Study overview

The Snake River from Clarkston to Pasco contains four dams (Ice Harbor, Lower Monumental, Little Goose and Lower Granite). There has been interest in breaching these dams for the benefit of native fish species. While several studies have been conducted that address the topic of breaching the dams, there has been limited focus and understanding of how transportation would be affected.

If the dams are breached, barges would no longer be used to ship on the Lower Snake River, and those goods would need to be moved by truck, train, and/or via the Columbia River.

WSDOT is conducting an analysis of the road, rail, and barge systems in the Lower Snake River region. The analysis includes the development of a model that creates different scenarios to assess the impacts of diverting goods from barge to truck and rail to determine potential infrastructure changes and improvements that would be needed. The study also assesses the impacts on safety, air quality, greenhouse gas emissions, and physical infrastructure resulting from these changes.

Study area

Map of Lower Snake River dams.

The study area is focused on the region surrounding the Lower Snake River in the southeast Washington counties of Whitman, Asotin, Garfield, Columbia, Walla Walla, Benton, and Franklin.

The U.S. Army Corps of Engineers owns and operates the four dams along the Lower Snake River, all of which are multiple-use facilities that provide navigation for barge traffic, hydropower used as part of local energy transmission, recreation, and fish and wildlife conservation benefits. These locks and dams allow for barge transportation by raising and lowering barges between different pools along the river.

Study timeline

Phase 1

Spring 24

Understanding Needs

Existing and future conditions for vehicular traffic and rail traffic

Develop **Total Logistics Cost (TLC) diversion model**

Develop **status report**

Phase 2

Winter 25

Infrastructure Impacts & Safety

Estimation of geological, rail, road and utility impacts of **breaching the dams**

