APPENDIX H:

PRELIMINARY RAIL CAPACITY ANALYSIS

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MainLine Management, Inc.

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Garland, TX **North Richland Hills, TX**

2/25/16
Port of Longview Barlow Point Development
Preliminary Rail Capacity Analysis

BACKGROUND

In 2010, the Port of Longview (POL) purchased the Barlow Point Property located on the west side of the City of Longview (City), Washington, and is located 8 miles west of the Burlington Northern Santa Fe (BNSF) mainline. Rail service to the property is via the Cowlitz River Bridge, through the Longview Switching Company (LSC) Yard, and along the Reynolds Lead (termed such for the Reynolds Aluminum facility, now closed).

LSC is jointly owned by BNSF and Union Pacific Railroad (UPRR) with one of the railways providing the management of LSC operations on an on-going basis. The non-controlling railway has the opportunity to assume that responsibility every 5 years. Currently BNSF is the managing operator of LSC providing a level of service for both railways that is consistent and equitable.

Patriot Rail, a third operating railway, provides local rail service to Weyerhaeuser, the Mint Farm and other current/potential rail-served industries.

POL is performing a due diligence study to assess the feasibility to develop Barlow Point into a marine terminal. A market analysis and conceptual site planning exercise were performed through late 2014 and early 2015 to identify possible types of uses and site layouts. Two potential site development options arose from those processes which focus on production and export of dry or liquid bulk commodities.

As a part of the due diligence study being coordinated by KPFF Consulting Engineers (KPFF), MainLine Management, Inc. (MLM) has conducted a preliminary assessment of rail service to Barlow Point. Utilizing the above referenced draft concepts, MLM considered three potential rail use and development options:

1. Liquid Bulk full unit train operations through an unloading facility.
2. Dry Bulk full unit train operations through an unloading facility.
3. Incremental rail car traffic to one or more clients within the site footprint in addition to the full unit train operations.

The intent of these studies and the development options reviewed was to gain a better understanding of the potential on- and off-site impacts of rail operations of this type and general magnitude.

ASSUMPTIONS

In order to be able to assess the impacts of rail operations of this type, several assumptions were made prior to conducting this preliminary analysis. These include:

- The SR432/SR433 grade separation at the Reynolds Lead would be constructed (The study can be found at http://www.cwcog.org/documents/SR432HistoryandMap_6_28_13.pdf).
- Train lengths for various commodities would remain consistent for the foreseeable future. Unit train sizes would remain approximately 7,000 feet in length for liquid bulk trains and approximately 8,500 feet in length for dry bulk trains. These lengths were based on the highest volumes and longest train lengths.
- POL's Industrial Rail Corridor (IRC), as part of the SR432/433 conceptual designs, would be extended westward to connect with the Reynold's Lead for direct access to Barlow Point. This would eliminate rail operations through the LSC Yard for trains to/from Barlow Point.
- BNSF main line improvements associated with the addition of two Cascade passenger train round trips between Seattle and Portland will be completed by 2017.
- Cowlitz River Bridge double track construction is completed.

ANALYSIS

MLM analysis is based on the following information:

- Information provided by POL and KPFF including general site layouts for each of the options reviewed.
- Information developed from previous MLM studies for POL.
- Various other previous and current studies of BNSF main line operations and projections.
- Studies of off-main line rail operations within the Greater Longview Industrial District (GLID) including Phase One and Phase Two of the SR432 Road/Rail Relocation Studies.

As part of our review, MLM and POL met with representatives from BNSF, UPRR and the LSC in April, 2015. The meeting focused on identifying any potential concerns and/or recommendations they may have, as well as gathering general information on their interest and participation with the future development at Barlow Point.

It should be noted that MLM did not utilize model simulation to analyze the various rail operations scenarios. Consequently, MLM's observations and conclusions are based on a high level review of

potential issues and implications should Barlow Point be developed under a heavy rail use configuration. Additional modeling is recommended as part of subsequent analysis of the Barlow Point developments in order to fully identify potential impacts of the proposed improvements.

The following sections of this memo discuss MLM's analysis, findings and potential issues that will need to be addressed should the proposed options be implemented. Key locations discussed below are indicated on Attachment A and Attachment B.

