

## ***Chapter 8***

# **Transportation**

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# Chapter 8

## Transportation

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### 8.1 Primary Issues

This chapter addresses impacts from both truck traffic and barging related to the project. Primary issues addressed include:

- Would truck traffic resulting from the project increase congestion or degrade traffic operations on local streets?
- To what extent would tug and barge traffic affect or be affected by other boat traffic on Puget Sound, including increased risk of collisions or spills?
- Would tug/barge tows cause wake effects?
- How would the addition of barge traffic affect the Washington State Ferry System?

### 8.2 Affected Environment

#### 8.2.1 Truck Traffic

This section describes the existing traffic conditions in the vicinity of the project. This information is based on the Level One Traffic Analysis prepared by TDA (1998) and included in the Maury Island Mining Operation Expanded Environmental Checklist (Huckell/Weinman Associates 1998).

##### 8.2.1.1 Roadway Network

Roadways in the vicinity of the project site are shown in [Figure 8-1](#) and described in [Table 8-1](#).

##### 8.2.1.2 Existing Traffic Volumes

In previous years the mine has operated with a maximum of 20,000 tons mined per year for local markets. Truck trips

generated under that level of activity number approximately 500 to 1,000 per year.

Figure 8-1 shows projected background turning movement volumes in the year 2002. No transportation improvements are planned in the study area.

### **8.2.1.3 Sight Distance**

On Southwest 260th Street, the stopping sight distance is approximately 180 feet and on 79th Avenue Southwest, the stopping sight distance is approximately 190 feet. This stopping distance meets King County Road Standards.

## **8.2.2 Marine Traffic**

This assessment is based, in part, on an independent marine route study prepared by Art Anderson Associates (1998), which provides route maps and additional details.

### **8.2.2.1 Definition of Study Area**

The study area for marine transport issues encompasses Puget Sound and associated waterways in the vicinity of the Maury Island gravel mine, from south of Tacoma near DuPont, north to Elliott Bay and the mouth of the Duwamish River. This corridor would encompass the areas most likely to order aggregate from the project site, including areas of south Puget Sound, the Tacoma area, and the Seattle area. Areas further north, such as Edmonds, Everett, Bellingham, and Port Angeles, would likely be less frequent customers for aggregate from the Maury Island mine over time than the markets mentioned above. This is due to a lower population center, greater distance from Maury Island, and availability of closer gravel sources.

Key commercial shipping passages within the study area include the Tacoma Narrows, Dalco Passage at the south end of Vashon Island, and the East Passage to Elliott Bay (Figure 8-2). Some tug/barge traffic would travel outside of this area, but it is expected that most traffic, over the life of the project, would travel between the Seattle area and Tacoma via the East Passage.

### **8.2.2.2 Puget Sound Vessel Traffic Service**

The U.S. Coast Guard monitors the Vessel Traffic Service (VTS), a radar tracking system for all large vessels and tow vessels in Puget Sound and through the Strait of Juan de Fuca. The Coast

Guard can monitor vessel type, speed, and destination via the VTS. The monitoring is done on radar screen and via radio as captains check in when leaving port, or for other reasons, to notify the Coast Guard and/or to inquire about navigational conditions.

The VTS is made up of three components: (1) Vessel Movement Reporting System (VMRS); (2) Traffic Separation System (TSS); and (3) surveillance systems such as radar (radar advisory) and closed-circuit TV.

The VMRS includes reporting requirements for ships and dissemination of navigational safety information to ships while they are navigating within Puget Sound or outside the Strait. The VTS area includes 12 separate radar sites to track ships. Cameras are located in critical waterways.

All power vessels larger than 131 feet are required to participate in the VMRS, as are any towing vessels (tugs) greater than 26 feet and any licensed vessel for hire carrying 50 or more passengers. Other smaller commercial vessels are required to monitor the system, if not participate. This means that all large commercial vessels and tugboats passing Maury Island are required to participate in the system, including all vessels towing barges to and from the site.

