DEPARTMENT OF ECOLOGY
State of Washington

Crude Oil Movement by Rail and Pipeline

Quarterly Report: January 1, 2025, through March 31, 2025

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Spill Prevention, Preparedness, and Response Program
Washington State Department of Ecology
Olympia, Washington

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Introduction

To enhance crude oil spill preparedness and response in Washington State, on August 24, 2016, Ecology adopted the rule, Oil Movement by Rail and Pipeline Notification. The rule establishes reporting standards for facilities that receive crude oil by rail and pipelines that transport crude oil in or through the state.[1] Additionally, the rule identifies reporting standards for Ecology to share information with emergency responders, local governments, tribes, and the public.

This rule is the result of 2015 Legislative direction to provide a better understanding of the changing risk picture for crude oil transported in Washington State as a result of the introduction of crude oil transport by rail and the associated changes in both the volume and properties of crude moving through Washington.

Timely notice of oil movement information is necessary for emergency responders and planners to effectively prepare for and respond to oil spills and other incidents associated with transporting crude oil by rail and pipeline. Providing adequate information about the dates, routes, and properties of crude oil can help protect people living and working near railroads and pipelines, the economy, and environmental resources of Washington State.

Ecology is required to publish information collected under the rule to its website on a quarterly basis. The quarterly reports provide:

- Aggregated information on crude oil transported by rail to facilities in Washington.
- Information about crude oil movement by pipeline in or through the state.
- Reported spills during transport and delivery of crude by rail and pipeline.
- Volume of crude oil transported by vessel.

The reports are intended to inform the public about the nature of crude oil movement through their communities.

The reporting period for this quarterly report is January 1, 2025, through March 31, 2025.

[1] Chapter 173-185 WAC, Oil Movement by Rail and Pipeline Notification

Crude Oil by Rail Summary

Movement of crude oil by rail in Washington State began in 2012 and has continued to increase since that time. Rail routes transporting crude oil enter the state from Idaho near Spokane and from British Columbia near Bellingham, and Ecology continues to monitor other potential routes. Large segments of the rail routes travel along the I-5 corridor, and cross or run next to major waterways, including the Columbia River and Puget Sound. (See Appendix A for a map of railroad routes in the state.)

Capturing information on the properties of crude oil, the volume transported, and the routes used to transport it allows for proper planning, placement of resources, and opportunities to provide detailed information to responders in the event of a spill, ensuring a more effective overall response. The rule directs Ecology to gather this information by requiring facilities receiving crude oil by rail to report all scheduled crude oil deliveries to be received by the facility each week for the succeeding seven-day period. Facilities enter this information into Ecology's Advance Notice of Transfer (ANT) database.

Information reported by facilities on scheduled crude oil deliveries includes the region of origin of crude oil, the railroad route taken to the facility within the state (if known), scheduled time and volume in barrels (bbls) of the delivery, and the gravity, sulfur content, and vapor pressure of the oil. Ecology uses the standard American Petroleum Institute (API) gravity ranges to define the crude type in the ANT database. (See Appendix B for the API gravity and sulfur content definitions and crude type ranges.)

Ecology is required to aggregate the information provided on a statewide basis by route, week, and type of crude oil. Aggregate information from the ANT database is provided in Table 1 for the period January 1, 2025, through March 31, 2025, representing the 1st Quarter of 2025. Each week is numbered by calendar week and is aggregated by route and type of crude. The information provided includes:

- Total weekly volume in barrels (bbls) of crude oil transported by rail
- Route
- Region of origin
- Crude type (combining API gravity range and sulfur content)
- Route volume
- Estimated number of railcars per route delivering crude oil (assumes each car holds 680 bbls)

Fourteen calendar weeks are reported in the 1st Quarter of 2025 starting at calendar week 1 and ending at calendar week 14.

Table 1: Crude oil movement by rail

Calendar week 1

Week 1 consists of only four days of reported ANT volumes due to the dates of the reporting period.