Barlow Point Conceptual Facility Internal Design Analysis

Train Volumes

MLM reviewed the conceptual layout provided by KPFF and believes that a liquid bulk, high rail use facility, of up to eight trains (four loaded and four empty) per day or a dry bulk, high rail use facility, of up to four trains (two loaded and two empty) per day could be accommodated. This liquid bulk operation represents the more significant rail volume of the rail operations investigated.

The efficiency of this operation would depend on a fairly consistent arrival and departure operation. Two departure tracks should be sufficient, for unloading operations with occasional delays for inbound loaded trains, as empty trains ahead prepare for departure.

Rail Curvature

MLM has reviewed the conceptual rail layouts for Barlow Point that indicate a track curvature of 9 degrees 30 minutes to 10 degrees 30 minutes which exceeds the current BNSF track design parameters of a maximum curvature of 7 degrees 30 minutes. BNSF has previously indicated a willingness to consider curvature degrees that exceed the 7 degrees 30 minutes, but they would need to grant a waiver upon their review of the proposed facility design. As it is understood, curvature in excess of the maximum would require that cars be progressed through the excessive curvature under load, rather than as empty cars, reducing the potential for string-lining empty cars as the train is progressed through the unloading site.

Train Length

Conceptual development options studied would require the ability to accommodate unit trains of between 7,000 feet (liquid bulk) and 8,500 feet (dry bulk) in length on site along both sides of the unloading location. Based on the conceptual layout of the unloading locations, MLM is aware that unit trains could potentially extend to the east beyond the current property limits. Further rail access evaluation will need to be conducted to determine specific product unloading location and if the resulting location of the tail end or front end of the inbound or outbound train would impact access to the neighboring industrial property to the east of Barlow Point.

Fueling Requirements

It is anticipated that UPRR would require an on-site location for fueling locomotives either by truck or from stationary tanks. UPRR typically requires fueling service for unit trains arriving from northern Montana, or from the Canadian Pacific Railway (CPR) as these trains utilize the UPRR/CPR interchange at Eastport in northern Idaho, which bypasses the fueling facilities at Hinkle, Oregon. BNSF does not have the same fueling concerns as trains destined for Barlow Point will access its main line fueling facility at Hauser, Idaho.

A fueling operation at Barlow Point would require the construction of fueling pans approximately 400 feet in length. The location of such a facility within the property has not been identified on conceptual layouts, but is likely to be located in the area just east of the proposed rail dump facilities. This location would allow arriving trains to spot the first cars to be unloaded and then receive fuel. The expected distributive power units (DPU) locomotives at the rear of the train could then be fueled when the unloading of the unit train is complete. If locomotives fueling cannot be accommodated on the property, alternative nearby fuel locations will need to be investigated.

Bad Order Cars

Both BNSF and UPRR require a bad order car track. The bad order car track allows for noncompliant cars to be relocated off the main track for evaluation and repair prior to departure. This track must be located to allow convenient access to the cars without impacts to the inbound or outbound tracks. The currently proposed rail configurations appear to provide sufficient room for a bad order car track.

Rail Crews

Roadway access is required for crews to access the inbound and outbound trains. Main line railway crews taking charge of the train must also be able to access the head end departing locomotives prior to departure. This access will need to be provided adjacent to public right-of-way and in the vicinity of the rail entry to Barlow Point. No specific location has been identified for this access at this time.

Continuous Dumping

To maintain rail operating efficiency, it is assumed that the inbound train will not be broken apart prior to dumping operations. Under federal law and railway regulations, if a train is broken apart and loses the integrity of its train line air charge, an initial terminal air brake test will need to be performed on each car prior to the train departing. This would greatly reduce efficiency of operations. Conversely, if the unit train remains intact with locomotives attached, only a continuity test will be required. This is a relatively simple check to perform and would increase efficiency at Barlow Point.

Bad order cars found during the continuity test or through other observation during the unloading process, can be set out from the outbound train without requiring an initial terminal air brake test, only a continuity test is required before departing once the bad order cars are set out and the train reassembled.

Manifest Rail Cars

Manifest rail operations are small numbers of rail cars that may involve box cars, flat cars, tank cars, covered hoppers or other types of cars that are not moving together in unit train volumes but are handled in switch service. Normally such switch service requires a small switch yard to provide for the ability to arrive, switch and accumulate outbound cars. A single client with a generic commodity may require as few as three tracks, which may be located on the client property or in close proximity. For multiple such clients, a larger car handling yard may be required.

