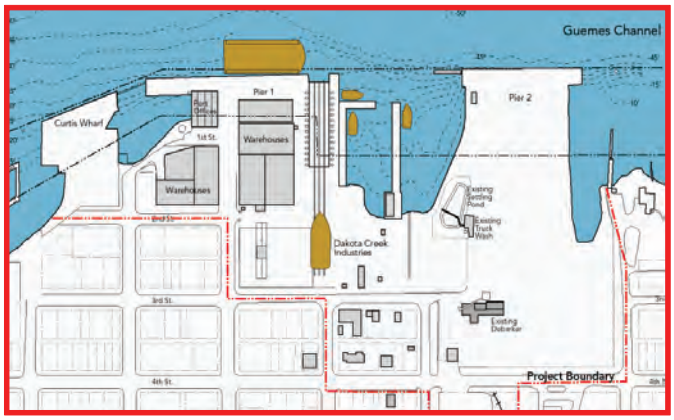
In 2003, after ten years of planning and pre-design work, the Port of Anacortes formally proposed to modernize and upgrade portions of its main industrial pier, Pier 1, through a public-private partnership between the Port and its major tenant, Dakota Street Industries (DCI). DCI operates a commercial shipyard at Pier 1 and is engaged in the construction and repair of marine vessels, including the Washington State ferries and US Naval and Coast Guard vessels. DCI is one of Anacortes' major employers and a significant contributor of family-wage skilled jobs to the local economy.

Project Area

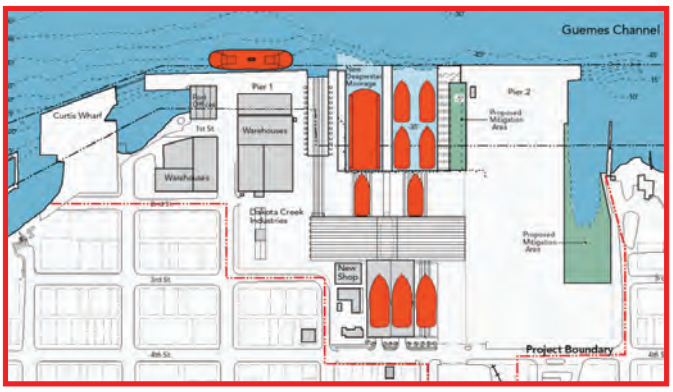
The completed redevelopment project will upgrade the entire Port property on Guemes Channel in Puget Sound and will modify the public waterway to greatly increase the operational flexibility and capacity of the shipyard. Besides extensive upland improvements and an environmental cleanup of contaminated soils, groundwater, and sediment, the Pier 1 project will create two deep-water moorage berths and construct two access and repair piers through bulkheading, dredging, and filling within the two existing basins adjacent to the terminal. Project Pier 1 includes the reconfiguration and expansion of the two existing shipyard basins by dredging approximately 180,000 cubic yards of sediments to deepen the basins to -35 feet mean lower low water (MLLW). Bulkheads for the reconfigured basins, and two new steel pile-supported concrete piers, dolphins, and heavy fenders will be built, and the new basin will accommodate one or more dry docks for ship construction and repair.

Importance of Eelgrass

Mitigation for aquatic habitat impacts of the project received special attention because the project is located on a shoreline considered of "statewide significance" under Washington's Shoreline Management Act, and because the shoreline areas are considered critical habitat for numerous important aquatic species (including Chinook salmon) listed under the federal Endangered Species Act. The existing shipyard basins were identified as supporting a bed of eelgrass (Zostera marina) and several species of macroalgae. The intertidal and subtidal habitat areas will be disturbed or destroyed by the dredging and filling work. Eelgrass beds are recognized as priority habitats of statewide significance because they increase prey production, enhance fish species diversity, and provide shelter to small fish, invertebrates, and waterfowl.