Develop **mitigation options** and conduct a safety analysis

Phase 3

Summer 25

Regulatory & Competetive Impacts

Identify potential regulatory issues related to mitigating options

Estimate the **competitive impacts** of modal diversion

Phase 4

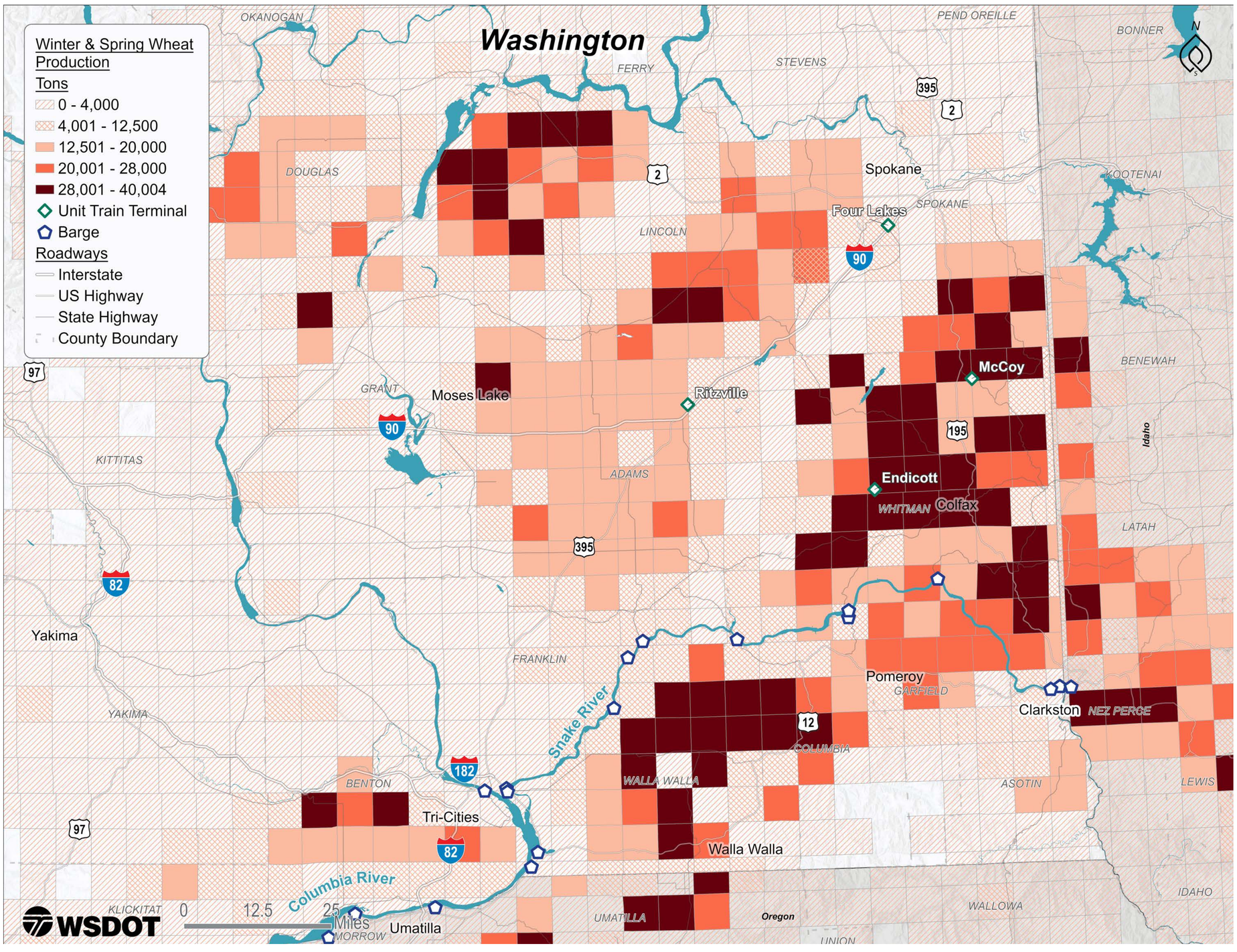
Spring 26

Report

Develop **draft and final report**

Community Engagement

Existing conditions in the Lower Snake River study area



Estimated current rail network trains and barge terminal grain flows (Source: WSDOT Lower Snake River Dams Transportation Study, 2024)

The Lower Snake River is part of a multimodal freight network consisting of barge, rail, and truck that moves goods between Eastern Washington to domestic locations in the U.S. and export markets around the world. Grain is the highest volume product moved on the river. It is shipped through a series of ports along the river before reaching ports along the Pacific Ocean for domestic and international distribution. Freight also moves through the study area from areas outside of the state.

In 2024, over 4,000,000 tons of grain in the study area were moved on the river by barge and over 1,000,000 tons of grain were moved by rail. The figure below shows the amount of grain moved from the major barge and rail terminals in the study area.

Scenarios analyzed in TLC model

If the dams on the Lower Snake River are removed, barge traffic will be shifted to road, rail, and downstream ports on the Columbia River. The changes in water flow from breaching the dams will also likely impact the physical condition of nearby rail and road infrastructure.

The study team developed a total logistics cost (TLC) model to estimate the changes in train, truck, and barge traffic as well as the development of alternative infrastructure if the dams are removed.

The study team is in the process of identifying and evaluating several scenarios to mitigate the projected changes in the number of trains and trucks and geological impacts from removing the dams.

Six scenarios that have been developed to date include:

- Scenarios 1-4 describe alternatives that model conditions if the dams are in place and if the dams are breached for 2020 (the base year) and for 2045. These scenarios do not include changes in the rail or road infrastructure.
- Scenarios 5 and 6 model changes in rail or road infrastructure. Additional Scenario 5 results are detailed as part of this open house. Scenario 6 results will be further developed in the next few months.

Additional scenarios are under development and will be presented at the online open house in August.

Scenarios in development:

Scenario 1: Base year model with dams in place (2020)

Scenario 2: Base year model with dams breached (2020)

Scenario 3: Future year model with dams in place (2045)

Scenario 4: Future year model with dams breached (2045)

Alternative future scenario 5: New rail terminals and track preservation (2045)