All vessel skippers participating in the system must call in by radio at specific times and locations. For example, skippers of vessels using the system south of Marrowstone Island and Possession Point call in on Channel 14 to the Coast Guard to inform them of their intent to depart and enter the shipping lanes. The Coast Guard requires them to call from their moorings approximately 30 minutes before departure (no less than 15 and no more than 45 minutes) and to call again upon actual departure. A destination is required. The vessel also is required to provide name, type, intended route, and speed. The Coast Guard monitor informs the skipper of other marine traffic in the area based on his/her visual observation of active traffic on the VTS screen. The tug skipper, based on the Coast Guard information provided, departs the dock and enters the shipping channels or makes other navigation decisions on his/her own based on the information provided. The Coast Guard does not direct the vessel, except under special or emergency conditions. The skipper will usually hail the skipper of an oncoming boat, if needed, using Channel 13, to inform that skipper of the tug's intentions. In all cases, the Coast Guard has both vessels on radar in the East Passage and other areas within the VTS system.

During periods of poor weather or visibility, the Coast Guard has the authority to impose additional operating requirements including times of movement or departure.

### **8.2.2.3 Shipping Trends in the Study Area**

Marine traffic in the area includes personal sail and power craft; petroleum, mineral, bulk cargo or container barges; ships carrying bulk cargo, lumber, or containers; log raft tows; passenger ferries; auto ferries; and occasionally petroleum or crude oil tanker or barge.

The amount of Seattle/Tacoma commercial traffic that sails east of Maury Island past the site is less than the total traffic to Tacoma and points south. This is because three factors encourage some of this traffic, particularly the smaller draft and slower vessels, to travel on the west side of Vashon Island, through Colvos Passage. These three factors are described below.

**Tidal Current.** The outgoing tide passing through the Tacoma Narrows increases in velocity as it passes through the Narrows, leaves southern Puget Sound, and enters Colvos Passage. Because Colvos Passage is in a relatively straight line from the Narrows, the Narrows acts almost as a nozzle, forcing water into Colvos Passage at higher speeds and increasing the northward current. This effect is so dominant that Colvos Passage has a net northward flow (i.e., northward currents dominate the tidal exchange in that area.)

To save time, ships and barges that travel northbound from the Tacoma area often try to use Colvos Passage and do not sail by the project site. Tidal currents are lower in velocity in the East Passage and do not have a net northbound flow.

**Distance.** The shortened distance using Colvos Passage is another reason that some skippers use this route. The distance from Alki Point to Pt. Defiance via the East Passage is 5.2 nautical miles (5.9 statute miles). The same trip via Colvos Passage is approximately 4 nautical miles (4.5 statute miles). At an absolute speed of 2 knots, saving 1.2 nautical miles saves approximately 0.6 hour in travel time.

**Lack of Vessel Traffic System.** Colvos Passage is not covered by the VTS. For that reason, fewer oil-carrying vessels or very large vessels use Colvos Passage. These vessels tend to use the East Passage in both directions to take advantage of the safety coverage and reliability of the VTS to track their position and to inform them about other ships and potential hazards. Whereas the

factors described above encourage the use of Colvos Passage by slow barges, tows, and smaller ships, the VTS encourages the use of the East Passage by larger ships and oil-carrying vessels. Thus, ships carrying petroleum products and larger ships generally use the East Passage and pass the project site.

#### **8.2.2.4 Volume of Ship Activity**

The total amount of ship activity through the East Passage and Colvos Passage is very low compared to other waterways, such as Tacoma and Seattle.

A summary of all tracked VTS participants who transited either East Passage or Colvos Passage from April 1999 to April 2000 was prepared by the U.S. Coast Guard (Appendix L). Of the 7,338 deep draft and tow vessels, 4,883 (67 percent) used the East Passage and 2,455 (33 percent) used Colvos Passage. During that same time frame, of the 725 vessels transporting oil or hazardous materials, 680 (93 percent) used East Passage and 44 (7 percent) used Colvos Passage.

Based on the VTS tracking data, approximately 13.4 vessels per day travel past the mining site on Maury Island. On average, one to two of these vessels per day contain oil or hazardous materials.

#### **8.2.2.5 Tug and Barge Activity**

Tug and barge activity is more evenly distributed between East Passage and Colvos Passage. The data provided by the U.S. Coast Guard (Appendix L) can be further broken down based on deep-draft versus tow vessels: 1,862 of 1,909 (97 percent) deep-draft vessels used East Passage while 2,053 of 4,336 (47 percent) tow vessels used East Passage.

