Memo

Date:	January 5, 2024
Project:	Pacific Green Fertilizer Plant
To:	Derek Vanarsdale, Atlas Agro
From:	Matt Van Hattam, HDR
Subject:	**Rail Transportation Analysis**

1.0 Introduction

Atlas Agro North America Corp is proposing a fertilizer plant facility referred to as the Pacific Green Fertilizer Plant (PGF) (referred herein as project) in Richland, Washington. The project is in the Northwest Advanced Clean Energy Park, City of Richland, Benton County, Washington, in a newly annexed portion of the City of Richland that was part of the Hanford Site. The overall industrial park is approximately 260 acres with the proposed project utilizing approximately 130 acres in the southern portion of the park.

The project would utilize trains to transport raw materials, specifically dolomite and limestone, to the PGF facility from a supplier in Woodland, Washington. This memorandum assesses potential rail transportation impacts from the project in terms of rail capacity, at-grade crossing delays, and overall rail safety during transport of these raw materials.

Railroads provide surface transportation of cargo (freight) and passengers, which offers an alternative to vehicular transportation that can support regional economic activity and mobility. As with other forms of transportation, rail transportation is subject to various regulatory requirements established to reduce the risk of transportation-related fatalities or injuries and protect public safety. For this assessment, rail transportation refers to the manifest freight trains and unit trains[1] that would serve the proposed facility (project-related trains), as well as the type and volume of other rail traffic using the same rail lines.

2.0 Regulatory Setting

Prior to construction, Atlas Agro will seek any necessary approvals for rail transportation and safety from Columbia Rail (the provider of rail services at the proposed PGF site) and BNSF Railway (the provider of line-haul services between Woodland, Washington, and Richland, Washington) Laws and regulations relevant to rail transportation are summarized in Table 1.

[1] A unit train is a train in which all cars carry the same commodity and generally originate, operate, and terminate as intact trainsets between one shipper and one receiver. A manifest train carries a diverse array of commodities in individual carloads or small groups of cars that are batched together for movement in one train from an originating yard to common terminating locations where the cars are classified (sorted) for further movement or delivered to the customer. Manifest trains may perform pickups and setouts at intermediate yards, interchange points, or customers enroute, as required.

Table 1. Regulations, statutes, and guidelines for rail transportation.

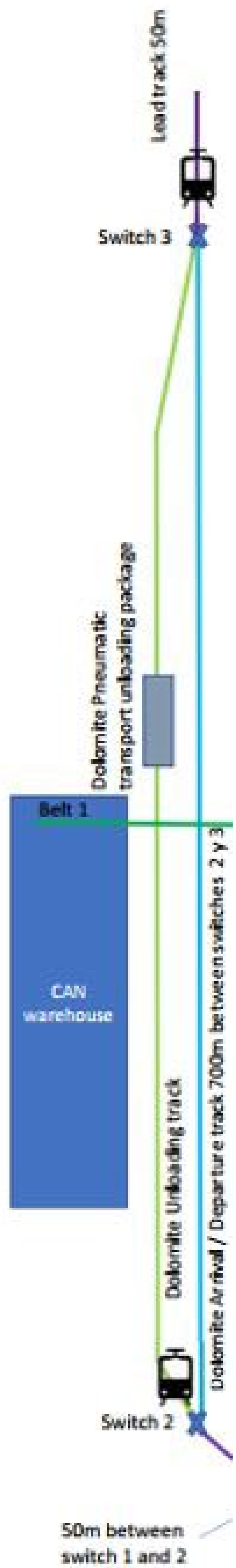
Regulation, Statute, Guideline	Description
Federal	
Federal Railroad Safety Act of 1970	Grants the Federal Railroad Administration (FRA) authority over all areas of rail safety. FRA has designated state and local law enforcement agencies with jurisdiction over most aspects of highway-rail grade crossings, including warning devices and traffic law enforcement.
Highway Safety Act and Federal Railroad Safety Act	Grants the Federal Highway Administration (FHWA) and FRA regulatory jurisdiction over safety at federal highway-rail grade crossings.
Rail Safety Improvement Act of 2008	Directed FRA to establish new rail safety regulations, including hours of service requirements for railroad workers, positive train control implementation, new standards for track inspections, certification of locomotive conductors, and safety at highway-rail grade crossings.
Federal Railroad Administration, Department of Transportation Regulations; Code of Federal Regulations (49 CFR 200-299)	Title 49 of the Code of Federal Regulations (CFR) contains all U.S. regulations governing transportation. Parts 200–299 contain regulations established by FRA governing railroads, including safety requirements related to track, operations, locomotives, and cars. FRA does not regulate segregated urban railroad transit systems. Under Title 49 CFR Part 225, railroads are required to report accidents and incidents to FRA. This analysis used the definition of an “accident/incident” that FRA applies to railroads for meeting its reporting obligation.
Interstate Commerce Commission Terminal Act of 1995 (49 USC 101)	Establishes the Surface Transportation Board as an independent federal agency charged with the economic regulation of various modes of surface transportation, primarily freight rail, and upholds the common-carrier obligations of railroads; requires railroads to provide service upon reasonable request.
State	
Washington Utilities and Transportation Commission	Inspects and issues violations for hazardous materials, tracks, signal and train control, and rail operations. WUTC regulates the construction, closure, or modification of public railroad crossings. In addition, WUTC inspects and issues defect notices if a crossing does not meet minimum standards
Title 81, Transportation—Railroads, Employee Requirements and Regulations (RCW 81.40)	Establishes general requirements for railroad employee environment and working conditions, the minimum crew size for passenger trains, and requirements for flaggers.
WSDOT *Local Agency Guidelines* M 36-63.28, June 2015, Chapter 32, Railroad/Highway Crossing Program	Focuses on adding protection to improve safety and efficiency of railroad/ highway crossings. Provides a process for investigating alternatives for improving grade-crossing safety, such as closure, consolidation, and installation of warning devices
WSDOT *Design Manual* M 22.01.10, November 2015, Chapter 1350, Railroad Grade Crossings	Provides specific guidance for the design of at-grade railroad crossings.
Rail Companies—Clearances (WAC 480-60)	Establishes operating procedures for railroad companies in Washington State. Includes rules of practice and procedure, walkway clearances, side clearances, track clearances, and rules for operation of excess dimension loads.
Rail Companies—Operation (WAC 480-62)	Establishes railroad operating procedures in Washington State.