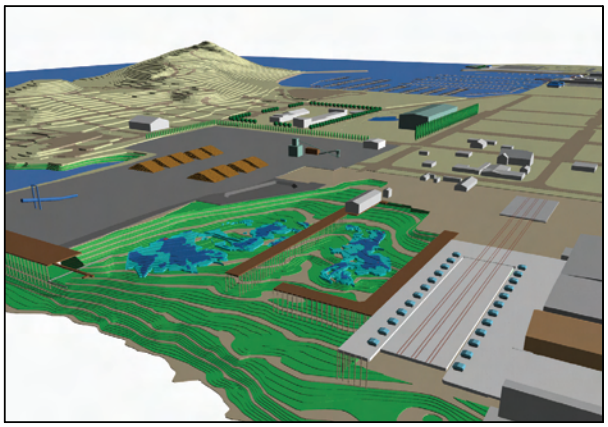


Existing Shipyard Capacity

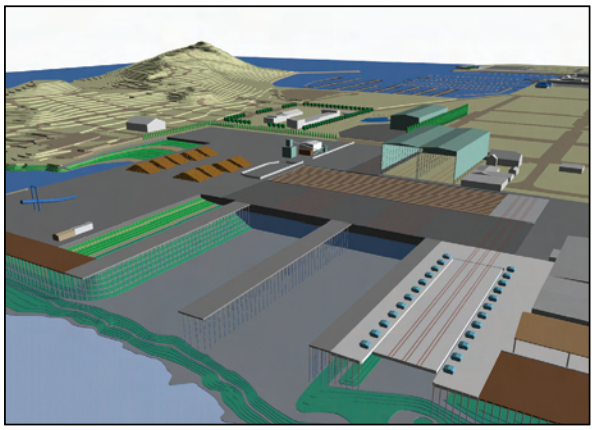


Proposed Shipyard Capacity

Fisheries regulatory agencies in Puget Sound consider intertidal and nearshore submerged areas, eelgrass beds, and macroalgae communities to be critical to the survival of juvenile marine fish and salmonids during their spring migration from the fresh water rivers and streams to saltwater, Puget Sound, and the Pacific Ocean. These habitats are important as migration corridors, producers of food and prey organisms, and serve as a refuge from predation. Fish habitat disturbed or destroyed by port or other waterfront development is required to be fully replaced and enhanced. In Puget Sound, habitat mitigation has been focused on replacing similar or enhanced habitat within the project area. For major projects, the regulatory agencies have typically required that mitigation actions be completed in advance of, or at the same time as, the impacts from construction. Historically, policy and regulatory programs have been resistant to "banking" of mitigation credits, particularly for marine projects, because of uncertainties about the success and sustainability of constructed mitigation sites. Pre-project surveys indicated that there were no available sites appropriate for eelgrass mitigation on or adjacent to the Pier 1 terminal, making advance mitigation on site impossible.



Existing ship basins



Proposed ship basins

Objectives and Methodology

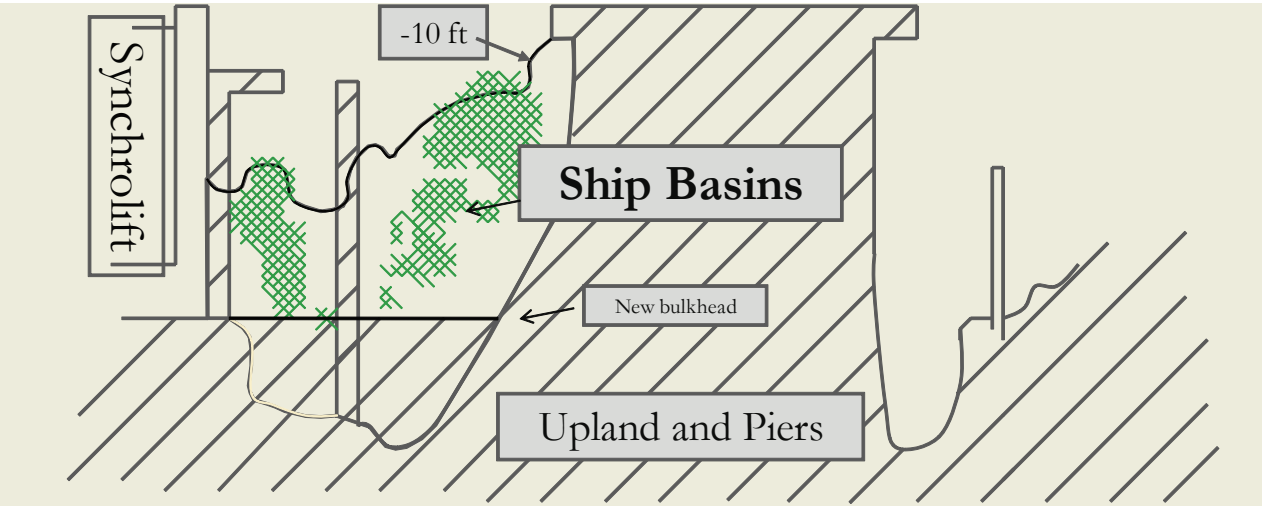
First, the Port built on past area-wide plans and environmental assessments to establish a location and basis for the eelgrass mitigation site.