Small, incremental manifest rail car operations for one or more additional tenants in addition to unit train operations may be an option in the concepts provided. MLM assumes should that occur a separate rail service provider, perhaps LSC, would provide the transportation services necessary between LSC Yard and/or the Longview Junction Yard and the facility.

Lead access to incremental car load facilities should be of sufficient distance to the east end of the unit train arrival tracks to minimize conflicts when incremental switching movements arrive, depart or are performing car handling movements. This may require a separate switch lead off the loop arrival tracks near the property limits, otherwise switch/manifest rail car movements and unit train arrivals (and potentially departures) may conflict with each other.

An initial terminal air brake test of incremental car volumes departing Barlow Point facilities would not be required as such cars would most likely be transported to the LSC Yard or Longview Junction Yard for further processing and it is at that point that the initial testing would be performed. However, under inter-yard transfer movements, a continuity test would be required before departing the Barlow Point facilities,

Reynolds Lead

Rail access to Barlow Point is via the Reynolds Lead, which is a single track that runs along the south side of SR 432. The Reynolds Lead has multiple at-grade roadway crossings that provide access to the Weyerhaeuser Property. It is an industrial lead which under BNSF requirements restricts speeds to a maximum of 10 MPH without signals. The Barlow Point property is approximately four miles from a proposed IRC/Reynolds Lead connection.

This lead presents two main issues related to development of the Barlow Point facility including:

1. Mitigation of conflicts at the Weyerhaeuser at-grade crossings: Turning or queuing lanes on SR432 may be necessary to stage trucks destined to Weyerhaeuser when train operations occupy access crossings.

2. Capacity of the Reynolds Lead to handle the potential volume of trains to and from Barlow Point and the neighboring industrial facility to the east (should that site be developed): Based on volume information provided to MLM, there is an estimated 22 to 26 unit trains (loaded and empty) of 7,000 feet to 8,500 feet in length expected to operate over the Reynolds Lead between the SR432/SR433 grade separation and the Barlow Point and the neighboring industrial properties.

In addition to the estimated unit train operations, construction of an incremental car load facility for manifest rail at Barlow Point would add at least two transfer movements, each likely shorter than a full unit train. At the volumes indicated, these would not likely require daily rail switching service. Finally, the review assumed that Patriot Rail operations currently utilizing the Reynolds Lead for service to the Mint Farm and interchange with LSC would continue.

At 10 MPH a 7,000 foot long train would take approximately nine minutes to clear a crossing at-grade. An 8,500 foot long train would take approximately 11 minutes to perform the same operation.

In addition, at 10 MPH each train would require approximately 24 minutes to traverse the distance between the SR432/SR433 grade separation and the Barlow Point entrance switch. This estimate does not include any additional time required to pull into the facility to clear the Reynolds Lead for another train movement, or time for a train to stop and a crew member to line any switch manually that is not in the position needed for the movement the train requires.

Switches not lined properly for a train's route would be a continuing issue at both ends of the Reynolds Lead, as it currently requires a train to stop and a crew member to manually line the switch in the correct position for the train's route.

Industrial Rail Corridor and Longview Switching Company access via LSC Yard

LSC has indicated that it is planning for the potential movement of unit trains through and past the LSC Yard. POL has indicated that its intent would be to operate unit trains to/from Barlow Point via its Industrial Rail Corridor after construction of the SR432/SR433 grade separation. It seems likely that an additional through track along the IRC to the Reynolds Lead connection may be necessary should the Barlow Point unit train operations develop per the conceptual layouts MLM has reviewed.

The IRC connection on the east end at the LSC lead could also contribute to the need for an additional IRC through track as empty unit trains departing Barlow Point will compete with other movements utilizing the lead between Longview Junction and, the IRC and LSC's Yard. This could include potential unit train movements from other proposed developments, arriving EGT trains and LSC transfer operations between the LSC Yard and the Longview Junction Yard.

Cowlitz River Bridge

The Cowlitz River Bridge is single track located on the connection between Longview Junction and all rail facilities within the GLID. As a consequence, all train movements arriving or departing the GLID operate over the bridge, creating significant opportunity for conflicts and the need to stage train movements, particularly for outbound empty unit trains.

Expanding the bridge to double track has been studied for some time and the question continues to be what level of new train traffic will create the need to expand the bridge's capacity. MLM is aware that BNSF has previously developed plans to add an additional track but is not likely to assume the cost of that addition on its own.

