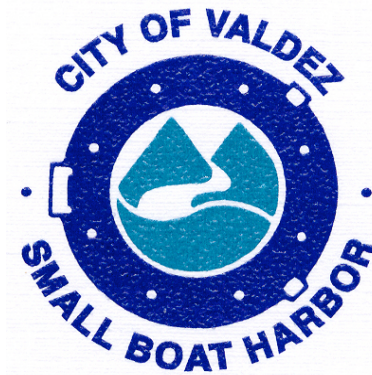


A Comprehensive Vision for Valdez Harbor Expansion and Marine Related Development – The Valdez Marine Center –



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28 February 2003**

Executive Summary

The time is right for the construction of a new harbor west of the Ship Escort Response Vessel Service (SERVS) Dock in Valdez, Alaska. Adoption of available technology will allow the moorage of additional vessels in the west site and promote the economic diversity needed in the community of Valdez. Development of a comprehensive plan for the use of City uplands adjacent to the new harbor will be the basis of new economic development in our community.

The firm of Peratrovich, Nottingham and Drage, Inc. (PN&D) conducted research in permeable wave barriers sponsored in part by the City of Valdez and has prepared a feasibility study on the use of this technology at the west site. The preservation of scarce uplands through the use of permeable wave barriers, adjacent available uplands, pent up demand for moorage in Alaska and the advancement of a marine center concept for Valdez, all work together to make this an exciting time to consider new economic development within our community.

The bottom line is always the most important element in any project or endeavor sponsored by a municipality. Economic impact of the new Marine Center project will exceed \$44,000,000 and provides for employment of 355 people, many in newly created jobs. A formal study of the marine center concept and land use planning will document greater benefits and help provide an overarching plan for future development.

Introduction

New alternatives in technology and economic opportunity have joined to make development of a new harbor, west of the Ship Escort Response Vessel Service (SERVS) Dock an attractive option. Development of permeable wave barriers as a harbor breakwater, immediate regional demand for moorage, available adjacent uplands, and adoption of a marine center concept all point to substantial economic benefit to the community of Valdez. Working in concert, these various elements present a strong case for transforming Valdez into a regional center for support of the marine and fishing industries. Port Valdez is historically unique in its ice-free character and strategic location with ready access to south central and interior Alaska. Ultimately the proper and timely development of the limited waterfront resources available in Valdez will provide a more balanced local economy.

Studies and concepts too often focus on single projects with singular benefits. Valdez has many rich resources that need to be brought into concert with future development. There are seldom functions or activities occurring within the community that are not in some part dependent on another enterprise or activity. A boatlift, for example, may not be a profitable enterprise in itself. However, the economic activity generated by repairs, storage and other maintenance functions would provide a much greater economic benefit to the community than that reflected in the cost of the boat lift.

Promotion of economic diversity is important to a community like Valdez that is dominated by a single industry. Support for planned development of the area west of the SERVS Dock is best detailed in three broad areas of discussion. They involve the advantages found in the development of a regional marine center concept, the use of permeable wave barriers and

detailing the economic benefits inherent in development of a new harbor. The need for an overarching, holistic mindset is vital to the ultimate success of this endeavor.

The Valdez Marine Center Concept

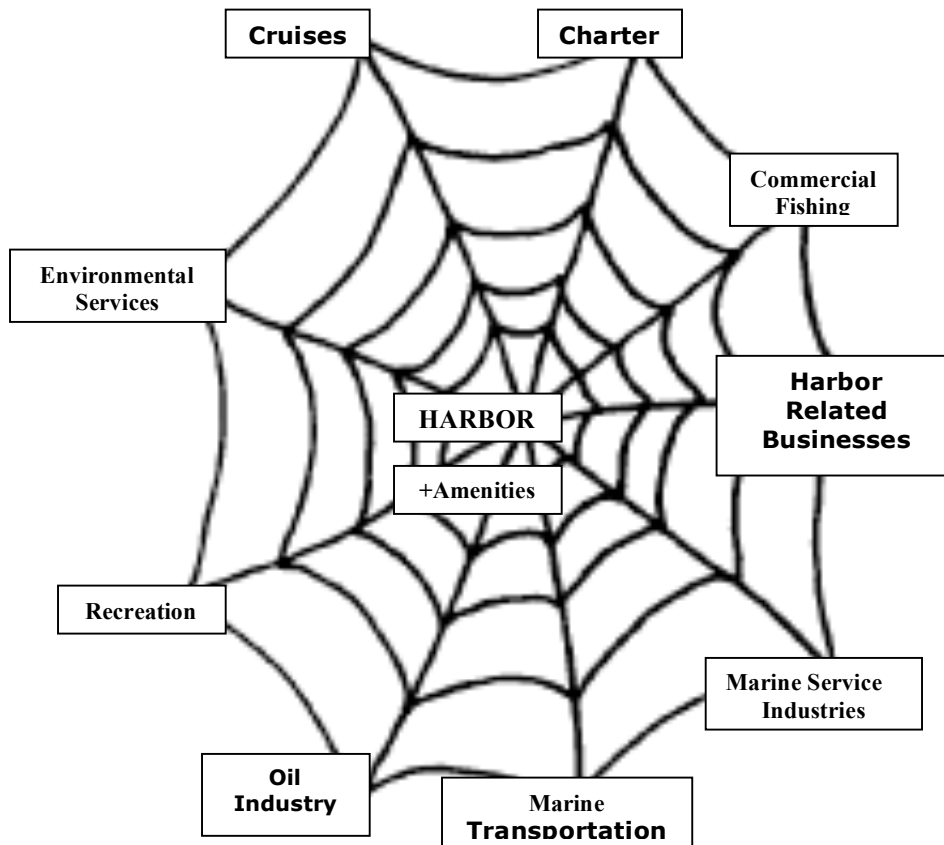
The City of Valdez is actively pursuing the construction of a new harbor basin. Just as important to planners of the basin is planning for the uplands development to ensure maximum economic development impact for the community. The planning of a new harbor in Valdez should include functions and activities that may not have been considered in the past, such as development of a comprehensive marine center and supporting businesses at the harbor spit. There are numerous public economic benefits available to the community if these possibilities are introduced within the initial harbor planning process. This section attempts to identify opportunities to expand cooperation between the public and private sector in development of business opportunities in the new harbor.