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	65,620	96
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	352,043	517
4, 5	British Columbia	Heavy Sour Crude	59,979	88
Weekly totals			**477,642**	**701**

Calendar week 2

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	387,108	569
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	479,032	704
4, 5	British Columbia	Heavy Sour Crude	120,368	177
Weekly totals			**986,508**	**1,450**

Calendar week 3

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	136,608	200
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	550,269	809
4, 5	British Columbia	Heavy Sour Crude	60,065	88
Weekly totals			**746,942**	**1,097**

Calendar week 4

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
North Dakota	Light Sweet Crude	North Dakota	122,737	180
North Dakota	Light Sweet Crude	North Dakota	344,685	506
British Columbia	Heavy Sour Crude	British Columbia	59,554	87
Weekly totals			**526,976**	**773**

Calendar week 5

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	256,293	376
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	484,037	711
4, 5	British Columbia	Heavy Sour Crude	60,335	88
Weekly totals			**800,665**	**1,175**

Calendar week 6

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	126,907	186
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	414,607	609
4, 5	British Columbia	Heavy Sour Crude	120,296	176
Weekly totals			**661,810**	**971**

Calendar week 7

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	129,496	190
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	279,284	410
4, 5	British Columbia	Heavy Sour Crude	60,299	88
Weekly totals			**469,079**	**688**

Calendar week 8

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	129,082	189
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	206,161	303
4, 5	British Columbia	Heavy Sour Crude	60,058	88
Weekly totals			**395,301**	**580**

Calendar week 9

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	260,537	383
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	209,311	307
1B, 2, 3, 4, 5	North Dakota	Light Sweet Crude	70,500	103
4, 5	British Columbia	Heavy Sour Crude	180,194	264
Weekly totals			**720,542**	**1,057**

Calendar week 10

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	190,029	279
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	342,811	504
4, 5	British Columbia	Heavy Sour Crude	120,189	176
Weekly totals			**653,029**	**959**

Calendar week 11

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	122,611	180
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	488,564	718
4, 5	British Columbia	Heavy Sour Crude	59,985	88
Weekly totals			**671,160**	**986**

Calendar week 12

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	256,907	377
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	270,305	397
4, 5	British Columbia	Heavy Sour Crude	120,317	176
Weekly totals			**647,529**	**950**

Calendar week 13

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	122,135	179
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	628,299	923
4, 5	British Columbia	Heavy Sour Crude	60,029	88
Weekly totals			**810,463**	**1,190**

Calendar week 14
Week 14 consists of only two days of reported ANT volumes due to the dates of the reporting period.

Route Segments	Region of Origin	Crude Type	Volume (bbls)	Est # Cars
1A, 2, 3	North Dakota	Light Sweet Crude	64,883	95
1A, 2, 3, 4, 5	North Dakota	Light Sweet Crude	135,739	199
Weekly totals			**200,622**	**294**

Note: *The data provided in Table 1 was reported to Ecology by the receiving facility into the ANT database as required by Chapter 173-185 WAC. Ecology cannot confirm the data or verify its accuracy.*