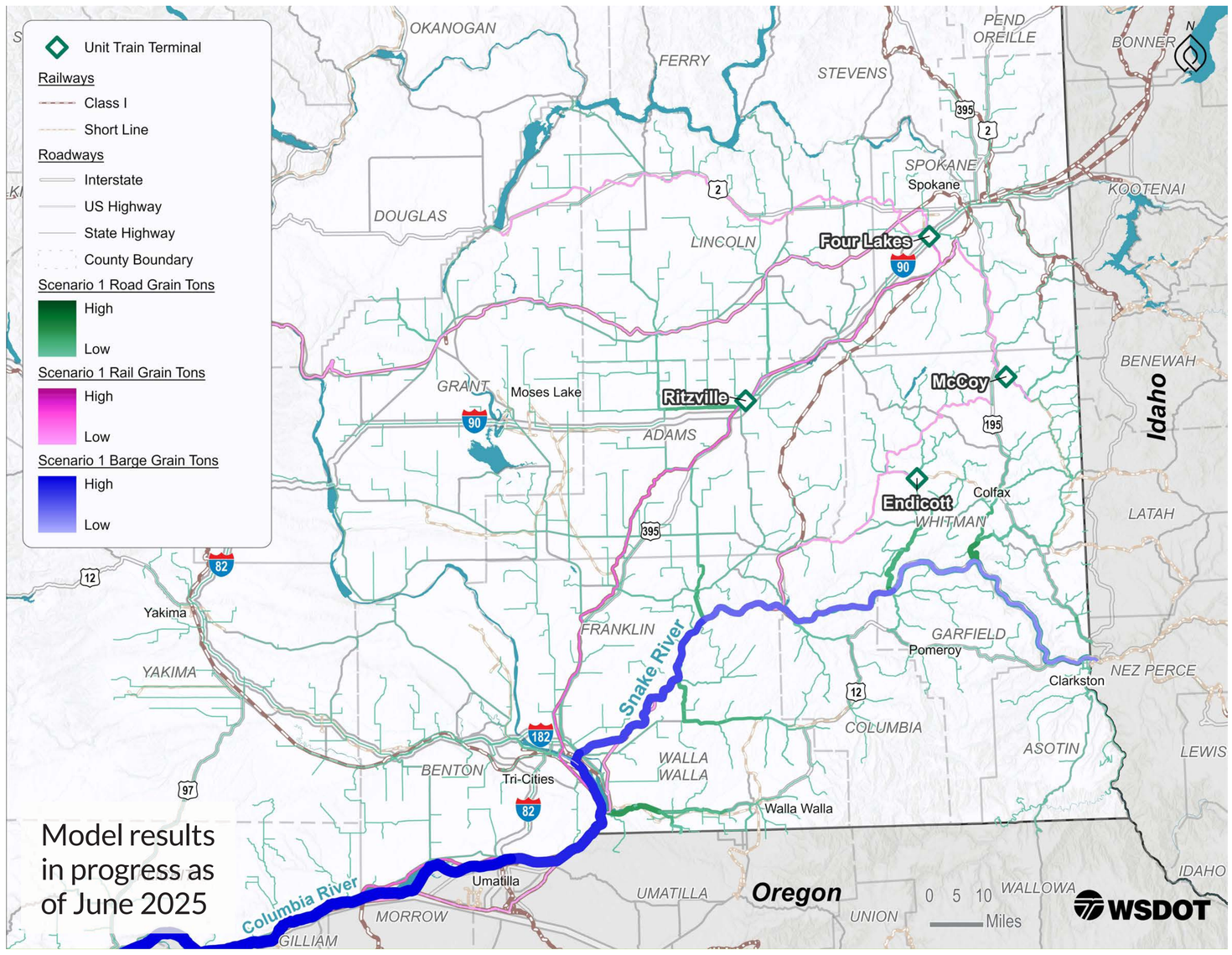
Alternative future scenario 6: New shortline rail to Pasco area (2045)

Scenarios analyzed in TLC model

Scenarios 1 & 2

Scenario 1: Base year model with dams in place (2020)

