CAMBRIDGE SYSTEMATICS

Cross Border Shortsea Shipping Study

final

report

prepared for

Transport Canada

prepared by

Cambridge Systematics, Inc.

with

Moffatt & Nichol Engineers

May 2004

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1.0 Overview

1.0 Overview

1.1 Background

The Cross Border Shortsea Shipping Study is part of a coordinated, bi-national strategy to improve the efficiency and security of cross border trade flows between the U.S. and Canada in the Cascade Gateway region. U.S.-Canada bilateral trade is the largest trading relationship in the world. Spurred first by bilateral free trade agreements between the two countries in the 1980s and further enhanced by the North America Free Trade Agreement (NAFTA), U.S.-Canada trade is projected to increase by as much as 180 percent by 2015. The impact of this trade growth has been particularly pronounced in the Cascade Gateway region, where robust population and economic growth in the Puget Sound area and the Lower Mainland of BC has fueled cross border economic integration. But it has also created significant congestion problems at the border.

Blaine currently is the fourth busiest commercial truck crossing along the U.S.-Canada border and most of this traffic travels through highly congested corridors (I-5 in the U.S. and Highway 99 in Canada). Truck traffic through all three of the Cascade Gateway region's commercial crossings has increased by more than 85 percent between 1992 and 2002 and at its peak before the U.S. economic recession, truck traffic had increased by almost 100 percent as compared to 1992 levels. The recent Cross Border Trade and Travel Survey, conducted by Cambridge Systematics for the International Mobility Trade Corridor (IMTC), showed that the vast majority of this traffic moves between origins and destinations located in the region between Seattle and Vancouver, BC. The IMTC is a bi-national coalition of business and government entities that was formed to pursue improvements to cross border mobility. The IMTC has played a lead role in identifying creative solutions to cross border mobility problems for people and goods. One such solution may lie in the development and enhancement of shortsea shipping services on the West Coast of North America.

Transport Canada, in cooperation with the U.S. Maritime Administration (MARAD), the Whatcom Council of Governments, and other IMTC stakeholders, hired the Cambridge Systematics (CS)-Moffatt & Nichol (M&N) team to conduct Phase 1 of a two-phase study of cross border shortsea shipping potential in Western North America.

Subsequent sections of the report overview describe the scope of the study and the way the CS team undertook this study. At the end of the overview is a summary of findings and the study team conclusions and recommendations.

1.2 Scope

The overall goals of the two-phase effort are to determine the feasibility of shortsea shipping in the IMTC region, to describe the type of services that would be most feasible, and to determine the supporting actions by government necessary to encourage development of these services.

The objectives of Phase 1 of the study are:

- Profile existing cross border coastal marine services on the West Coast of North America. These carriers, who mostly operate domestic services today, represent the potential providers of cross border shortsea shipping services. It is therefore important to understand the nature of their current operations and what makes them work as well as understanding how expansion of services to incorporate cross border routes would introduce new obstacles.

- Assess the factors that will affect the ability of coastal marine services to participate in cross border freight movements.

- Prepare a final report that summarizes the results of the study in a form that is suitable for a variety of decision-makers and the public.

This report summarizes the existing shortsea shipping services (both domestic and cross border) that may provide a building block in the development of any future services and describes how legal, regulatory, institutional, operational, and economic factors will affect success of a future service.

1.3 Methodology

The study was conducted with a very tight schedule and limited budget. Therefore, the consultant team needed to take advantage of prior work and existing contacts within the coastal shipping and port communities in Western North America. In order to profile existing coastal services, the consultant team conducted several Internet searches, contacted industry trade associations, and obtained carrier contacts from the major ports on the West Coast of North America and the client team. CS recently completed a study of shortsea shipping issues and opportunities for the I-95 Corridor Coalition on the East Coast of the U.S. and this study provided profiles of several shortsea services in the Western U.S. Another source, the U.S. Army Corps of Engineers web site, provided a comprehensive listing of tug and barge operators in Washington and Oregon. Contacts with many of these operators were also established through membership information on the American Waterway Operators Association web site. A similar listing was obtained for British Columbia (BC) tug and barge operators using various industry contacts and Internet searches. CS searched web sites for as many of these carriers as possible to obtain

additional information about ports served, commodities carried, vessel fleet, and types of services. CS also sent an e-mail survey (see Appendix A) to all of the carriers from whom e-mail addresses could be obtained. For the largest carriers (those with a fleet of more than 10 vessels) and a sample of the smaller carriers, direct telephone contacts were attempted and a more extensive telephone interview was conducted (see Appendix A) to learn about their service profile and the factors affecting their ability to participate in U.S.-Canada cross border shortsea shipping. In addition to carriers, contacts were made with major ports and terminal operators and regulatory agencies and a comprehensive literature search was conducted.

1.4 Summary of Findings

There are relatively few existing cross border shortsea services on the West Coast of North America. Those that do exist serve three primary markets:

- Bulk raw materials and semi-finished products with production facilities on the water and usually private terminal operations. The most prominent commodity in this class is bulk aggregates moving from Canada to the Seattle area;
- Ferry services that generally include both passenger and cargo transport mostly operating to Vancouver Island, the Gulf Islands, and the San Juan Islands; and
- Limited services from BC to Alaska both ferry and barging.

There has been a decline in cross border shortsea services over the last decade due to a number of factors, including:

- Natural resource industry restructuring that has led to on-water plant closures;
- Availability of more competitive services by other modes (especially new rail services); and
- Increase in deep sea container services in Vancouver and a decline in trans-shipment.

There are a substantial number of shortsea services in domestic coastal trade on both sides of the border. Most of these services are tug and barge operations moving a variety of cargoes (bulk material, general cargo, and heavy equipment), as well as ferry services to and from the islands. A notable non-contiguous trade on the Northwest Coast is the transport of containers and trailers between Tacoma and Anchorage, on self-contained container vessels operated by Totem Ocean Trailer Express and Horizon Lines.

Factors that affect the viability of cross border shortsea services in Western North America include the following:

- Trade and custom regulation (advance manifest requirements, cabotage rules, tariffs and duties):
- Security issues (application of new ISPS rules);
- Port infrastructure (primarily availability of land for expanded terminal and warehouse/production facilities), environmental permitting, and local land use policy and taxation;
- Vessel infrastructure and technology (load and unload requirements, capacity, and speed);
- Operational issues (market information, role of cargo transport in carrier operations, port operations, backhaul traffic, trip frequency, load consolidation requirements);
- Institutional issues (labor rules, public vs. private terminals, roles and relationships of water carriers, truckers, and intermodal marketing companies); and
- Cost (drayage costs, port and terminal charges, handling, inventory).

Current interest among carriers in new cross border shortsea services is limited, but some carriers see opportunities for new business. Primary concerns include the following:

- Markets between Puget Sound and Vancouver are too short a distance for shortsea shipping to be competitive for services aimed at shippers not currently located on or near the waterfront. Drayage costs, port charges, and handling costs are viewed as significant obstacles and shortsea services are viewed as not being able to meet shipper requirements in many cases.
- New security requirements and customs rules (advance manifest requirements) will make cross border services less attractive as compared to trucking and as compared to domestic marine services. This is a particular concern for southbound movements from Canada into the U.S.

Some limited services already in existence could potentially be expanded to include cross border operations if the markets were developed. These would involve movement of the same commodities already moved using the same facilities. In these cases, carriers did not seem to feel that cross border processing requirements presented significant obstacles. But they need more market information.

Although roll on-roll off (ro-ro) vessels offer significant per container cost benefits in terms of handling and types of labor used, the reduced carrying capacity of these vessels may favor the use of lift on-lift off (lo-lo) container-on-barge for general cargo services (containers can be stacked four containers high). Options with higher speed vessels might

provide a viable alternative to trucking as congestion and unreliability at the border grows. However, these services may need to be subsidized in the short term.

Cabotage rules (Coasting Trade Act in Canada and Jones Act in U.S.) do not seem to play a significant role in cross border shortsea services. There were only a few carriers who indicated that multi-port per country services would be necessary to generate economical services given demand patterns and distances between ports. Some carriers approved of the cabotage restriction so that cross border shortsea shipping did not become the vehicle by which domestic shipping was undercut by the other country's carriers (similar concerns as those expressed by motor carriers).

There is currently an imbalance in the way security and customs rules are being applied on both sides of the border and harmonization of these procedures may be critical to development of a viable shortsea service. The application of 24-hour rules is the most often cited example of this inequity. In its latest bulletin on this subject, Canada Customs Border Services Agency (CBSA) now makes an exception for shipments where the length of the voyage is less than the period within which notice would otherwise be given. In these cases it is only required that notice be given before departure of the vessel. For example, a shipment from Vancouver to Seattle, which might typically involve a transit time of less than 10 hours would not be required to give the full 24-hour advance notice. At this time, the U.S. position is that the 24-hour advance notice rule applies to all cross border shipments. This might be an appropriate time for both countries to consider the opportunity to facilitate shortsea shipping through a reciprocal agreement to relax this requirement in conformance with current CBSA procedures.

Port infrastructure constraints do not appear to be a major obstacle to expanded services. There are a number of existing bulk handling and barge ramp facilities on both sides of the border that could accommodate more traffic. Preferential treatment of deep sea carriers also does not seem to be an obstacle (to some extent this may be because many of the carriers interviewed were operating out of private facilities). However, bringing shippers physically closer to carriers by creating warehouse and processing sites near the water may be an important incentive for development of shortsea shipping and this could be difficult given municipal tax policy in BC, zoning rules, environmental permitting requirements in coastal areas, and community opposition to port expansion in both Canada and the U.S.

Viable cross border shortsea services will require relatively high volume shipping lanes to generate sufficient demand for frequent services (a necessary pre-condition to compete with trucking). This may be difficult to develop in the primary corridors of cross border movement on the West Coast. The trade imbalance also creates an obstacle based on the difficulty of generating back haul loads. Reducing cabotage obstacles might be one way of expanding back haul markets.

Labor rules and requirements were an often cited obstacle to cross border shortsea shipping. This complaint by carriers may be based on comparison of costs when shipping from private terminals, which may not be unionized, as opposed to public ports. Since cost competition for shortsea shipping is based on comparison with other modes (rail and

trucking), the sensitivity to any factor that raises overall costs may be greater than on other types of waterborne movements.

1.5 Conclusions and Recommendations

Cross border shortsea services focused on the bulk raw materials or semi-finished goods market appear to have some early promise. The biggest issue is proximity of the shippers to load points and the restructuring of many of these industries (particularly in Canada). One option that might work to help develop this market would be government involvement in the development of waterfront industrial parks or sites for production/ warehousing and distribution facilities. Targeting specific companies looking for this type of expansion opportunity could be a starting point for developing this market. There is also a substantial amount of product moving from Vancouver Island to the Lower Mainland by barge and then moving by truck to the U.S. (some of this is containerized cargo). Bringing this cargo directly to the U.S. by an all-water route represents a promising niche opportunity and there appear to be services of this type that are under discussion.

In the general cargo market, it is difficult to compete with trucking on price and transit time making a viable cross border service focused on the market between Puget Sound and the Lower Mainland hard to develop. Some analysts believe that smaller capacity, high speed vessels with ro-ro capability may be attractive in this market. While they will not be able to achieve the economies of scale associated with stacking of containers, the higher speed, ability to provide more frequent service (lower volume per vessel), and lower loading costs for ro-ro operations could make this option competitive in the future. At the present time, ferry operators have expressed only limited interest in this market. Even though there is some potential to run cost competitive lo-lo container on barge services, shippers seem to expect services discounted below truck rates and these cost goals are difficult to achieve. Transit times for the barge services are also not competitive even with current congestion levels at the border.

It is critical to the future success of cross border shortsea shipping to bring labor (ILWU) to the table as an active stakeholder in defining services that can work and how labor rules can accommodate service requirements. Handling costs are likely to be a major cost component for every type of service that is envisioned. Many of the existing domestic shortsea services that are successful are operating out of private facilities or in situations in which lower skilled labor (often non-union) can be employed. The unions should not perceive the development of cross border services as an attempt to "union bust" but changes in labor rules may need to be negotiated. On the East Coast, the ILA is becoming more actively involved in shortsea shipping, seeing it as a source of job growth and opportunity.

Because of the high relative cost of handling and port charges, the need to generate high shipment volumes in both directions, and the geographic dispersal of many potential

markets for cross border shortsea shipping, it may not be possible to operate viable services that involve only one port per country. This will require both the U.S. and Canada to address issues in their respective cabotage rules.

The impact of new security requirements on cross border shortsea service options is difficult to assess at this time because not all of the new requirements are in place. However, the approach that the Canadians have taken to implementation of the 24-hour advance manifest requirements is clearly more favorable to cross border shortsea shipping than is the U.S. approach.

2.0 Existing Short Sea Operations on the West Coast of North America

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Shortsea shipping is the use of vessels of varying size and type to move freight and/or passengers to and from destinations that do not require an ocean crossing. This may include voyages that are both domestic and international in nature and that occur along coastlines, rivers, or lakes. Shortsea shipping has been in existence for thousands of years dating back to the times of the Phoenicians around 1200 B.C. Prior to the introduction of the automobile and train, shortsea shipping was a prevalent mode of transport for both people and cargo and still is in many societies.

The first objective of the study was to profile the existing coastal marine services as these might be a logical place to start when trying to build the cross border shortsea shipping infrastructure on the West Coast of North America. CS identified the major existing shortsea service providers based in Washington, Oregon, Alaska, and Vancouver, BC. Some of the identified carriers are based in the study region and operate in and out of the region going all the way to California, Hawaii, and South America. The following sections describe the existing shortsea shipping services on the West Coast of North America in detail.

2.1 Existing Cross Border Shortsea Services

It appears that cross border shortsea shipping between the U.S. and Canada has been in decline over the past 10 years. A number of well known services that once existed no longer operate. These include:

- Up until the mid-1990s, first American President Lines (APL) and then Sealand trans-shipped Vancouver-bound containerized cargo arriving by deep sea service to Seattle, by barge to terminals in Vancouver. As the Port of Vancouver expanded its own deep sea container terminals, these ocean carriers began making regular calls directly at Vancouver and eliminated the trans-shipment services from Seattle.

- Matson operated a container vessel service between Los Angeles, Seattle, and Vancouver calling at Fraser Port from 1995 to 2000. Matson provided a weekly service using the cellular containership SS Manulani with a capacity of 649 40-foot and 260 20-foot containers. Transit time between Los Angeles and Seattle was 2.5 days. This ser-

vice was discontinued in 2000 in favor of an agreement with the Burlington Northern Santa Fe (BNSF) railway to handle this freight. Matson cited several factors for the demise of this service, including the lack of flexibility due to limited frequency, the inability of the vessel to handle larger domestic and overweight containers, drayage costs, and price competition from rail and truck. The service to Vancouver was often to reposition empty containers from Los Angeles to Vancouver, where more export cargo is available. With ever increasing import traffic to Vancouver plus first ports of call starting in the later 1990s, these direct services to the Vancouver market generate enough empty containers to handle the BC-generated export traffic.

- The White Pass Corporation was one of the pioneers of containerization in marine transportation. The company offered marine service between Vancouver and the Yukon via the Alaska port of Skagway, which was the terminus of the White Pass and Yukon Railway. In 1954, the company pioneered an integrated marine-rail system using 25-foot custom-built containers. The service used two vessels, MV Klondike and MV Frank H. Brown, which were designed to transport bulk fuel and containers. The service was discontinued in 1982 following closure of the large Cyprus Anvil lead-zinc mine at Faro. Service recommenced on a biweekly basis in 1986 as the mine was reopened by Curragh Resources. This service was discontinued permanently in the early 1990s. The viability of White Pass service was affected by improvements in highway infrastructure, including the Alaska Highway and BC's Highway 37, which increased competition from the trucking industry, as well as by the reductions in traffic due to the decline of mining activity in the Yukon.