A 1991 analysis of the VTS system by the U.S. Coast Guard (John A. Volpe National Transportation Systems Center 1991) examined the amount of ferry, ship, barge, and tug operations in Puget Sound and the Tacoma vicinity. These data are discussed here to give the reader an idea of the relative amount of activity at various locations.

The Tacoma area had approximately 20,000 tug movements in 1987 in addition to nearly 5,000 barge tows of bulk products or dry cargo for a total of 25,000 movements in and out of Commencement Bay. In addition, there were 34,500 small-boat passenger trips in the area. All combined, there were 425 movements in the “large ship” category (tugs and barges fall in the “small” category).

In contrast, the central Puget Sound area (which encompasses Seattle and has a very rare collision incidence) had 45,000 tug movements and 17,000 tanker barge and dry cargo barge movements, for a total of 62,000 trips. (There was one tanker barge and one fishing vessel accident in the 10 years leading up to this survey and four groundings of passenger or cargo ships.) There were 227,500 passenger boat trips for the same period and an additional 165,000 small to large dry cargo vessel trips. Overall activity in that area was 454,950 trips. It was predicted to increase to 711,000 trips by the year 2010.

This can be compared to the number of large ship sailings through the East Passage, as described above, and the existing barge tow operations between Seattle and Tacoma at present, which are likely to approximate a dozen trips per day or about 4,900 per year.

#### **8.2.2.6 Ferry Activity**

The only ferry route in the study area that would be crossed directly by barge traffic from the proposed mining operation for any customer to the north is the Vashon/Fauntleroy ferry route (Figure 8-3). There are 34 to 36 crossings, counting both directions, during the week and approximately 30 crossings on weekend days. Assuming an average of 34 crossings per day for purposes of this EIS, running between the 21-hour period of 5:05 a.m. to 1:55 a.m., there are just over 3 crossings per hour. Because each crossing takes 15 minutes, there is a period of up to 45 minutes every hour when there is a ferry crossing between Vashon and Fauntleroy, except generally between the hours of 2 a.m. and 5 a.m.

There is also considerable ferry activity entering Elliott Bay. For example, the Bremerton and Bainbridge auto ferries and car ferries, the Vashon passenger ferry, the summertime West Seattle ferry, and the commercial ferries (ships and catamarans) to Victoria and other points north travel in this area.

## **8.3 Impacts**

### **8.3.1 Truck Traffic**

Sand and gravel mining involves the use of heavy trucks to transport material from the mining site to local markets. The use of trucks could impact the operation of local roads and intersections in the vicinity of the project site.

Traffic modeling and level of service predictions are not necessary for this analysis because truck traffic for the proposal is minimal (up to 20 trucks per day maximum) with no overall annual growth likely on the island due to practical limits on development.

Mainland trucking impacts are not evaluated in this EIS because future markets and routes from barge delivery points are only speculative at this time, and the Applicant has confirmed that no off-island trucking would occur from the mine. This EIS also assumes that mainland trucking impacts would be evaluated under SEPA on a case-by-case basis, within the jurisdiction where trucking or construction would occur, as has been done for the third runway at SeaTac and other projects. Because locations, volumes, and receiving capacity are uncertain, and trucking impacts are covered in separate project documents where appropriate, truck impacts at specific barge delivery points are not covered in this EIS.

**8.3.1.1 *Would truck traffic resulting from the project increase congestion or degrade traffic operations on local streets?***

**Proposed Action.** Under the Proposed Action nearly all of the material mined at the site would be transported by barge. Material hauled from the site by truck to serve the local markets is expected to remain nearly the same as under existing conditions. According to the Applicant, the number of daily truck loads would vary greatly, ranging from none to a maximum of 20 trucks per day. Under normal operating conditions there would be a maximum of approximately two truck trips during the afternoon peak hour. In addition, vehicle trips by employees must be considered. The number of employees working at the site currently varies from none to two. Under the Proposed Action a maximum of 20 employees could be present on the site. Therefore, the maximum total daily vehicle trips at the site during the afternoon peak hour under these conditions would be approximately 24 (20 exiting employees, 2 entering truck trips, 2 exiting truck trips). With these small traffic volumes, no traffic impacts are expected to occur as a result of the Proposed Action.