Valdez Small Boat Harbor has been involved with a number of planning efforts during the past three years. An overall master plan was implemented that has been very useful in providing direction for future development. This master plan was recently updated to reflect current progress in capital projects and considerations for new harbor requirements. A report outlining the state of the harbor was published in the spring of 2002 that describes harbor infrastructure, operations and development goals. This document provided a record of what is actually in place and being done at the harbor. The harbor began to collect economic data from users during the 2002 boating season. Initial efforts to quantify this information show the harbor to be a major economic force in the greater Valdez community. It is worth

noting that the City of Valdez has been very progressive in its oversight of harbor activity. Compared to other facilities in Alaska and the lower forty-eight, Valdez has accomplished many things that are only recently being discussed in other places.

The question to us is what defines harbor related activity. Valdez is a coastal community with strong ties to marine environment, recreation and transportation. The harbor recently developed a user handbook with an attached business directory. An effort was made to include those businesses that have a connection to the harbor. It was quickly apparent that most Valdez businesses benefit from the operation of the harbor. It is therefore important for us to plan harbor construction projects that are also favorable to local users and businesses. There are many activities that could be included in the planning of a new harbor.

Not only do these enterprises interact with the harbor, but they also have business relationships with each other. A charter operator will depend on the harbor for moorage and purchase parts from a local hardware store. The following is a summary of some harbor related activities and businesses that might benefit from the proper planning of a new harbor. One method to visualize them is to picture the harbor as a web with related functions or activities extending from the center of it.



Web of Harbor Relationships

Charters – Charter fishing is a major component of the harbor community. There are approximately 100 operators working out of the harbor. The master plan proposes the establishment of a charter boat row, which could highlight this activity and provide specific support structures for the fleet. This includes advertising, improved access for all visitors, fish cleaning stations and a common area for visitors to find a charter boat. The area could be designed with a motif that attracts visitors to walk through the area and watch the fish being brought in to the dock.

Another group of charter boats in the harbor operate longer, overnight trips. These vessels are typically larger and demand more moorage space and support services. A new harbor should consider the trend towards larger vessels and the lack of moorage in Alaska for vessels over sixty feet in

length. Many of the large yachts that can be seen throughout the west coast are actually operated as charter vessels. Each represents a separate business enterprise.

Commercial Fishing – Commercial fishing is recognized as being second only to the oil industry, as the most important business pursuit in the state. Valdez has 75 commercial fishing vessels operating out of its harbor and many more staging here for the summer season. Commercial fishing provides direct employment, purchase of supplies, use of marine repair services, raw fish taxes, and secondary employment for the community. Valdez needs to consider the business services required to support commercial fishing and how they could be incorporated in the new harbor. These would include a larger haulout, larger cranes, machine shop, chandlery, welding shop, shipwrights, and a cold storage. Many of these facilities would also better support other commercial vessel operators like cruise ships, oil industry vessels and other fishing enterprises such as processors or the new Valdez Fisheries incubator program.

Many more ideas have been identified as necessary in the new harbor. Upland storage, a bulkhead loading dock, larger moorage spaces and a larger boatlift have been discussed. Many fishers operating from Valdez in the summer would remain here permanently if support service and moorage were available.

Harbor Related Businesses – We mentioned earlier, most businesses in Valdez have a marine related component. A visiting vessel needing repairs would buy groceries, visit restaurants and may stay with a local hotel. Many visiting recreational boats will use the same services. Research conducted by

staff for a policy document shows that there are more than 30 businesses conducting their affairs in the harbor area.

Marine Service Industries – Marine service industries required to fully support a commercial marine center include the services of machinists, welders, shipwrights and ship stores for maintenance and repairs. Fueling, ice making, cold storage, cargo and processing are needed to support a healthy fishing fleet in the harbor.

Marine Transportation – Boat harbors are natural connecting points for other forms of transportation. Floatplanes utilize the mooring basin during the winter with the freezing of Robe Lake. Coastal pilots, the Coast Guard and oil industry transport personnel via water to points throughout the Sound. The harbor facilitates the transfer of fuel and building materials via landing craft to remote locations as well. Taxi and freight companies transfer passengers and material to vessels at the harbor.