- Seaspan International Ltd.'s Oil and Rail Division transported rail cars between Seattle and Vancouver by barge. Around 90 percent of this traffic consisted of lumber or oriented strand board (OSB) originating on the BC Rail network, which was destined to interline with the Union Pacific (UP) Railroad at the Port of Seattle. This service provided shippers with a means of accessing competitive rail service for distribution of products in the western United States. UP was unable to conclude an agreement with BNSF on the rate division with BNSF, which owns the single cross border rail link in the Lower Mainland. The nearest alternative direct rail link to the UP is the Canadian Pacific-Union Pacific interchange at Kingsgate in the interior of BC. Traffic reached a level of 6,000 carloads per year, which necessitated a minimum of five sailings per week from Seaspan's North Vancouver barge slip to Seattle. Transit time by barge was 16 to 18 hours. This service was discontinued in 2001 as BNSF and UP came to an agreement for an all-rail route to transfer traffic to the UP network in Portland. The agreement was reached after UP filed a complaint with the U.S. Surface Transportation Board alleging that BNSF was not complying with conditions imposed by the Board in allowing Burlington Northern to merge with the Santa Fe Railroad. BNSF was required to grant UP rights to solicit traffic over this line.

Today, existing cross border shortsea shipping services often exist for only very specific products and customers. No dedicated shortsea general freight or passenger services were identified with the exception of three ferry services between Washington State and BC, one ferry service between Alaska and BC, and one barge service between Alaska and BC as follows:

- Washington State Ferries operates a regular ferry service from Anacortes, WA to Sydney, BC from late March until late fall each year. The ferry service is for passengers and vehicles and offers a daily departure from both Anacortes and Sydney. The ferry makes intermediate stops at Friday Harbor and Orcas Island in the San Juan Islands. The vessel used is generally a Super Class Washington State ferry with a length of 382 feet and can carry up to 2,500 passengers and 160 vehicles (including 30 commercial vehicles). Fares for commercial trucks are based on length. The fare for a standard WB-17 tractor trailer unit, 65 feet long is C$246 in the off-season and C$327 during peak summer season. Currently, 99.9 percent of Washington State Ferry's business are moving passengers and vehicles between Anacortes, WA and Sydney, BC. They very rarely have to deal with freight trucks on the ferries. So far they have not dealt with any advanced manifest filing requirements for freight trucks, because they are exempt from the 24-hour rule for cross-border passenger and vehicle movement.

- Black Ball Transport, a private enterprise, operates regular ferry services from Port Angeles, WA to the inner harbor of Victoria, BC using the vessel MV Coho. The service operates anywhere from one to four departures daily from Port Angeles and Victoria depending on the time of year. The crossing time is 95 minutes. The MV Coho can accommodate foot passengers, automobiles, and recreational vehicles, as well as tour buses and commercial trucks. The fare for a standard WB-17 650-foot long tractor trailer unit is C$298.

- There are seasonal foot passenger ferries from the Port of Bellingham, WA to Victoria, BC.

- The Alaska Marine Highway System offers ferry service between Prince Rupert, BC and Ketchikan, AK. The sailing time between the two ports is six hours. Currently, the ferry arrives and departs Prince Rupert only once every four to five days. The current vessel in use is the MV Taku, a 352-foot long ferry with a capacity of 69 vehicles and 450 passengers.

- Canadian National (CN) Rail operates a barge service which transports railcars between Prince Rupert and Whittier, Alaska. This service has been in operation for more than 40 years. The barge is operated by Foss Maritime of Seattle under a long-term contract. This service links the Alaska Railroad to the continental rail system.

There may be an opportunity to develop shortsea shipping services related to deep sea container vessel services that call the Ports of Vancouver and Fraser Port, as well as U.S. ports as part of their international port rotation. Table 2.1 lists those services that call the Port of Vancouver, as well as the noted U.S. ports, as part of their west coast rotation. Table 2.2 lists the deep sea container services at Fraser Port that also call U.S. ports as part of their west coast port rotation.

Table 2.1 Deep Sea Container Vessel Services at Port of Vancouver

Operator	Services Designation	West Coast Port Rotation	Scheduled Day of Arrival in Vcr
China Shipping	ANW	Vancouver-Seattle-LA	Wed.
COSCO	CPNW	Vancouver-Seattle	Fri.
New Grand Alliance	GPNX	Vancouver-Seattle	Sun.
Zim	AMP	Vancouver-Seattle	Thur.
CMA-CGM	TPX	LA-Vancouver	Sat.
Evergreen	CPN	Tacoma-Vancouver	Tue.
Evergreen	TPS	LA-Tacoma-Vancouver	Fri.
Evergreen	WAE	Tacoma-Vancouver	Sun.
New World Alliance	PS3	LA-Seattle-Vancouver	Fri.
Westwood	Westwood Svc II	Seattle-Vancouver & other BC Ports	Sat. (bi-weekly)
Hanjin	HPNX	Seattle-Vancouver-Portland-Seattle	Sun.
K Line	KPNW	Tacoma-Vancouver-Portland	Sat.
New World Alliance	WPNW	Tacoma-Seattle-Vancouver-Portland	Mon.
New World Alliance	PS1	Seattle-Vancouver-LA	Sat.
New Grand Alliance	JCX	LA-Oakland-Vancouver-Seattle	Mon.
Westwood	Westwood Svc I	Seattle-Vancouver & other BC Ports-Longview-Seattle	Fri. (bi-weekly)

Source: Vancouver Port Authority.

Table 2.2 Deep Sea Container Vessel Services at Fraser Port

Operator	Service Designation	West Coast Port Rotation	Operator
CP Ships	MaxPac II	Fraser Port – Anchorage	CP Ships
CP Ships	MaxPac III	Fraser Port – Oakland or LA	CP Ships
CP Ships	MedPac	Fraser Port-Portland-Oakland-LA-Central America-LA	CP Ships
ANZDL	Oceania	LA-Fraser Port	ANZDL
n/a	Ampac	n/a	n/a
Operator	Service Designation	West Coast Port Rotation	Operator

Source: Canada Maritime.

To date these services do not transport any cargo shortsea (i.e., from the U.S. to Canada, or Canada to the U.S.), with the exception of some empty containers for repositioning and the MaxPac III service from Fraser Port to Alaska. This recently implemented service carries some cargo from the lower 48 states to Alaska, but only if it is delivered to Canada from the U.S. lower 48 states by rail. With delivery by rail, the cargo is not subject to the Jones Act. It has been noted by the Vancouver Port Authority that these deep sea services have tremendous capacity to transport cargo by container between Canada and the U.S., and there appears to be no impediment in doing so besides cost. To ship a container from Vancouver, BC to Seattle, WA, it costs about U.S. $120 for the dray from a warehouse to the Vancouver terminal plus U.S. $250 for the terminal charge in Vancouver, then about U.S. $300 for the marine move from Vancouver to Seattle and the same terminal charge and the drayage charge on the Seattle side. The total cost of loading, unloading, and transporting a container between the U.S. and Canada for these services goes up to U.S. $1,000, which is much higher than the cost of transporting a container by truck at U.S. $650.

In addition to the regular services noted above, there are a number of identified private services operating cross border. Those that do are generally catering to exclusive customers using private equipment.

- Cominco ships zinc from its Red Dog mine in Southwest Alaska by bulk carrier to Vancouver Wharves in North Vancouver, BC. From there the zinc is transported to Cominco's Trail, BC smelter. This service only occurs during the summer months when the Alaska port is ice free.

- Norsk Pacific Steamship Company Ltd. was created in 1962 to transport newsprint from BC to California and became part of Seaspan and the Washington Marine Group in 1995. Norsk has three operating divisions s follows:

  - The Coastwise Division operates from Seattle, WA and typically transports more than 300,000 metric tons of newsprint from the Norske Canada pulp mills in Crofton and Campbell River to San Francisco, Long Beach, and San Diego. The MV Thorseggen, a 19,000 dwt specially built newsprint carrier is dedicated to this trade and completes 26 voyages per year.
  - The Terminal Division, also in Seattle, operates a barge terminal in Seattle and an inland distribution terminal in Carson, CA. Both warehouses handle a variety of products from their ports including toys, paper, project cargo, and domestic freight.
  - The Towing Division, which has merged with Seaspan International, transports more than 400,000 tons of finished forest product and wood chips from Vancouver Island to BC mainland and Puget Sound ports.

- Lafarge North America uses their own fleet of tugs and barges to regularly transport bulk aggregates from quarries in BC to Vancouver, the Fraser River, and Seattle.

- Lehigh Northwest Materials Ltd., from their quarry at Sechelt, and Texada Quarrying Ltd., from their quarry on Texada Island, regularly ship limestone for cement

production by tug and barge to Seattle and Portland. For cement, they load at their plant in Delta BC and offload at their Seattle site. For aggregates, they load at their plant in Victoria, BC and offload at the Seattle site. Seaspan International is generally the tug and barge operator on contract to these two firms. In addition, both quarries use Canada Steamship Lines (CSL) to transport aggregate and rock used for marine construction projects or asphalt production to as far away as the San Francisco Bay Area and Southern California for specific project uses. CSL uses self unloading ocean-going vessels. Deliveries are dependent upon specific projects. For example, in the first six months of 2002 Texada shipped 900,000 tons of rock to California, but in the next six months none was shipped. Some rip rap rock is shipped by Sea Link Marine Services for Texada.

- Western Towboat Company, based in Seattle, WA, carries break bulk on its own barges between the U.S. and Canada. In 2003, they handled a total of more than 1.2 million short tons of bulk aggregates (i.e., sand, gravel, crushed rock, coal) up and down the West Coast. Normally, they call at Victoria, Blubber Bay, Treat Creek, and Campbell River ports in BC in Canada, and Seattle, Tacoma, Everett, Dupont, and Olympia in Washington. They own five deck barges and 18 conventional and tractor tugs.

- Olympic Tug & Barge, Inc., based in Seattle, WA, offers container-on-barge and bulk/ break bulk-on-barge transport services between the U.S. and Canada. They own 13 barges (combination of deck and tank barges) and 10 tug boats. Normally, they call at all Puget Sound ports, major BC ports, and Columbia River ports up to Portland, OR or Vancouver, WA. They handle oil, sand and gravel, rock, containers, wood chips, clay, limestone, shale, pet coke, coal, construction equipments, and construction materials and supplies.

- Foss Maritime Company based in Seattle, WA offers cross-border barge service for customers who own private loading facilities in BC and Puget Sound region. They carry bulk commodities such as wood chips, petroleum, scrap metals, and aggregates. The services they offer is on a customer demand basis and no scheduled cross border service is in operation.

- Sause Bros., based in Coos Bay, OR, operates up and down the coast from BC to Los Angeles/Long Beach region, including the Puget Sound area, Columbia River, and the San Francisco Bay Area. They handle various commodities such as lumber, plywood, newsprint, poles, salt, and petroleum products. They operate one barge voyage per month (6,500 short tons per trip) to transport salt across the border from Canada to the U.S. Sause Bros. owns 12 deck barges, nine tank barges, and 20 tug boats and they load or unload at breakbulk terminals, tanker terminals, and bulk terminals.

- Dunlap Towing Company, based in Laconner, WA, handled up to 800,000 tons of logs, 250,000 tons of wood chips, and some containerized freight in 2003 in the study region. Normally, they call at the Port of Chemainus and Port of Nanaimo in BC and Port of Seattle, Everett, Olympia, Port Angeles, Tacoma in Washington. They own seven deck barges and one tank barge.

- There is a tug and barge service that operates regularly between the Fraser River and Tacoma. The service hauls scrap metal to Tacoma and returns with liquid calcium carbonate. To date we have been unable to identify the operator of this service.

- Island Tug and Barge Ltd. of Vancouver, BC regularly transports oil on 6,500 ton barges to Portland and sometimes Alaska. This is not a scheduled service.

- In addition, significant volumes of bunker fuel and aviation fuel move cross border by barge, generally from the U.S. to Vancouver. Carriers include Marine Petrobulk (part of Seaspan), ICS, and Esso.

- Nexen Chemicals, formerly Canadian Occidental, imports salt from Sedros Island in Baja, Mexico, in self-propelled ships to its plant in North Vancouver, BC. The salt is used in the production of caustic soda and other chemicals.

- Gemini Towing transports fish feed twice a month from Vancouver to Anacortes, WA and Port Angeles, WA. They use a 134-foot long by 44-foot wide covered deck barge towed by a 67-foot tug. They have been providing this service since 2001.

- There are occasional shipments of bulk veneer transported by tug and barge from the Port of Nanaimo to Washington State.

- Sometime in the next six months, a container on barge service is expected to begin service carrying forest products from the Port of Nanaimo to Seattle. This will be a regular service.

2.2 Canadian Domestic Shortsea Shipping Services

Domestic shortsea shipping on the west coast of Canada is extensive. Some 25 percent of Canada's domestic marine activity occurs on the west coast. Of this volume, much is carried by tug and barge. Table 2.3 summarizes profiles of 86 tug and barge operators in BC.

The largest operator is the Washington Marine Group, which consists of a group of companies acquired by Dennis Washington which encompasses domestic and international marine transportation and shipbuilding. The operations include Seaspan International Ltd, Cates Tugs, Seaspan Coastal Intermodal, Kingcome Navigation, Norsk, shipyards in Vancouver and Victoria, and marine service operations. The Washington Marine Group also owns the Southern Railway of BC. Washington Marine Group has undertaken a major thrust into international container operations through creation of two new subsidiaries: 1) Seaspan Container Lines and 2) Seaspan Ship Management Ltd. Seaspan Container Lines has ordered 36 large container ships from Samsung Heavy Industries in the last three years, including an order for five 8,100 TEU vessels, which will be chartered to China Shipping Group

Table 2.3 Tug and Barge Operators in BC

No.	Operator Name	Type of Operation	Area of Operation	No. of Tugs	No. of Barges
1	Active Marine Towing	Log & general towing	Howe Sound	3	0
2	Albion Tug & Barge	Towing	West Coast	1	1
3	Alert Bay Towing Ltd.	General towing, barging, crane service	BC Coast	3	2
4	Blue Flasher	Towing, salvage	Vancouver Area	1	0
5	Burrard Clean Operations	Oil spill response	BC Waters	0	2
6	Burrard Water Taxi	Water taxi, bonded transportation of stores, pilots	Port of Vancouver	0	1
7	Catherwood Towing Ltd.	Log towing on Fraser River; barge towing (freight and machinery), South Coast & Vancouver Island	Fraser River, South Coast, Vancouver Island	11	3
8	Champion Barge Ltd.	Coastal freight, work platform, ship supply	Vancouver Harbour, Howe Sound, Indian Arm, Gulf Islands	0	1
9	Chase Navigation	Marine salvage, general towing	Coastal	1	0
10	City Transfer, Inc.	Freight barging, daily service to Powell River & Port Mellon	BC Coast	0	2
11	Coast Marine Contracting Ltd.	Float & pier repairs or new construction; pile driving; towing, barge rentals	BC	1	1+
12	Coastal Sea Trucking Ltd.	Barging or marine transportation/ freight	Vancouver to Port Hardy	0	1
13	Cooper Barging Service Ltd.	Land & marine transportation, oilfield construction	Northern BC, NWT	3	9
14	Crosby Marine Services, Ltd.	Log towing, barge transportation		1	1
15	D&E Towing & Salvage Ltd.	Marine towing, barging, salvage, construction	Queen Charlotte Islands	1	2
16	D.H. Timber Towing & Salvage Ltd.	Towing/ship assist, crew boat leasing, water taxis	Tugs: Quatsino Sound	2	0
17	Delta Tug & Barge Ltd.	Marine towing & dredging	Southern BC	3	2
18	Edgewater Marine Services	Light towing, marine salvage, environmental cleanup	Jervis & Schelt Inlet, Egmont (Nelson Is.)	0	1

Table 2.3 Tug and Barge Operators in BC (continued)