The proposed future activity levels would also be similar to existing conditions, and could possibly increase at 2.5 percent per year, with all truck traffic serving local markets. At a growth rate of 2.5 percent per year, it would take approximately 30 years for the daily truck traffic to double to 40 daily trips.

**Alternatives 1 and 2.** Under Alternatives 1 and 2, truck traffic would be the same as under the Proposed Action and would serve local markets. Under Alternatives 1 and 2 the maximum number of employees on the site at any one time would be 18 and 12, respectively, and traffic volumes generated by the facility would be lower than under the Proposed Action. Thus, no traffic impacts would be expected under Alternatives 1 and 2.

**No-Action.** Under the No-Action Alternative, mining activities would continue as they have in the past with material being mined primarily for on-island markets. Truck traffic would be the same as under the Proposed Action, while the maximum number of employees that would be present on the site at any one time would be five. Traffic volumes generated by the facility would therefore be lower than under the Proposed Action, and no traffic impacts would be expected.

## **8.3.2 Marine Traffic**

### **8.3.2.1 Assumptions**

The discussion here is based on a maximum of four barges per day, in each direction, totaling eight trips to and from markets and the Maury Island dock over a 24-hour period. It is also assumed that, due to size and weight, each barge would have its own tug and would travel alone, not tandem with another barge, and thus require four trips for four barges, each way, for a total of eight trips.

A typical scenario might include the use of three to four barges for delivery to a single site. One barge would be loading at the gravel pit dock, another unloading at the destination, and one or two in transit to or from the site, depending upon distance. Other options might include barge deliveries to separate sites at the same time, which would likely disperse the barge traffic at the receiving end, with no change in traffic at the dock. In any case there would be four round trips per day maximum to/from the site.

A large barge capable of carrying 10,000 tons would carry an equivalent of approximately 7,350 cubic yards of material (at 1.36 tons per cubic yard). At 10 cubic yards per truck, each barge would require about 735 truck trips over 6 hours to unload, or 122 trucks per hour – 61 trucks per hour if tandem hoppers were used. These data are relevant to barging because they reflect the practical limits of barge unloading that can occur at any one location. Trucking impacts at receiving sites are not discussed

further in this impact analysis for reasons discussed in Section 8.3.1 and Section 1.1.1.2.

**8.3.2.2 To what extent would tug and barge traffic affect or be affected by other boat traffic on Puget Sound, including increased risk of collisions or spills?**

**Proposed Action.** No significant impact to marine transportation is expected as a result of the project although there would be a marginal increase in the absolute risk of the waterway. The combination of VTS requirements, tug/barge speeds, and the very low frequency of shipping operations south of Alki Point contribute to an insignificant marine transportation risk. Tugs and barges operate safely in areas of Puget Sound with much greater traffic densities. These conclusions are explained in detail in the following paragraphs.

Barges departing the dock would be controlled by a tugboat that would tow the barge to its destination. Following the required reporting procedures under the VTS, tugboats, the Coast Guard, and oncoming vessels would be aware of their movements. This is a normal procedure for tugs, and the occasional ship sailing past Maury Island is much less frequent than the ferry traffic and shipping that tugs encounter leaving the Chittenden Locks or Elliott Bay.

Perhaps the greatest navigational exposure to tug/barge combinations leaving the dock would be to southbound traffic approaching Point Robinson, on Maury Island just east of the dock. While barges arriving at Maury Island would be in clear sight and on radar, tug/barge combinations leaving the site northbound or southbound would be entering the traffic lane from behind the point. This is a case where tugs would likely wait for ship traffic to pass the point, rather than trying to enter or cross the lanes in front of them. Regardless, skippers would call the Coast Guard before departure, be informed about oncoming ship traffic, contact the oncoming skipper if needed, and depart the dock at an appropriate time based on conditions.