Oil Industry – Currently the harbor accommodates vessels from SERVS. This includes small response boats, staging oil recovery barges and small line handling tugs. It is anticipated that SERVS will utilize the new commercial harbor for moorage of response vessels due to proximity and protection from the weather. The community does not have the facilities to handle maintenance of the larger escort tugs and response craft. Much of this business is taken to Seward, Alaska.

There are many opportunities available to the harbor to support the oil industry. There are also several other oil spill response organizations that have used the harbor in the past. The harbor could also work more closely with the community college in its oil industry training programs.

Recreation – Recreational activities occurring within the harbor cover the gamut of possibilities. There are skiff rentals, pier fishing, hunting, kayaking, rafting, hiking and camping trips beginning at the harbor. Sixty percent of all boating activity occurring out of the harbor is recreational. The use of a boat in Prince William Sound can be recreational in of itself or a boat can be used to facilitate another activity like camping. The harbor master plan has identified the importance of continued planning to support recreational activities.

Environmental Services – Valdez Small Boat Harbor has become the de facto used oil collection site for the City of Valdez. Non-harbor customers are supposed to take used oil to the bailer facility for disposal, but since the harbor is closer, this does not occur often. Staff has identified the need for a building to handle environmental wastes generated by the harbor. It is unrealistic to believe boaters will transport small quantities of oily bilge water to the City bailer facility. Current environmental concerns and plans for harbor expansion have become intertwined. The harbor needs to be proactive in its environmental practices, if there is any hope of expanding the present facilities. The City has already made great progress with the completion of the new upland facilities. Storm and vessel maintenance processed water is collected and treated. This waste stream used to be directed into the Duck Flats and mooring basin.

A new bilge water treatment building should be constructed at the harbor to accommodate oily wastes generated by harbor users and to provide similar service to the residents of Valdez as well. It would be appropriate for the new facility to accept antifreeze and batteries as well. A new environmental

facility should be able to support the needs of the harbor and community residents as well.

Permeable Wave Barriers

Historically harbors have utilized rubble mound construction to build protective breakwaters. Rubble mound construction basically involves dumping large rocks into the water until an adequate height is achieved and the rocks quit spreading out at the bottom. Rubble mound breakwaters are expensive to construct. They bury wildlife habitat on the sea floor. Rock breakwaters hinder the flow of water and cause stagnation of harbor waters. Rubble mound breakwaters are difficult to remove and limit future expansion considerations.

The City of Valdez sponsored permeable wave barrier research conducted by the firm of Peratrovich, Nottingham and Drage, Inc (PN&D) in concert with the Alaska Science and Technology Foundation in 1998. PN&D developed scale models that simulated Alaska wave conditions and used these models to design a wave barrier that protects vessels moored in a harbor, as well as allowing adequate flushing of water through the harbor.

Waves equivalent to those normally found in the Pacific Northwest and Alaska were studied. This included waves to six feet in height, with periods of two to five seconds and lengths to 150 feet. Wave action in Port Valdez has been studied by the U. S. Army Corps of Engineers (USACOE) and they found the significant wave to be concerned with in Valdez reaches five feet and has a period of just over four seconds. A permeable wave barrier can easily attenuate a wave of this magnitude. The use of permeable wave barriers at the west SERVS site provides these project benefits:

- The original plan developed by the USACOE proposed the dredging of approximately four acres of existing uplands. Valdez has limited waterfront property and the loss of additional uplands is unacceptable. The use of a permeable wave barrier allows construction in deeper waters, which may allow for creation of additional new uplands at the harbor construction site, depending on final basin size.
- The west site is considered a disturbed area and holds no environmental value to natural resource agencies involved in regulation of marine construction projects. Environmental concerns equate to time and money. More time and more money will be expended as the proposed harbor project shifts to the east. It is a reality that the Duck Flats are an area of national environmental interest and there is little the city can do to change that. There are limited opportunities for alternate mitigation in Prince William Sound due to the pristine nature of the Sound and enormous funds spent in mitigation from the *Exxon Valdez*. A mitigation project may be required as an exchange for construction on the east side of the SERVS dock.
- Wave barriers are multipurpose structures. They protect vessels from wave and wake damage, but can also be used for other additional purposes. Wave barriers have vertical surfaces and therefore maximize the useable area created by the breakwater. Wave barriers can serve as docks that provide flexible moorage on their face. The addition of mooring bollards and energy adsorbing fenders on the outside face allows seasonal moorage of large vessels. Attached floats on the inside face can create additional slip space that cannot be found in the use of rubble mound breakwaters. The addition of floats on the inside face of

a wave barrier significantly expands the number of vessels that can be moored in the harbor.