No.	Operator Name	Type of Operation	Area of Operation	No. of Tugs	No. of Barges
19	FMW Towing Ltd.	Barge and general marine towing	BC Coast & Puget Sound	4	8
20	False Creek Tugboats Ltd.	General towing	Lower Mainland, Gulf of Georgia	2	0
21	Falt Towing	General marine Towing, shipberthing	Southern Vancouver Is.	3	0
22	Forrest Marine Ltd	Marine towing & salvage; log sorting and booming; fresh water log storage	Fraser River, Gulf of Georgia	3	2
23	Frazer Island Towing Ltd.	Log towing	Juan de Fuca Strait	2	0
24	G&N Towing Ltd.	Marine towing, pile driving	W. Coast, Vancouver Is.	2	1
25	Gadd Marine Constructors Ltd.	Pile driving (land & marine), marine construction	Vancouver Is. (east & west coasts), Gulf Islands	1	1
26	Gemini Marine Services	Towing, equipment transport	Vancouver – Port Hardy	3	3
27	General Towing Ltd.	Barge & log towing, fish farm anchoring, and net changing	BC Coast	4	3
28	Gowlland Towing	Log & barge towing, custom log booming	Campbell River, Johnstone Straits	7	0
29	Great Northern Marine Towing Ltd.	Towing	North American Coast	2	0
30	Gulf Coast Navigation Ltd.	Barge & tug roll-on/ roll-off (ro-ro)	South Coast	1	0
31	Harbour Pile Driving Co. Ltd.	Marine construction, dredging, pile driving	BC Coast	0	2
32	Harken Towing Co. Ltd.	Log & barge towing, fresh water storage		12	3
33	Hodder Tugboat Co. Ltd.	General marine towing	Fraser River, BC Coast, Puget Sound	6	0
34	Horseshoe Bay Marine Services	Marine construction, salvage	South Coast	1	1
35	Hub Towing Ltd.	Marine towing, ship berthing/unberthing	Gulf of Georgia	1	0
36	Humphries Tug & Barge	Towing and salvage	BC Coast	3	4
37	Inlet Navigation Ltd.	Scheduled ro-ro fuel & freight	Campbell River to Bella Coola	2	3
38	Island Marine Construction	Marine construction	Gulf of Georgia	1	1

Table 2.3 Tug and Barge Operators in BC (continued)

No.	Operator Name	Type of Operation	Area of Operation	No. of Tugs	No. of Barges
39	Island-Sea Marine Ltd.	Coastal & ocean towing	W. Coast North America	1	0
40	Island Towing Ltd.	Towing & barge rental, equipment moving, water taxi		2	2
41	Island Tug and Barge Ltd.	General towing, oil & equipment barging, submarine cable laying, ship assist	Puget Sound to Southeast Alaska	8	18
42	J.A.S. Marine Equipment Leasing Ltd.	Barge services, long- & short-term charters	BC	0	1
43	The JJM Group	Marine construction, dredging, hydrographic survey	Coastal BC	2	14
44	Jarl Towing Ltd.	Towing	Johnstone Strait & Campbell River Area	5	0
45	Jones Marine Services	Towing, ship berthing, water taxi, shipyard facilities	BC Coast, Puget Sound	9	0
46	Kitimat Command Marine	Freight to 12,000 lbs. and up to 6 passengers	Douglas Channel area	0	1
47	Ladner Tug and Barge Ltd.	Towing	Inside waters	1	2
48	Lafarge Construction Materials (Marine Division)	Towing	BC & Washington	3	4
49	Larson Towing Co. Ltd.	Towing-barges, log booms, assist work	Vancouver, Northern Vancouver Is. (inside)	1	0
50	Mackenzie Sea Services	Towing, dive support, salvage	BC Coast	1	2
51	Marine Petrobulk Ltd.	Oil bunkering	Canadian West Coast	0	4
52	Mariner Towing Ltd.	General marine towing	Pacific Northwest	3	1
53	Mercury Launch & Tug	Transportation of people and equipment	Howe Sound, Gulf of Georgia	1	2
54	Minette Bay Ship Docking	Ship berthing, light freight & passenger services, marine construction	North and central coast	2	0
55	Mountain Marine Transportation Ltd.	Marine towing & construction		2	3

Table 2.3 Tug and Barge Operators in BC (continued)

No.	Operator Name	Type of Operation	Area of Operation	No. of Tugs	No. of Barges
56	North Arm Transportation Ltd.	Coastal barge towing	BC Coast	7	7
57	Ocean Construction Supplies	Sand & gravel, limestone, cement barging	Pacific Northwest	5	15
58	Pacific Cachalot Ltd.	Log & barge towing	BC Coast	6	0
59	Pacific Link Ocean Services Corp	Towing	North American Coast	3	1
60	Pacific Towing Services	Log towing & barging	Pacific Northwest Coast	9	4
61	Quadra Construction Co.	Heavy equipment rental	BC Coast	0	1
62	Riverside Towing Ltd.	Towing & log storage	Fraser & Pitt Rivers, Howe Sound, Vancouver Harbour	10	0
63	Rivtow Marine Inc.	Tug & barge transp., log towing/barge transp., ship docking weekly freight service to Prince Ruper, Kitimat & Queen Charlotte Islands	West coast of BC & U.S., Alaska & Mexico.	30	50
64	S & P Marine Inc.	Log towing	Fraser River, Howe Sound	3	0
65	Sabre Marine Ltd.	Log towing, barging, booming, float building	North Coast, BC	5	1
66	Saltair Marine Services Ltd.	Marine construction, pile driving, towing, dredging, industrial anchor installation		2	2
67	Sea-Link Marine Services	Towing	North American Coast	1	2
68	Seaspan Coastal Intermodal Company	Ro-ro transportation of trucks, trailers, railcars	Delta to/form Nanaimo & Swartz Bay	0	2
69	SMIT Harbour Towage Vancouver Inc.	Ship berthing	Burrad Inlet, Vancouver Harbour	5	0
70	Squamish Pilot Marine Service	General marine towing	Stuart Island, Bute Inlet	1	0
71	Squamish Tugboat Co. Ltd	Towing, ship assist, marine construction	Howe Sound, Fraser River, Lower Mainland	4	1
72	Tidal Towing Ltd.	Log & barge towing, fresh water storage	Pitt & Fraser Rivers, Lower Gulf of Georgia	3	0

Table 2.3 Tug and Barge Operators in BC (continued)

No.	Operator Name	Type of Operation	Area of Operation	No. of Tugs	No. of Barges
73	Tuff Marine	Fuel & freight barging, towing, salvage, marine construction, pildriving, and anchor handling	North Coast	1	1
74	Tymac Launch Service	Water taxi, pilot launch, tug & barge, barge ramp, waste oil/bilge water collection and disposal	Vancouver Harbour, Indian Arm, Howe Sound, Southern Gulf of Georgia	3	10
75	Union Tug And Barge Ltd.	Towing, log barging	North American Coast	2	1
76	Valley Towing Ltd.	Towing, construction, pile driving, dredging	Lower Coast, Georgia Strait	2	1
77	Vancouver Pile Driving	General marine construction, dredging	West coast of Canada	0	6
78	Wainwright Marine Services Ltd.	Towing	Mid to NW Coast of BC, Queen Charlotte Is., Alaska	8	8
79	Washington Marine Group	Ship berthing, escorting and ship assist, coastal towing, log transportation, pollution boom/ environmental work and shipyard facilities		See below	
80	Cates Tug	Ship berthing, escorting & ship assist	Port of Vancouver	8	0
81	Kingcome Navigation	Coastal towing	Pacific Coast	0	4
82	Seaforth Towing	Towing, pollution boom/environmental work, ship assist/ escort	Vancouver Harbour, Port Moody, Howe Sound	3	0
83	Seaspan International Ltd.	Tugs, multi-purpose barges, shipyard facilities, ship docking & ship handling, coastal barge towing	West Coast of North America, Georgia Strait & Puget Sound, primarily BC	35	208
84	West Coast Tug & Barge	Log towing, log barging, equipment barging, barge rental, barge towing	Vancouver to Prince Rupert	2	3
85	Westminster Tug Boats Inc.	Ship berthing, towing	Fraser River	5	0
86	Westview Navigation Ltd.	Towing, yarding	Georgia Strait	2	0

Seaspan International Ltd., which includes Kingcome Navigation and Cates Tug, has a fleet of 51 tugs and 201 barges made up of six ocean going tugs, 22 coastal tugs, and 23 ship assist tugs, 11 of which are part of Cates Tug. Kingcome Navigation operates Seaspan's two self-loading, self-dumping, self-propelled log ships.

The Coastwise division of Norsk Pacific Steamship Company Ltd. operates the MV Thorseggen, an 18,982 dwt vessel which is used to transport newsprint from BC mills to California. The Seaspan Coastal Intermodal service uses four ro-ro ferries and two articulating tug and barge units to transport railcars and truck trailers between their terminal at Tilbury on the Fraser River and Vancouver Island at Nanaimo and Swartz Bay. The service accommodates primarily commercial tractors and trailers, but will permit any rubber-tired vehicle, and carries about 150,000 units per year on up to 10 scheduled sailings per day. This operation was formerly CP's Coastal Marine Operations division, which was purchased by Washington Group in 1998. The reported tariff for a trailer unit to Nanaimo or Sydney is $4.56 per foot. Rate reductions are given for volume.

Seaspan currently runs a number of cross border services, which are generally low value bulk commodities, such as liquids, wood chips, and limestone. Representatives of Seaspan see little opportunity to introduce regular cross border cargo services as long as most shippers are not willing to pay more than for truck carriage. Seaspan had spoken to some major shippers about introducing a marine service after the events of September 11 when trucker line ups at the border were lengthy. However, shippers were not willing to pay extra for the marine service, since in their eyes they were not paying for the truckers to stand in line at the border (i.e., the wait costs were not being passed on to shippers). Seaspan does not see any other factors, including customs regulations and security requirements, as a major hindrance to cross border shortsea shipping. It all comes down to cost.

The second largest tug and barge operator is Rivtow Marine. Rivtow has a fleet of approximately 30 ocean, coastal, and ship assist tugs and about 50 barges of various types. The company was purchased by a Dutch company, Smit International, in 2000. Rivtow's cross border activity is periodic at best with some spot transport of chips to Everett and the occasional load of caustic soda from Vancouver to the Columbia River for Nexen.

Other well known tug and barge operations include City Transport, which moves commercial tractor/trailer units between its barge ramp equipped facilities in Powell River, Port Mellon, and No. 6 Road in Richmond on the North Fraser.

Norske Canada moves newsprint and paper on covered deck barges from its mill in Powell River to the recently opened Coast 2000 terminal on the Fraser River where it is warehoused and transloaded to truck or rail. This is a regular service.

Other regular barge service includes newsprint and pulp from Vancouver Island to Westran and Sylvan Distribution in Surrey on the Fraser River. This is a large volume operation using covered deck barges.

In addition, there are numerous smaller tug and barge operations moving bulk products, including wood chips, raw logs, pulp, rock, aggregates, and other products. However,

perhaps the largest and most well known shortsea shipping service on the west coast of Canada is BC Ferries. BC Ferries operates one of the world's largest ferry systems. In 2003, BC Ferries was transformed from a crown corporation into an independent commercial organization known as BC Ferry Services, Inc., in which the Government of British Columbia holds a single issued voting share under the Company Act. The new BC Ferries operates 38 vessels on 25 routes and to 48 destinations, and employs 2,800 full-time staff and 1,700 casual staff. Traffic in 2002 and 2003 totaled 21.6 million passengers and 8.3 million vehicles. Statistics on cargo carried on BC Ferries are not captured by Statistics Canada's marine surveys. Statistics Canada records this cargo as vehicular movements because it is ro-ro loaded.

According to BC Ferry Services, Inc.'s 2002/03 Annual Report, the corporation recorded operating revenues of $490 million and operating expenses of $463 million in 2002 and 2003, plus a $53.1 million loss on disposal for write down of the fast ferries sale. Operating revenue included a subsidy of $23.4 million from the Federal-provincial governments, which is provided under the terms of an agreement signed in 1977. The Province also provided a subsidy of $74.2 million from provincial fuel tax revenues.

2.3 U.S. Domestic Shortsea Shipping Services

Many carriers operate U.S. domestic shortsea shipping services in the study region. The majority of these are tug and barge operators. CS compiled an extensive list of tug and barge operators in the study region and profiled the majority of them as summarized in Table 2.4.

2.4 Ports Infrastructure

This section presents the inventory of port facilities and significant port infrastructure that supports shortsea shipping and that could be used for cross border shortsea shipping on the West Coast of North America.

2.4.1 Canadian West Coast Ports

The 2003-2004 British Columbia Ports Handbook published by the Chamber of Shipping of British Columbia lists 23 ports on the BC coast. Of these 23 ports, six are classified as Canadian Port Authorities under the 1998 Canada Marine Act. These are:

1. Fraser River Port Authority;
2. Nanaimo Port Authority;

Table 2.4 Tug and Barge Operators Washington and Oregon

Sr No.	Operator Name	Type of Operation	Area of Operation	No. of Barges	No. of Tugs
1	Tidewater Barge Lines, Inc.	Grain, refined petroleum products, wood and wood products, both liquid and dry fertilizers, and containers	Willamette, Columbia, and Snake Rivers	128	18
2	Crowley Marine Services, Inc.	General freight and towing	Puget Sound, Alaska; Hawaii; and worldwide	56	68
3	General Construction Co.	Construction equipments, supply and materials	Tacoma, Seattle, Puget Sound, WA; and San Francisco Bay Area	42	NA
4	Manson Construction Co.	General cargo, construction materials and dredge spoils	West coast (USA) and tributaries	38	3
5	Foss Maritime Company	Diesel fuel, grain, logs, wood chips, bunker fuel, containerized cargo, pulp, paper, ammonia, and caustic soda	Washington and Alaska; Puget Sound and Pacific Coast; Ports in BC	25	30
6	Zidell, Inc.	Charters to others	Columbia, Willamette rivers and tributaries; Puget Sound; Alaska; Pacific Coastal and Hawaii areas	25	NA
7	Sause Bros.	Lumber, plywood, newsprint, poles, salt	BC, Puget Sound, Columbia river, Coos Bay, Eureka, San Francisco Bay, Los Angeles/Long Beach, San Diego, Hawaiian Islands, South Pacific	21	20
8	Shaver Transportation Company	Grain and gravel	Columbia, Snake and Willamette rivers, Intercoastal	17	9
9	Ross Island Sand And Gravel Company	Sand and gravel	Portland and Astoria, OR, Columbia and Willamette rivers and Oregon slough	15	NA
10	Bernert Barge Lines	Sawdust, chips, logs, gravel, and containers	Columbia River – Dalles to Longview; Boardman to Longview; Lewiston, ID to Longview; Dalles to Camas; The Dalles to Longview; Boardman to Camas; and Columbia River – Wauna to Camas	14	4

Table 2.4 Tug and Barge Operators Washington and Oregon (continued)

Sr No.	Operator Name	Type of Operation	Area of Operation	No. of Barges	No. of Tugs
11	Olympic Tug & Barge	Oil, sand and gravel, containers, wood chips, clay, limestone, shale, pet coke, coal, construction equipment, construction materials and supplies	All Puget Sound ports, major BC ports, Columbia River up to Portland/Vancouver	13	10
12	Sea Coast Towing	Towage of refined petroleum barges	Puget Sound, WA; on the Pacific Coast of North America and inside waters of BC and Alaska; also western rivers to California	13	15
13	Brusco Tug & Barge, Inc.	Towing, log rafts, sand, dredge spoils, and chip barging	Columbia River – Wauna to Vancouver; Willamette river; and Pacific Ocean from BC to Eureka, CA	12	25
14	Bernert, Joe Towing Company, Inc.	Sand and gravel, construction materials	Willamette and Columbia Rivers	12	4
15	Northland Vessel Leasing Co.	General cargo	Puget Sound, S.E. Alaska, Cook Inlet and Western Alaska	11	6
16	Wards Cove Packing Co., Inc.	Misc cannery supplies	Seattle, WA to Northern Alaska, Bristol Bay and points in Alaska	8 + 15 (gen cargo)	1
17	Alaska Marine Lines, Inc.	Containerized freight (all kinds)	Seattle, WA to southeast Alaska	7	0
18	Krs Partnership	Construction materials and equipments	Seattle, WA to Alaska	6	0
19	American Construction Co., Inc.	Dredging and construction materials	Puget Sound, transit between Puget Sound and Anchorage, AK	6	3
20	Schnitzer Leasing, Inc.	Charters to others	Columbia and Willamette Rivers	5	0
21	Island Tug & Barge Co.	Sand and gravel, marine construction equipment, scrap steel, bulk dry cement, and containerized cargo	Eagle Harbor, Elliot Bay, Puget Sound and Lake Washington; Victoria and Fraser River (Canada); Coastal – Mexico to Alaska	5	8
22	Northwest Aggregates Co.	Sand and gravel	Duwamish and West Duwamish Waterways, Hylebos Waterway and Kenmore; Multnomah, Columbia and Wolamic; Coastwise Alaska, Washington, Oregon, California and BC	5	0