The U.S. Coast Guard analysis (Appendix L) of the proposed barging activity points out that the traffic lanes off Robinson Point are extremely close to the shoreline; and deep draft vessels often transit this area at velocities greater than 20 knots. Additionally, a VTS “radar shadow” exists near the shoreline just south of Robinson Point. This shadow often causes the automatic tracking function of the VTS to drop track, and VTS occasionally loses

radar image of the vessels altogether. However, the vessel track and/or radar image is quickly regained once it departs the shadow.

The U.S. Coast Guard concluded that “the elevated risk to tugs/barges departing the mine site will be mitigated through the full participation of the tugs with the VTS”. This includes the timely reporting of their Sailing Plan and Position Reports as required by 33 CFR 161.19. Furthermore if the tug were to choose a course of action that the VTS deemed unsafe, the VTS has the authority to issue the tug a direction under 33 CFR 161.11. For example, the VTS could direct a tug/barge not to get underway until traffic within the traffic lanes had cleared Robinson Point.

Another concern noted by the Coast Guard was the significant recreational boating and fishing activity near the Robinson Point area. Most of these vessels are less than 40 meters (130 feet) and therefore not required to participate with VTS. The size and construction of these vessels also may make them less likely to be detected by the VTS radar. The recreational and fishing activity would be of particular concern during periods of reduced visibility.

Contractors transporting mined material would sign an agreement that strictly prohibits oil/fuel dumping and includes provisions for accidental-spill response procedures, financial liability, and notification requirements. A Spill Response and Containment Plan would be prepared specifying accidental-spill provisions and available spill-response equipment. This plan would be prepared and submitted to the WDNR, Department of Ecology, and King County before barge loading could occur.

The U.S. Coast Guard concluded “that Vessel Traffic Service Puget Sound has the ability to safely handle the modest increase in barge traffic described in the EIS”.

**Alternatives 1 and 2.** No significant impacts would occur, as discussed for the Proposed Action.

**No-Action.** As defined in Chapter 2, no barge activity would occur at the Maury Island site.

### **8.3.2.3 Would tug/barge tows cause wake effects?**

**Proposed Action.** Tug/barge tows on Puget Sound are among the slowest transports on the water. They generate essentially no wake when under tow due to their extremely low velocity. Wake effects from barge/tug combinations are insignificant compared to

even the low level of existing shipping traffic that does generate wakes.

The U.S. Coast Guard informs vessels participating in the VTS when the tide level is at or above 11 feet. It is then the responsibility of the professional mariner to take this information under consideration, and to adjust speed to minimize excessive wake when appropriate. The tide level information is announced 30 minutes before predicted levels and continues at 30-minute intervals until the 11-foot tidal height has subsided. Thus, ship-generated wake effects during periods of the most likely damage would be minimized by reminders about tidal height.

**Alternatives 1 and 2.** No significant impacts would occur, as discussed for the Proposed Action.

**No-Action.** No impacts would occur because barging would not occur at the Maury Island site.

#### **8.3.2.4 *How would the addition of barge traffic affect the Washington State Ferry System?***

**Proposed Action.** Because most barge traffic would come close to or cross the Vashon/Fauntleroy ferry run, this is the most important single route from the standpoint of potential ferry operation conflict. Impacts to other routes have also been evaluated.

Ferries generally give the right-of-way to commercial vessels crossing their routes. Captain Jim Malde of the Washington State Ferry System stated that the ferry system routinely deals with all shipping on Puget Sound, and an increase of eight barge crossings on the Fauntleroy/Vashon run would not cause significant impacts to ferry operation. He said that evasive maneuvers by ferries do delay the runs momentarily, but that the ferries do not give slow barges the same amount of clearance, or as wide a detour, as they do ships. Therefore, no significant delays are expected, and he did not feel that the barges would in any way disrupt ferry operations (Malde pers. comm.).

Captain Malde also felt that deliveries into Elliott Bay would intersect, or be very close to, routes of the Bremerton and Bainbridge ferries, passenger and auto, and the Vashon passenger ferry. Although not a disruption or significant impact, these ferry runs may also have to avoid the proposed barge activities as well, depending on route and timing.

Based on the routine nature of the encounters, and the very low frequency of barge traffic, barge traffic would have no significant impact on Washington State Ferry traffic.

**Alternatives 1 and 2.** The Proposed Action would have no significant impacts on ferry operations, and therefore alternatives requiring less barging would have even less effect.