- Permeable wave barriers are environmentally friendly. Water can flow freely through the structure and harbor flushing is significantly better. The current harbor is a prime example of the problems associated with poor circulation of water. Rubble mound breakwaters destroy sea floor habitat and limit movement of wildlife. Wildlife such as juvenile salmon can travel unhindered through a wave barrier structure.
- There are many recreational benefits associated with wave barrier structures. These include development of picnic areas, connections to a coastal trail system and fishing piers.
- The construction of wave barriers can provide alternative moorage for large vessels like those used by the Coast Guard, NOAA, the oil and fishing industry. SERVS vessels may utilize the more protected waters of an adjacent harbor. There are potential new vessels coming to Port Valdez including the USCG Cutter *Long Island* and a proposed missile defense system radar barge.
- Permeable wave barrier structures are more appropriate for use in high-risk seismic areas. Rubble mound breakwaters impose a huge weight load on the sea floor and can slide easily in an earthquake. Port Valdez is basically a fjord with steep slopes and the topography limits the depth in which a rock breakwater can be placed. Wave barriers use components similar to those used in standard dock construction, which are lighter and can be placed in deeper water. This flexibility allows more efficient mooring basin design and capacity.

Economics

Pat Burden of Northern Economics wrote recently that, "...the importance of a harbor in a community does not stop at the waterfront. A successful harbor both creates and requires a number of related services in the community. Visiting vessel owners purchase food and supplies for local stores. Visitors arriving by vessel often patronize restaurants, hotels, and entertainment businesses in a community. Visitors new to a community may also purchase tour packages that will allow them to explore a community with a guide. Visitors use many businesses that residents use, and vessel owners will do the same."

A calculation of the economic impact generated by construction of a new boat harbor can be made using assumptions provided in research already conducted on the behalf of the City of Valdez. The treatment of this subject begins with a harbor fleet design, identification of the fleet mix, quantifying expenses generated by each user group, calculation of total economic impact and a summary of its importance to the community. Valdez Small Boat Harbor has also led an effort for further expansion planning through efforts like the *Harbor Master Plan*, *State of the Harbor Report* and *Valdez Marine Center* white paper. Mr. Patrick Burden of Northern Economics, Inc. presented a set of guidelines for estimating the economic impact made in the community by the operation of ports and harbors at the Alaska Association of Harbormasters and Port Administrators 2002 annual meeting. Mr. Burden identified three different measures of value to the community. They are **financial impact, fiscal impact and economic impact**. These values represent three different bottom lines that contribute to the local economy. The following exercise calculates these measures of value using the limited data presently available to the harbor.

Financial impact - Financial impact is the total of harbor revenue, payroll and local purchases of the harbor itself. Total estimated revenue for Valdez harbor for FY2002 is \$649,550. Harbor payroll budgeted for FY2002 is \$388,141. Estimated local purchases by the harbor total \$190,000. So of the \$649,550 in estimated revenue for the harbor in FY2002, approximately \$578,141 is spent in the community and represents the financial impact of the harbor. A similar comparison can be extended to the construction of a new harbor. The current harbor contains 16,260 feet of billable moorage. Combining payroll and local purchases that are paid for out of current revenue, then dividing by the total billable moorage produces an estimate of financial impact of \$35.56 per foot that can be applied to the new harbor. Total billable moorage for the Valdez ultimate harbor design in chart 1 is 16,395 feet. 16,395 feet multiplied by \$35.56 produces a potential financial impact for the new harbor of \$583,006 per year.

Fiscal impact - Fiscal impact is the total spending by non-local and local harbor users, as well as the taxes generated by harbor users and related businesses. Using survey data and research conducted by the U.S. Army Corps of Engineers, we can estimate the expenses incurred by vessels operating out of the harbor.

The current small boat harbor reached its total capacity and has been crowded for a number of years. The City of Valdez and the ACOE began planning for a new harbor in 1999. There has been a substantial amount of information developed over the last three years. The ACOE analyzed potential users of a new harbor and the range of vessel sizes required to satisfy moorage demand. Major harbors in Prince William Sound were identified and moorage demand through waitlist and transient moorage

usage was quantified. The result established a concept harbor that would meet the needs of the Valdez community. The City of Valdez, through discussions with staff and appointed and elected officials further refined the immediate requirements of a new harbor for the community. The ultimate harbor design for the City of Valdez would accommodate approximately 500 vessels of various sizes.

Valdez Ultimate Harbor Design (Table 1)

Average Vessel Size ft (m)	Number of Slips
30 (9)	425
43 (13)	59
52 (16)	10
98 (30)	6
Total	500

Current use of the small boat harbor and waitlist information was studied to identify the fleet mix that would use the new harbor. Fleet mix is an estimate of different user groups and vessel trades that would moor in the harbor. The ACOE identified recreation, commercial fishers, charter boats and fishing tenders as potential users of a new harbor. The ACOE fleet design identified a mooring basin that would accommodate 335 vessels. This information can be scaled from the ACOE effort to the local desire for a 500-vessel harbor. It is important to estimate the user representation in the new harbor since each group offers different economic benefits to the community.

Valdez Moorage Demand Summary (Table 2)

Vessel Type	30' (9m)	43' (13m)	52' (16m)	98' (30m)	Total
Recreation	324	15			
Fishers	31	16	4		
Charters	70	28	6		
Tenders	0	0		6	6
Grand Total	425	59	10	6	500

There are several approaches that can be made to quantify the economic impact of a harbor user group to greater economy. The numbers will also vary directly on vessel length. A larger vessel will have a bigger crew, burn more fuel and require greater maintenance.