Table 2.4 Tug and Barge Operators Washington and Oregon (continued)

Sr No.	Operator Name	Type of Operation	Area of Operation	No. of Barges	No. of Tugs
23	Salmon Bay Barge Line, Inc.	Cement, molasses and lignosulphanate	Seattle, WA; the Puget Sound and tributaries thereof	5	3
24	Sds Lumber Company	Chips, sawdust, logs and rock	Columbia River and Snake River between Bingen, WA and Wauna, OR – Boardman to Astoria	5	6
25	Victory Marine, Inc.	U.S. Military cargoes and grains	U.S. west coast; U.S. gulf and foreign	5	5
26	Western Pioneer, Inc.	Northbound to Alaska: groceries, salt, building materials, seafood processing equipment, seafood packaging material, beer & liquor, household goods Southbound from Alaska: frozen cod, Pollock, salmon, crab, halibut	Southeast Alaska: Gustavus, Tenakee, Pelican Kodiak, Ouzinki, Port Lions, Port Bailey, Larsen Bay Western Alaska: Sand Point, King Cove, Akutan, Dutch Harbor	5 – Self Propld ships	1
27	Umpqua River Navigation Co.	Sand, gravel, quarry rock and dredging	Umpqua to Pacific Coast	4	0
28	Calista, L.L.C.	NA	NA	4	2
29	Salmon Bay Sand & Gravel Co., Inc.	Sand and gravel	Dupont/Steilacoom to Seattle	5	4
30	Bainbridge Marine Serv., Inc.	General cargo	Puget Sound Area	1	1
31	Dunlap Towing Co.	Logs, wood chips, containerized freight, other break bulk freight	Chemainus, Nanaimo, BC; Seattle, Everett, Olympia, Tacoma, Port Angeles, WA; Alaska and Hawaii	8	NA
32	J T C, Inc.	Sand and gravel	Inland waters of Puget Sound area	3	2
33	Kiewit Pacific Co.	Rock and gravel	Columbia River, Puget Sound, Hawaiian Islands, West Coast and Alaska	3	0
34	M. Cutter Company	Towing and construction materials	Columbia River – Astoria, OR; Pasco, WA; Willamette River – Port of Portland, OR; Snake River (Mouth) Lower Granite Dam	3	1
35	Mark Marine Service, Inc.	Marine pile driving and tow boating	Inland waters of Columbia, Snake, and Willamette Rivers	3	4
36	Pacific Hawaiian Lines, Inc.	Cement and Containers	U.S. West Coast, Alaska, U.S. East Coast	1 – Single hull	0

Table 2.4 Tug and Barge Operators Washington and Oregon (continued)

Sr No.	Operator Name	Type of Operation	Area of Operation	No. of Barges	No. of Tugs
37	Western Towboat Company	Sand, gravel, crushed rock, coal	Victoria, Blubber Bay, Treat Creek, Campbell River, BC; Seattle, Tacoma, Everett, Dupont, Olympia, WA; Portland, OR	5	18
38	Knik Construction Co., Inc.	Construction equipment, gravel, and asphalt oil	Kuskokwim River, Bering Sea, Kotzebue Sound, southeast Alaska, Puget Sound and Prince William Sound	2	0
39	Crowley Launch & Tugboat Co.	General cargo	Alaska, Puget Sound, west coast to California	2	0
40	Ace Rock, L. L. C.	Construction aggregates	Puget Sound and Snohomish River	1	0
41	Arrow Launch Service, Inc.	Passengers and packaged goods	Anacortes, WA/Port Angeles, WA ; Seattle, WA/Tacoma, WA	2 + 7 (OSV)	0
42	Bering Marine Corp.	Contractor's supplies and equipment	Bering sea/Central and southeast Alaska/ Puget sound to Kotzebue sound	2	2
43	Bernert, William	Gravel	Multnomah channel Columbia river, Santosh canal to blue lake mile 119; Santosh canal to Kittridge Willamette river mile 9	2	3
44	Hendren Towboat Co., Inc.	Towing	Columbia river and tributaries; Willamette river, Multinomah channel	2	0
45	Marine Equipment Leasing Co.	Charters to others	Columbia/Snake rivers	2	0
46	Pacific Trader, Llc	General dry cargo (containers, lumber and vehicles)	Seattle to Alaska/ Hawaii	2	0
47	Western Marine Construction	Construction equipment; dredged materials and rock to/ from construction projects	All Washington and Alaska waters and ports	2	1
48	Port Gardner Tug & Barge	Contract towing	Puget Sound	1	0
49	Alaska General Seafood	Seafood	Puget sound to Alaska	1	0

Table 2.4 Tug and Barge Operators Washington and Oregon (continued)

Sr No.	Operator Name	Type of Operation	Area of Operation	No. of Barges	No. of Tugs
50	Cadman, Inc.	Portland cement and construction aggregates	Delta, BC to the Frazier River; through Puget Sound in WA; up the Duwamish River in Seattle; and off-loads at Cadman's Dock in Seattle on the Duwamish River	1	0
51	Carlson, William H.	Logs, rock, modular homes and equipment	Puget Sound, WA; Waldron Island and Tacoma	1	0
52	Coastal Transportation, Inc.	Frozen fish and fishery supplies	Hiram Chittenden Locks, ship canal Seattle – WA; Chignik, Sand Point, King Cove, False Pass, Dutch Harbor, Akutan, Unalaska, Captains Bay, St. Paul Island, St. George Island, Port Moller, Togiak, AK; Seattle and Bellingham; Pribilof Islands	1 + 6 (general cargo)	0
53	Dahl-Ferguson Partnership	Towing	Puget Sound area, Hawaii, Alaska and Canada	0	2
54	Knutson Towboat Co.	Towing	Coos Bay, Coos River, and Isthmus Slough	0	9
55	Manke Family Resources, L. P.	Logs, Veneer and boom sticks	Inland waters of Alaska, Washington and Canada	1	0
56	Mar Com, Inc.	Company equipments	Willamette River – Oregon City to mouth Columbia River, Vancouver to Astoria	1	1
57	Ocean Marine Services, Inc.	Freight, oil field supplies and barge fuel	Nikiski, AK to oil and gas platforms; waters in and around Cook Inlet, AK	1	0
58	Pacific Coast Maritime, Inc.	Leases to other contractors	Domestic Alaska and California	1	2
59	Pacific Marine Leasing, Inc.	Containerized general cargo	U.S. East Coast	1	0
60	Pacific Northwest Bulkhead, Inc.	Building materials	Puget Sound area	1	0
61	Shamrock Marine Leasing	General break bulk cargo	U.S. West Coast; Longview, WA to Alaska and California	1	0
62	Tilbury Cement			1	0
63	Washington State Ferries	Passengers and vehicles	Puget Sound ports with ferry connections	29	0

Source: Combination of U.S. Army Corps of Engineers, interviews, Internet searches, and past studies.

3. North Fraser Port Authority;
4. Port Alberni Port Authority;
5. Prince Rupert Port Authority; and
6. Vancouver Port Authority.

Canadian Port Authorities are those ports designated as such by the Canada Marine Act by having the following attributes:

- Financially self-sufficient and likely to remain so;
- Of strategic significance to Canada's trade;
- Linked to a major rail line or major highway infrastructure; and
- Having diversified trade.

The following provides a brief description of each Canada Port Authority port in BC as provided by the Ports Handbook, along with a list of terminals and supplementary information.

Fraser River Port

Fraser River Port is comprised of the lower portion of the Fraser River, where it flows into the Pacific Ocean. The area covers 100 km of the main arm of the Fraser River and provides some 227 km of shoreline. The nine municipalities that border the port are Coquitlam, Delta, Langley, Maple Ridge, New Westminster, Pitt Meadows, Port Coquitlam, Richmond, and Surrey.

Terminal:

- Annacis Auto Terminals Ltd. (autos);
- Richmond Properties (Modallink & Coast 2000 intermodal terminal);
- Fraser Surrey Docks Ltd. (containers and break-bulk);
- Fraser Wharves Ltd. (autos);
- Seaspan Coastal Intermodal Company (barge ferry service to Vancouver Island); and
- Lehigh Northwest Cement Limited (formerly Tilbury Cement Ltd.).

The new Coast 2000 terminal, Seaspan Coastal Intermodal facility, and Fraser Surrey Docks are major terminals that participate currently in shortsea shipping. Fraser Surrey Docks is also the Port's main deep sea container terminal. This facility is currently undergoing a major expansion to increase container capacity, which has grown from about 50,000 TEUs per acre in 2001 to 252,000 TEU per acre in 2003. These improvements include new ship-to-shore gantry cranes and a new near dock intermodal yard. Capacity is expected to increase to about 450,000 TEU per acre.

The Coast 2000 terminal just began receiving barges of newsprint and other products from BC coastal mills and replaces the former Fraser River Terminals facility on the North Fraser. A 125-acre site adjacent the terminal has been designated by the Port Authority for a deep sea terminal.

In January 2003, the Major Commercial Transportation System (MCTS) study prepared by the Waterborne Technical Committee of the Greater Vancouver Gateway Council identified eight waterborne nodes on the Fraser River as having development potential for goods or passenger movement along with road and rail linkages. The MCTS suggests that development of these sites, wherever possible, for coastal services and waterborne distribution could be a beneficial addition to the Lower Mainland's goods movement system. The Fraser River Port Authority has eagerly promoted shortsea shipping and sees the Fraser River Port as a likely port for such activity. However, major concerns include local land use and tax polices that inhibit development potential of available sites that could serve as shortsea shipping load points. Table 2.5 lists sites on the Fraser River as identified by the MCTS with development potential that may be suitable for shortsea shipping oriented terminals along with an assessment of development issues.

North Fraser Harbour

The North Fraser is a unique shallow draft (up to 15 feet) industrial and commercial waterway serving the requirements of the many water-oriented industries that line its banks. North Fraser encompasses the waters of North and Middle Arms and comprises some 24 km of tidal waterway contiguous with the municipal boundaries of Vancouver, Burnaby, Richmond, and a minor portion of New Westminster. More than 81 businesses line the banks of the Port generating about 7,000 direct jobs.

Despite there being no public deep sea facilities, and being primarily a tug and barge port, there are a numerous waterfront facilities in the Port, including:

- Fraser River Terminals (now closed);
- North Arm Transportation (tug/barge operator);
- Doman Forest Products;
- City Transfer (commercial truck transport terminal with barge ramp); and
- Numerous forestry, seafood, and aggregate/cement facilities.

The MCTS study identified three waterborne nodes within North Fraser Port, including Mitchell Island which is crossed by Knight Street, one of the BC Lower Mainlands major container truck routes, the Big Bend area in Burnaby, and the former Eburne mill site, which the Port plans to develop into a barge facility. The Eburne site currently has a barge ramp which has been periodically used to transport some commercial truck traffic.

Table 2.5 MCTS – Waterborne Nodes – Potentials for Development

Nodes	Description Ownership Environmental and Social considerations	Development Potential Goods/Cargo	Development Potential – Passenger Terminal	Node serviced by Road? Rail? Combination	Other Considerations	Stakeholders Organizations Involved in Development
1. Fraser/ Richmond Properties – Coast 2000 Terminal	680-acre former landfill site. Land administered by the Fraser River Port Authority for marine and Industrial uses. Environmental issues in hand.	Development underway. Plans include a coastal and deep sea terminal, as well as serviced backup land for distribution-related industry.	No passenger capability.	Road link to East-West Richmond Connector. CN Rail is on site now.	Land is available for lease from FRPA, but no land sales available.	Fraser River Port Authority, CN Rail City of Richmond
2. Tilbury Island	65-acre waterfront site. Owned by Stuart Belkin (Chatterton) Washington Group (Seaspan) Smit International (Riv Tow site) Environmental considerations on Chatterton site only.	Seaspan & Riv Tow sites are presently used for waterborne distribution. Expansion potential is at Chatterton.	Passenger service potential.	River Road connection is poor. Rail Service via CNR & BNSF	Old deep sea bulk loading facility exists at Chatterton site.	Land owners Railways Corporation of Delta.
3. Fraser Surrey Area	Fraser River Port Authority. Zoned industrial, environmental issues in hand.	Deep sea Terminal (Fraser Surrey Docks) in place, as well as 80 acres of distribution facilities. 20 acres waterfront optioned for water – dependant cargo distribution.	No passenger capability.	Reasonable road access and on the future South Fraser Perimeter Road. Served by CNR, CPR, BNSF, & SRY.	Adjacent lands owned by the Province of BC, 150 acres zoned industrial.	FRPA, City of Surrey Province of BC Southern Railway of BC CN Rail BNSF

Table 2.5 MCTS – Waterborne Nodes – Potentials for Development (continued)

Nodes	Description Ownership Environmental and Social considerations	Development Potential Goods/Cargo	Development Potential – Passenger Terminal	Node serviced by Road? Rail? Combination	Other Considerations	Stakeholders Organizations Involved in Development
4. Brunette Creek	The majority of the site is privately owned, with some GVRD ownership. Environmentally sensitive areas need to be considered.	Development potential requires further investigation.	Passenger capability requires further investigation.	Road access has network bottlenecks, which create significant access constraints in some areas. Some properties are only accessible via North Road that presently has very low traffic. Further information would be required on port throughput and traffic generation from cargo. Partial rail access: may not be active (would need to be confirmed).	Soil contamination at Domtar site.	Landowners; environmental groups, including stream keeper groups City of Coquitlam GVRD FREMP CP Rail
5. Port Kells Area	Approx. 20 acres on triangular site bordered by Fraser River, Triggs Road, and 104 Ave. Properties owned by Teal Cedar Products and Columbia Shake & Shingle. Site is mostly coded "green."	Eroded foreshore and excavated log pocket could provide "end on" moorage (i.e., ferry style) for limited impact on navigation.	Potential water based passenger service fed by #1 freeway or future rail passengers from a CN like "West Coast Express."	Close access to 176th Street that leads to #1 Freeway. Close access to CN mainline. Very close to the proposed South Fraser Perimeter Road.	Adjacent lands are mill and/or wood fiber oriented. Could be available if pressure on BC forest industry continues. Currently processing high-value cedar products.	Land owners City of Surrey CN Railway

Table 2.5 MCTS – Waterborne Nodes – Potentials for Development (continued)

Nodes	Description Ownership Environmental and Social considerations	Development Potential Goods/Cargo	Development Potential – Passenger Terminal	Node serviced by Road? Rail? Combination	Other Considerations	Stakeholders Organizations Involved in Development
6. Pitt Meadows Airport	Owned by the Pitt Meadows Airport Society, Municipality of Pitt Meadows and Maple Ridge. Much of the land is contained within the ALR. Land is located within the floodplain, so development costs could be high.	Airport Society motivated toward industrial development. Good deepwater site.	Existing air passenger terminal. Potential links to rail and water passenger service.	Limited road access at present, but proposed Fraser River Crossing will be nearby. CP Railway is close by as is CPR Intermodal Yard.	Difficult to rezone from current ALR designation. Limited availability of inexpensive fill material.	Pitt Meadows Airport Society Cities of Pitt Meadows and Maple Ridge CP Rail
7. Burnaby Big Bend	City of Burnaby. Severe environmental remediation on going		None.	Serviced by road and CN Rail.	Movie studio inquiries.	
8. Mitchell Island		Available space to develop.	None.	Serviced by road and water.	None.	
9. Eburne Site	Owned by NFPA. No environmental considerations.	Potential for container terminal.	Potential for passenger terminal.	Serviced by road and CP Rail.	None.	
10. Fraser/Delta Area	Several small parcels owned by a number of owners. Fraser River Port Authority owns 15 non-contiguous parcels equal to approx. 50 acres.	Potential Industrial site, CFS/CY yard. No direct access to water as River Road runs between river and property.	Possible passenger terminal, but not if River Road continues in its present location.	Serviced by CN/ BNSF.	Site needs to be consolidated. This was a Fraser River Port Authority goal prior to the enactment of the Canada Marine Act.	Fraser River Port Authority The Corporation of Delta Various small lot owners

Table 2.5 MCTS – Waterborne Nodes – Potentials for Development (continued)

Nodes	Description Ownership Environmental and Social considerations	Development Potential Goods/Cargo	Development Potential – Passenger Terminal	Node serviced by Road? Rail? Combination	Other Considerations	Stakeholders Organizations Involved in Development
11. Mission Industrial Foreshore	Mission Raceway and adjacent industrial lands. Ownership not yet determined. Flat, developable land on river-front. Land is in the floodplain and floodproofing requirements unknown. Race track may have to be relocated. River in area of productive fish habitat.	Good access to river for all types of cargo.	Currently adjacent to the eastern terminus of the West Coast Express. Could this be an alternative passenger mode?	CPR mainline adjacent, CNR can cross from south shore via CP Bridge. Lougheed Highway near by, good access to the Mission Bridge, #1 Freeway and U.S. Border.	Much of the site is Mission Raceway. This is a positive, in that it holds the lands, but by the time conversion takes place there may be little opportunity to relocate the raceway.	City of Mission CP Rail

A recent precedent was set at the Eburne site. The Port Authority recently sold 17 acres of the site to Translink to build a transit center. When the Port Authority applied to the City of Vancouver to subdivide the site, a requirement was triggered to provide a portion of the land for a park. The City wanted a waterfront park and walkway that the Port considered incompatible with proposed marine and industrial uses of the site. In lieu of providing park space, the Port eventually completed the sale to Translink who in turn made a payment of $1,041,250 to the City in consideration of parkland.

