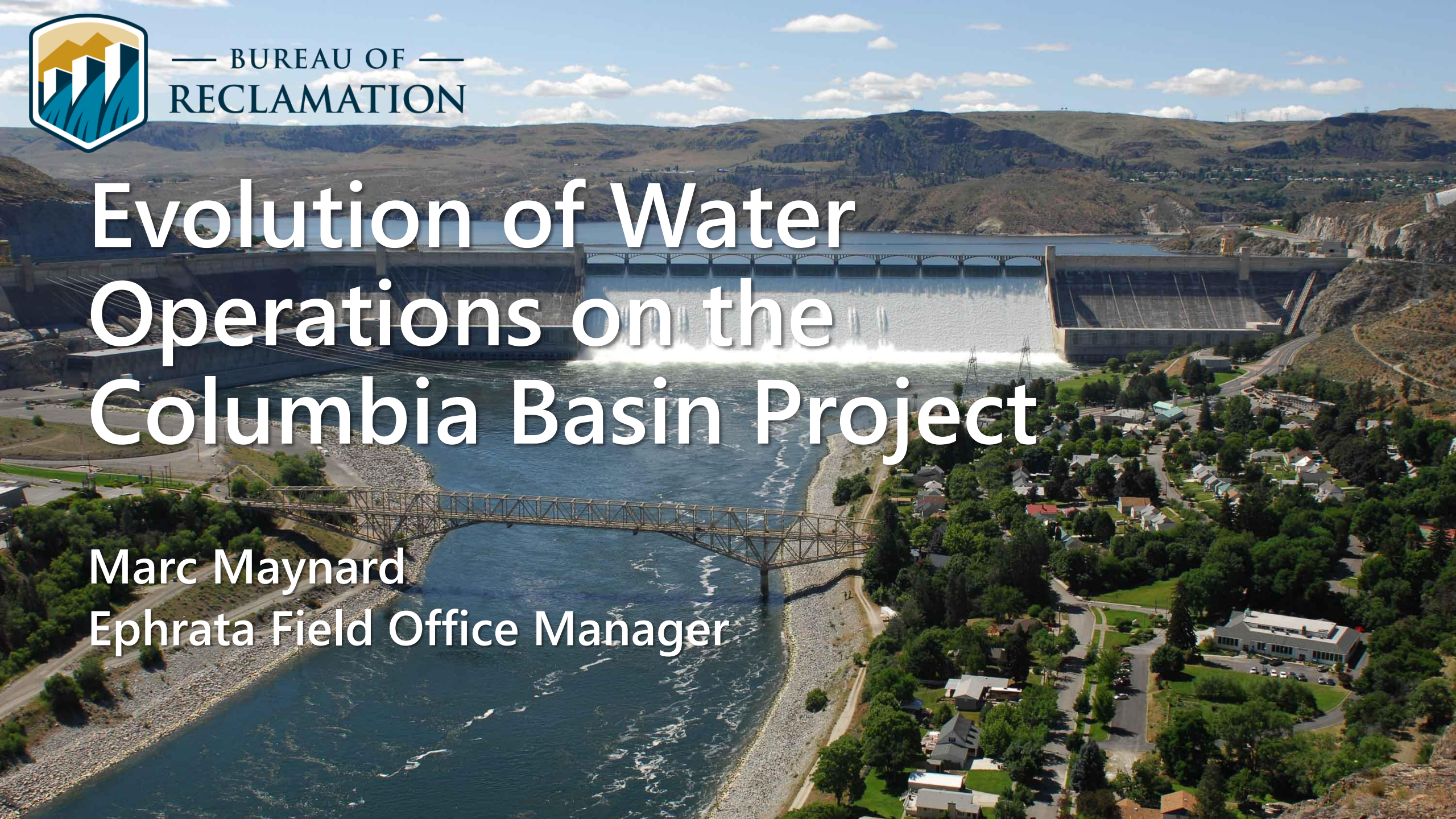

BUREAU OF RECLAMATION

Evolution of Water Operations on the Columbia Basin Project

Marc Maynard
Ephrata Field Office Manager

Drivers of Operational Change

- Shifting use patterns
- Changing irrigation methods
- Climate
- Project development