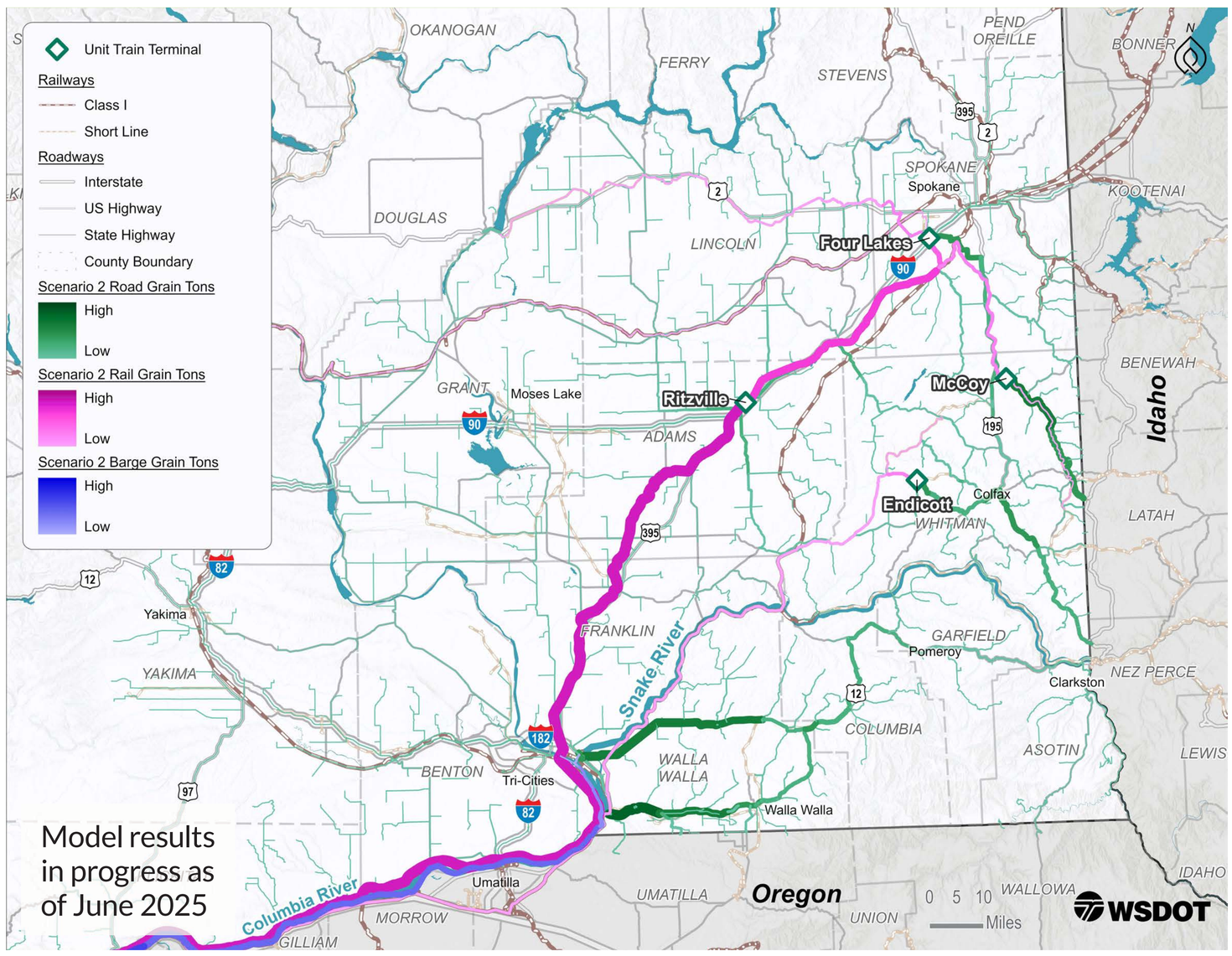
- Estimate of existing conditions (as of 2020) for the movement of grain, fertilizer, and wood products by barge, rail, and truck in the study area.



Scenario 1: Existing conditions in 2020 with dams in place and barges being operated on the Lower Snake River.

Scenario 2: Base year model with dams breached (2020)

- Shift in barge, rail, and truck freight flows in 2020 if the four dams on the Lower Snake River were breached and barges were no longer able to move on the river.
- Rail and truck traffic would increase if dams are breached.



Scenario 2: Increases in rail and truck traffic if dams are breached based on 2020 conditions.