Currently, border regulations are seen by the Port Authority as a hindrance to future cross border shortsea shipping.

Port of Vancouver

The Port of Vancouver is a safe, year-round, all weather, deep-water port, with 276 km of coastline under its navigational jurisdiction. Harbour limits include Burrard Inlet, with Indian Arm and Port Moody, False Creek and English Bay and all other tidal waters lying east of a line drawn from Point Atkinson light south to the west point of Point Grey. It also includes a narrow, coastal strip in the Strait of Georgia in the approach to Fraser River, Sturgeon Bank, Roberts Bank and Boundary Bay.

Discussions with the Port of Vancouver suggest that they feel cross border shortsea shipping is more appropriate for the river ports than it would be for the Port of Vancouver.

Terminals:

- Agricore United Terminal;
- Ballantyne Pier;
- Berry Point Site;
- Canada Place (Cruise Ship Terminal);
- Cascadia Terminal;
- Nexen Chemicals Canada Limited Partnership;
- Centerm (including Ballantyne Pier);
- Burlington Northern-Santa Fe;
- Deltaport Container Terminal;
- Dow Chemical Terminal;
- Fibreco;
- IOCO Terminal;
- JRI Terminal – James Richardson International;
- Lynnterm East Gate;
- Lynnterm West Gate;

- Main Street Dock;
- Neptune Bulk Terminals;
- Pacific Coast Terminals Co. Ltd.;
- Petrocanada Terminal;
- Roger Sugar Dock;
- Saskatchewan Wheat Pool;
- Shellburn Lubes Terminal & Warehouse;
- Stanovan Terminal;
- Terasen-Westridge Marine Terminal;
- Vancouver Wharves;
- Vanterm;
- West Coast Reduction (via Vanterm Terminal); and
- Westshore Terminals Ltd.

The Port of Vancouver is Canada's largest port in which over 66.7 million tons of cargo were handled in 2003, down from a record of 76.6 million tons in 2000. The 2003 tonnage includes 1.54 million TEU of container traffic, a new annual record.

Terminals that are currently used for shortsea shipping are the BNSF dock used to transport rail cars from Vancouver to various pulp and paper mills on the coast. The rail cars generally carry liquids used in the pulp and paper production process. The Nexen terminal receives salt shipments from Mexico. In addition, there are a number of terminals that handle bulk liquids/petroleum products that are shipped up and down the coast.

The Port has in the past reviewed and is currently revisiting shortsea shipping on a domestic basis for the movement of empty containers between Lower Mainland points. Cost has often been found to be the main impediment to implementation. The Port would also like to encourage cross border shortsea shipping using existing deep sea services that call its three container terminals (Centerm, Deltaport, and Vanterm), but again high costs make the services non-competitive vs. rail and truck.

With its growing container trade, the Port is pursuing a significant expansion in its container handling capacity, which is now near saturation, with expansions at each of its three existing container terminals and a proposed new fourth terminal at Roberts Bank. The Port is forecasting that by 2020 BC ports have the opportunity to handle an estimated 6.0 million TEU of container traffic.

Prince Rupert

Located at 54 degrees north on Canada's west coast, the Port of Prince Rupert is the deepest natural harbor in North America, and ice-free all year. The Port covers all waters of

Prince Rupert Harbour, including Ridley Island, Tuck Inlet, Morse Basin, Wainwright Basin, Porpoise Harbour, and Venn Passage.

Terminals:

- Atlin Terminal;
- Fairview Terminal;
- Prince Rupert Grain;
- Ridley Terminal;
- Skeena Cellulose Pulpmill (Watson Island, Porpoise Harbour);
- Ocean Dock;
- Cruise Ship Lightering Facility;
- South Kaien Island/Ridley Island Sites; and
- Westview Terminal.

The Port of Prince Rupert has experienced substantial declines in cargo volumes over the past 10 years. In 1992, the Port was handling about 14 million tons of cargo, while in 2002 that volume had reduced to just over 4 million tons. Significant declines were seen in exports of coal, forest products, and grain.

Current cross border services that are primarily linked to transport to and from Alaska are not expected to change significantly in the near-term.

Nanaimo

Nanaimo is the major commercial port on Vancouver Island located on the east coast 36 km west of Vancouver. The Port of Nanaimo encompasses the waters of Departure Bay, False Narrows, Dodd Narrows, Northumberland Channel, the north end of Newcastle Channel, and the Nanaimo River Estuary.

Terminals:

- Nanaimo Assembly Wharf;
- Duke Point Deep Sea Terminal;
- Duke Point multi-use area; and
- Visiting vessel pier-cruise ship facility.

In 2002, the Port handled 2.0 million tons of cargo, which continued a steady decline over the preceding five years. Currently, aside from BC Ferries at Departure Bay and Duke Point, the Port's main shortsea shipping service is the Seaspan Coastal Intermodal barge service that calls Nanaimo from Tilbury.

As noted earlier, within the next few months, a new cross border shortsea shipping service is expected to commence from Nanaimo to one of Seattle's deep sea container terminals. The service will be for a specific shipper to transport forest products by container from Vancouver Island to Seattle. The service is expected to use the Port's 40-ton container crane, which it acquired from the Vancouver Port Authority's Centerm terminal. Alternatively, the container barge may have its own loading capabilities. The service will use ILWU labor, and is expected to be cost competitive. To date, the Port is not aware of any factors, such as security or customs regulations, that have caused a major hindrance to the proposed service noting that the Duke Point Deep Sea Terminal will meet ISPS requirements as mandated.

Also, in April, Van Al Barge Services is planning to commence a new trailer barge service from Nanaimo to Fraser Port.

Port Alberni

Port Alberni is located on the west coast of Vancouver Island 50 km west of Parksville and 121 km northwest of Victoria on Highway 4. The Port covers all the waters of Alberni Inlet, extending from a limit of 2.4 km up the Somass River for a distance of 38.6 km south to Congreve Island in Trevor Channel and Pill Point in Junction Passage.

Terminal:

- Port Alberni Terminals.

Port Alberni has three deep sea berths that in the past were used to transport forest products to the U.S. as a cross border shortsea shipping service. About 15 to 20 years ago, covered barges with paper products departed Port Alberni for Honolulu, Long Beach, and San Diego. Until about seven or eight years ago, paper and pulp were shipped to the Puget Sound by barge. All of this traffic is now transported by truck to the U.S. via BC Ferries or Seaspan Coastal Intermodal to the BC Lower Mainland. Today, instead of finished forest products, a larger tonnage is raw logs being transported to the U.S. from the Port Alberni area.

The Port attributes this shift in mode to several factors, including reduced volumes making marine transport less viable economically; the expense, including insurance, of a marine voyage in the rougher waters of the west side of Vancouver Island; and that shippers prefer to put their products in containers. "Coded" paper has replaced pulp or newsprint production at the local mill, and for this product containers offer better protection from damage.

Victoria

Victoria is located at the southern tip of Vancouver Island. Victoria Harbour consists of three parts: the Outer Harbour used by deep-sea vessels; the Inner Harbour, which is extensively used by coastal and industrial traffic; and the Upper Harbour used by coastal

and industrial traffic. The Authority's jurisdiction includes the public facilities at Wharf Street, Fishermen's Wharf, and Government Street.

Terminals:

- Ogden Point Docks;
- Ship Point Wharf; and
- Belleville Street Pier.

Victoria is not a Canadian Port Authority, but is administered by three entities depending on which area of the Port is under consideration. These entities include the recently formed Greater Victoria Harbour Authority, the Provincial Capital Commission (PCC), and Transport Canada. The Belleville Street Pier where the MV Coho ferry calls between Victoria and Port Angeles, WA is under the jurisdiction of the PCC.

2.4.2 Washington State Ports

A survey of selected U.S. ports was conducted to determine the resources available and constraints/opportunities for shortsea shipping between Puget Sound and the greater Vancouver area. The selected ports were those providing any significant cargo services at present. Port operators were asked about their facilities and tenants, while the shipping companies were asked about the services they provided and the facilities that they require to support their cargo transport operations. In addition, some follow-up questions regarding the perceptions of shortsea shipping as an opportunity were answered by several of the survey participants.

The port operator's survey questionnaire respondents were:

- Port of Seattle (http://www.portseattle.org);
- Port of Tacoma (http://www.portoftacoma.com);
- Port of Olympia (http://portolympia.com);
- Port of Everett (http://www.portofeverett.com); and
- Port of Bellingham (http://www.portofbellingham.com).

Port of Seattle

The Port of Seattle sees a container throughput of approximately 1.4 million TEU a year. The Port has facilities for ro-ro cargo; bulk grain; and breakbulk (consisting mainly of autos, grain, molasses and petroleum) as well. Salvage/rescue services and tug/towing services are also present at the port.

Tug and barge operators at the Port include Crowley, Foss, Northland, Alaska Marine Lines, Samson Tug/Barge, and Boyer Alaska Barge Lines. Container carriers that call at

the Port include Hanjin, APL, COSCO, Westwood, Matson, and Mitsui (among others). These carriers provide regular, scheduled cargo transport services.

The types of vessels that operate out of the Port include container ships, bulk ships, ro-ro vessels, deck barges, and tank barges.

The terminal/facility equipment available to support the carriers' cargo transport operations include:

- 23 cranes (including three Super post-Panamax cranes and 11 other post-Panamax cranes);
- Dockside mobile cranes;
- Approximately 8,000 feet of moorage;
- Approximately 233 acres of space;
- Rail barge ramps;
- Ro-ro ramps; and
- Berth depths of 50 feet (MLLW).

A representative of the Port of Seattle indicated that he thinks that shortsea shipping is a very good opportunity for an existing carrier with excess capacity. Reliable and frequent service, coupled with an efficient operation, cooperation from the governments on customs and agricultural inspection assistance, and perhaps some subsidies from the governments during the start of operations, would be required to make it cost-competitive and create a market for the service.

Port of Tacoma

The Port of Tacoma handled approximately 1.7 million TEUs in 2003. The Port has facilities for ro-ro cargo, bulk grain, and breakbulk (including autos and grain) as well.

Container carriers that call at the Port include Evergreen, Hyundai, "K" Line, Yan Ming, APL, and Maersk Sealand. These carriers provide regular, scheduled cargo transport services.

The types of vessels that operate out of the Port include container ships, bulk ships, ro-ro vessels, and lo-lo vessels.

The terminal/facility equipment available to support the carriers cargo transport operations include:

- 17 container cranes;
- 17 ship berths (berth depths of 48 to 50 feet (MLLW));
- 33 straddle carriers; and
- Three on-dock intermodal rail facilities for quick transfer of containers between ship and rail.

In follow-up discussions after the survey response, the Port of Tacoma mentioned that some of the carriers in the Port had organized a barge service to/from the Fraser Port that operated less than a year in each case. The problem in each instance was a lack of demand for this service. The lack of demand for this service may be attributable to the fact that most major carriers now stop in Vancouver, as well as in Puget Sound. In the early 1990s, the Port of Tacoma performed a study for a similar idea (using barges between Port of Tacoma and BC), but labor costs killed the project.

It was also mentioned that the Port strongly supports the Jones Act (in support of some of their carrier tenants, Horizon and Tote), though the representative was not sure if this is an official position of the Port.

Port of Olympia

The Port of Olympia's 60-acre terminal consists of three modern, deepwater berths, on-dock rail, a Customs bonded warehouse, and a complete container yard. The port does not have a regular container carrier calling and derives its business from charter vessels and tramp steamers.

The commodities handled in the Port of Olympia include:

- 58 million board ft logs;
- 3,500 MT steel;
- 65,000 MT aluminum;
- 12 million board ft lumber;
- 4,500 MT garnet; and
- 7,000 MT cullet

The types of vessels that can operate out of the Port include container ships, bulk ships, ro-ro vessels, lo-lo vessels, and deck barges.

The terminal/facility equipment available to support the carriers cargo transport operations include:

- Two 40-ton gantry cranes;
- Three ship berths (berth depths of 40 feet (MLLW));
- On-site container, bulk, and breakbulk yard handling equipment, including top-picks, yard tractors, yard chassis, front-end bucket loaders, forklifts, and log handlers;
- 60-acre terminal; and
- On-dock rail service.

Additional information provided by a representative of the Port of Olympia described a barge service operated by the Port in partnership with the shippers from various BC ports to the Port of Olympia for distribution of lumber products to U.S. markets. The service has been running for approximately a year and a half on a spot basis based on shippers' demands. Discussions indicated that the Port is very interested in the opportunity for shortsea shipping and expanding their service to other products (including backhauling of containers to BC), and eventually to regularly scheduled service.

Port of Bellingham

The Port of Bellingham provides facilities for container-on-barge and bulk/breakbulk transport services. Other services provided at the Port include salvage/rescue services and tug/towing services. Less than 10 percent of the Port's business are made up of cargo transport operations.

In the last 24 months, there have been few commodities handled at the Port. No carriers call at the Port at this time. Foss Maritime operates tugs in the Port.

The terminal/facility equipment available to support the carriers cargo transport operations include:

- Rail barge load/unload facilities;
- Liquid load/unload facilities;
- Warehouse space; and
- Direct rail access to BNSF line.

Additional correspondence with the Port of Bellingham indicated that shortsea shipping is the best opportunity for the Port of Bellingham to obtain/retain shipping business. The Port of Bellingham is in a location that allows them to provide the "connectivity" for shipping product between Canada and the U.S. market. The connectivity of rail/truck/marine service is how the Port would encourage shippers to use shortsea shipping as a means of optimizing time/money by using water instead of highways.

The Port is currently working with two Canadian lumber companies interested in trucking and barging product to the shipping terminal and then shipping out to Japan by vessel and by rail to the U.S. market. The one product would come through a "shortsea shipping" concept by barge from Vancouver Island. This is the type of operation that would make sense logistically. Going by water rather than truck on these two projects would mean 75 trucks a day off the highway.

Port of Everett

The Port of Everret's 100-acre terminal consists of eight berths and handles approximately 1.0 million tons of cargo a year. The Port does not have a regular container carrier calling and derives its business from charter vessels and tramp steamers. Tug operators are also based at the Port.

The commodities handled in the Port of Everett include:

- Logs;
- Lumber;
- Agricultural products;
- Bulk alumina ore; and
- Specialized aircraft parts.

The types of vessels that operate out of the Port include deck barges and tramp steamers.

The terminal/facility equipment available to support the carriers cargo transport operations include:

- Rail access;
- Eight ship berths (berth depths of 39 to 40 feet (MLLW));
- On-dock rail service;
- Cold storage facility; and
- Gottwald 280E 100-ton mobile crane.

3.0 Factors Affecting Cross Border Short Sea Shipping

3.0 Factors Affecting Cross Border Shortsea Shipping

The second objective of the study was to assess factors that will affect the ability of shortsea shipping operators to offer successful services for cross border transportation.