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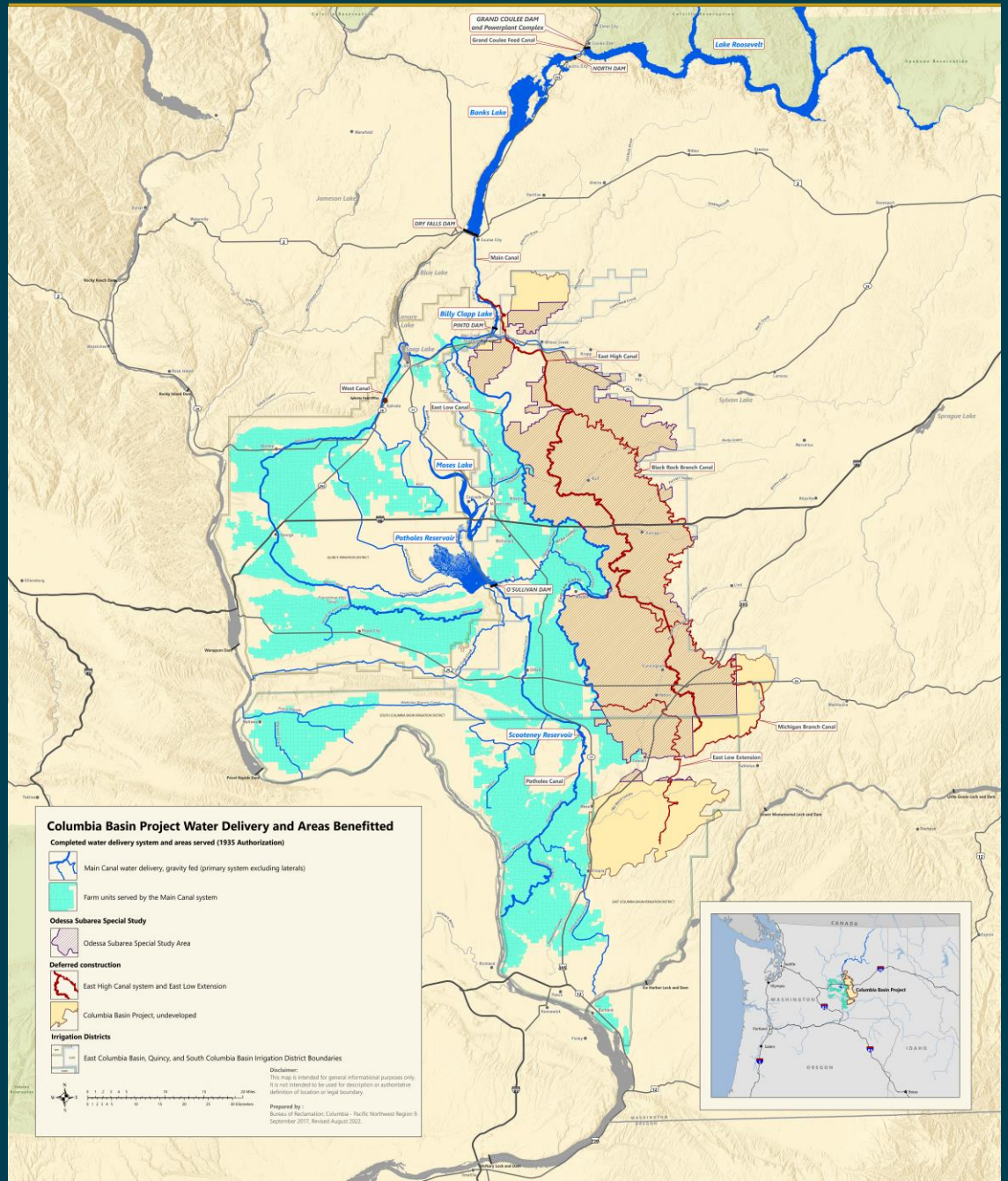
RECLAMATION

COLUMBIA BASIN PROJECT

Columbia-Pacific Northwest Region 9 - Washington



Project Development

- Odessa Groundwater Replacement Program
  - Associated water permits and environmental requirements
  - Delivery of water to OGWRP facilities via the East Low Canal
  - Supplemental (feed) water to Potholes Reservoir

Water Permits for OGWRP Development

- Surface water permit S3-30486P - Lake Roosevelt Incremental Storage Release

- Surface water permit S4-33091 – Odessa Subarea groundwater replacement

Lake Roosevelt Incremental Storage Release

- Withdrawal of additional water from Lake Roosevelt to provide:
  - Drought relief
  - Improve municipal and industrial supply
  - Provide replacement water for some groundwater use in the Odessa Subarea (10,000 acres)
  - Improve instream flows in the Columbia River below Grand Coulee Dam

https://www.usbr.gov/pn/programs/ea/wash/lakeroosevelt/index.html

Lake Roosevelt Incremental Storage Release

Use	Amount (acre-feet)	Description
Odessa subarea	30,000	Water pumped to Banks Lake and delivered through the CBP to Odessa Subarea, offsetting groundwater pumping
Municipal & Industrial	25,000	Water released from Grand Coulee Dam and withdrawn from Columbia River at various sites downstream
Instream Flow ("fish"	27,500	Water released to instream flow corresponding with the out-of-stream components
Interruptible water users ("drought")	33,000	In drought years, offset withdrawals from some interruptible water right holders along the Columbia River at various sites downstream.
Instream Flow ("drought fish")	17,000	Water released to instream flow corresponding to drought interruptible component.