**No-Action.** Because barging would not occur at the project site, ferry operations would not be affected.

## 8.4 Adverse Impacts and Mitigation

### 8.4.1 Significance Criteria

King County considers the following as indicators of significance for land and marine traffic under SEPA.

- Directly causing a traffic condition that would likely result in one or more of the following conditions at the time any part of the development is completed and able to generate traffic:
  1. A roadway intersection that provides access to a proposed development, and that will function at a level of service worse than “E”, and that will carry thirty (30) or more added vehicles during any 1-hour period as a direct impact of the proposed development, and that will be impacted by at least 20 percent of the new traffic generated from the proposed development in that same 1-hour period; or
  2. A roadway intersection or approach lane where the director determines that a hazard to safety could reasonably result (Ord. 11617 § 60, 1994).
- Increase in marine traffic that results in substantial additional risk of collision and/or interference with recreational, commercial, or state ferry traffic, so that a collision or other major accident would be likely to occur over the life of the project.

## **8.4.2 Measures Already Proposed by the Applicant or Required by Regulation**

Due to the small volume of truck traffic resulting from any of the alternatives, no mitigation measures are required or suggested for land-based transportation systems.

The following mitigation measures apply to marine traffic.

- a. Coast Guard requirements for vessels operating in Puget Sound will be applied to all operations.
- b. Contractors transporting mined material would sign an agreement that strictly prohibits oil/fuel dumping and includes provisions for accidental-spill response procedures, financial liability, and notification requirements. Accidental-spill provisions and available spill-response equipment would be specified in a Spill Response and Containment Plan. This plan would be prepared and submitted to the WDNR, Department of Ecology, and King County before barge loading could occur.

## **8.4.3 Remaining Adverse Impacts and Additional Measures**

### **8.4.3.1 *Trans Impact 1. Increased Risk of Interference or Hazard Due to Unannounced Barge Departure and Arrival***

**Specific Adverse Environmental Impact.** Barging is a regular activity in Puget Sound, and the project would not introduce unusual marine traffic conditions or significantly alter existing traffic and safety. Still, any time a barge crosses Puget Sound, it introduces some risks that, while not necessarily significant, would nevertheless be adverse. Moreover, regular reporting of arrivals and departures is waived under VTS rules if a vessel is working within a 3-mile radius. The distance between the site and potential delivery points on the mainland is just over 3 nautical miles and could erroneously be interpreted to fall within the waiver.

### **8.4.3.2 *Trans Mitigation 1***

Require normal reporting of arrival/departure activities under the Vessel Traffic Service Puget Sound (VTSPS) for all tugs serving the dock. Specific reporting procedures would need to be coordinated with the Coast Guard.

**Regulatory/Policy Basis for Conditions.** U.S. Coast Guard regulations require all towed vessels exceeding 40 m (about 130 feet) in length to participate in the VTSPS. The tugs (about 100 feet long) and barges (over 300 feet long) expected to be used at the site fall under this requirement.

## 8.5 Cumulative Impacts

Development of the project under any of the alternatives would add very minor truck volumes to existing roads. The additional volume is not significant and would not have any cumulative impacts in the project vicinity.

This project would add to existing shipping traffic on Puget Sound. The most important marine traffic conflicts would occur when a gravel barge crosses the course of a petroleum barge being towed with the current, such that the petroleum tow has less ability to steer. The gravel barge is likely to be tied directly to the tug, empty or full, and more maneuverable, and it would generally give the tow the right-of-way. The other potential conflict is shipping activity in the passage involving higher speeds. Because the gravel barge would be crossing the shipping channel and ships would be travelling at higher speeds, tug/barge operators are likely to give the ships the right-of-way, whether coming from port or starboard (left or right).

In either case, whenever leaving moorage, the tug skipper would contact the Coast Guard VTS to check for traffic and handle the crossing with the least possible disruption to other marine transportation.

The scope of this EIS is to identify impacts of mining at the site and to explore potential measures to mitigate significant adverse impacts of that mining. An indirect result of the project would be the ultimate use of the mineral products extracted from the site. Depending on the particular contract, some materials from the Glacier Northwest site would eventually be trucked from water-based off-loading points to inland delivery points. Such trucking would increase traffic and related impacts, including road damage, noise effects, increased traffic delays, safety risks, and air quality impacts from traffic-generated dust and emissions.