Shortsea shipping has emerged as a strategy that may mitigate the effects of congestion at land border crossing by creating the opportunity to divert cargo to a non-highway mode. It could also reduce emissions, as marine transportation generally produces lower emissions per ton-mile than does trucking. Where containers can be moved economically and reliably by shortsea services, the services may reduce the need for parallel truck or rail moves, and help relieve highway and rail congestion. In the Cascade Gateway region, there is also a considerable amount of bulk product that moves by truck across the border. These commodities are clearly potential markets for cross border shortsea shipping.

While the concept of shortsea shipping has received a significant amount of attention over the past several years, there are several key challenges affecting shortsea shipping operations in the region. In addition to the challenges affecting shortsea shipping in general, there are challenges that are unique to cross-border movements by shortsea. The following sections outline the general challenges associated with shortsea shipping as well as those specific to cross-border operations.

3.1 Overview of the Issues

In this section of the report, we provide a general discussion of the factors that affect shortsea shipping in general and cross border shortsea shipping specifically. Much of the information contained in the general discussion was obtained from published sources and documentation as well as through interviews with government and port officials. In addition, we have provided summary comments of carriers with respect to how these factors affect operations from their perspective. This section of the report does not attempt to evaluate the extent to which these factors are major or minor obstacles nor does it suggest solutions. This analysis is provided in Section 4.0.

The factors that were evaluated have been classified in the following categories:

- Trade and customs regulation,
- Security issues,

- Port infrastructure,
- Vessel infrastructure and technology,
- Operational issues,
- Institutional issues, and
- Cost.

The following sections describe each issue in detail.

3.2 Trade and Customs Regulation

U.S. and Canada Advance Manifest Rule

U.S. Customs and Border Protection (CBP), through the Trade Act of 2002, now requires advance notification of cross-border shipments. Under this act, vessel carriers are required to electronically transmit shipment manifests to CBP 24 hours before containers are loaded in foreign ports onto vessels bound for the United States, so that the government can conduct its security screening and "hold" any high risk cargo before a vessel begins its voyage to a U.S. port. Canada has similar reporting requirements through its Advance Commercial Information (ACI) initiative. Starting in April 2004, manifests for Canadian-bound marine shipments must be electronically transmitted to the Customs Border Services Agency (CBSA) 24 hours prior to vessel loading. The implementation of the Canadian 24-hour rule has undergone some evolution over the past year. Most recently, Customs Notice N-565 was issued and states that "if the length of the voyage is less than the period within which notice would otherwise be given" notice must be given before departure of the vessel. In the case of certain West Coast cross border shortsea shipping options, such as shipments from the Puget Sound Region to the Lower Mainland, this would be a more favorable ruling than the approach taken in the U.S. (shipments between these two market areas would generally involve transit times of less than 10 hours).

The 24-hour rule affects a cross border shortsea carrier depending on the geography of the service and the type of cargo it carries. For a tug and barge service running between Vancouver and Seattle, particularly traveling in the southbound direction, this rule is one of the most critical issues affecting cross-border shortsea shipping, mainly for a containerized cargo. It takes about seven to eight hours of water travel time between Vancouver and Seattle which requires a barge operator to load the barge at least 14 hours in advance of the barge departure from Vancouver. To meet the carrier's deadline, the shipper(s) is required to send the cargo more than 14 hours in advance to the loading facility. While cross-border shipments by other modes are also required to submit electronic manifests in advance, the timeframes are much shorter – one and two hours for truck and rail, respectively. This clearly discourages a shipper from using a cross border shortsea service for containerized cargo as other modes give much more flexibility in terms of timing.

Many carriers operating in the study region feel that the 24-hour rule for the short distance cross-border shortsea shipments creates extra delay, extra hassle and increases overall cost of the shipment as compared to the other modes of transportation.

Cabotage Laws

Cabotage laws are enacted by countries to require freight and passenger traffic to be carried on their own nationally registered and sometimes built and crewed ships. The defining U.S. cabotage law for freight movements is the Merchant Marine Act of 1920, known as the Jones Act. The Jones Act affects all vessels engaged in the transportation of cargo between two points within the United States, its territories, and possessions, as well as vessels engaged in dredging, towing, salvage, fishing, and other marine operations. Under the Jones Act, vessels engaged in these activities are required to be U.S.-built, U.S.-documented, U.S.-owned and controlled, and U.S.-crewed. The defining U.S. cabotage law for passenger movements is the Passenger Vessel Act of 1886. While this law is broadly analogous to the Jones Act, a key difference is that, while the Jones Act requires U.S. vessels be used for transporting freight between U.S. ports even if moving via a foreign point, the Passenger Vessel Act permits use of a foreign-built, foreign-registered, and/or foreign-crewed vessel if an intermediate stop is made in a foreign country. Cabotage laws such as the Jones Act and the Passenger Vessel Act help maintain the viability of U.S. shipbuilders, ensure a strong merchant marine, allow the U.S. to sustain the maritime infrastructure necessary for national defense purposes, and contribute to the safety of the vessels and vessel operators engaging in maritime operations. However, these Acts can prevent foreign-built, owned, or operated ships from engaging in domestic trade. While there is a process for obtaining waivers from U.S. cabotage laws that might be considered to deal with the unique issues associated with shortsea shipping, this waiver is rarely granted and there were strong indications from U.S. carriers who were interviewed for this study, that they would oppose such a waiver as being unnecessary for most cases of cross border shortsea shipping (unless the vessels were making stops at multiple U.S. ports, the provisions of the Jones Act would not apply to a single cross border movement).

The defining cabotage law in Canada is the Coasting Trade Act of 1992. This act reserves marine transportation of goods and people between two points in Canada, as well as any other marine activity of a commercial nature, to Canadian-registered ships. The Act requires that only Canadian registered vessels, owned and operated by Canadian domiciled companies, and crewed by Canadians can handle domestic marine commerce in Canada. Exceptions are granted when it can be demonstrated that no Canadian vessel is available for a specific duty on which applications can be made to Transport Canada

In 2001, the Canada Transportation Act Review Panel issued its findings with regard to its extensive review of the 1996 Canada Transportation Act. The Act required a comprehensive review, commencing no later than July 1, 2000, of the operation of the Act and certain other acts pertaining to the economic regulation of transportation. The Panels mandate was as follows:

- Assess whether these acts provide Canadians with an efficient, effective, flexible and affordable transportation system; and

- Where necessary or desirable, to recommend amendments to the acts, including the national transportation policy set out in Section 5 of the Canada Transportation Act.

The Panel's report issued in 2001 addressed the Coasting Trade Act. The Panel stated that it believes that the restrictions in the Coasting Trade Act should be eliminated, at least for North American carriers, to encourage cost-efficiency among carriers and, thereby, benefit users. It was recognized by the Panel that the United States has shown no signs of removing similar restrictions in its legislation (i.e., Jones Act).

The Coasting Trade Act is less stringent than the Jones Act in two ways. First, the Coasting Trade Act does not prohibit vessels built outside of Canada from engaging in coastal marine trade, as long as the vessel is registered in Canada (per the Canada Shipping Act of 1985) and taxes defined in the Excise Tax Act of 1985 are paid. Second, foreign vessels (those registered in another country) and non-duty paid vessels (those registered in Canada but whose duties and taxes under the Excise Tax Act have not been paid) may also transport people or goods after having been granted a coasting trade license from the Customs Border Services Agency (CBSA). Despite the less-restrictive cabotage laws defined in the Coasting Trade Act, the tax and administrative burdens required of vessels registered in other countries may discourage operators from the U.S. from engaging in shortsea cargo transport operations in Canada.

No carriers that were interviewed noted that the Coasting Trade Act or the Jones Act were a specific concern or hindrance to them with regard to cross border shortsea shipping. However, some carriers recognize that, to develop sufficient volume and backhaul opportunities, it may be necessary to call on multiple ports in each country to make a cross border service viable. While none feels particularly restricted to date, relaxation of these rules could create a broader range of opportunities. Not surprisingly, some of the U.S. carriers mentioned that the Jones Act provides them a safety net against Canadian carriers who would compete with them in the domestic shortsea shipping market. Relaxation of the Jones Act for cross border shortsea shipping is viewed negatively by these carriers if it is not tightly controlled to ensure that Canadian carriers are only allowed to make multiple stops in the U.S. as part of a cross border rotation.

Some carriers argue that cabotage laws result in higher shipping rates for coastal or shortsea service. These carriers feel that cabotage laws prevent shortsea and coastal shipping from being able to compete effectively with other, deregulated modes. U.S. shipyard costs are very high and some in the maritime industry estimate that the cost of building a vessel in the U.S. is three times higher than in the Far East.[1] Operating costs (U.S. flagged/crewed vs. foreign flagged/crewed) are similarly more expensive. The cost of building vessels for use in domestic shortsea trade acts as a significant market barrier,

[1] Richard H. Vortmann, *U.S. Shipyards' Role in the Shortsea Shipping Equation*," presented at the TRB Marine Board Spring Meeting, May 20, 2003.

particularly as compared to truck and rail, which rolling stock can be manufactured more cheaply.

3.3 Security Issues

The International Ship and Port Facility Security Code (ISPS), implemented by an amendment to the International Convention for the Safety of Life at Sea 1974 (SOLAS), has mandated many security requirements for vessel operators and port and terminal operators. ISPS, which will come into effect on July 1, 2004, applies to ships engaged on international voyages and port facilities serving those ships. Specifically, the ISPS applies to:

- Passenger ships, including high-speed passenger craft;
- Cargo ships of 500 gross tons or greater; and
- Mobile off-shore trading units.

Vessels and ports subject to the requirements of ISPS require a:

- **Ship/port facility security officer**, who will be responsible for the overall security of the vessel/facility;
- **Ship/port facility security assessment**, to evaluate the vulnerability of the vessel/port facility to terrorist activities; and
- **Ship/port facility security plan**, a confidential plan that will outline security measures to be taken when interfacing with a non-ISPS compliant ship or port facility.

In addition to these requirements, freight-handling vessels greater than 300 gross-tons are required to install an automatic identification system (AIS), which will automatically send detailed ship information to other ships and shore-side agencies.

The U.S. and Canada have worked to implement the requirements of ISPS through the Maritime Transportation Security Act (MTSA) of 2002 and new Transport Canada Marine Security Requirements, respectively. These two sets of requirements have broadened the number of vessels subject to ISPS to include the following types of vessels:

- International cargo vessels of 100 gross tons or larger;
- International towing vessels greater than eight meters in length towing certain classes of barge; and
- Passenger vessels carrying more than 12 international passengers or more than 149 domestic passengers (Source: U.S. Coast Guard, MTSA-ISPS Helpdesk, 1-877-687-2243.).

Under these regulations, most tug and barge operators will be exempt, unless they are carrying listed dangerous goods; so many of the existing cross border services that use tug and barge as identified will be exempt.

In addition, all marine facilities that interface with vessels that are affected would also be regulated.

The security requirements include:

- The general requirements, qualifications, and responsibilities of security officers and other personnel with duties related to security;
- Security drill and exercise requirements;
- Requirements for recordkeeping and equipment;
- Provisions respecting declarations of security;
- Vessel/marine facility/port security assessment requirements;
- Vessel/marine facility/port security plan requirements; and
- Provisions respecting the coordination of security plans for ports.

The U.S. Coast Guard has given provisional recognition that Transport Canada's Marine Security Requirements give the same coverage as the U.S. MTSA. As such, vessels that fly the flag of Canada and call to and from U.S. ports are not required to submit security plans and assessments to the U.S. Coast Guard.

Transport Canada has noted that 300 vessels fly the Canadian flag unto which the requirements will apply. The average estimated cost per vessel to comply with the requirements is $48,500 in the first year and $14,300 each year thereafter. This covers such items as alarms, transponders, lights, radios, etc., plus possible additional labor to fill security positions. In addition, it has been estimated that the cost to marine facilities will range from $205,000 to $1,400,000 per facility for a total cost of $100.4 million in the first year and $31.1 million for each following year. This will include such items as new buildings, securing restricted areas, lock and pass systems, monitoring equipment, lighting, and labor similar to in nature to vessels.

Although most ports and carriers did not feel that the recent U.S. and Canadian security requirements were a significant detriment to cross border shortsea shipping, the additional costs incurred by vessels and facilities will add to shortsea shipping costs. While these new security regulations are designed to prevent terrorist activities on vessels and ports serving international trade, the increased costs and potential cargo shipment delays resulting from these rules may make cross-border shortsea operations less attractive to potential shippers and operators.

3.4 Port Infrastructure

There are many deepwater seaports in the study region. These deepwater ports are typically set up to handle large, ocean-going container ships, which are their primary customers and sources of revenue. Terminals at these facilities include deep access channels, large berths, heavy duty gantry cranes and other major equipment that is not suitable for use on vessels involved in shortsea trade, which are typically smaller with shallower drafts and narrower beams.

Port and terminal operations at deepwater seaports are also not amenable to shortsea shipping operations. Since ocean-going containerships are the primary customers of these ports, they typically have preference when it comes to berth, labor, and equipment availability. This is a particular concern for lift-on/lift-of (lo-lo) ships, which require a significant amount of labor and equipment for loading and off-loading of cargo. In fact, coastal lo-lo ships typically have to allocate 24 hours per port call, though only eight to 12 hours are required for on-load and offload of cargo. Deepwater ports often require the use of other services, including pilotage, tug assist, and line-handling services. The Port of Vancouver (BC), for instance, requires all vessels greater than 350 gross registered tons to use pilot services. Vessels crossing the Columbia River Bar must also use a pilot. These services, along with the delay in berth assignment and labor and equipment availability, raise the typical handling charge for coastal vessels to U.S. $200 to U.S. $250 per lift, or U.S. $400 to U.S. $500 total (on-load and offload).[2] Since the average length of haul for shortsea or coastal services is significantly shorter than those of ocean-going ships, these port costs account for a higher percentage of the overall cost of transportation service, making it more difficult for shortsea or coastal services to compete with truck and rail.

It should be noted that many of the carriers interviewed or surveyed for this study that are engaged in domestic coastal trade operate from private terminals that specialize in this type of service. A number of the smaller ports also have barge ramps and/or bulk loading/handling capacity. This reduces the port charges and handling charges. It is difficult to say the extent to which there is sufficient capacity at these existing facilities to expand operations without considering specific commodities. The interest expressed by several of the smaller public ports does suggest available capacity. However, expanding or building new facilities could be difficult due to environmental permitting issues and local land use regulations (discussed later in this report).

[2] National Ports and Waterways Institute at Louisiana State University, *High-Speed Ferries and Coastwise Vessels: Evaluation of Parameters and Markets for Application*, 2000.

3.5 Vessel Infrastructure and Technology

There are several different types of vessels involved in shortsea shipping operations, including pull barges, push barges, and high-speed vessels. These vessels can be equipped with a variety of cargo handling systems, the most commonly encountered systems being classified as either lo-lo or ro-ro (the vessels may sometimes be referred to as lo-lo or ro-ro vessels even though it is possible to have both loading capabilities on the same vessel). Each vessel type and cargo handling system has applications that may be more appropriate for specific commodities. In addition, each has advantages and disadvantages in terms of cost and service characteristics. Matching the technology to available port infrastructure, commodity markets, and labor constraints will have a strong influence on the economics of a particular shortsea operation.

Vessel Types

Pull or Push Barges

The pull barge is the most commonly used vessel for shortsea operations in the U.S. Typical pull barges have a capacity of between 400 and 700 20-foot equivalent units (TEUs) and are capable of handling between 150 and 270 53-foot domestic containers. Containers or truck trailers are secured on deck and containers are sometimes stacked three- or four-high. These barges also handle bulk and breakbulk cargo. Barges are typically pulled by 5,000 horsepower tugs at a speed of approximately 10 knots (11.5 miles per hour). Push barges are similar to pull barges with the exception that they are pushed, rather than pulled. Tugs and push barges are sometimes lashed together to act as a single vessel, allowing for greater speed and efficiency as compared to traditional pull or push barges. Securing containers on deck requires extensive lashing, which can add to operating cost and overall shipment time. As a result some barges, including those used by Matson navigation as part of its inter-island Hawaii service, are cellular, making lashing unnecessary. Cargo handling of a cellular barge requires crane service (either on-barge or shoreside), which is not available at all terminals. In addition, the cellular structure can add to the cost and weight of the barge, hindering overall efficiency.