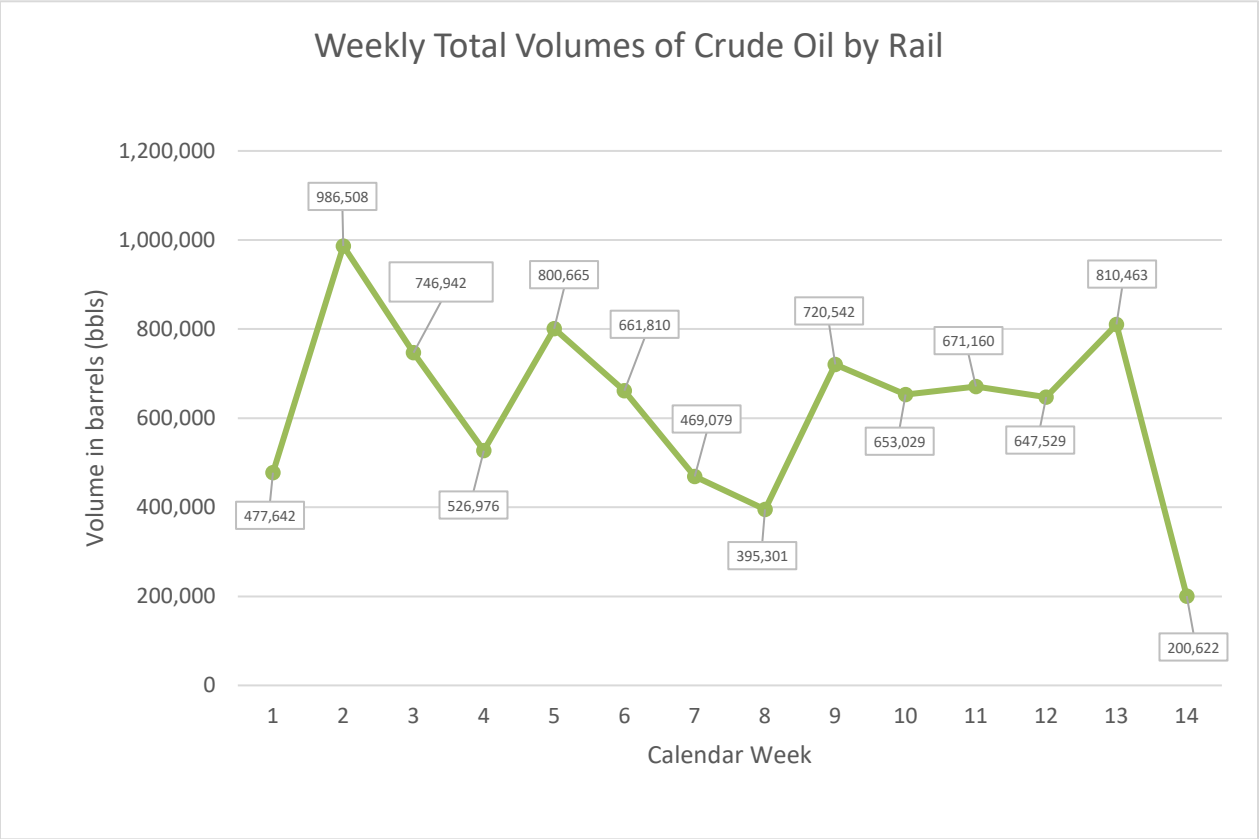
2025 Quarter 1 total volume (bbls): 8,768,268

A summary of the data shows:

- Two regions of origin were reported: North Dakota and British Columbia.
- Two types of crude oil were reported: light and heavy.
- Routes 1A, 1B, and 2 through 5 were used to transport crude by rail.
- The total volume of crude oil transported by rail during the quarter was 8,768,268 barrels (368,267,256 gallons).
- The average weekly volume of crude oil transported by rail was 681,976 barrels (28,643,009 gallons).
- The total number of rail cars moving crude oil by rail was 12,871 cars.
- The average number of rail cars per week moving crude oil by rail was 1,001 cars.
- 86.98 percent of crude oil transported by rail was light crude.
  13.02 percent of crude rail transported by rail was heavy crude.
- 86.98 percent of crude oil transported by rail was sweet crude.
  13.02 percent of crude oil transported by rail was sour crude.
- North Dakota was the region of origin for 86.98 percent of crude oil transported by rail.
  British Columbia was the region of origin for 13.02 percent of crude oil transported by rail.

- Crude oil originating in North Dakota had reported vapor pressure ranging from 3.6 to 13.5 pounds per square inch.
  Crude oil originating in British Columbia had reported vapor pressure ranging from 9.8 to 11.4 pounds per square inch.

Figure 1 shows the weekly total volumes of crude transported by rail for each calendar week in the 1st Quarter of 2025.



Note: *Week 1 consists of only 4 days of reported ANT volumes due to the dates of the reporting period. Week 14 consists of only 2 days of reported ANT volumes due to the dates of the reporting period.*

Figure 1: Weekly total volumes of crude oil by rail for the 1st Quarter of 2025

The lowest weekly volume was 986,508 barrels (41,433,336 gallons) in Week 2. The highest weekly volume of crude transported by rail was 395,301 barrels (16,602,642 gallons) in Week 8.

Figure 2 displays crude transported by rail, by route, for the 1st Quarter of 2025.