The harbor department surveyed recreational users during FY 2002. Initial responses to our survey indicate that non-local visitors make 2.2 trips to harbor each season and spend \$440.68 per trip. It would be safe to assume recreational vessels using the new harbor would spend at least this amount per year (\$969.50 per vessel). An effort will continue to better define total spending by both non-local and local harbor users in FY2003.

The following is a summary of costs that can be associated with each vessel identified in the moorage demand summary. Supporting charts developed by the USACOE are attached in the appendix. The chart below represents annual operating costs for the vessels identified in the Valdez moorage demand summary chart. Total operating costs generated by vessels utilizing the new harbor would be in the area of \$29,000,000 per year.

Total Annual Operating Cost for Demand Summary (Table 3)

Vessel Type	30' (9m)	43' (13m)	52' (16m)	98' (30m)	Total
Recreation	\$314,118 ¹	\$14,545 ¹			\$328,663
Fishers	\$3,469,861 ²	\$2,985,984 ³	\$1,037,868 ⁴	\$0	\$7,493,713
Charters	\$10,209,150 ⁵	\$6,167,560 ⁶	\$1,536,354 ⁷	\$0	\$17,913,064
Tenders	\$0	\$0	\$0	\$3,328,410 ⁸	\$3,328,410
Grand Total	\$13,964,611	\$9,166,744	\$2,574,222	\$3,328,410	\$29,063,850

Not all costs generated by vessels in the new harbor will translate into direct local spending. There is a certain level of “leakage” to the greater national and international economy. **Valdez will capture more of these funds as local services and resources are developed.** The promotion of the Valdez Marine Center concept will further this goal and prevent funds from “escaping” the local economy.

Economic impact - Economic impact is the combination of total spending modified by a multiplier, new income and export-oriented commercial spending modified by the same multiplier, and additional employment caused by the harbor’s presence in the community. It is an accepted economic principle that new and outside income brought into a community is spent a number of times. A larger community is better able to provide goods and services than a smaller one. A conservative economic multiplier for a community the size of Valdez would be 1.5. Current information available shows a total spending of \$29,646,856 could be generated by a new harbor. This results in an economic impact of **\$44,470,284** generated by the harbor

¹ Based on survey data of \$969.50 per vessel – Page 14.

² Based on USACOE data with project total annual costs of \$111,931 per vessel – Table 4.

³ Based on USACOE data with project total annual costs of \$186,624 per vessel – Table 5.

⁴ Based on USACOE data with project total annual costs of \$259,467 per vessel – Table 6.

⁵ Based on USACOE data with project total annual costs of \$145,845 per vessel – Table 4.

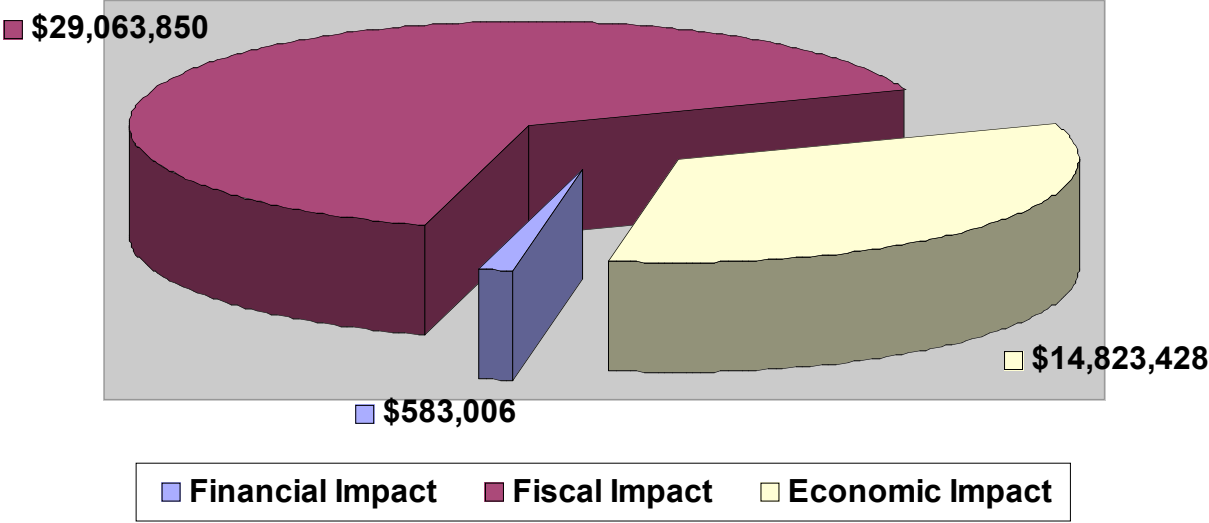
⁶ Based on USACOE data with project total annual costs of \$220,270 per vessel – Table 5.

⁷ Based on USACOE data with project total annual costs of \$256,059 per vessel – Table 6.

⁸ Based on USACOE data with project total annual costs of \$554,735 per vessel – Table 7.

operating budget and harbor customers. Each million dollars of economic impact will generate eight to eleven jobs in a community the size of Valdez. Using a factor of eight employees per million dollars would result in the potential of the addition of up to **355 jobs** in the community resulting from construction of a new harbor because of its total economic impact.