Pull and push barges are common in U.S. shortsea shipping operations due, in part, to Federal regulations governing domestic maritime trade. Minimum crew size of vessels operating in the U.S. is defined in Title 46, Code of Federal Regulations, Part 15. Minimum crew size of vessels operating in Canada is defined in the Canada Shipping Act. The purpose of the regulations is to set forth uniform minimum requirements for the manning of vessels. In general, they implement various international conventions which affect merchant marine personnel and provide the means for establishing the complement of personnel necessary for safe operation of vessels. Both U.S. and Canadian crew size regulations stipulate minimum crew size based on the vessel's registered tonnage, which in the case of a pull barge is the tug vessel, not the barge itself. The crew of the tug, typically about eight, is much smaller than that of a self-propelled vessel similar in size to the pulled barge, allowing shippers and carriers to move significant amounts of freight with

minimal crew requirements; a self-propelled vessel of 700 TEU capacity would require a crew of 20.

High-Speed Vessels

The use of high-speed vessels, capable of attaining speeds of 28 knots (32 mph) or higher, is growing in both shortsea and deep-sea shipping operations. There are several types of fast ships, including catamarans, hydrofoils, and traditional displacement ships utilizing lighter construction materials. These ships can attain speeds well above traditional tug-barge combinations and containerships, decreasing the transit time between ports-of-call. Though prototypes of several fast ships are currently in use along shortsea and coastal routes in the South Pacific and Europe, few have been deployed in North America. (Note: One example of a high-speed ferry is "the Cat," which is a car/passenger ferry service between Maine and Nova Scotia. It operates from mid-May through October).

Vessel Cargo Handling Systems

Lift-On/Lift-Off

Lift-on/lift-off (lo-lo) cargo handling systems are often used on vessels or barges used to transport containers in shortsea operations. Some lo-lo vessels, referred to as "self-geared" vessels, include deck-mounted handling cranes, which can reduce overall capacity. These vessel-mounted cranes are sometimes required to facilitate loading and unloading of containers at ports without adequate shore-side cranes.

Roll-On/Roll-Off

Roll-on/roll-off (ro-ro) cargo handling systems refer to systems used when the cargo can be rolled onto the vessel, such as cases where a trailer is dropped with chassis on-deck by a tractor-trailer rig. Another type of ro-ro system uses fork lifts to load cargo (the fork lifts roll the cargo on and off the deck). These systems reduce costs associated with cargo loading (expensive crane systems and skilled crane operators are not required). This reduced cost and complexity of loading operations allows ro-ro vessels to call on smaller and less-developed ports. Vessels employing this type of cargo handling equipment typically carry trailers, chassis- or trailer-mounted containers, cars, rail cars, and other rolling machinery, and other cargo (such as containers) driven on to the vessel by use of a fork lift or other rolling machinery. These vessels sometimes use a "drive-through" system with access both forward and aft, which speeds the loading and unloading process. The capacity of ro-ro vessels can be less than one-half that of a lo-lo vessel of similar size, as cargo cannot be stacked (due to wheels) and significant space is needed for on-load and off-load ramps. The reduced capacity of ro-ro ships is at least partially offset by the reduced cargo handling and port costs accrued by these vessels.

3.6 Operational Issues

Lack of market/market analysis – There has been a significant amount of work done in assessing how shortsea services can be provided, including assessments of prospective high-speed vessels for use in shortsea trade and even conceptual designs for coastal terminals. What is missing is a detailed assessment of the current and potential market for these services. Existing shortsea operators handle a limited commodity mix, typically consisting of high-weight, low-value cargo, such as wheat, grain, or scrap metal. There may be other commodity types that could be diverted to shortsea, but few shortsea operators have investigated or have the desire to investigate the market for these commodities. This is clearly reflected in the assessment of opportunities when talking to carriers. If a more detailed market assessment is conducted in Phase 2 of this study, it will be important to share this with carriers. They generally do not see major obstacles to cross border operations besides market and cost. Once realistic target markets are identified based on trade flow volumes, origin-destination characteristics, and service requirements it will be possible to do a better assessment of costs of services and the competitive position of cross border shortsea shipping relative to trucking under various assumption about land border congestion.

Backhaul traffic – One reason that shortsea and coastal carriers do not schedule more frequent service is the lack of backhaul loads between segments. This is a particular concern between destinations in the U.S. and Canada. While coastal trade between Vancouver and Seattle may be operationally feasible, the trade imbalance (U.S. importing more from Canada than it exports to Canada) results in "deadhead" miles, or unloaded return trips that do not generate revenue, on the Seattle-Vancouver leg of the trip, increasing the costs for both shippers and the shortsea carrier.

Trip frequency – Unlike trucks, shortsea and coastal carriers do not offer transportation services on demand; rather, they provide service on fixed schedules. Unlike railroads, however, which typically provide daily or twice daily service to origins and destinations, none of the shortsea and coastal operations in the U.S. provides even daily service; in fact, service frequency of the existing U.S. coastal services varies from one to five times per week. As "just-in-time" logistics practices continue to increase the demand for frequent deliveries of goods, shortsea and coastal carriers may need to increase trip frequencies in order to effectively compete with these other modes.

3.7 Institutional Issues

Canadian Issues

Municipal issues – With three levels of government, there will inevitably be competing interests. Some interviewees, particularly on the port side, noted that many municipalities do not have an appreciation of the role marine transportation can play in the economy.

Lighter commercial or residential development is often preferred and, thus, zoning in areas adjacent to port facilities often reflects this and is done in a manner that is not compatible with port facilities.

In addition, the major ports in BC, designated as Canadian Port Authorities, are Federal agencies and, along with the provincial government and up to 21 municipalities in the Greater Vancouver area, coordination of transportation objectives and requirements can be difficult. Many advances and cooperative efforts have been made in recent years through the work of Translink and more so on the cargo side by the Greater Vancouver Gateway Council. The mandate of the Council is to promote the Greater Vancouver area as a major gateway to North America for the movement of passengers and goods and ensure the Gateway efficiently provides the highest level of service of customer satisfaction.

In January 2003, the Greater Vancouver Gateway Council issued the "Major Commercial Transportation System – Water Routes for Cargo and Passengers – Overview of Issues and Opportunities" study. This study reviewed shortsea shipping of a cross border or domestic nature. The study listed a number of factors that cause underutilization of water routes under the major headings of Economics, Governance, Lack of Defined Opportunities, Navigational Restrictions, and Environment. Under Governance, the following municipal factors were listed as being factors that hinder shortsea shipping:

- Municipal levies on waterfront property (see next section);
- Zoning restrictions and land use planning;
- Municipalities acting locally rather than regionally; and
- Governance electoral cycle.

Ports Property Tax Act – Over the past couple of decades, municipal property taxes on waterfront properties have grown substantially where today port terminals pay between two and 10 times more in municipal property taxes than their U.S. counterparts. Their property tax rates can be as much as 12 times higher than residential rates.

The BC Port Competitiveness Committee, which was formed in 1999, concluded that excessive municipal property taxes were making many terminal operators unprofitable and discouraging new investment in infrastructure. In some jurisdictions, taxes on port tenants equaled the rent paid to port authorities. Property taxes for BC terminals are three to 6.9 percent of assessed value.

For shortsea shipping, where cost considerations are paramount in order to compete with rail and truck modes, municipal property taxes on existing facilities will increase costs and for any new facilities that are required to serve shortsea shipping new investment may be discouraged.

In 2003, the Government of BC acknowledged the issue of municipal taxes and resulting competitiveness with U.S. ports by instituting a cap on property taxes. The cap applies to 15 terminals in the BC Lower Mainland and includes:

- Capping the rates that terminal operators pay on existing facilities to 3.0 percent of assessed value for five years; and

- Introducing a 10-year tax rate cap of 2.5 percent of assessed value on new investment in port facilities to encourage infrastructure growth.

These caps have been well received by the port community and will now clear the way for new investment. On the other side of this issue, however, many municipalities are critical of the provincial government's cap on rates.

U.S. Issues

Harbor Maintenance Tax – The Harbor Maintenance Tax (U.S.) was established in 1986 as part of the Water Resources Development Act. The tax is levied on all commercial vessels passing through Federally maintained channels and is based on a percentage of the value of the goods transported on the vessel. The funds collected are used as general fund revenues that can be used for purposes other than harbor maintenance. Until 1998, the tax was assessed on all U.S. cargo (imports, exports, and domestic cargo). In 1998, the tax on U.S. exports was declared unconstitutional; the fee on U.S. imports is currently being challenged as well. In 2002, over $800 million was expected to have been collected from this assessment. The Harbor Maintenance Tax particularly affects shipments along inland waterways, as a strict interpretation of the tax requires it to be paid each time cargo passes through a Federally maintained channel. This tax structure may place shortsea, coastal, and inland shipping at a price disadvantage compared to other modes.

Mutual Canadian/U.S. Issues

Growth in freight traffic and relationships with trucking industry – Supply chains are becoming increasingly national and global in scope, as many domestic companies are managing worldwide production and distribution systems, often locating their production facilities in areas around the world. The ability of the transportation system to provide reliable door-to-door services across continents, countries, and modes of transportation is becoming increasingly important to the private sector freight industry. Maintaining transportation system reliability will become even more challenging as freight volumes through international trade gateways, such as seaports and border crossings, are expected to double and in some cases triple by 2020. A key factor that can contribute to the success of a shortsea shipping program is building and maintaining relationships with other transportation modes, particularly the trucking industry. As a truck movement will likely be required on both ends of a shortsea shipment, trucks should be seen as complementing – not competing with – shortsea shipping. The anticipated growth in freight traffic will ensure that there is enough freight to be shared among all the modes. In addition, drayage to shortsea shipping sites and the opportunity to marry drop and pick trucking operations with short hauls by shortsea over longer distances provides higher equipment utilization for trucking that could improve operating costs. Therefore, marrying trucking services and shortsea services, similar to what has been done by a number of successful

truck-rail intermodal services, allows each mode to specialize in what it does best and provide shippers with a more competitive service.

When developing a shortsea shipping program, it is important to understand how the various elements of the supply chain and transportation systems work together to meet the needs of users and to determine how the use of shortsea shipping operations can complement and support these systems and become an integral part of the overall transportation system.

Role of Intermodal Marketing Companies (IMCs) and freight forwarders – Intermodal Marketing Companies (IMCs) and freight forwarders manage the "package" of equipment supply, long-haul transportation service, and drayage movements for their customers. These stakeholders often have more control over how freight moves from origin to destination than shippers themselves, though they are sometimes not mentioned as critical elements of the supply chain. According to some estimates, IMCs handle more than 40 percent of international intermodal freight traffic and a large percentage of domestic freight traffic, as well. In many cases, these IMCs either are not aware of shortsea services or choose not to use them, making it difficult for shortsea shipping to increase its market share.

Community/environmental impacts – Many ports and terminals in the study region are located in mixed-use areas that contain not only transportation and warehousing facilities, but also residential neighborhoods. Trucks accessing ports and terminals located in such areas are often forced to travel along local streets and roads that are fraught with obsolete bridges and connectors as well as pavements not sturdy enough for use by heavy vehicles. In addition, while increased congestion at ports and terminals and their access routes will certainly have a major effect on the efficiency of national and international freight systems, their impacts are felt locally through increased noise and air pollution to the local community. Because of these issues, there is a growing concern about port expansion in the study region.

3.8 Costs

In evaluating factors impeding the growth in shortsea operations in the study region, most of the carriers who were interviewed mentioned that the cost of cross border shortsea shipping as compared to trucking makes it a less viable option. Total cost of a shortsea move can be broken down into three main elements:

1. Drayage costs to and from origin and destination port terminals;
2. Handling costs at the origin and destination terminals; and
3. Water transit cost.

For a barge carrying 260 20-foot containers and traveling at seven knots per hour, the following cost (all cost numbers are in U.S. dollar) and transit time information was provided by a current cross border barge operator in the region.

- For Vancouver to Seattle service: $870 per container ($120 drayage cost at each origin and destination port plus $250 container rehanding at each origin and destination port plus $130 barge transit cost), with approximately 19 hours of transit time. For the same origin-destination (O-D) pair, trucking a container costs about $550 with a total transit time of up to six hours.

- For Vancouver to Portland service: $1,080 per container ($120 drayage cost at each origin and destination port plus $250 container rehanding at each origin and destination port plus $240 barge transit cost), with approximately 53 hours of transit time.

- For Vancouver to San Francisco service: $1,175 per container ($120 drayage cost at each origin and destination port plus $250 container rehanding at each origin and destination port plus $435 barge transit cost), with 118 hours transit time.

The following assumptions were made in determining the above costs:

- Container handling cost at the terminal includes labor cost, vessel dockage cost (charges against vessel), and terminal cost (charge against the cargo); and

- Containers are stacked up to four high and the container handling cost includes the use of container handling cranes to load and unload stacked container in the barge.

If the same barge is loaded with a load of lumber (bulk commodity) going from Vancouver to Seattle, it costs about $20,000 to load or unload at the origin or destination facility as compared to $250 x 260 = $65,000 for a barge with containers stacked up to four high.

If the same barge is loaded with containers on chassis with ro-ro operations where the trucker drives a trailer with a container onto the barge, it would cost about $680 per container to go from Vancouver to Seattle. The reason the cost is higher than the lo-lo case described previously is because the total number of containers that can be accommodated in one layer is only 66 as compared to 260 stacked containers. Thus, barge transit cost per container goes up, while per container handling charges go down.

Many shippers feel that barge transit times are less reliable than truck or rail because of weather factors. Depending on the weather, an average tug-barge can travel at the speed of anywhere from two knots per hour to eight knots per hour. Thus, there can be significant variation in travel time on the ocean.

A number of carriers mentioned that the use of unionized labor for on-dock handling activities is an obstacle to shortsea shipping, given the tremendous pressure to keep handling costs down to be competitive with trucking. These carriers argue that the types of handling operations associated with shortsea operations frequently require lower skill levels as compared to deep sea container operations and the current union rules do not

take this into account. The existing domestic shortsea services often do not use union labor, because they operate out of private terminals. Based on the provided data, it is difficult to assess the impact of union labor costs vs. non-union costs on the competitiveness of shortsea services nor on the safety of the operations. Clearly, the ILWU needs to be part of the discussion on shortsea shipping. If there are ways to satisfy union concerns about job safety, security, and pay rates and still meet the objective of delivering cost competitive services, it could mean more jobs and improved transportation services.

It should be noted that because of the newness of the service, issues associated with reliability and other service characteristics, shippers typically expect shortsea services to be offered at significant discounts as compared to trucking. Either congestion at the border will have to become much worse or operations will need to be subsidized if shortsea shipping is to be truly competitive with trucking in most instances given the current cost structure.

4.0 Analysis of Factors Affecting the Potential of Cross Border Shortsea Shipping

In evaluation of the significance of specific factors as obstacles to expanded cross border shortsea shipping, it is useful to distinguish between factors that affect shortsea shipping generally (i.e., whether domestic or cross border) and those that are uniquely associated with cross border movements. In this regard it is instructive to review the fate of a number of discontinued cross border shortsea services. In almost every case, the factor that caused the decline of cross border operations was a market issue that was not unique to cross border service:

- The APL and Sealand trans-shipment services were discontinued as container traffic grew in Vancouver, eliminating the need for trans-shipment from Seattle. The existence of ocean carrier services calling on ports in Vancouver and the U.S. West Coast has clearly reduced the need for this type of service. While the current ocean carrier services that do call in both countries on the same rotation clearly have underutilized capacity that could be used for cross border traffic, the costs of drayage and the load on and load off at each end, makes this cost prohibitive for a short move when compared to truck.

- The Matson service was replaced in favor of a rail agreement due to lack of flexibility due to limited service, inability to handle large domestic and overweight containers, drayage costs, and price competition from rail and trucking.

- The White Pass service was discontinued due to mine closures and decline in resource extraction activities in close proximity to the ports.

- The Seaspan service was discontinued due to the availability of a more cost competitive and regular rail service.

While there are several factors, including cabotage laws and post-9/11 port and vessel security requirements, that can discourage the use of shortsea shipping, the cases described above provide an indication of some of the more critical factors that hinder expanded use of cross border shortsea shipping that are not related to the cross border element of the service.

- The most cost effective services are those that are able to capture the low costs of water transit without incurring the relatively high costs of drayage, handling, and storage.