A long range planning process for public and private development actions and mitigation within Fidalgo Bay had been underway since the early 1990s. Spearheaded by the City of Anacortes, the Fidalgo Bay-Wide Plan envisioned goals, objectives, policies, and guidelines for development and conservation within aquatic areas of the city for a twenty year time horizon. With the Port and other federal, state, and local agencies as participants, the Plan identified potential development actions, both public and private. The Port was simultaneously completing a major update of its own comprehensive plan and the accompanying environmental assessment identified several future projects with potential eelgrass impacts, including redevelopment of Pier 1 and the expansion of the Cap Sante Boat Haven, the port's recreational and commercial vessel marina. The programmatic environmental impact statement (EIS) on the Fidalgo Bay-Wide Plan established a framework for mitigation decisions which was agreed to in concept by regulatory agencies with jurisdiction

over aquatic resources. Nearshore habitat area and eelgrass impacts due to development were identified as a major issue for project permitting, and the plan established a basis for discussing "bay-wide impacts" to eelgrass which could be mitigated at an appropriate large-scale mitigation site for advance or banked mitigation. Potential mitigation sites within the bay were identified in the plan; these were areas that were absent eelgrass due to past dredging, log rafting or other industrial activities, or where eelgrass was not productive due to limited light penetration as a result of water depth. However, without specific development projects proposed, and lacking a regulatory mechanism for advance mitigation, the City's plan stopped short of establishing the use of such a site.

The Port initiated the environmental impact assessment for the Pier 1 shipyard redevelopment in late 2002. The Environmental Impact Statement (EIS) analyzed alternatives for modernizing and upgrading the shipyard facility, and all alternatives included creation of a deep-water basin that adversely affected nearshore and aquatic habitats on the site. The EIS identified three types of habitat impacts that would result from project construction:

- Loss of aquatic habitat (conversion to upland) from filling behind the new bulkheads;
- Conversion of intertidal habitat to subtidal habitat due to dredging; and
- Loss of eelgrass due to both dredging and filling within the basin.



Habitat impacts

The Port proposed to compensate for these impacts by:

1. Constructing two mitigation sites adjacent to and bracketing Pier 1 where new aquatic area would be created to compensate for the conversion to upland and new intertidal habitat areas;
2. Constructing a new large-scale eelgrass mitigation site within an unvegetated portion of Fidalgo Bay that was surrounded by shallower areas that support eelgrass beds. The Port proposed to compensate for the loss of 0.74 acres of eelgrass within the shipyard basin by creating approximately 2.3 acres of additional eelgrass habitat.

The proposal was to place 3 to 4 feet of clean fill to achieve a bottom elevation comparable to adjacent eelgrass habitat, followed by planting and monitoring eelgrass to assure successful growth and colonization. Located approximately two miles from the shipyard redevelopment in the middle of Fidalgo Bay, this project became known as the "Fidalgo Bay Eelgrass Mitigation Site".

As part of the EIS process, the Port held two formal public hearings, conducted multiple informal tours, and solicited oral and written comments on the redevelopment proposal. While community discussions were focused on potential changes to the shipyard uplands visible to the surrounding neighborhoods, agencies and environmental groups were concerned with the identified aquatic impacts; and numerous formal and informal tours and discussions ensued. Multiple boat tours with agency and tribal officials were taken to a similar but much smaller-scale mitigation site at Drayton Harbor in northern Puget Sound. The port provided detailed computer modeled imaging of impacts to submerged areas within the shipyard basin, and also provided wave, current, and sediment modeling that assured that the proposed site was workable and sustainable from the perspective of its physical setting within the bay.

With the EIS complete, the Port initiated federal, state, and local permit applications for the shipyard redevelopment and separately, for the off-site eelgrass mitigation site.