Chart 1 - Economic Values Contributing to a Total Impact of \$44,470,284 Created by the Valdez Marine Center



Economic Conclusions - It is apparent that Valdez harbor is an important economic engine within the community and that expansion of its facilities will greatly enhance the local and regional economy. Further study is important to properly support operations, plan for future expansion and promote effective use of city facilities.

It is important to note the USACOE identified a number of other additional economic benefits that could be attributed to the addition of a new harbor. These include an annual savings of \$20,500 in reduced time delays, reduced fishing tender travel time of \$205,200, reduced dock/float damages of \$171,000, reduced harbor personnel costs of \$12,100, and improving subsistence access for \$264,800 in addition benefits to the community.

Recommendations

Recommendations for the new harbor are based on the idea that there are multiple benefits arising from good planning and well-reasoned installation of harbor infrastructure. Many of these recommendations depend on better public-private cooperation. The City of Valdez is in a position to develop the waterfront to best serve the needs of the community and private businesses can be brought in to operate many of these ventures. Planning for the new harbor should include recreational, industrial, commercial, environmental and local interests. Benefits to visitors will also enhance the quality of life for Valdez residents.

Recommendation 1: Marine Center Economic Study – Conduct a comprehensive evaluation of the economic benefits of a new harbor and supporting facilities needed in Valdez. In addition to refining and confirming existing economic information, this study will be **critical for providing the necessary groundwork to secure State and Federal funding**. Northern Economics proposed completing this scope of work to address adequate planning for a new marine center:

- Review existing documents and prior studies to provide background information for this study.
- Develop a purpose and need statement and supporting documentation to demonstrate the need for a new harbor and supporting facilities in Valdez.
- Prepare a vision statement that integrates small boat harbor infrastructure development with local and regional economic diversification strategies to strengthen the oil and gas, commercial and sport fishing, and tourism industries. The vision statement will identify specific services and facilities needed to meet user demand and that are

vital for a successful harbor facility, based on our professional experience in port and harbor development. For a community to reap the benefits on a harbor expansion, uplands development must take place to promote support services for visiting vessels. A successful marine center must have several components – harbor, vessel lift, work area and collection system, supply stores, repair services, etc. – all of which are needed for the harbor to provide a benefit to the community. A harbor expansion provides more space for visiting vessels, but the services offered in the uplands area is what encourages vessels to visit. Uplands development and the linkage between the harbor improvements and the architectural and visual attraction of commercial/retail shop fronts are part of the vision of a new harbor and marine center for Valdez. Prior research and numerous comprehensive planning, economic diversification, and harbor and waterfront development studies will inform the vision for a new harbor and marine center.

- Describe the economic benefits associated with the harbor expansion and other waterfront development. The value of a harbor exceeds the revenues it brings in for moorage. Many other business sectors are impacted by the harbor-related activity: oil and gas industry, fishing, tourism, and recreation. Other waterfront improvements will also generate benefits. We will address the fiscal, financial, and economic effects of the harbor and the other improvements, as well as other benefits that can be identified.
- Provide rough order of magnitude cost estimates for the recommended harbor improvements. Relying on existing studies of marine centers, we will provide a rough estimate of the costs for harbor and facilities development.

Recommendation 2: Regional Focus – The new harbor and developed uplands should be promoted on a regional basis. This facility should be

named as the Prince William Sound Marine Center or Valdez Marine Center to promote the concept that multiple vessel-related services are available here. Seward is able to draw from a large geographic area due the scale of its service infrastructure. Many vessels based in Valdez haul out in Seward. Offering excellent marine vessel services would draw customers from all the communities in Prince William Sound and parts of the Gulf of Alaska.

Recommendation 3: Public Amenities – Depending on the final location of the new harbor, a walking path should be built along the perimeter of the mooring basin. This trail could be an extension of the Dock Point trail or an extension of the harbor boardwalk from South Harbor Drive. There should be overlook points that provide views of fishing activity and scenic views. Picnic areas located at these observation decks would attract people to the harbor and would be a great public space for residents as well. Areas should be identified as points for the addition of shore-based fishing docks.

Accessible, clean bathrooms and showers are important to harbor users. Vessels have limited facilities and customer experience with a harbor is shaped by the quality of these facilities. The Valdez Port and Harbor Commission identified an additional restroom on the east side of the current mooring basin as an important economic development project. This facility was pictured as having showers, laundry and vending services. An area could be established in concert with this building to offer charter boat directory service and an area could be built to provide for the sale of locally caught fresh fish.

The harbor master plan calls for the construction of a new harbormaster's office when a new boat basin is constructed. One of the best public attractions a harbor can have is a restaurant overlooking the mooring basin.

Fishermen's Terminal in Seattle would be a good example. Most harbors on the west coast provide space for these types of facilities. A new harbor office could incorporate lease space for a restaurant or other marine related business which would be a public benefit by bringing visitors into the area and help offset harbor operational costs.

Harbor related amenities include adequate moorage, power, lighting, garbage, water and pumpout services. Collection of used oil, batteries, antifreeze and bilge water is an important function of the harbor. The harbor now has one of the best upland vessel maintenance yards in the northwest. Efforts will continue to improve this facility and operate it in an environmentally sound manner.