3.0 Study Area

The study area is the project area, located within the Northwest Advanced Clean Energy Park in the city of Richland, Benton County, Washington. For the purposes of this analysis, the "project area" is defined as the proposed rail infrastructure extending from a connection with existing freight rail infrastructure (the Port of Benton Industrial Lead) that is designed to serve the proposed PGF Plant (Figure 1). To facilitate raw material import, the facility would connect with the existing Port of Benton Industrial Lead located along the eastern edge of the site. The proposed rail infrastructure would extend approximately 2,625 feet from the connection to the Port of Benton Industrial Lead northward into the facility. The rail layout at the facility provides an arrival and departure track for the dolomite and limestone railcars and a parallel, double-ended unloading track that would be used to unload railcars. Dolomite and limestone would be unloaded directly from the railcars to a pneumatic transport system where it would be conveyed to silos for on-site storage.

The rail infrastructure planned to support the receipt of dolomite and limestone shipments by rail has been designed to not preclude the construction of additional rail infrastructure to support the shipment of finished products by rail at an undetermined point in the future. However, the shipment of outbound finished products is not part of the project's current plans, nor is it a part of this analysis.

Figure 1. Proposed rail infrastructure in the project area



The study area for indirect impacts includes the project area and an existing freight rail corridor between Longview and Richland, Washington, which is defined as the rail study area. The rail study area extends approximately 274 miles and is comprised of several contiguous rail lines, which together form the route that railcars loaded with dolomite and limestone would operate over from Woodland to Richland.

4.0 Project Related Rail Shipments

At full operation, the project would bring approximately 39 incoming railcars per week carrying feedstock for the facility and send out approximately 39 empty railcars per week to be reloaded with feedstock. The feedstock transported by rail the facility is dolomite and limestone, assumed to be sourced from a facility in Woodland, Washington.

The volume of railcars is equivalent to approximately 0.5 incoming trains per week and 0.5 outgoing trains per week, based on current average train length data from the Association of American Railroads. (The *2023 Railroad Fact Book* published by the Association of American Railroads, notes that the average number of cars per freight train in the U.S. is currently 81.7 cars.) Transportation contracts with freight railroads have not yet been signed. For the purposes of this analysis, the project's rail volumes are assumed to be transported on existing manifest freight trains that currently operate between Woodland and Richland, Washington, and that no additional train movements will be generated by the project.

BNSF Railway (BNSF) is assumed to be the line-haul rail service provider for shipments of dolomite and limestone in the rail study area from Woodland to Richland, with final delivery to the project site provided by Columbia Rail. Together, these two railroads operate a network of rail lines that provide the most direct route for project-related shipments of dolomite and limestone from the originating facility in Woodland to the project site in the city of Richland.

The rail lines that form the rail study area are summarized in Table 2.

Table 2. Rail study area line segments.

Line Name	Rail Operator	Begin Location	End Location	Miles (Approx.)
Seattle Subdivision	BNSF Railway	Longview Yard	Woodland	15
Seattle Subdivision	BNSF Railway	Woodland	Vancouver	20
Fallbridge Subdivision	BNSF Railway	Vancouver	SP&S Jct. (Kennewick)	219
Lakeside Subdivision	BNSF Railway	SP&S Jct. (Kennewick)	Pasco Yard	3
Yakima Valley Subdivision	BNSF Railway	SP&S Jct. (Kennewick)	UP Conn. (Kennewick)	2
Kalan Industrial Lead	Union Pacific (BNSF has trackage rights)	UP Conn. (Kennewick)	Richland Jct. (Kennewick)	4
Port of Benton Industrial Lead	Columbia Rail (BNSF has trackage rights)	Richland Jct. (Kennewick)	Hanford	11

Table Source: Washington State Rail Plan 2019-2040, FRA Crossing Inventory and Accident Report database, and FRA – Rail Safety Map

BNSF's rail network spans the western United States transporting consumer goods, grain and agricultural products, energy products, industrial products such as chemicals, housing materials, food, and beverages. BNSF owns 1,335 routes miles of rail lines in Washington State and has the authority to operate over an additional 115 miles of rail lines in Washington State controlled by other railroad companies through the exercise of trackage rights. Trackage rights provide one railroad with the legal right to operate on tracks owned or controlled by another railroad.