Scenarios analyzed in TLC model

Scenarios 5 & 6

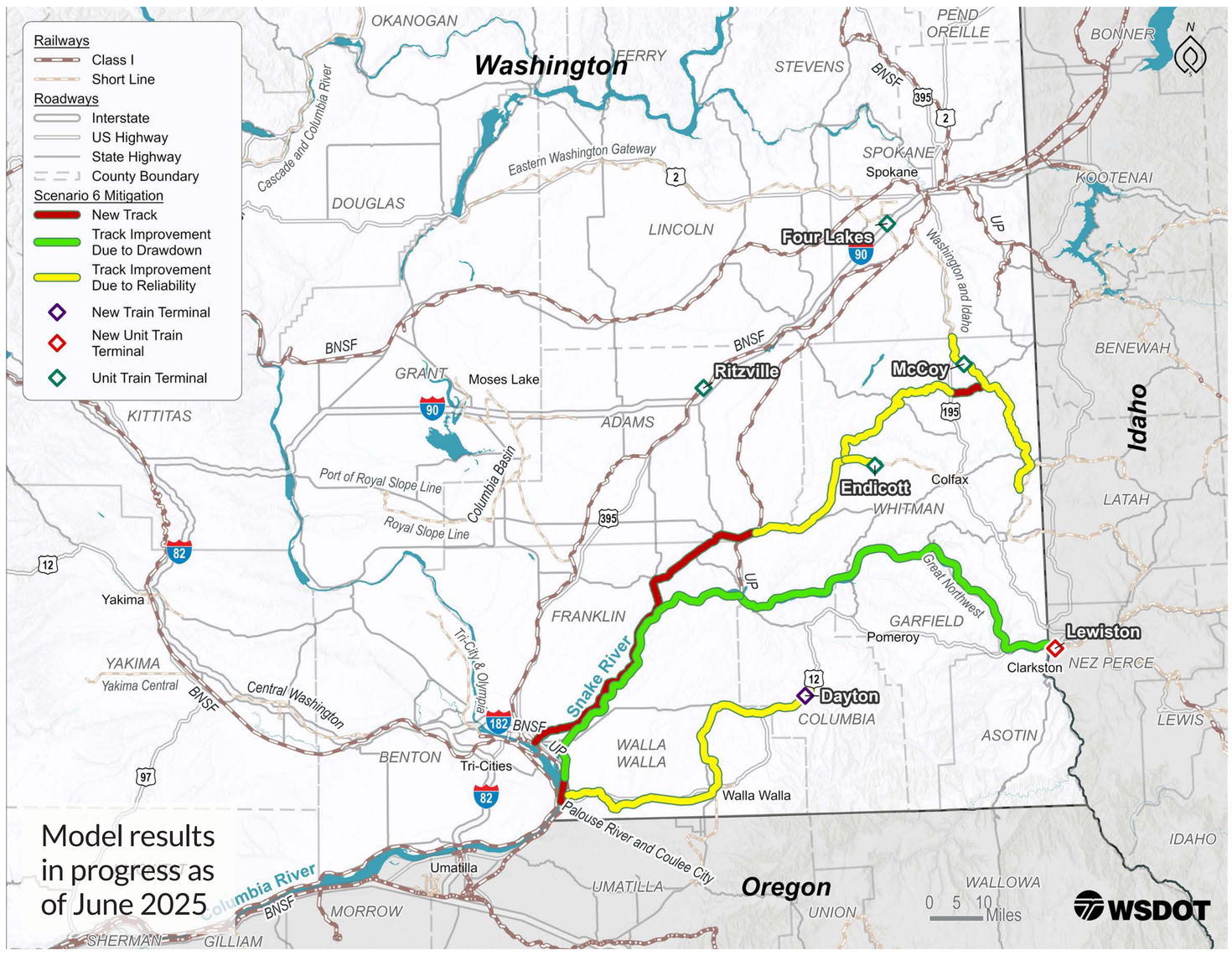
Alternative Future Scenario 5: New Rail Terminals and Track Preservation (2045)

- Add new unit train terminals in Lewiston and Central Ferry.
- Make improvements in rail tracks along the river to preserve usage after drawdown.

Scenario 5: New rail terminals in Lewiston and Central Ferry.