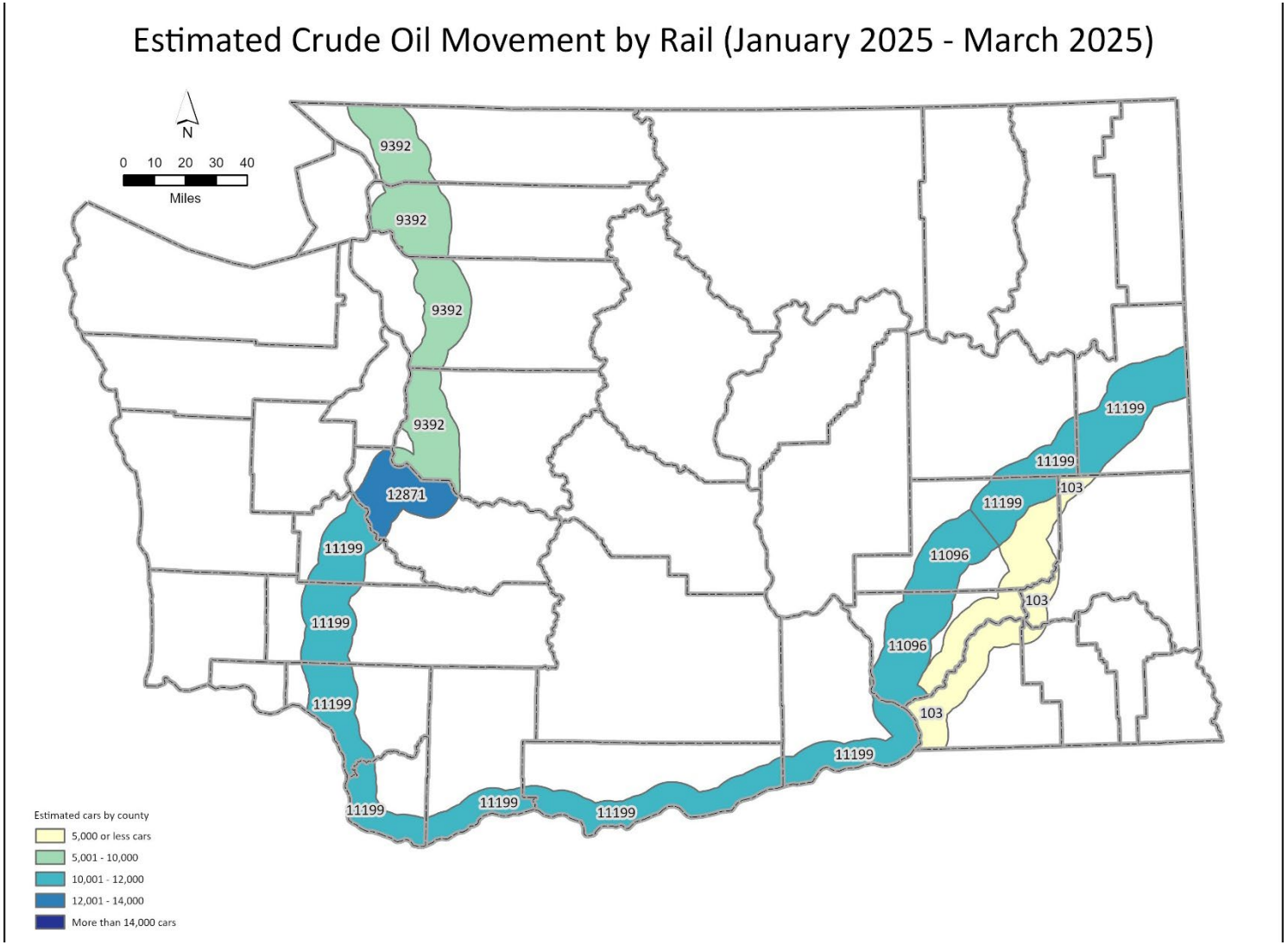


Figure 2: Crude oil movement by route for the 1st Quarter of 2025

Crude Oil by Pipeline Summary

Pipelines exist inland and may be located near waterbodies and populated areas. Knowing the types and quantities of crude oil transported through pipelines in Washington State helps Ecology properly plan for and execute a rapid, aggressive, and well-coordinated response to a spill.

Under the rule, transmission pipelines that transport crude oil in or through the state must provide Ecology biannual notice of all crude oil transported in or through the state.[2] Biannual notice must be submitted each year by July 31 for the period from January 1 through June 30, and by January 31 for the period from July 1 through December 31. Biannual notice provided by pipelines includes contact information for the pipeline and the total volume of crude oil transported in or through the state during the reporting period by state or province of origin.