Second, the Port capitalized on new and present opportunities to facilitate permitting and implementation of a new kind of mitigation plan. The Port overcame significant regulatory obstacles to the proposed mitigation plan by taking immediate and timely advantage of policy changes and financial constraints within key state and federal agencies.

These included:

An innovative mitigation agreement with state fisheries officials:

Subsequent to the development of the Fidalgo Bay-Wide Plan, in response to the lack of a state regulatory mechanism for off-site and/or advance mitigation of wetlands and aquatic habitat, and with the support of the state's public ports, the Washington State legislature enacted new legislation (RCW 90.74) related to aquatic resources mitigation. The new law directs state agencies to consider mitigation plans that include off-site options, particularly where the plan provides for equal or better biological functions and values, compared to the existing conditions, for the target resources or species identified.

Facing a major permitting negotiation with the state of Washington Department of Fish & Wildlife (WDFW) related to the Pier 1 project and mitigation plan, the Port immediately engaged with the department to develop the kind of creative off-site mitigation package allowed under the new law. In addition to providing for the shipyard project-specific mitigation plan, the ensuing Memorandum of Agreement (MOA) between the Port and WDFW provides the vehicle for application of mitigation credits for the eelgrass project to future port-sponsored development projects and establishes how the credits will be calculated and assigned to the Port's projects. Through mutual agreement, the Port and WDFW established a

basis for application of mitigation credits (a combination of total acreage and abundance of shoots) and for accounting of mitigation credit within present and future permits. This MOA is the first of its kind in the state of Washington, and it facilitated permit negotiations with other regulatory agencies. A copy of the agreement is attached.

A new form of joint lease of state-owned aquatic lands:

Generally, aquatic lands within Washington are owned and controlled by the state Department of Natural Resources (DNR). Use of state-owned aquatic land requires an "aquatic use authorization", which is essentially a variable term lease for certain allowed and water-dependent uses. Historically, DNR had been resistant to use of aquatic lands for mitigation projects, but a newly-elected state lands commissioner directed department policy towards allowing mitigation and enhancement of aquatic lands as a mechanism for improvement of historically degraded aquatic areas. Capitalizing on the new directives, and on informal agreements reached between the City and the State during the prior Fidalgo Bay-Wide planning process, the Port entered into a new form of sublease agreement with the City of Anacortes and DNR for use of the proposed eelgrass site for 30 years. The lease allows for modification of up to 6 acres of aquatic lands, providing substantial area for future mitigation "credit" for development actions. At the end of the lease term, the area reverts back to state ownership with the improved habitat in place as a publicly-owned site improvement.

Beneficial use of dredged materials with cost-savings and streamlining of construction:

Ready to proceed with the advance mitigation project and with major permit negotiations complete, the Port began the design and construction phase of the eelgrass project. The mitigation plan for the Pier 1 shipyard redevelopment project required that the affected eelgrass be replaced at a 1.5 to 1 area ratio with the documented establishment of eelgrass shoots within the site in advance of dredging the shipyard basin. In order to accomplish this, the Port needed to construct the mitigation site one year prior to starting the redevelopment project. The immediate challenge was to find 60,000 cubic yards of clean silt and sand that would provide the needed elevation and appropriate substrate for establishing eelgrass. Initial conversations with the state indicated that such material might have to be purchased from the state, a cost the port had not anticipated in addition to the costs of dredging and placing the fill in the mitigation area. Meanwhile it became apparent that navigational dredging of the Swinomish Channel, a key access point to the Port of Skagit County's marine facilities south of Fidalgo Bay had been placed on permanent hold because of budget constraints within the US Army Corps of Engineers due to Hurricane Katrina and the war in Iraq. Conversations between the two ports and

Dredging of Swinomish Channel

the Corps resulted in another new agreement - one in which the Port of Anacortes agreed to undertake the needed maintenance dredging in parts of the federal channel in exchange for approvals to place the sediments at the eelgrass mitigation site as a beneficial use of dredged materials. The resulting beneficial use project provided a nearby source of fill materials and accomplished the sorely needed channel dredging, relieved the Corps of the costs of dredging and disposal, and generated cost savings to both ports.

Third, the Port established the basis for future mitigation of eelgrass.