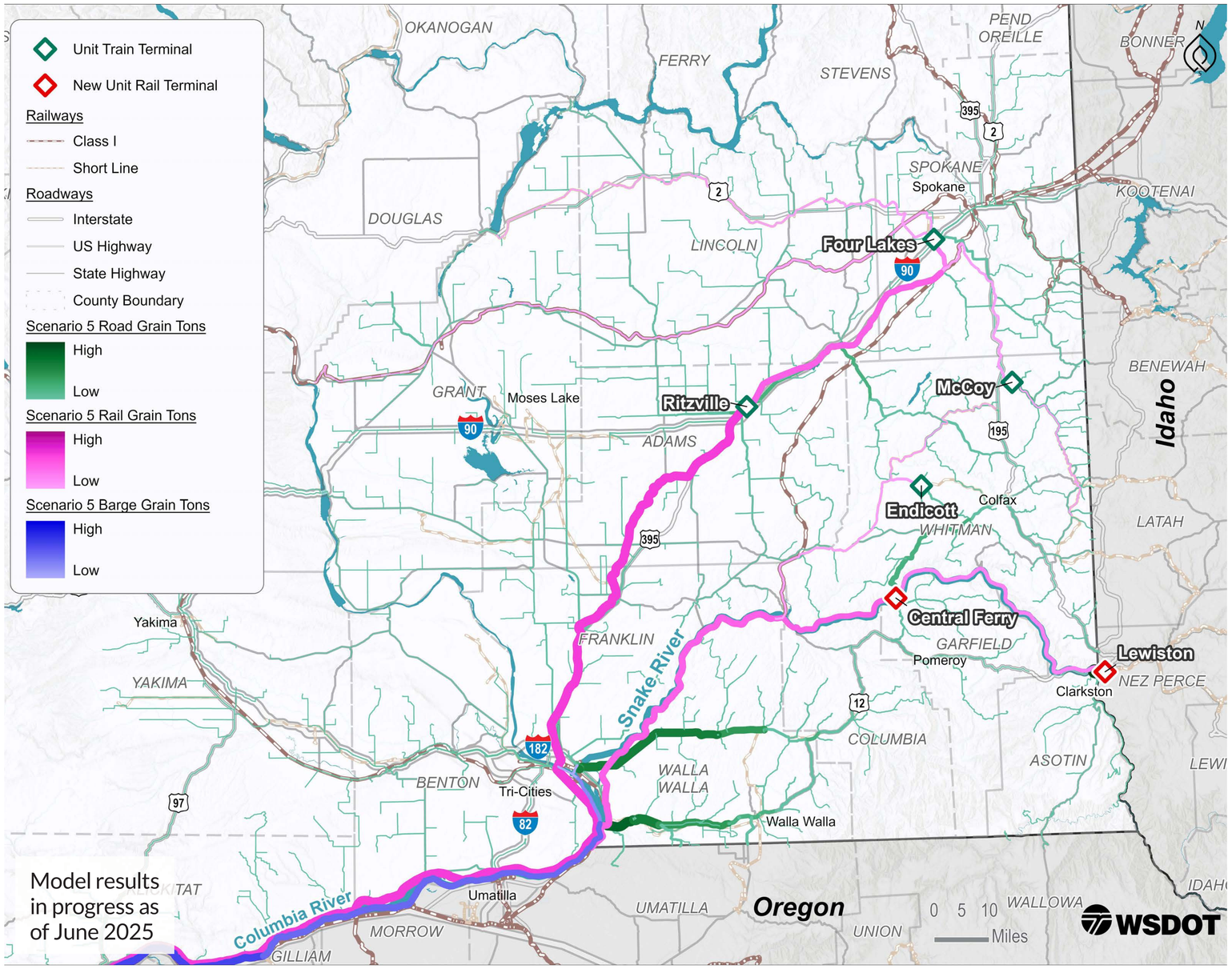
Alternative Future Scenario 6: New Shortline Rail to Pasco Area (2045)

- Develop new shortline rail to barge infrastructure.
- Add a new unit train terminal in Lewiston.
- Make improvements in rail tracks along the river to preserve usage after drawdown.



Scenario 6: New shortline rail to Pasco area.

Scenario 5: Add unit train rail terminals in Lewiston and Central Ferry (2045) | Truck, rail, and barge tonnage