The most recent biannual notices from pipelines covered the period from July 1, 2024, through December 31, 2024. Table 2 below provides the total volume of crude oil transported in or through the state by pipelines during this period.

Table 2: Crude oil movement by pipeline

Period	State/Province of Origin	Mean API Gravity & Range	Sulfur Content	Volume (bbls)
July 1, 2024 – December 31, 2024	Alberta	41.9 (Light)	Sour (>0.5%)	9,185,467
July 1, 2024 – December 31, 2024	Alberta	24.9 (Medium)	Sour (>0.5%)	278,593
July 1, 2024 – December 31, 2024	Alberta	21.7 (Heavy)	Sour (>0.5%)	5,264,128
July 1, 2024 – December 31, 2024	Alberta	38.2 (Light)	Sweet (≤0.5%)	28,369,992

Note: *The data provided in Table 2 was reported to Ecology by the pipelines transporting crude oil in or through the state, as required by Chapter 173-185 WAC. Ecology cannot confirm the data or verify its accuracy.*

The next biannual notices from pipelines will cover the period from January 1, 2025, through June 30, 2025, and must be submitted to Ecology by July 31, 2025.

Crude Oil Spills – Rail and Pipeline

Oil spills can have significant impacts to the public, environment, and economy. Ecology strives to protect Washington's environment, economy, and public health and safety through a comprehensive spill prevention, preparedness, and response program.

The rule directs Ecology to provide the number and volume of spills to the waters of the state during the transport and delivery of crude oil by rail and pipeline in each quarterly report.[3] For the period of January 1, 2025, through March 31, 2025, zero crude oil spills to the environment by rail or pipeline were reported. In the event there are spills to report in the future, Ecology will

[2] Chapter 173-185 WAC, Oil Movement by Rail and Pipeline Notification
[3] Chapter 173-185 WAC, Oil Movement by Rail and Pipeline Notification

provide this information and include the date of the spill, the county where the spill occurred, the source, material, and volume of the spill.

Crude Oil Movement by Vessel

In 2006, the state adopted rules for advance notice of oil transfers for vessels and facilities. Ecology has been receiving advance notice of transfer data for all transfers to or from vessels in Washington State since that time.

In order to provide a full picture of crude oil movement in Washington State, a summary of crude oil movement by vessel is provided below, which is in addition to the requirement for this quarterly report as described in the rule.[4]

Table 3 below provides the total volume of crude oil in barrels of inbound and outbound vessel transfers for the period of January 1, 2025, through March 31, 2025. Inbound vessel transfers refers to crude oil movement from vessels to facilities, while outbound vessel transfers refers to crude oil movement from facilities to vessels. Table 4 below provides the region of origin of crude oil delivered on inbound vessel transfers.

Table 3: Crude oil movement by vessel

Vessel transfers	Volume (bbls)	Volume (gallons)
Inbound	25,174,960	1,057,348,320
Outbound	95,000	3,990,000
Total	**25,269,960**	**1,061,338,320**

Table 4: Inbound – vessel crude oil by region

Region of crude origin	Volume (bbls)	Volume (gallons)
US – Alaska North Slope	18,779,960	789,598,320
Canada	2,686,000	112,812,000
Argentina	1,670,000	70,140,000
Brazil	1,050,000	44,100,000
US – Bakken Formation	969,000	40,698,000
Total	25,174,960	1,057,348,320

Note: *The data provided in Tables 3 and 4 was reported to Ecology into the ANT database as required by Chapter 173-180 WAC and Chapter 173-184 WAC. Ecology cannot confirm the data or verify its accuracy.*

A summary of vessel transfer data for the quarter shows:

- There were 64 total vessel transfers of crude oil (inbound or outbound).
- The average volume of crude oil transferred to or from vessels per week was 1,965,441 barrels (82,548,536 gallons).
- 92.23 percent of crude oil inbound by vessel was light crude.
  7.77 percent of crude oil inbound by vessel was medium crude.

[4] Chapter 173-185 WAC, Oil Movement by Rail and Pipeline Notification

- 76.41 percent of crude oil inbound by vessel was sour crude.
  23.59 percent of crude oil inbound by vessel was sweet crude.

An Overview of Crude Oil Movement in Washington

A broad view of crude oil movement in Washington State can be seen when comparing the movement of crude oil transported into the state by vessel, rail, and pipeline.