As noted above, through innovative and timely agreements with key regulatory agencies, the Port has secured the basis for future mitigation credits for impacts to eelgrass from future projects. The Memorandum of Agreement with WDFW for the Fidalgo Bay Eelgrass Mitigation Site provides a framework for applying mitigation credits by incorporating negotiated rates of replacement for various future developments. The agreement will allow for up to 6 acres of mitigation credits, provided that the specific numbers of eelgrass shoots required to be compensated for have been replaced within the mitigation site. The Pier 1 project will "use" 2.3 acres of the site, leaving the reminder available to offset future potential impacts. Within the near future, the Port will be looking to the site to provide habitat mitigation for eelgrass that will be disturbed by maintenance dredging and expansion of the port-owned and operated 960-slip Cap Sante Boat Haven, the second busiest recreational marina in the state. The eelgrass mitigation site itself will result in a substantial improvement to a degraded habitat in an area of Fidalgo Bay, will provide for a larger contiguous area of key aquatic habitat in Puget Sound, and will eventually revert in ownership of the improved aquatic lands to citizens of the state.

How the Project fulfills the award criteria

The level and nature of benefits to environmental quality, beautification, or community involvement

Anacortes High students tying eelgrass bundles

Community involvement subsequent to the EIS process included an intense local interest in the eelgrass project, demonstrated by coverage in the local press (attached). The project was adopted for study by an advanced marine biology class at Anacortes High School, and students directly participated in the project by volunteering to bundle the eelgrass shoots or "turions" for transplanting by divers on the mitigation site. Completion of the mitigation site will result in the documented viable replacement of degraded eelgrass within an industrial basin with a larger bed of dense and productive eelgrass within a contiguous eelgrass meadow in Fidalgo Bay. This solution provides equal or better biological functions compared to traditional on-site, in-kind mitigation proposals.

The level of independent involvement and effort by the port

The completion and success of the Fidalgo Bay eelgrass mitigation site is the culmination of more than ten years of planning by the Port and local agencies. Although implementation of a bay-wide approach to eelgrass mitigation was discussed in theory for many years, the port's leadership in overcoming project design and regulatory obstacles has resulted in advance mitigation both for the Pier 1 shipyard redevelopment and for future port development projects. The mitigation project required preparation of two EISs (the comprehensive plan framework and the project specific analysis) and dozens of technical studies related to resident eelgrass communities, water and sediment quality, and innovative computer modeling of affected areas and the proposed mitigation site.

The creativity of the solution or programs

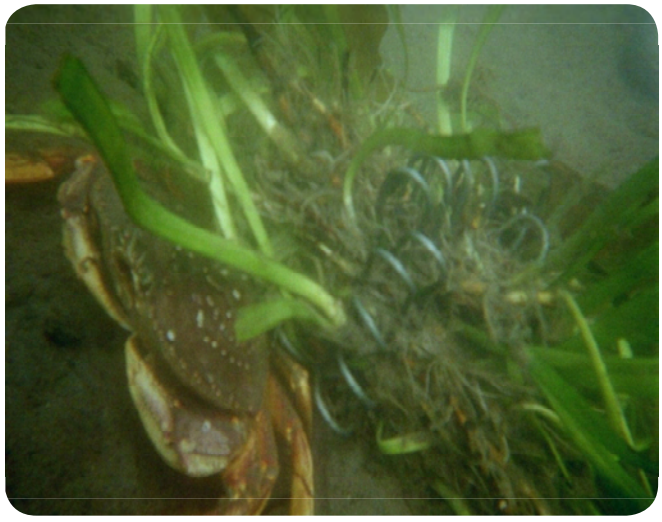
The Port created new technical methods for assessing the biological measurement of future "credits" for eelgrass mitigation, developed appropriate modeling to assure the physical appropriateness of the proposed site, and engaged in successful partnerships with multiple local, state and federal agencies to reach agreement and implement the project while protecting the port's long term development interests.