Recommendation 4: Maintenance – Maintenance of public facilities needs to be established as a routine cost of business and not deferred as done in the past. Management software needs to be developed that tracks required maintenance and its associated costs. The system envisioned for the harbor would be based on a GIS system that utilizes a library of all operation and maintenance manuals published for the harbor. Each project built in the harbor has an O&M manual with it that describes required maintenance and intervals for this maintenance to be completed. A good management program would issue work orders for required operations and then record time and expenses to complete to the project. The system would then provide an accurate cost of facilities maintenance and promote a greater lifespan for capital improvements.

Conclusions

Valdez Small Boat Harbor expansion is an important vehicle in the economic development of the greater community. Any further development will immediately impact local businesses through increased visitation both from visitors and residents. The potential for further community development through harbor expansion includes new parks, trails, retail outlets and environmental facilities. Jobs will be created in the vessel support industry as well. Planning efforts should not be limited to construction of just a mooring basin and floating docks. A new Marine Center could be the focal point of a community reaching its true economic potential and thus providing real benefits the entire community.

The proposed Valdez Marine Center should be considered as one of the most viable, realistic projects in the City's overall Economic Development Plan and as a key strategy for future economic diversification.

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Table 4 - Typical Fishers' and Charters' Operating Costs for 9 m Vessel (USACOE 2002)

	Expenditures	Without Project	With Project	Savings
Fixed Costs	Investment	\$108,000	\$108,000	0
	Return on Capital	6,972	6,972	0
	Insurance	4,000	4,000	0
	Association Dues	300	300	0
	License/Permit Fees	400	400	0
	Aquaculture Assessment	1,400	1,400	0
	Fishing Crew Food	7,800	7,410	390
	Charter Crew Food	7,200	6,840	360
	Fishing Crew Shares	52,800	52,800	0
Variable Costs	Vessel Repair/Maintenance	8,000	7,600	400
	Major Equipment/Replacement	4,000	3,800	200
	Diesel Fuel	16,900	16,055	845
	Lube Oil and Hydraulic Fuel	1,183	1,124	59
	Moorage/Gear Storage	2,100	600	1,500
	Gear Repair	3,500	3,200	300
	Business Expenses	2,700	2,565	135
	Other Stores and Supplies	2,500	2,375	125
	Miscellaneous Supplies	1,400	1,330	70
	Charter Crew Wages	87,043	87,043	0
	Operating Costs	Commercial Fishers		
Total Annual Costs ¹		\$115,955	\$111,931	\$4,024
Variable Costs ²		\$42,283	\$38,649	\$3,634
Total Operating Hours ³		1,820	1,820	1,820
Hourly Operating Costs ⁴		\$23.23	\$21.24	\$1.99
Commercial Charters				
Total Annual Costs ¹		\$149,839	\$145,845	\$3,394
Variable Costs ²		\$129,326	\$125,692	\$3,634
Total Operating Hours ³	1,620	1,620	1,620	
Hourly Operating Costs ⁴	\$79.83	\$77.59	\$2.24	

¹Total Annual Costs includes All Expenditures except Investment.

²Variable Costs includes All Expenditures except Investment, Return on Capital, Insurance, Association Dues, License/Permit Fees, Aquaculture Assessment, and Food. In addition, Commercial Charters and Tenders Wages are included in Variable Costs; however Fishers Shares are not part of these costs.

³For some expenditures, with-project operating hours were reduced by 5 percent; by reducing total operating hours by 5 percent would understate hourly operating costs.

⁴Hourly Operating Costs = Variable Costs divided by Operating Hours.

Table 5 - Typical Fishers' and Charters' Operating Costs for 13 m Vessel (ACOE 2002)

	Expenditures	Without Project	With Project	Savings	
Fixed Costs	Investment	\$264,000	\$264,000	0	
	Return on Capital	17,042	17,042	0	
	Insurance	11,100	11,100	0	
	Association Dues	400	400	0	
	License/Permit Fees	2,050	2,050	0	
	Aquaculture Assessment	3,550	3,550	0	
	Fishing Crew Food	11,700	11,115	585	
	Charter Crew Food	10,800	10,260	540	
	Fishing Crew Shares	88,350	88,350	0	
Variable Costs	Vessel Repair/Maintenance	10,250	9,737	513	
	Major Equipment/Replacement	6,350	6,032	318	
	Diesel Fuel	20,475	19,451	1,024	
	Lube Oil and Hydraulic Fuel	1,433	1,362	71	
	Moorage/Gear Storage	2,250	600	1,650	
	Gear Repair	5,500	5,100	400	
	Business Expenses	4,600	4,370	230	
	Other Stores and Supplies	3,500	3,325	175	
	Miscellaneous Supplies	3,200	3,040	160	
	Charter Crew Wages	122,261	122,261	0	
	Commercial Fishers				
	Total Annual Costs ¹	\$191,750	\$186,624	\$5,126	
	Variable Costs ²	\$57,558	\$53,017	\$4,541	
Total Operating Hours ³	1,820	1,820	1,820		
Hourly Operating Costs ⁴	\$31.63	\$29.13	\$2.50		
Commercial Charters					
Total Annual Costs ¹	\$225,351	\$220,270	\$5,081		
Variable Costs ²	\$179,819	\$175,278	\$4,541		
Total Operating Hours ³	1,620	1,620	1,620		
Hourly Operating Costs ⁴	\$111.00	\$108.20	\$2.80		

¹Total Annual Costs includes All Expenditures except Investment.