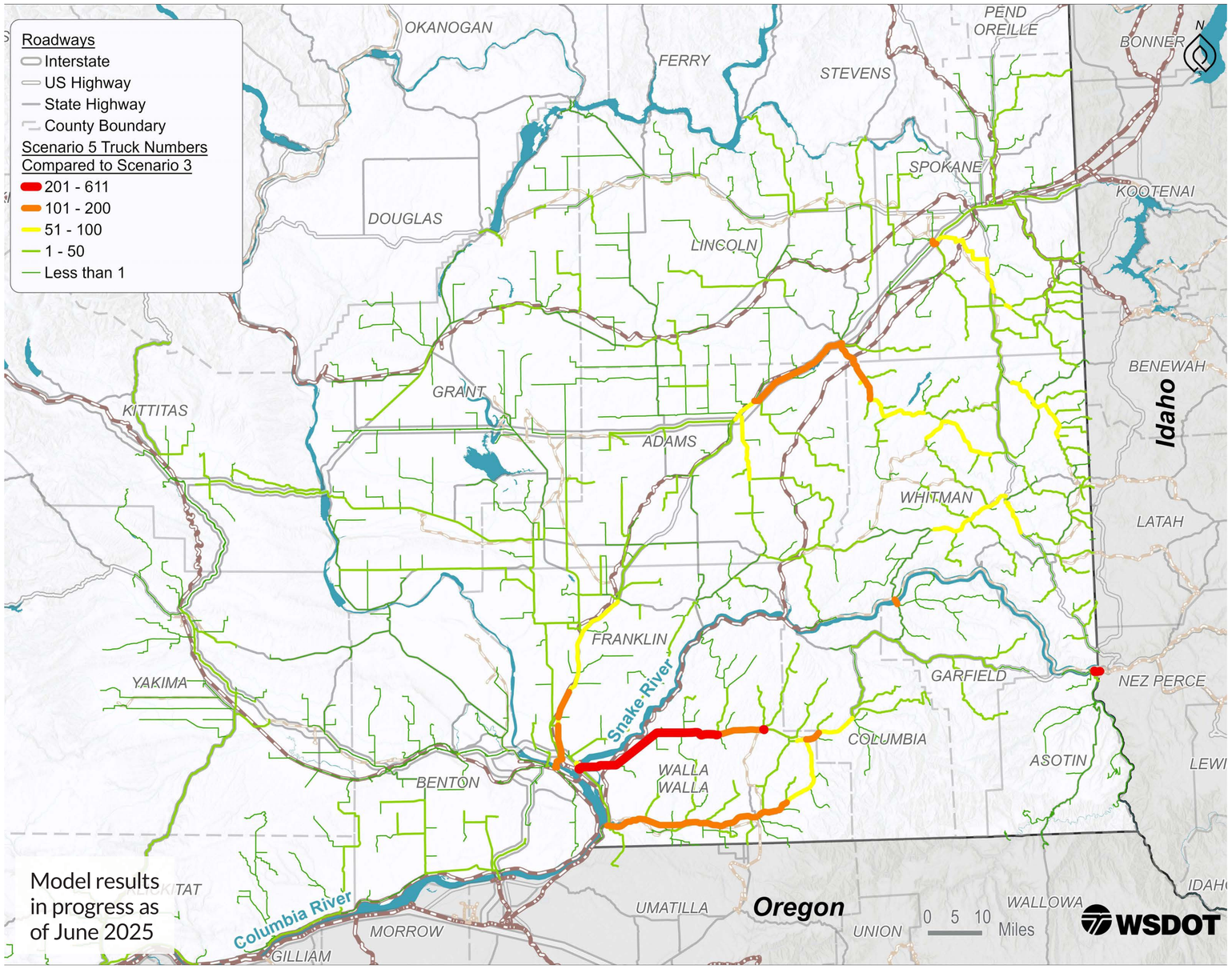
Truck, rail, and barge tonnages for Scenario 5.

The TLC model was used to evaluate the performance of Scenario 5.

Without access to the Lower Snake River, shippers in this scenario would move additional goods by rail via new unit train rail terminals in Lewiston and Central Ferry.

Another large portion of traffic would be diverted to truck and transported to barge terminals in the Pasco and Wallula regions.