The general opinion has been that the bridge's capacity is currently sufficient to absorb some level of train volume growth, including moderate growth due to the Barlow Point facility development. What is not clear is that if Barlow Point developed the full range of unit train operations in conjunction with current capacity demand over the bridge, would capacity be reached. Other items that would affect the bridge's capacity include:

- BNSF's decision to run all empty unit train services north on its main lines due to congestion elsewhere in its network. That would result in conflicts with all other traffic at the bridge as those trains turn north to access BNSF's main lines at the north end of the Longview Junction Yard.
- The addition of unit train operations from other proposed developments.

BNSF Main Line Connection to IRC/LSC Yard

At the meeting with the railways in April, LSC indicated they had concerns regarding congestion conflicts at the connection with BNSF's main lines at Longview Junction. Congestion conflicts include:

- Increased unit train activities
- Switching activities at Longview Junction Yard
- BNSF and UPRR main line manifest trains stops to pick up and set out cars generated at or destined to industries within the GLID

The construction of a third main track between Kalama and Kelso, part of the requirement to add two additional Cascades passenger train daily round trips between Seattle and Portland, is designed to alleviate some of the conflicts that already occur in the Longview Junction area. BNSF has implemented a directional routing protocol which will have an impact on empty trains departing the Barlow Point facilities, particularly in the longer term. Under the directional routing protocol, BNSF is utilizing the Stampede Pass route between Auburn and Pasco as the eastbound empty unit train corridor for points north of Vancouver, WA. The main line between Pasco and Vancouver along the Columbia River is

utilized as a westbound corridor for loaded unit trains. As loaded unit train growth continues to occur within the Longview area, fewer eastbound empty unit trains will be operated over the Pasco – Vancouver main line and will be operated via Stampede Pass.

For empty unit trains generated at Longview, a facility that would require connecting through the Longview Junction Yard to BNSF's main lines at the north end of the Longview Junction complex would potentially create further internal conflicts at Longview Junction.

CONCLUSIONS

The following are MLM's preliminary high level observations:

Based on the conceptual layouts reviewed, the MLM believes that a unit train unloading facility can be constructed at Barlow Point to handle either liquid or dry bulk commodities in the train volumes indicated.

Construction of manifest rail car operation within the Barlow Point footprint is also a potential possibility, dependent on overall facility design. A manifest operation will likely require a separate lead from unit train operations and a small switching yard. The Barlow Point property and proposed rail configurations appear to provide sufficient space to support this need.

The curvature of the loop tracks will require a waiver from BNSF if the degree of curvature exceeds 7 degrees 30 minutes.

A unit train unloading facility will require construction of a locomotive fueling location with drip pans to service UPRR locomotives if UPRR is involved in providing unit train service to Barlow Point. The Barlow Point property and proposed rail configurations appear to provide sufficient space to support this need.

A bad order set out track which is accessible to car repair personnel will be necessary. The Barlow Point property and proposed rail configurations appear to provide sufficient space to support this need.

Road access to locomotives on a train ready to depart will be necessary for an outbound main line road crew to take charge of the train. The Barlow Point property and proposed rail configurations appear to provide sufficient space to support this need.

Design of the product discharge locations within Barlow Point will need to be evaluated to minimize offsite access conflicts to adjacent properties due to the length of potential inbound unit trains.

Reynolds Lead may need to be double tracked if both the Barlow Point and other proposed developments adjacent to the site are constructed to the level of train volumes proposed.

If the two developments do occur and the Reynolds Lead is double tracked, it is probable that signalizing the track between the IRC connection to the Reynolds Lead and facility access at Barlow Point will be required, which would allow increased train speeds. Switches would have to be powered and remotely controlled for lining proper routes, perhaps by the LSC yardmaster. The volume of potential proposed trains will require active management of train flows over the routes between Longview Junction, and the Barlow Point facilities.

POL's IRC may require an additional through track, particularly between the IRC connection and the LSC on the east end past the EGT entry switch.

The Cowlitz River Bridge may need to be double tracked due to the Barlow Point unit train operations, dependent on the timing of other increases in rail traffic demanding capacity over the bridge. Construction of the second track across the river will likely be required due to the increased unit train operations from the combination of the development of Barlow Point and other proposed developments adjacent to the site.