Columbia Rail, based in Walla Walla, Washington, operates several shortline railroads in eastern Washington and eastern Oregon with a combined length of 150 miles. Columbia Rail is the operator of the 16 miles of railroad owned by the Port of Benton. This stretch of rail serves businesses in the project vicinity and includes the Port of Benton Industrial Lead. The track extends from Hanford (where access to the project site's location at the North Horn Rapids Industrial Park would be provided) southward to Richland Junction, in Kennewick, Washington. Connections are made with BNSF and Union Pacific Railroad (UP) at the Richland Junction.

Both BNSF and UP are Class I railroads, the classification system used by the Surface Transportation Board to categorize U.S. railroads for regulatory purposes based on operating revenue. Class I railroads are defined as railroads with annual operating revenues greater than $1.032 billion, which comprise the six largest railroads in the U.S. BNSF and UP are the only Class I railroads that serve Washington State and operate the majority of the freight rail trackage in the state.

The trackage rights that would be required for BNSF to move a project-related rail shipment of dolomite and limestone from Woodland to Richland through the rail study area are already in place, as shown in Table 2. A map of southern Washington State rail lines that includes the rail lines in the study area is shown in Figure 2.

Figure 2. Existing freight rail tracks from Longview to Richland.

Source: Washington State Rail Plan 2019-2040

5.0 Rail Transportation Impacts

5.1 Methods of Evaluating Impact on Rail Transportation

This section describes the sources of information and methods used to evaluate the potential impacts on rail transportation associated with the construction and operation of the project.

5.1.1 Information Sources

Information sources used to evaluate potential impacts on rail safety associated with the construction and operation of the project included the following:

- **Existing and No-Action Alternative rail traffic**. Existing rail traffic in the rail study area was collected based on data and estimates contained in the Washington State Rail Plan, 2019–2040, published by Washington State Department of Transportation in August 2020; the Rail Master Plan for the Port of Benton and City of Richland, published in January 2017; U.S. DOT Grade Crossing Inventory Forms available online through FRA's Office of Safety Analysis Crossing Inventory and Accident Reports database; and U.S. DOT's FRA – Safety map, an online GIS rail map of the national rail network. For the purposes of this analysis, existing traffic levels will be used for the No-Action Alternative.
- **Project-Related train operations**. Future project-related rail traffic and train parameters were based on information provided by Atlas Agro.
- **Train parameters**. Train parameters for train operations in the No-Action Alternative were developed using data on freight train length published by the Association of American Railroads. Train parameters for project-related train operations were provided by Atlas Agro.

5.1.2 Impact Analysis

The following methods were used to identify the potential rail transportation impacts of the proposed renewable fuels production facility in the rail study area. For this analysis, potential impacts resulting from project-related operations are based on the projected railcar throughput requirements provided by Atlas Agro AG to support the operation of the PGF Plant.

- **Train parameters and operations**. For this analysis, all project-related trains were assumed to have the parameters and operational frequencies shown in Table 4 and Figure 4. Existing rail operations in the rail study area that comprise the No Action alternative were assumed to have the operational frequencies and train parameters shown in Table 3, Table 4, Table 5 and Figure 3.
- **Rail line capacity**. A rail line level of service (LOS) grade for rail lines in the study area, based on the ratio of existing train volumes to the rail line's practical capacity,[2] was developed by Washington State Department of Transportation for the Washington State Rail Plan, 2019–2040. The state rail plan's LOS ratings are included in this analysis to help determine the adequacy of rail lines in the study area to accommodate project-related train volumes of service (Table 4 and Table 5).

Table 3 shows the physical characteristics of rail lines in the rail study area.

Two of the rail lines in the study area host intercity passengers, which operate at higher maximum operating speeds than freight trains. BNSF's Seattle Sub hosts *Amtrak Cascades* intercity passenger trains operating between Seattle, Washington, and Portland, Oregon. This service is sponsored by the Washington and Oregon state departments of transportation. From 2006 to December 2023, *Amtrak Cascades* service on the Seattle Subdivision consisted of four daily round trips (eight train

[2] Practical capacity is the capacity at which trains on the system are all moving without incurring significant delay or experiencing significant operational problems. Also defined as "The percentage of theoretical capacity that provides reliable and predictable train operation."

movements). However, effective December 11, 2023, service between Seattle and Portland was increased to six daily round trips (12 train movements). The rail study area contains an intercity passenger station at Vancouver, where *Amtrak Cascades* trains stop. In addition, the Seattle Subdivision hosts Amtrak's long-distance *Coast Starlight* train, which makes one daily round trip between Seattle and Los Angeles, California. The *Coast Starlight* also stops at the Vancouver, Washington, passenger station.