²Variable Costs includes All Expenditures except Investment, Return on Capital, Insurance, Association Dues, License/Permit Fees, Aquaculture Assessment, and Food. In addition, Commercial Charters and Tenders Wages are included in Variable Costs; however Fishers Shares are not part of these costs.

³For some expenditures, with-project operating hours were reduced by 5 percent; by reducing total operating hours by 5 percent would understate hourly operating costs.

⁴Hourly Operating Costs = Variable Costs divided by Operating Hours.

Table 6 - Typical Fishers' and Charters' Operating Costs for 16 m Vessel (ACOE 2002)

	Expenditures	Without Project	With Project	Savings	
Fixed Costs	Investment	\$420,000	\$420,000	0	
	Return on Capital	27,113	27,113	0	
	Insurance	18,200	18,200	0	
	Association Dues	500	500	0	
	License/Permit Fees	3,700	3,700	0	
	Aquaculture Assessment	5,700	5,700	0	
	Fishing Crew Food	13,650	12,967	683	
	Charter Crew Food	10,800	10,260	540	
	Fishing Crew Shares	123,900	123,900	0	
Variable Costs	Vessel Repair/Maintenance	12,500	11,875	625	
	Major Equipment/Replacement	8,700	8,265	435	
	Diesel Fuel	24,050	22,847	1,203	
	Lube Oil and Hydraulic Fuel	1,684	1,600	84	
	Moorage/Gear Storage	2,400	600	1,800	
	Gear Repair	7,500	7,000	500	
	Business Expenses	6,500	6,175	325	
	Other Stores and Supplies	4,500	4,275	225	
	Miscellaneous Supplies	5,000	4,750	250	
	Charter Crew Wages	122,261	122,261	0	
	Operating Costs	Commercial Fishers			
		Total Annual Costs ¹	\$265,597	\$259,467	\$6,130
Variable Costs ²		\$72,834	\$67,387	\$5,447	
Total Operating Hours ³		1,820	1,820	1,820	
Hourly Operating Costs ⁴		\$40.02	\$37.03	\$2.99	
Commercial Charters					
Total Annual Costs ¹		\$262,046	\$256,059	\$5,987	
Variable Costs ²		\$195,095	\$189,648	\$5,447	
Total Operating Hours ³		1,620	1,620	1,620	
Hourly Operating Costs ⁴		\$120.43	\$117.07	\$3.36	

¹Total Annual Costs includes All Expenditures except Investment.

²Variable Costs includes All Expenditures except Investment, Return on Capital, Insurance, Association Dues, License/Permit Fees, Aquaculture Assessment, and Food. In addition, Commercial Charters and Tenders Wages are included in Variable Costs; however Fishers Shares are not part of these costs.

³For some expenditures, with-project operating hours were reduced by 5 percent; by reducing total operating hours by 5 percent would understate hourly operating costs.

⁴Hourly Operating Costs = Variable Costs divided by Operating Hours.

Table 7 - Tenders' Operating Costs for a Typical 30 m Vessel (ACOE 2002)

	Expenditures	Without Project	With Project	Savings
Fixed Costs	Investment	\$1,200,000	\$1,200,000	0
	Return on Capital	77,465	77,465	0
	Insurance	54,627	54,627	0
	Association Dues	700	700	0
	License/Permit Fees	4,000	4,000	0
	Aquaculture Assessment	9,120	9,120	0
	Tenders' Food	11,700	11,115	585
Variable Costs	Vessel Repair/Maintenance	66,203	62,893	3,310
	Major Equipment/Replacement	25,200	23,940	1,260
	Diesel Fuel	41,972	39,873	2,099
	Lube Oil and Hydraulic Fuel	3,159	3,001	158
	Moorage/Gear Storage	6,741	600	6,141
	Gear Repair	32,336	30,836	1,500
	Business Expenses	58,924	55,978	2,946
	Other Stores and Supplies	3,486	3,312	174
	Miscellaneous Supplies	7,000	6,650	350
	Tenders' Wages	170,625	170,625	0
Operating Costs	Tenders			
	Total Annual Cost ¹	\$573,258	\$554,735	\$18,523
	Variable Cost ²	\$415,646	\$397,708	\$17,938
	Total Operating Hours ³	1,820	1,820	1,820
	Hourly Operating Cost ⁴	\$228.38	\$218.52	\$9.86

¹Total Annual Costs includes All Expenditures except Investment.

²Variable Costs includes All Expenditures except Investment, Return on Capital, Insurance, Association Dues, License/Permit Fees, Aquaculture Assessment, and Food. In addition, Tenders Wages are included in Variable Costs.

³For some expenditures, with-project operating hours were reduced by 5 percent; by reducing total operating hours by 5 percent would understate hourly operating costs.

⁴Hourly Operating Costs = Variable Costs divided by Operating Hours.