If BNSF routes empty unit trains from Longview northward to Auburn and the Stampede Pass, empty unit trains routed northward through the Longview Junction Yard may result in increased conflicts with other trains arriving and departing Longview and Longview Junction switching.

Mainline Management, Inc.
Port of Longview Barlow Point Development
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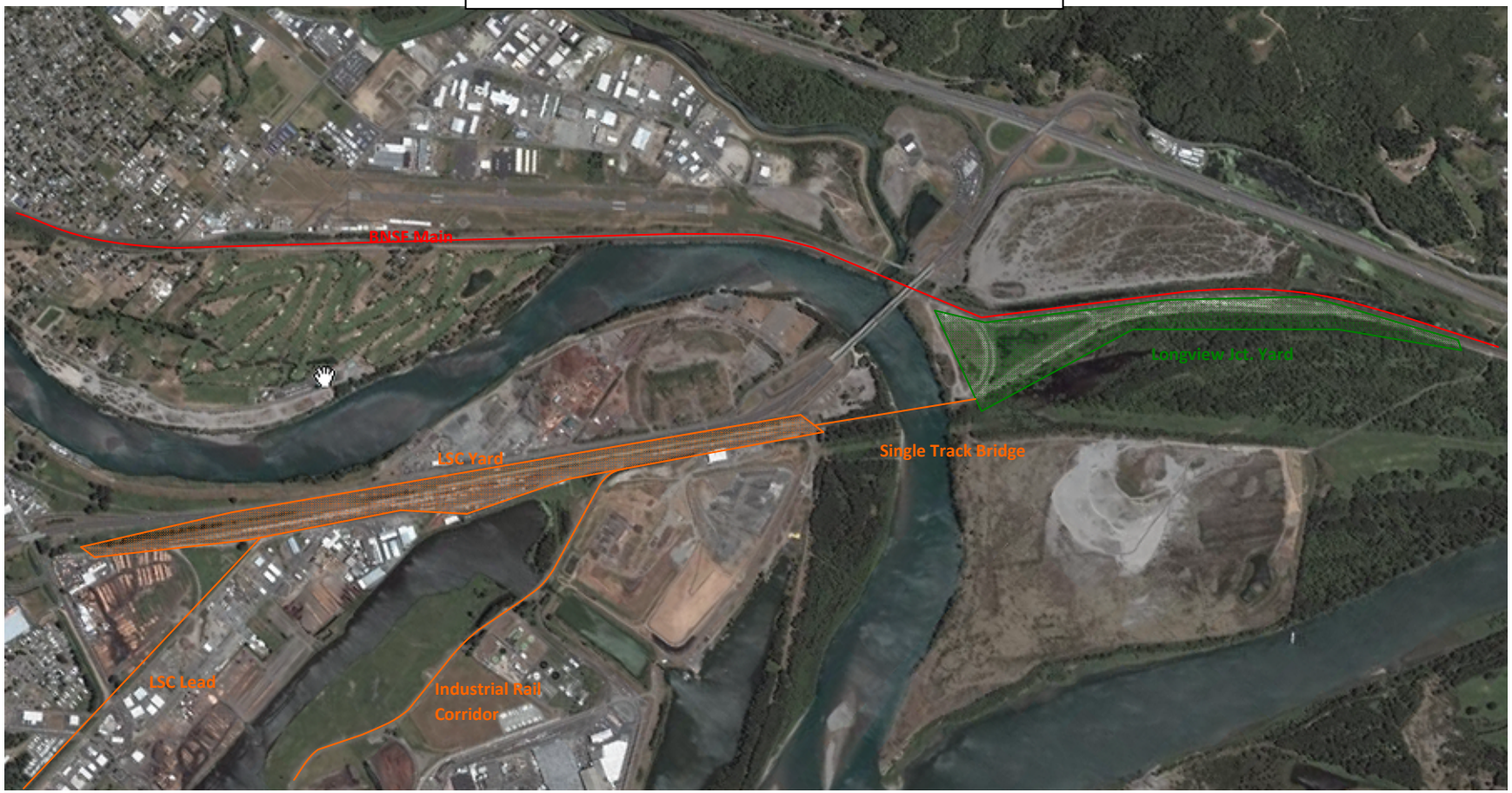
Attachment A



Mainline Management, Inc.
Port of Longview Barlow Point Development
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Attachment B

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