The Fallbridge Subdivision and Lakeside Subdivision host Amtrak's long-distance *Empire Builder* train, which makes one daily round trip between Portland, Oregon, and Chicago, Illinois. In the rail study area, the *Empire Builder* makes station stops at Vancouver, Bingen-White Salmon, Wishram, and Pasco.

Table 3. Physical Characteristics of rail lines in the rail study area

Line Name	Line Segment	Railroad Owner/Operator	Other Railroads that Operate on Line	No. of Main Tracks	Maximum Operating Speed (mph)	Track Signaled
Seattle Sub	Longview-Woodland	BNSF	ATK, UP	2	79	Yes
Seattle Sub	Woodland-Vancouver	BNSF	ATK, UP	2	79	Yes
Fallbridge Sub	Vancouver-Wishram	BNSF	ATK	1-2	70	Yes
Fallbridge Sub	Wishram-SP&S Jct.	BNSF	ATK	1	79	Yes
Lakeside Sub	SP&S Jct.-Pasco	BNSF	ATK	1-2	25	Yes
Yakima Valley Sub	SP&S Jct.-UP Conn. (Kennewick)	BNSF	None	1	35	No
Kalan Industrial Lead	UP Conn.-Richland Jct.	UP	BNSF	1	10	No
Port of Benton Industrial Lead	Richland Jct.-Hanford	CWW	BNSF, UP	1	10	No

Table Source: Washington State Rail Plan 2019–2040, FRA Crossing Inventory and Accident Report database, and FRA – Rail Safety Map

Table 4 shows the train frequencies of rail lines in the rail study area. Two train frequency data sets are shown: the average of frequencies per line segment reported in the most recent FRA Crossing Inventory form, and also the average train frequency reported in the Washington State Rail Plan, 2019–2040.

In addition, the table shows the estimated amount of rail capacity consumed by existing operations, based on an integrated rail system capacity analysis of freight and passenger rail services in 2016 that was part of the Washington State Rail Plan, 2019–2040. The capacity analysis calculations from the state rail plan are expressed as LOS grades and were developed by comparing combined freight and passenger train volume to the practical capacities of each line segment. The LOS grades and descriptions in the state rail plan were developed to correspond to the LOS grades used in the FHWA's Highway Performance Monitoring System.

Table 4. Train frequencies and capacity analysis of rail lines in the rail study area

Line Name	Line Segment	Railroad Operator	Avg. Trains per Day in FRA Crossing Inventory Report	Year of Rail Traffic Calculation in FRA Crossing Inventory Report	2016 Avg. Trains per Day, State Rail Plan	2016 LOS Grade, State Rail Plen
Seattle Sub	Longview-Woodland	BNSF	48	2019	46	C
Seattle Sub	Woodland-Vancouver	BNSF	48	2019	46	C
Fallbridge Sub	Vancouver-Wishram	BNSF	32	2019	35	E
Fallbridge Sub	Wishram-SP&S Jct.	BNSF	28-32	2019	35	E
Lakeside Sub	SP&S Jct.-Pasco	BNSF	38	2019	43	E
Yakima Valley Sub	SP&S Jct.-UP Conn. (Kennewick)	BNSF	12	2019	8	B
Kalan Industrial Lead	UP Conn.-Richland Jct.	UP	4	2019	n/a	n/a
Port of Benton Industrial Lead	Richland Jct.-Hanford	CWW	6	2023	n/a	n/a

Table Source: Washington State Rail Plan 2019–2040, FRA Crossing Inventory and Accident Report database, and FRA – Rail Safety Map

Table 5 defines the volume-to-capacity ratios and LOS grades applied to the rail capacity analysis data from the Washington State Rail Plan, 2019–2040 shown in Table 4 for lines in the rail study area.

Table 5. Volume-to-Capacity ratios and level of service grades

LOS Rating	Description	Volume	Volume/Capacity Ratio
A	Below Capacity	Low to moderate train flows with capacity to accommodate maintenance and recover from incidents	0.0 to 0.2
B	Below Capacity	Low to moderate train flows with capacity to accommodate maintenance and recover from incidents	0.2 to 0.4
C	Below Capacity	Low to moderate train flows with capacity to accommodate maintenance and recover from incidents	0.4 to 0.7
D	Near Capacity	Heavy train flow with moderate capacity to accommodate maintenance and recover from incidents	0.7 to 0.8
E	At Capacity	Very heavy train flow with limited capacity to accommodate maintenance and recover from incidents	0.8 to 1.0
F	Above Capacity	Unstable flows; service breakdown conditions	> 1.00

Table Source: Washington State Rail Plan 2019–2040

As can be seen in Table 4, most of the lines within the rail study area were operating below capacity in 2016, primarily LOS B or C, although the Fallbridge Sub (Vancouver–Pasco) was operating at a level at its practical capacity, with a LOS E rating. More recent train volume data from the FRA