Figure 3 shows the estimated percentage of crude oil transported by vessel (inbound only), rail, and pipeline for the last four quarters, covering the period of April 1, 2024, through March 31, 2025.[5]

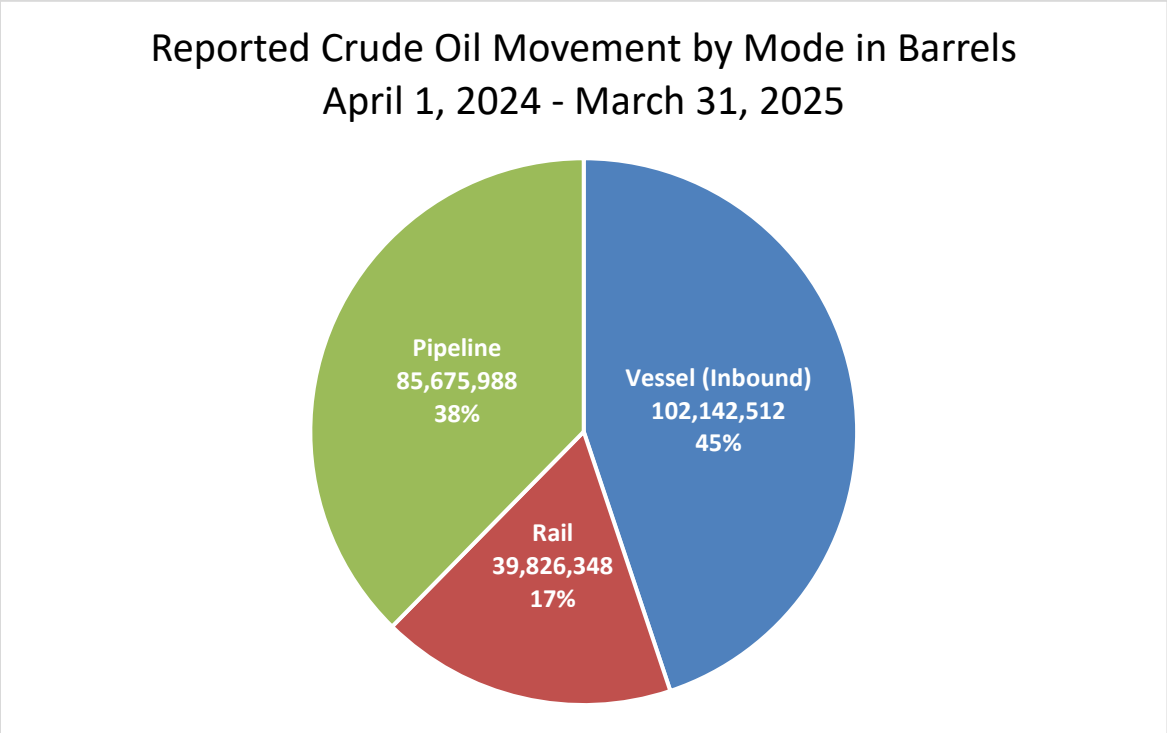
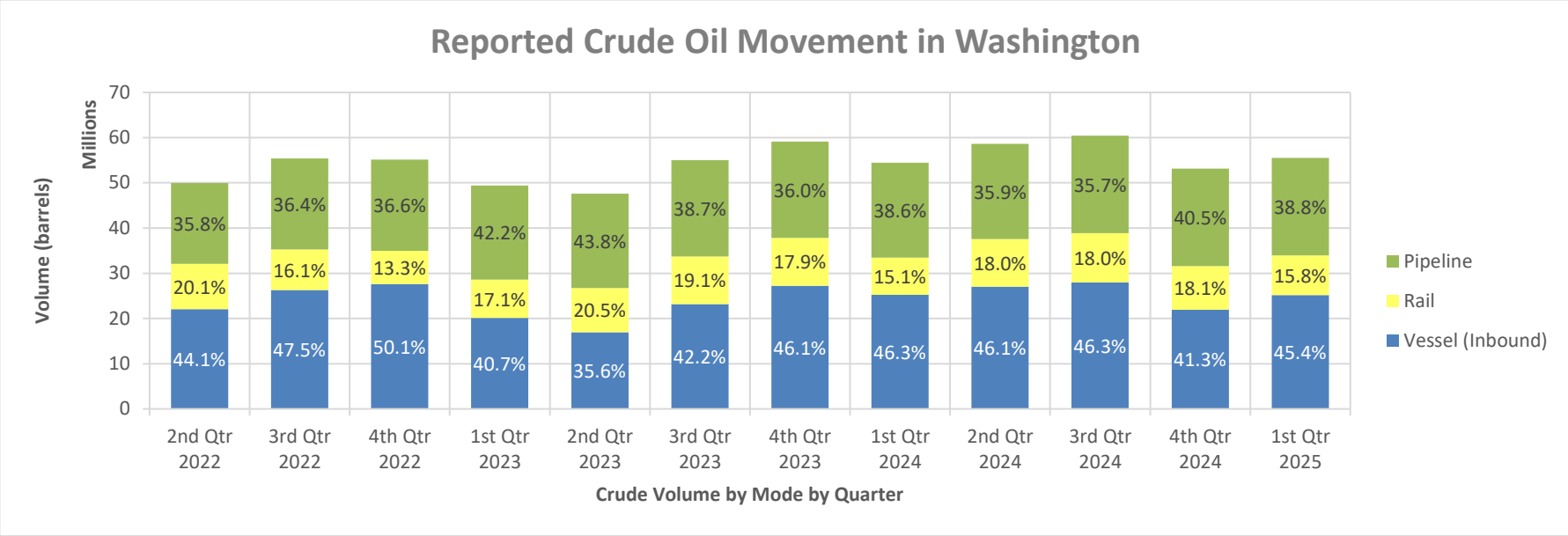