The project includes several "firsts":

- The development of new biological guidelines for evaluating credits for advance mitigation for eelgrass;
- First use of the new state aquatic habitat mitigation statue to develop an agreement for advance off-site eelgrass mitigation;
- First direct port implementation of a federal dredging project for the purpose of constructing an eelgrass advance mitigation site within Puget Sound

Whether the project or program results are apparent

The Port completed the dredging of the Swinomish navigation channel and placement of dredged materials at the Fidalgo Bay eelgrass mitigation site in December 2006. Approximately 20,000 eelgrass turions were attached in groups of six to metal staples that were hand-planted by divers in a 2.3-acre area at the end of June 2007. Video transect monitoring and diver observations of the site conducted in September 2007 showed vigorous growth of eelgrass, with self-seeding from adjacent eelgrass beds already occurring on the boundaries of the site.



Newly planted eelgrass providing cover for crab

The site is in use by a wide range of aquatic species, including salmonids, forage fish, and Dungeness crab. Additional diver surveys and video monitoring scheduled for the end of June 2008 are expected to reveal the establishment of additional shoots with increased density of plants throughout the modified area. With the advance mitigation in place and eelgrass flourishing, construction contracts for the dredging and redevelopment of the shipyard have been awarded and the ground-breaking is scheduled for July 2008.

The cost effectiveness of the activity or the program

By taking the lead in developing the innovative agency agreements that allow for advance off-site mitigation, the Port reduced potential costs and delays in the redevelopment of Pier 1 and future port redevelopment projects with eelgrass impacts. For these future projects, relatively little effort will be required and considerable savings will be gained in the cost of environmental assessments, permitting, and technical studies. The Port turned federal budget constraints for the maintenance dredging of a nearby federal navigation channel into an opportunity for beneficial use of dredged materials, resulting in a regional benefit and substantial savings for the Port of Anacortes, Port of Skagit County, and the Corps of Engineers itself.

In addition, the Port successfully procured major grant support for the project through the Skagit County's Distressed Public Facilities Fund and the 2007 State Community Economic Revitalization Board Job Development Fund. Both funds are designed to assist with public infrastructure projects that directly stimulate economic development by supporting the creation of new jobs or the retention of existing jobs in economically distressed rural counties. These two grant programs have provided $1.5 million to offset capital costs of construction of the eelgrass mitigation site.

The transferability of the technology or idea to the port industry

A workable model of advance mitigation or banking of mitigation credits for eelgrass: The interagency MOA is an innovative interagency agreement that can be used as a model by other ports seeking regulatory consensus on how to proceed with projects that require advance off-site mitigation. This approach is transferable to other regions in its consistency with recent Corps of Engineers guidance on mitigation that allows for regulatory flexibility and more creative approaches to large-scale advance mitigation projects.

Technical breakthroughs in assessment of eelgrass habitat: The Port developed new methods for evaluating potential sites for mitigation, and for assessment of whether the constructed site is successful. Project design and assessment tools can be used by other ports contemplating mitigation for habitat impacts.

Cooperative interagency agreements: A long term partnership with the City of Anacortes formed a firm basis for proposing and locating the advance mitigation site, and procuring the necessary land use approvals and sublease agreements

necessary to utilize state tidelands. Guidelines developed as part of the Fidalgo Bay-Wide Plan formed the basis from which the Port, agencies, and citizens reached consensus about an appropriate mitigation approach.

Success of constructed large-scale eelgrass site: The success of the Fidalgo Bay site demonstrates that large scale sites for eelgrass can be successfully constructed and become viable and valuable aquatic habitat. Economies of scale in construction of such a site favor incorporation of mitigation "credits" for future habitat impacts for development projects. Current regulatory policies and scientific assessment of aquatic mitigation sites also point to greater productivity and success of large sites.

Conclusion

The Port of Anacortes took a unique leadership role in developing an innovative solution to mitigation of eelgrass impacts for a major shipyard redevelopment project, while at the same time securing a predictable path towards reaching agreement and mitigating impacts of planned future projects. The success of the Fidalgo Bay Eelgrass Mitigation Project demonstrates that public ports can take new approaches to project design, project coordination, agency agreements, and integration of federal, state and local requirements while protecting long-term port economic and development interests. The Fidalgo Bay Eelgrass Mitigation Project has assured cost-effective and timely permitting for the maintenance and expansion of two major regional marine facilities: the Dakota Creek Industries shipyard, a major local economic asset and employer, and the Cap Sante Boat Haven, a primary recreational gateway to the famed beauty of the nearby San Juan Islands and Straits of Juan de Fuca.