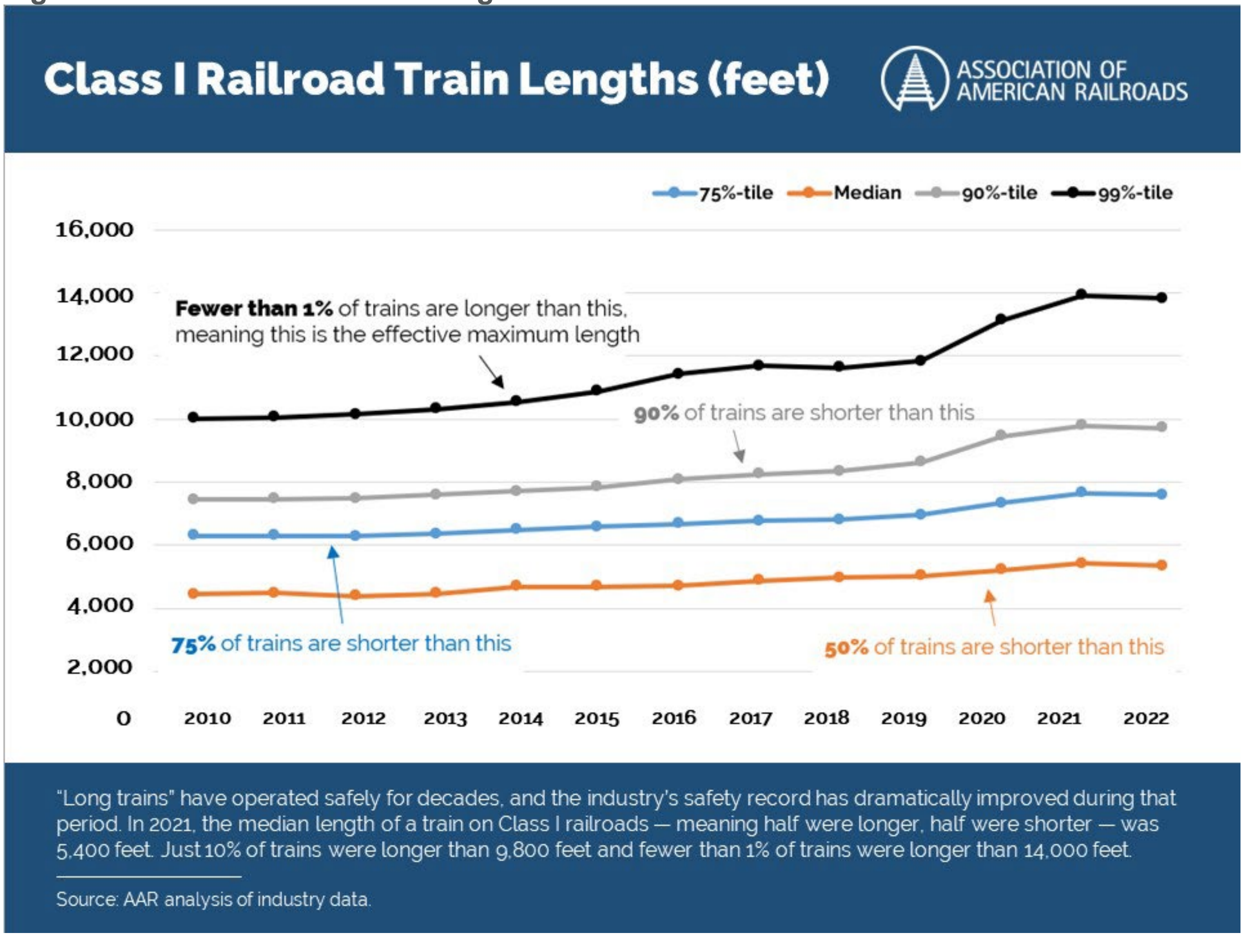
Crossing Inventory reports indicate that traffic volumes on the Fallbridge Sub have declined slightly from 2016 to 2019.

The wide range of physical characteristics, train frequencies, and LOS of the lines in the rail study area are indicative of the different purposes they serve. The Seattle Subdivision is a high-density rail corridor that roughly parallels Interstate 5 and is the primary route for north-south rail traffic of all types moving from Washington State southward to Portland and California and northward to the Canadian border. The Fallbridge Subdivision is one of three BNSF main lines in Washington State that link the Pacific Northwest with markets in the central United States. It is the primary line for export grain traffic moving to ports along the Columbia River and Puget Sound, and is also a key route for intermodal traffic (trailers and containers on flatcars) moving to and from Portland, Tacoma, and Seattle, as well as manifest (carload) rail traffic moving to and from industrial and agricultural customers in Washington State. The Yakima Valley Subdivision is part of an alternate, lower-capacity route for traffic moving between the Pacific Northwest and the central United States via the Stampede Pass crossing of the Cascade Range.

The Kalan Industrial Lead is a low-density, unsignaled freight line that is used by UP to serve local freight customers between Kennewick and Wallula, Washington, as well as interchange traffic with Columbia Rail via the Port of Benton Industrial Lead. BNSF has trackage rights on a portion of UP's Kalan Industrial Lead to enable BNSF local trains originating at Pasco Yard to interchange traffic with Columbia Rail- via the Port of Benton Industrial Lead.