The markets which can be structured to make these types of services work are very limited.

- Bringing the shippers closer to the load points could help make shortsea shipping more cost competitive (as was the case in the past). However, many of the bulk raw materials shippers that traditionally used this service are in decline or restructuring of the industries has moved production locations farther from water loading points.

- The idea of creating industrial and warehouse zones in proximity to ports that can specialize in shortsea services has merit but current zoning and tax policies make this difficult. The difficulty that ports in the U.S. have had in dealing with community opposition to expansion and difficult environmental permitting regulations may also hinder this approach.

- The trade imbalance between Canada and the U.S. has implications for backhaul traffic. However, this is a problem faced by competing modes so its differential impact on shortsea shipping may not be that significant a factor.

- The issue of labor costs was raised in most of the interviews we conducted. The use of non-union labor in private bulk terminals and in ro-ro operations has tended to favor these services for shortsea operations. Bringing labor into the discussion as an active participant in making shortsea shipping work seems critical. This is already beginning to happen on the East Coast, where the ILA has become actively engaged in the MARAD-led discussions.

- The need to consolidate loads and the associated impacts on frequency of service clearly puts shortsea shipping at a disadvantage, particularly for general cargo moves, when compared to rail or trucking.

The market obstacles, particularly those associated with cost, are formidable and seem to be much more significant factors affecting cross border shortsea shipping services as compared to the factors uniquely associated with cross border operations. If the cost and market barriers can be overcome, potentially by either subsidy programs or aggressive marketing of the highest potential market segments (including government developed terminal and port facilities), then the following aspects of cross border operations are likely to have a more significant impact:

- Advance manifest rules are a significant obstacle to the development of general cargo and container services from Canada to the U.S. Canada has adopted a more lenient stance on the cross border trade and bulk and break-bulk cargoes are generally exempt. For general cargo, providing paperwork 24-hours in advance provides considerably less flexibility than rail or trucking.

- New security rules from ISPS and MTSA apply to many different types of vessels, barges, and facilities, particularly vessels and barges engaged in international/cross border trade and/or carrying dangerous or hazardous goods. Barges not engaged in cross border movements that are not carrying hazardous goods (i.e., barges transporting timber along the Columbia-Snake system) are not subject to these regulations.

New security rules from ISPS and MTSA could put smaller operators (ports and carriers) who focus primarily on domestic trade of non-hazardous materials in a position that will hinder cross border movements, discouraging these operators from entering the cross border market, even if existing market barriers could be overcome.

- Cabotage rules seem to have only limited impact on the cross border trade because the types of routes that are discussed do not generally involve multiple stops in either country. Canada has adopted a posture of greater leniency with regard to U.S. vessels and crews but the U.S. has not reciprocated. When asked, however, most carriers do not see this as a real obstacle.

These issues and their implications for cross border shortsea shipping are discussed in more detail below.

4.1 The Market Case

The existing coastal marine services are in several distinct market niches that define the types of shortsea shipping services that may work for cross-border operations:

- **Bulk raw materials or semi-finished goods –** These products include raw logs, wood chips and pulp, paper, lumber, petroleum, bulk chemicals, and construction materials (sand, gravel, cement). The services currently offered may move over relatively short distances (Columbia River ports to Puget Sound) or over much longer distances (the San Francisco Bay Area and Los Angeles to Puget Sound). This is the one market in which a number of cross border operations already exist. The cost factors associated with shipping these materials seem to be less sensitive to distance in determining the markets. The shipments are generally large lots with loads that do not need to be consolidated and are typically less time sensitive than general or containerized cargo. A major advantage of water movement over truck movement is the low cost of moving large quantities and this has created situations in which shippers have historically located near the water (further keeping transport and handling costs down). Because shippers are often located on the water, they often own their own private terminals, use lower cost labor, and in some instances, own their own barges.

  Based on the IMTC Cross Border Trade and Travel Survey, a substantial fraction of southbound truck traffic involves movement of commodities that fall into this category, although the trade flows of this commodity are not balanced with similar backhaul traffic. Thus, this would appear to present a viable alternative for cross border shortsea shipping consistent with IMTC objectives. Further investigation of specific market opportunities could be conducted by identifying shippers using the land borders from the Cross Border Trade and Travel Survey Database.

  There may, however, be some obvious obstacles to expanding cross border shortsea shipping in this market. To the extent that these commodities are moving cross border by truck, this is an indication that there are shippers located away from water

locations. This is certainly true of lumber and wood products producers in Canada, an industry that has undergone considerable transition, consolidation, and decline in recent years. This has resulted in the closing of a number of load points that had been served by barge operations in the past. Movement of bulk materials by truck to a distant load point for barge movement adds considerable handling costs. In addition, we did not find any ro-ro operations serving this market. The more common operation for bulk transport is to load directly on barge from a production site with appropriate bulk handling equipment. This means that a typical operation that included delivery from a remote production facility would involve discharging bulk cargo from truck to a storage facility with subsequent reloading onto the barge. This would require storage and handling facilities at the load point. In addition to the costs of storage and handling, there are limited existing facilities of this type with expansion capabilities and land for new facilities is likely to be expensive and to face opposition from nearby communities.

Another potential market opportunity in the bulk cargo market may exist for product originating on Vancouver Island (primarily forest products). These cargoes already move by water to the Lower Mainland where they are frequently transloaded to rail or truck for movement to the U.S. The principal obstacle to moving these cargoes by shortsea shipping to the U.S. is that the product is frequently mixed with mainland product for shipment to the final consumer or the loads are being deconsolidated for shipment to consumers. As noted in the discussion of existing services, there may be new services about to open at Nainamo that would address this market niche, providing a further indication of its near term potential.

- **General cargo markets –** There are general cargoes that move domestically in ro-ro and lo-lo operations. Some of these are containerized cargoes. There are several small feeder operations but most of the general cargo movements in shortsea shipping are from the mainland (either U.S. or Canada) to the islands (either Vancouver or the San Juan/Gulf Islands) or longer distances up the coast of Canada or between the Lower 48 and Alaska. In most cases, these operations are cost effective because there is no other practical mode by which to make the delivery. There are a few coastal domestic services in both the U.S. and Canada that carry general cargo but these generally do not involve scheduled service. The short haul moves to and from the islands are amenable to ferry movements because the quantities being shipped are relatively small.

  The general cargo market seems likely to be a very difficult market in which to expand cross border shortsea operations for a variety of reasons. The general cargo markets generally involve smaller individual shipments that will need to be consolidated for water movement and this will increase the overall time involved in making a shipment. This coupled with the effects of advance manifest rules and other security procedures make cross border general cargo moves even more difficult and costly than they are in the already difficult to compete in domestic markets.

4.2 Other Cost Issues

Over and over in interviews with carriers, we were told that costs of shortsea shipping as compared to trucking made it a less viable option in most markets. The cost element that most carriers were referring to was the handling costs at either end of the move. Drayage costs to the load point and from the delivery point to the receiver are also significant costs. In looking at these cost items, there are several issues that need to be considered when trying to develop an effective program to encourage cross border shortsea shipping.

- **Ro-ro operations and labor costs –** Ro-ro operations in which chassis-mounted containers or trailers are barge loaded from a ramp may provide considerable cost savings from the point of view of handling as compared to most other types of services and may provide an attractive option for services coordinated with motor carriers. Current ferry services tie up a driver throughout the move and this can be unattractive for the motor carrier. A service in which drayage operators can drop and pick trailers at the terminal could allow the motor carriers who currently engage in cross-border carriage to generate higher rates of equipment utilization with much higher reliability of service. This may permit some of the cost savings to be passed on to shippers in the form of lower rates. In addition, the general rule of thumb at the terminals is that ro-ro services use lower-cost labor for load and unload services as the tractor drivers in the terminal yard do not need the higher skill level of crane or lift operators. This further reduces costs. However, this reduction in costs of handling must be traded off against the lower capacity utilization of the vessel, since stacking of containers is not an option if they are moved on chassis.

- **General cargo moves and distance –** In the case of general cargo movements, longer distance moves definitely offer cost advantages to shortsea shipping. The move between Seattle and Vancouver may simply be over too short a distance to be economical. There was some interest expressed by carriers on both sides of the border to offer services with multiple stops on the other side of the border if this were not prohibited by the Coasting Trade Act and the Jones Act. This would allow carriers to take advantage of longer moves and the ability to more quickly consolidate cargo at the load point because of the wider range of delivery options. This is more likely a benefit to Canadian carriers because of the existence of U.S. markets up and down the coast. It should be noted, however, that there were only a few of the interviewed carriers who expressed any interest in offering this type of multi-stop service and U.S. carriers were decidedly in favor of retaining the Jones Act as a policy to protect the viability of U.S. shipbuilders; ensure a strong merchant marine; and contribute to the safety of the vessels and vessel operators engaging in maritime operations.

- **The role of ocean carriers –** A number of ocean carriers call ports in both the U.S. and Canada and there would seem to be an advantage to being able to utilize available capacity on these ships to make coast-wise moves. However, the ports that we talked to indicated that the handling costs of the shortsea move would still be very prohibitive as compared to trucking.

4.3 Service Characteristics

Costs and associated market issues are such a significant obstacle to cross-border shortsea services, that lack of competitive service characteristics is hardly discussed. To some extent this reflects the fact that interviews conducted for this survey focused on carriers and port officials and not on shippers. Further, in most of the markets where shortsea shipping can be competitive, travel time and frequency of service are not critical service requirements of the shippers. However, shippers in the general cargo market will see lack of daily services with faster travel times as a competitive disadvantage for shortsea services as compared to truck and even rail services. The advance manifest requirements for Canadian cargoes coming into the U.S. add to this service impediment (see below).

If the advance manifest requirements could be loosened in both directions, shortsea shipping using next generation, higher speed vessels might prove competitive on service reliability as compared to trucking in the future. This would be the case if congestion at the land borders continues to become more severe and more unreliable. However, at the current time, shortsea shipping cannot compete on service characteristics with trucking. Cargoes with these requirements are less likely to be the market for these services.

4.4 Security and Customs

Reports of the actual and potential impacts of new security rules and customs regulations were very mixed. There was at least one smaller shipper of fish products who felt that the new security requirements were confusing and introduced considerable uncertainty for smaller carriers who do not have the capacity to figure out all the rules and to whom they apply. This is still a very uncertain situation.

As noted above the advance manifest rule is not being implemented in the same way on both sides of the border and this creates a significant impediment to southbound traffic. Working to harmonize customs rules to facilitate cross border shortsea shipping should be a policy priority.

Security rules under ISPS and their application to small private cross border shippers is still a fuzzy area, particularly with regard to how Canada will implement the requirements. This will clearly add costs to the cross border shortsea markets that are of interest and that are already at a cost disadvantage.

4.5 Port Infrastructure

It is difficult to comment on the available port and terminal capacity to handle cross border shortsea shipping without considering the specific commodities and markets to be served. There do appear to be a limited number of barge ramps capable of handling more ro-ro traffic. The bigger problem is the need for waterfront land for facilities that would bring shippers closer to the services. This type of industrial expansion could be prohibitive in most existing port locations and would face considerable community opposition in most cases. However, a more comprehensive market study for shortsea shipping should look for concentrations of shippers that might be in need of expanded facilities to see if the creation of a government sponsored industrial park that could provide shortsea shipping customers might make sense as a catalyst to help develop services and the industry.

Appendix A

Shortsea Shipping Survey

Appendix A. Shortsea Shipping Survey

The first objective of the study was to profile the existing coastal marine services on the West Coast of North America and the second objective was to understand various factors impacting their ability to participate in the U.S.-Canada cross border shortsea shipping. First, CS identified the major existing shortsea service providers based in Washington; Oregon; Alaska; and Vancouver, BC. CS e-mailed or faxed survey forms shown in Figures A.1 and A.2 to all of the carriers from whom e-mail addresses could be obtained. Then CS attempted to contact all the largest carriers (those with a fleet of more than 10 vessels) and a sample of the smaller carriers directly by telephone and, wherever possible, a more extensive telephone interview was conducted once CS received the filled out survey forms.

Figure A.1 Service Profile Form

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Transport Canada - International Mobility and Trade Corridor Project (IMTC)

Cross-Border Short Sea Shipping Study

Short Sea Shipping Survey – Service Profile Form

Contact Information

Company Name: _____

Address: _____

Name and Title of Respondent: _____

Date: _____ Phone: _____ E-mail: _____

Short Sea Shipping Service Profile Information

1. What types of services do you offer? Check all that apply.

_____ Container-on – Barge Transport	_____ Bulk/Break bulk –on-Barge Transport	_____ Floating Crane Services
_____ Container-on – Ship Transport	_____ Bulk/Break bulk –on-Ship Transport	_____ Dredging Services
_____ Salvage/Rescue Services	_____ Tug/Towing Services	_____ Other _____

2. What percentage of your business is made up of cargo transport operations?

_____ Less than 10%	_____ 10-25%	_____ 25-50%
_____ 50-75%	_____ 100%	_____ Cargo transport handled on an ad-hoc basis

_____ Other _____

3. What types of commodities do you handle? And how much (annual tonnages by commodity)?

_____
_____
_____
_____

4. What ports do you normally call on?

_____
_____
_____

1

Figure A.1 Service Profile Form (continued)

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_____

5. Do you provide regular, scheduled cargo transport services? ___ Yes ___ No. If yes, what is your sailing schedule?

_____
_____
_____
_____

6. What types of vessels do you operate? Please indicate how many of each vessel type are currently in service.

_____ Deck barges _____ LASH barges _____ Tank barges
_____ Lo/lo vessels _____ Ro/ro vessels _____ High speed vessels
_____ Other _____

7. What types of terminal/facility equipment do you require to support your cargo transport operations?

_____
_____
_____
_____

Thank you for your participation. Please e-mail or fax the completed survey to:

Mr. Vijay Agrawal; Email: vagrawal@camsys.com, Phone: (510) 873-8700, Fax: (510) 873-8701

2

Figure A.2 Factors Affecting Cross Border Shortsea Shipping

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Factors Affecting Cross Border Short Sea Shipping

Please tell us how following factors impact your ability to participate in the US-Canada cross border short sea shipping (SSS) and up to what extent.

	Factors	Importance level (0 to 5) 0 = Not Applicable 5 = Most Important	Your Notes
Port Infrastructure and Carrier Profile	Your ability to carry truck trailers on barges		
	Ports ability to support Roll On –Roll Off, Load On –Load Off, Pass On – Pass Off and other types of SSS operations (Current)		
	Ports ability to support Roll On –Roll Off, Load On –Load Off, Pass On – Pass Off and other types of SSS operations (Future)		
	Ports capacity limitation for future SSS growth and availability of other ports for future expansion		
	Deep sea Port's relative preference to Ocean going vessels as compared to SSS vessel (example: berthing space, wait time, equipment availability, labor needs)		
	<Please add more here>		

1

Figure A.2 Factors Affecting Cross Border Shortsea Shipping (continued)

	<Please add more here>		
Cabotage Laws and Customs Procedures	Provision of Jones Act and/or Coasting Trade Act in Canada		
	US and Canadian 24-hour advanced manifest filing rules		
	Availability of Custom services at Ports of call		
	Customs new cost recovery system at Canadian Ports		
	Implications of International Port and Ship Security (ISPS) code on Vessels and Ports		
	<Please add more here>		

2

Figure A.2 Factors Affecting Cross Border Shortsea Shipping (continued)

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	<Please add more here>		
Border Security Requirements	Transport Canada and U.S. Coast Guard security requirements for cross-border SSS		
	Automatic Vessel Identification requirement		
	U.S. Department of Homeland Security and Canada Border Services Agency requirements on cross-border people movement		
	<Please add more here>		
	<Please add more here>		
Regulatory and Institutional Requirements	U.S. Coast Guard and Transport Canada Marine Safety requirements		
	U.S. and Canadian environmental requirements		
	Ports ILWU labor union contract agreements		
	<Please add more here>		

3

Figure A.2 Factors Affecting Cross Border Shortsea Shipping (continued)

	<Please add more here>		
Cost Factor	Port and terminal fees		
	Harbor maintenance tax		
	Property tax		
	<Please add more here>		
	<Please add more here>		
Other	Available Channel Depth		
	<Please add more here>		
	<Please add more here>		

4