Figure 3: 12-month crude oil movement by mode

Between April 1, 2024 and March 31, 2025, vessels were responsible for 45 percent of reported crude oil movement into the state, rail was responsible for 17 percent, and pipeline for 38 percent.

[5] The most recent biannual notices from pipelines were submitted to Ecology for the period from July 1, 2024 through December 31, 2024. The next biannual notices submitted by pipelines will cover the period from January 1, 2025, through June 30, 2025, and must be submitted to Ecology by July 31, 2025.

Figure 4 shows crude oil movement, by mode, covering the period of April 1, 2022, through March 31, 2025.



Mode	2nd Qtr 2022	3rd Qtr 2022	4th Qtr 2022	1st Qtr 2023	2nd Qtr 2023	3rd Qtr 2023	4th Qtr 2023	1st Qtr 2024	2nd Qtr 2024	3rd Qtr 2024	4th Qtr 2024	1st Qtr 2025
Vessel (Inbound)	44.1%	47.5%	50.1%	40.7%	35.6%	42.2%	46.1%	46.3%	46.1%	46.3%	41.3%	45.4%
Rail	20.1%	16.1%	13.3%	17.1%	20.5%	19.1%	17.9%	15.1%	18.0%	18.0%	18.1%	15.8%
Pipeline	35.8%	36.4%	36.6%	42.2%	43.8%	38.7%	36.0%	38.6%	35.9%	35.7%	40.5%	38.8%

**Note*: *The most recent biannual notices from pipelines were submitted to Ecology for the period from July 1, 2024, through December 31, 2024. For more recent quarters, Ecology estimated crude oil movement by pipeline for the period based on data provided in that previous biannual notice.*

Figure 4: Quarterly crude oil movement by mode, April 2022 – March 2025

Ecology will continue to receive information about crude oil movement and use the data to summarize changes over time.

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Appendix A – Washington Railroad Routes