Owing to the large number of rail lines and the variety of train types and train operations on the lines in the rail study area, the train parameter for existing operations was determined based on the average length of freight trains in U.S. For the purposes of this analysis, train parameters of existing trains in the rail study area will be based on recent train length data published by the Association of American Railroads (AAR) in its August 2023 "Freight Train Length" fact sheet. According to the AAR fact sheet, "in 2021, the median length of a train on Class I railroads — meaning half were longer, half were shorter — was 5,400 feet [Figure 3]. Just 10 percent of trains were longer than 9,800 feet, and fewer than 1 percent of trains were longer than 14,000 feet."

Figure 3. Class I Railroad train lengths.

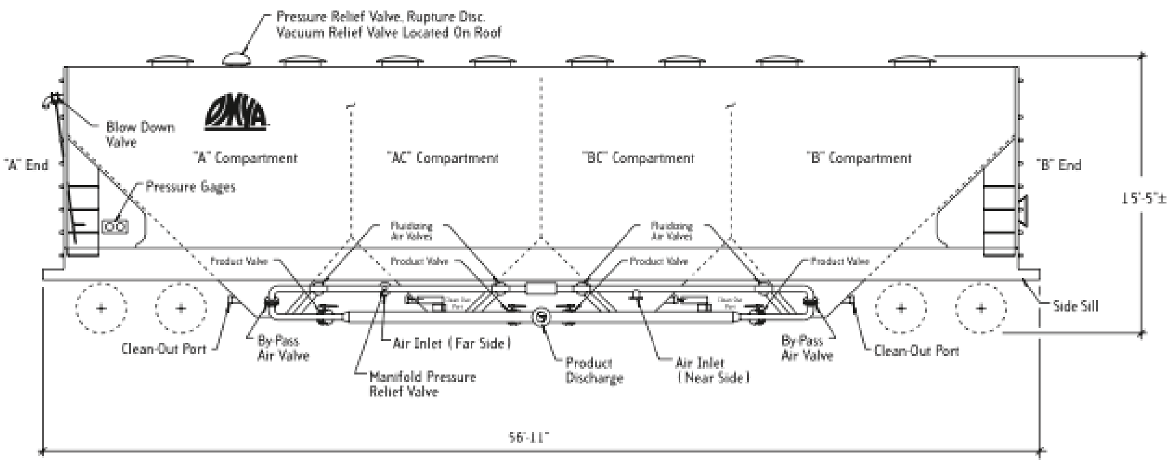


Source: AAR Freight Train Length fact sheet, 2023

The median train length of 5,400 feet will be the assumed length of trains on rail lines in the rail study area in the Existing and No-Action alternatives.

Project-related rain operations at full operation would consist of a once-per-week movement of 39 loaded railcars of dolomite and limestone, which would be transported from a production facility in Woodland, Wahington, to the project site, and a once-per-week movement of 39 empty railcars that would be transported from the project site back to the production facility in Woodland, Washington, for reloading with dolomite and limestone. The dolomite and limestone is estimated to be hauled in four-bay covered hopper cars. Each covered copper hopper car is estimated to have a length of approximately 65 feet between couplers (Figure 4) and be capable of holding 100 tons dolomite and limestone.

Figure 4. Typical railcar dimension of railcars hauling project-related traffic.



Source: Atlas Agro AG

Table 6 shows the parameters and operations of project-related trains operated in the rail study area. Transportation contracts with freight railroads have not yet been signed. For the purposes of this analysis, the project's rail volumes are assumed to be transported on existing manifest freight trains that currently operate between Woodland and Richland, Washington, and that no additional train movements will be generated by the project. However, for the purposes of rail capacity estimates a project-related train volume has been determined, based on the existing average length of trains in the rail study area and the project-related trains.

When projected-related train volumes in each direction are combined, the length of the cars totals 5,070 feet (two movements per week of 39 cars with a combined length of 2,535 feet), which is the approximate equivalent length of one Class I freight train. For the purposes of this analysis, the total project-related rail volume is assumed to be one roundtrip train per week, or 0.5 one-way train movements per week, in the rail study area.

Table 6. Project-related trains in the Rail Study Area

Train Type	Average Cars	Average Length (ft.)	Average Movements (2)	Project-Related Train Equivalent Volume Added to Rail Network (3)
Manifest (Woodland – Richland)	39	2,535 (1)	2 per week (approx.), consisting of 1 movement per week in each direction	1 train per week (approx.), consisting of 0.5 trains per week in each direction

1 Assumes use of a four-bay covered hopper car with a length of approximately 65 feet between couplers.

2 Train movements are defined as mainline trips between the two locations identified in the train type column. Does not include local switching moves performed en route to serve specific customers.

3 Based on the AAR's average length of a Class I freight train of 5,400 feet.

The estimated project-related train volume equivalent to approximately 0.5 incoming trains per week and 0.5 outgoing trains per week is reinforced by additional average train length data found in the AAR "2023 Railroad Fact Book." This book includes a measurement of train length by number of railcars, rather than feet, and reports that the average number of cars per freight train in the U.S. is currently

81.7 cars. A project-related shipment of 39 cars is nearly equivalent to one-half of an average train length when measured by railcar length.