It is conceivable that the increased supplies of sand and gravel that would result from this project may allow some other projects to progress more rapidly and at a lower cost. Nevertheless, it is reasonable to assume that these other projects would occur with or

without the Maury Island mining operation and are therefore not connected actions. Obviously, the decision to revise the Grading Permit at this mining site would not grant permission for trucking to specific sites, nor would it permit construction projects that would use the materials, for those would constitute separate actions under SEPA (WAC 197-11-060). Accordingly, specific impacts of off-loading materials would be addressed under SEPA on a case-by-case basis, within the jurisdiction where trucking or construction would occur.

## **8.6 Significant Unavoidable Adverse Impacts**

None expected. No significant impacts are anticipated due to truck traffic under any of the project alternatives. Barging would require tugs and/or barges to cross traffic lanes, resulting in a marginal increase in the absolute risk to the waterway. Barging is a regular activity in Puget Sound and is subject to existing regulations, standards, and protocols to maintain safe and acceptable navigation. Navigation would be overseen by the Coast Guard and by port authorities at delivery points. Protocols to ensure marine traffic safety are likely to be viable and effective in reducing risks to well below significant levels.

## **8.7 Citations**

### **8.7.1 Printed References**

Art Anderson Associates. 1998. Marine route study, Lone Star Northwest Maury Island project. March 6. Included as Appendix G to: Huckell/Weinman Associates, Inc. 1998. Expanded environmental checklist for Northwest Aggregates Maury Island mining operation. May.

Huckell/Weinman Associates. 1998. Expanded environmental checklist for Northwest Aggregates Maury Island mining operation. May. Huckell/Weinman Associates.

John A. Volpe National Transportation Systems Center. 1991. Port needs study (vessel traffic services benefits). Volume 2 – Appendices, Part 1. August. Cambridge, MA. Prepared for U.S. Coast Guard, Washington, DC.

TDA. 1998. Level One traffic analysis. February 19. Included as Appendix F to: Huckell/Weinman Associates, Inc. 1998.

## **8.7.2 Personal Communications**

Malde, Jim. Port Captain, Washington State Ferry System.  
February 3, 1999 – telephone conversation.

**Table 8-1. Summary of Roads in the Vicinity of the Project Site**

| <b>Roadway</b>         | <b>Physical Description</b>   | <b>Comments</b>  |
|------------------------|---|--|
| <b>SW 260th Street</b> | Two travel lanes, approximately 11 feet in width, with no center stripe. Shoulders approximately 2 to 4 feet wide along both sides. Shoulder composition varies from grass to gravel. Grade descends to the west.             | Provides direct access to the project site via a driveway.   |
| <b>Dockton Road SW</b> | Posted speed limit is 40 mph. Two travel lanes, approximately 10 feet wide, with a center stripe. Shoulders approximately 4 to 6 feet wide along both sides of the road. Shoulder composition varies from gravel to pavement. | Provides access to SW 260th Street from the west. The westbound right turn onto Dockton Road from SW 260th Street is at an acute angle and may present difficulty for trucks turning from SW 260th Street to northeast-bound Dockton Road. |
| <b>79th Avenue SW</b>  | Posted speed limit is 25 mph. Two travel lanes, approximately 11 feet in width, with no center stripe. Shoulders 3 to 4 feet wide along both sides of the road. Shoulder composition varies from grass to gravel.             | Provides access to SW 260th Street from the east.  |
| <b>SW 256th Street</b> | Posted speed limit is 25 mph. Two travel lanes, approximately 11 feet in width, with no center stripe. Shoulders approximately 4 feet wide along both sides of the road. Shoulder composition varies from grass to gravel.    | Provides access to 79th Avenue SW.   |
| <b>75th Avenue SW</b>  | Posted speed limit is 35 mph. Two travel lanes, approximately 10 feet in width. Shoulders 5 to 7 feet wide along both sides of the road. Shoulder composition varies from grass to gravel.                                    | Provides access to SW 256th Street. To the north, 75th Avenue SW merges with Dockton Road, leading to Vashon Island.   |