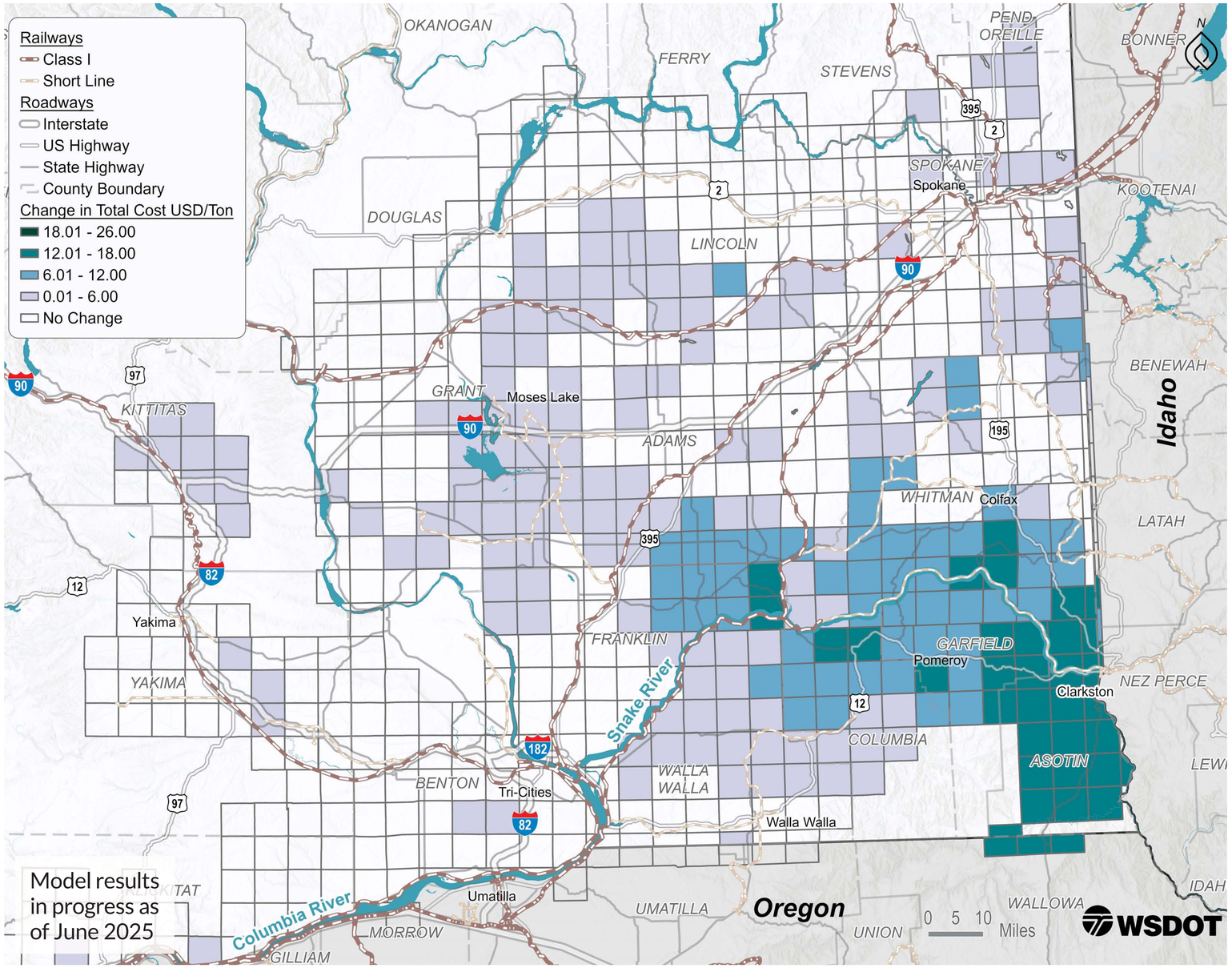
Scenario 5: Add unit train rail terminals in Lewiston and Central Ferry (2045) | Changes in truck volume



Changes in daily truck volume for Scenario 5.

This map shows the changes in truck volumes in the study area as a result of adding rail terminals in Central Ferry and Lewiston.

Scenario 5: Add Unit Train Rail Terminals in Lewiston and Central Ferry (2045) | Changes in transportation costs



Changes (in total cost USD/ton) of moving grain from each of the townships in the study area for Scenario 5.

In Scenario 5, shippers located in the southeast corner of the study area would shift from using the current barge terminal in Lewiston to a new rail terminal in the Lewiston vicinity. These shippers would experience the largest increase in transportation costs because moving goods by rail is more expensive than moving by barge.

Shippers located along the central portion of the Lower Snake River would also experience an increase in transportation costs as they shift from barge to rail using the Central Ferry rail terminal. For these shippers, because their transport distance to export ports along the Pacific Ocean is shorter, they would have a smaller increase in costs compared to shippers using the Lewiston rail terminal.

Feedback on Mitigation Scenarios

Do the proposed mitigation scenarios look reasonable to you? Why or why not?

Do you have concerns about adding new shortline rail services?

What, if any, impacts do you expect on local communities from these proposed mitigation scenarios?

Do you have any concerns about congestion, safety impacts, or emissions impacts?

Do you have comments about how the proposed mitigation scenarios would impact the local agricultural industry?

Are there any mitigation scenarios that you would suggest that the study team consider for additional analysis?

Comparison of cargo capacities

Barge, rail, and truck cargo capacities

Cargo Capacity	Barge	4-Barge Tow	Hopper Car	100-Car Train (grain)	Semi-Truck
	3,500 Tons	14,000 Tons	100 Tons	10,000 Tons	26 Tons
	122,500 Bushels	490,000 Bushels	3,500 Bushels	350,000 Bushels	910 Bushels
	875,000 Gallons	3,500,000 Gallons	30,240 Gallons	3,024,000 Gallons	7,865 Gallons

Equivalent Units

1 Barge = 35 Hopper Cars = 134 Trucks

1 Tow = 1.4 Trains = 538.4 Trucks

This graphic shows the cargo capacity of transporting by barge, rail, and truck. (Source: United States Army Corps of Engineers)