5.2 Potential Project Impacts

This section describes the potential direct and indirect impacts related to rail transportation and vehicular traffic delays from the construction and operation of the project.

5.2.1 Construction

Because the project area is at the terminus of the rail study area, and not currently served by existing rail traffic, construction of the PGF Plant would not affect existing rail traffic in the rail study area. No construction materials are proposed to be transported by rail to or from the project area during construction.

5.2.2 Operations

Operation of the project would result in the following indirect impact on rail transportation.

Within the project area, a shipment of 39 covered hopper cars loaded with dolomite and limestone will enter the facility once per week to feed raw material to the production process. Each car is estimated to carry 100 tons of cargo. Therefore, each weekly shipment will deliver 3,900 tons—or 7,800,000 pounds—of raw material to the facility. Columbia Rail will enter the facility with one 39-car shipment of dolomite and limestone per week and set out the cars on the Raw Material Arrival/Departure track. Once the cars are delivered and the Columbia Rail local train has left the facility, a switcher locomotive at the north end of the project area rail infrastructure (the north switcher) will take the first loaded car on the north side and move it to the Raw Material Unloading Track, at the Raw material unloading station. Once the car is stopped at the Raw material unloading station, the car will be connected to the facility's raw material unloading pneumatic transport system, which will transfer dolomite and limestone from the covered hopper car to the facility's raw material silos. Once the covered hopper car is emptied, a south switcher locomotive will take the car and move it to the Raw Material Arrival/Departure Track as the last car on the south end of the convoy of railcars. Then, with the north locomotive switcher pulling and the south locomotive switching pushing, the whole convoy is pushed north to resume its original location. Once this is done, the north locomotive switcher will take the first covered hopper car on the north side and move it to the Raw Material Unloading Track at the Raw material unloading station. The whole process will be repeated until all of the covered hopper cars have been emptied and reassembled as one 39-car block on the Raw Material Arrival/Departure Track to await pickup by the Columbia Rail local train, which will pull the empty railcars from the facility via the Port of Benton Industrial Lead.

Project-related rail operations outside of the project area along the rail lines that form the rail study area are assumed to occur as follows: manifest trains carrying project-related covered hopper cars loaded with dolomite and limestone would move from Woodland, Washington, to the project area, and then reverse, moving as empty railcars from the project area back to Woodland. Although the project-related railcars are assumed to move in existing manifest trains operating in the rail study area, the project-related rail volumes would add more length to existing trains. Project-related rail shipments are assumed to generate a movement of 39 loaded covered hopper cars once per week from Woodland to the project area, and a movement of 39 empty covered hopper cars once per week from the project area to Woodland. The length of the 39 covered hopper cars proposed to transport dolomite and limestone from Woodland to the project area is approximately 2,535 feet, or roughly half the length of the average Class I freight train length of 5,400 feet. The PGF Plant, at full throughput, would generate the equivalent of 0.5 loaded trains per week and return an equivalent of 0.5 empty trains per week. Therefore, the equivalent of one project-related train per week would operate in the rail study area.

The movement of dolomite and limestone by rail via BNSF from Woodland to the project area requires some segments of track to be traversed more than one time during a shipment's journey, based on descriptions of train operations in the rail study area that appear in the Washington State Rail Plan, 2019–2040 and the Port of Benton/City of Richland Rail Master Plan. For the purposes of this analysis, the facility in Woodland that originates the project-related railcar loads of dolomite and limestone is assumed to be served by a BNSF local freight train that originates in Longview Yard. After the local train picks up the loaded dolomite and limestone cars at Woodland and switches other customers along its route, it returns to Longview Yard. At Longview, the project-related covered hopper cars loaded with dolomite and limestone are transferred to another BNSF freight train that operates south from Longview, past Woodland, to Vancouver Yard in Vancouver, Washington. At Vancouver Yard, the project-related cars are assumed to be transferred to a BNSF freight train that operates from Vancouver Yard to Pasco Yard in Pasco, Washington. At Pasco Yard, the project-related cars are assumed to be transferred to a BNSF local freight train that operates from Pasco to the Port of Benton Yard, where the cars are interchanged with Columbia Rail. From the Port of Benton Yard, Columbia Rail is assumed to provide the last-mile delivery of project-related cars to the project area.

Under this operating assumption, there are two rail line segments that one project-related shipment of 39 cars would traverse twice: the segment of the Seattle Subdivision between Woodland and Longview, a distance of approximately 15 miles, and the Lakeside Subdivision between Pasco Yard and SP&S Jct. in Kennewick, a distance of approximately 3 miles. In these two segments, the PGF Plant, at full throughput, would generate the equivalent of one loaded train per week and return an equivalent of one empty train per week, or a total of two project-related trains per week. The two line segments where project-related rail volumes would be twice as high, owing to the passage of two project-related movements per shipment, have a combined length of approximately 18 miles, which comprises 6.5 percent of the total approximate 274-mile length of the rail study area.