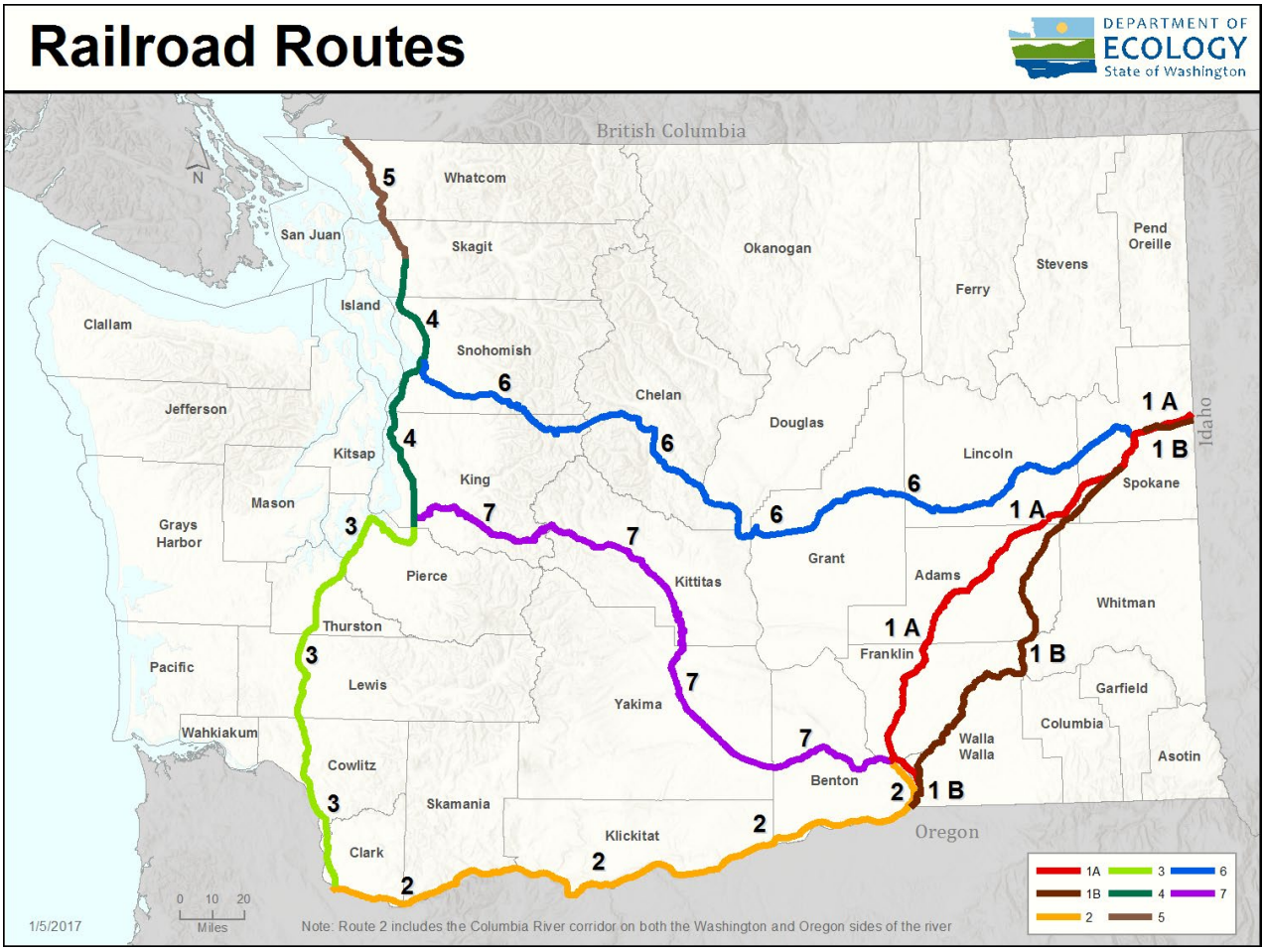

Figure 5: Railroad routes in Washington

Appendix B – API Gravity and Crude Oil Types

Information reported by facilities on scheduled crude oil deliveries includes the gravity and sulfur content of the oil. Ecology uses the standard American Petroleum Institute gravity (API gravity) ranges in combination with the sulfur content to define the crude type in the ANT database.

Sulfur content is measured as the percent of sulfur, by weight, of the crude oil. Oil is categorized by its sulfur content as either sweet or sour. Sour crudes contain greater than 0.5 percent sulfur. Sweet crudes have less than or equal to 0.5 percent sulfur.

API gravity is the measure of the density of petroleum liquid in relation to the density of water and is used to classify oils as light, medium, heavy, and extra heavy. The lower the API gravity, the more likely it is to sink in water. Crude type by API gravity is shown in the table below.

Table 5: Crude type by API gravity

Crude Type	API Gravity Range
Light Crude	31.2-50 API
Medium Crude	22.3-31.1 API
Heavy Crude	10-22.2 API
Extra Heavy Crude	0-9.9 API