Based on the statewide rail line capacity analysis presented in the Washington State Rail Plan, 2019–2040 and summarized in Section 4.1, the rail lines in the rail study area are assumed to accommodate the current baseline rail traffic in addition to future project-related rail traffic.

The project does not require any new public highway-rail grade crossings along any of the railroad lines within the rail study area.

Operation of the PGF Plant would increase the potential for vehicular delays at existing highway-rail grade crossings in the rail study area by roughly 5 percent in the line segment with the lowest volume of trains in the rail study area. The potential for vehicular delays at highway-rail grade crossings would be no greater than 3 minutes per train movement—or approximately 6 minutes per week—along the two lowest-speed sections of the rail study area, the Kalan Industrial Lead and the Port of Benton Industrial Lead, where the maximum operating speed of trains is 10 mph. These two line segments have a combined length of approximately 15 miles, comprising just 5 percent of the length of the total rail study area. Along the BNSF main lines between Longview and Vancouver and between Vancouver and Pasco, the potential for vehicular delays at existing highway-rail grade crossings is estimated to be between 30 and 60 seconds per movement—or approximately 1 to 2 minutes per week—as manifest freight trains are estimated to be operating at speeds between 30 mph and 60 mph. In the segments of the rail study area traversed two times by each project-related shipments (Longview-

Woodland, Pasco-SP&S Jct.), vehicular delays at highway-rail grade crossings would total approximately 2 to 4 minutes per week. The estimated increase in vehicular delays at highway-rail grade crossings resulting from projected-related rail traffic is negligible.

6.0 References

Association of American Railroads. *2023 Railroad Fact Book.* Released 2023 AAR. Accessed December 27, 2023. Not available online

Association of American Railroads. *Freight Train Length.* Released August 2023. Accessed December 27, 2023. https://www.aar.org/wp-content/uploads/2023/03/AAR-Train-Length-Fact-Sheet.pdf

BNSF Railway. *BNSF Railway in Washington*. Website. Accessed November 20, 2023. https://bnsfnorthwest.com/washington/

Columbia Rail. Website. Accessed November 20, 2023. https://columbiarail.com/

Federal Railroad Administration (FRA), Office of Safety and Analysis. Grade Crossing Inventory and Accident Reports webpage. Accessed October 26, 2023. https://safetydata.fra.dot.gov/officeofsafety/publicsite/crossing/crossing.aspx

Port of Benton and City of Richland. *Rail Master Plan*. Released January 2017. Accessed October 25, 2033. https://portofbenton.com/wp-content/uploads/2023/07/SPRING-Newsletter-Allpdf.pdf

Port of Benton. *Port of Benton 2023 Comprehensive Plan*. Released October 2022. Accessed October 25, 2033. Port of Benton and City of Richland. Rail Master Plan. Released January 2017. Accessed October 25, 2033. https://portofbenton.com/wp-content/uploads/2023/07/SPRING-Newsletter-Allpdf.pdf

Port of Benton. *Summer 2023 Newsletter*. Accessed August 20, 2023. https://portofbenton.com/wp-content/uploads/2023/07/SPRING-Newsletter-Allpdf.pdf

Surface Transportation Board. Economic Data webpage containing revenue thresholds for the classification of rail carriers. Accessed December 27, 2023. https://www.stb.gov/reports-data/economic-data/#:~:text=Current%20thresholds%20establish%20Class%20I,See%2049%20C.F.R.

Surface Transportation Board. *CWW LLC dba Columbia Rail-Lease and Operation Exemption-Port of Benton County, Wash*. Published February 22, 2023. Accessed October 26, 2023. https://www.federalregister.gov/documents/2023/02/22/2023-03664/cww-llc-dba-columbia-rail-lease-and-operation-exemption-port-of-benton-county-wash

Tri-Cities Area Journal of Business. *Port hires Walla Walla company to manage Richland railroad*. Published February 10, 2023. Accessed December 27, 2023. https://www.tricitiesbusinessnews.com/articles/4276

Tri-Cities Area Journal of Business. *Port of Benton: Rail priorities keep port on the right track*. Published October 11, 2023. Accessed December 27, 2023. https://www.tricitiesbusinessnews.com/articles/4748

U.S. Department of Transportation. *FRA – Safety Map website*. Accessed October 26, 2023. https://fragis.fra.dot.gov/GISFRASafety/

Washington State Department of Transportation, Rail, Freight, and Ports Division. *Washington State Rail Plan, 2019–2040*. Released August 2020. Accessed October 26, 2023. https://wsdot.wa.gov/sites/default/files/2021-10/2019-2040-State-Rail-Plan.pdf

Washington State Department of Transportation. *Amtrak Cascades adds two more daily roundtrips starting Dec. 11*. Published November 29, 2023. Accessed December 27, 2023. https://wsdot.wa.gov/about/news/2023/amtrak-cascades-adds-two-more-daily-roundtrips-starting-dec-11

Washington State Transportation Commission. *Statewide Rail Capacity and System Needs Study*. Released December 2006. Accessed October 26, 2023. https://wstc.wa.gov/wp-content/uploads/2019/09/Rail-TM3-RailCapcityNeedsandCnsts.pdf