Odessa Subarea Groundwater Replacement

- Groundwater replacement for 70,000 acres
- Delivered from Banks Lake storage, resulting in summer draft of Banks Lake up to ~11 feet when fully implemented
- Depth of drawdown is calculated from the number of acres served by surface water permit S4-33091, up to 70,000 acres.

https://www.usbr.gov/pn/programs/eis/odessa/index.html

Banks Lake Drawdown

- Drawdown will occur every year with lowest target elevation occurring as close to September 1 as possible
- Drawdown is a result of reduced pumping from John Keys III plant into Banks Lake
- Refill of Banks Lake for this water occurs mostly in October

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COLUMBIA BASIN DEVELOPMENT LEAGUE CONFERENCE

Washington State - Columbia-Pacific Northwest Region 9

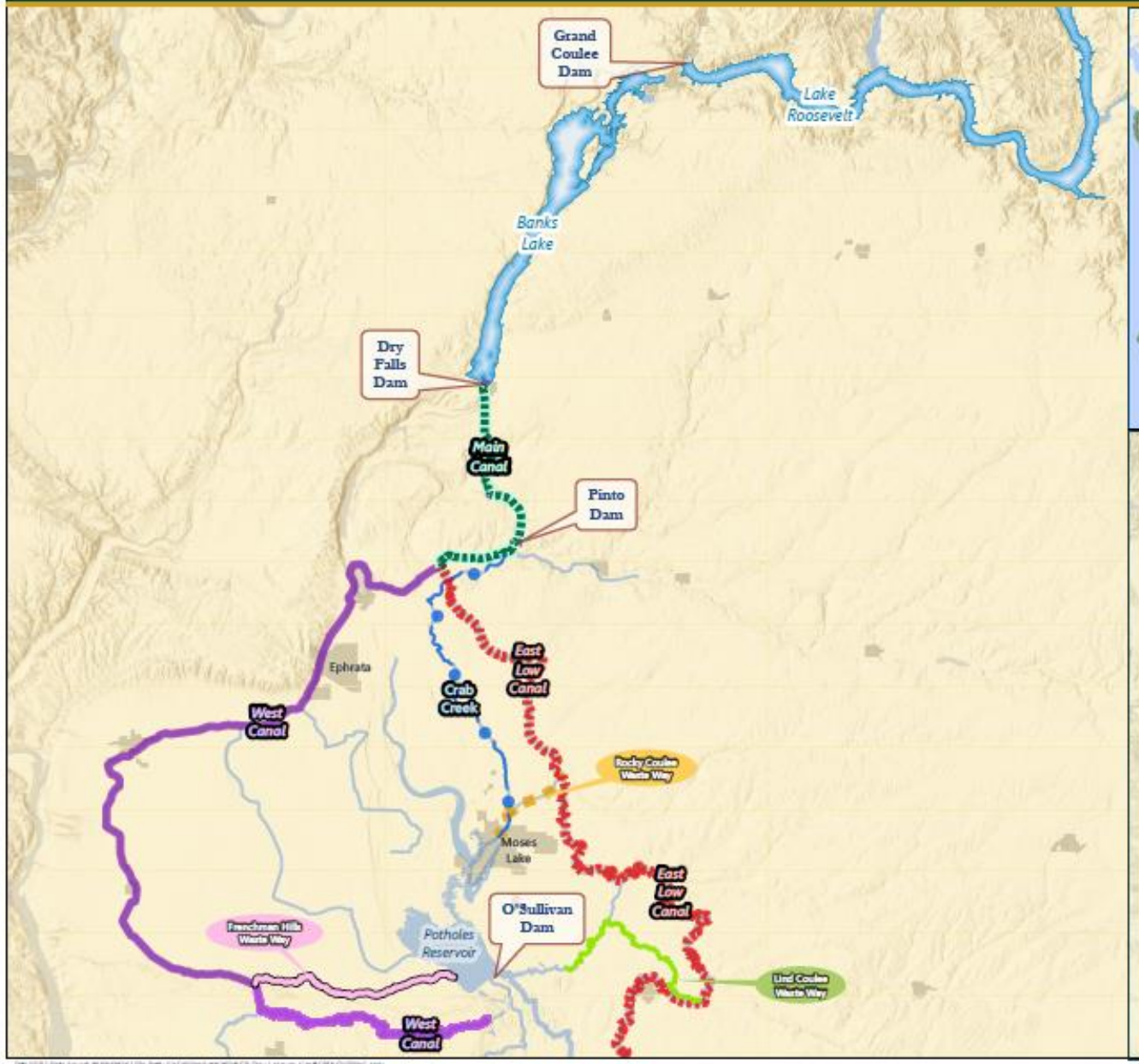
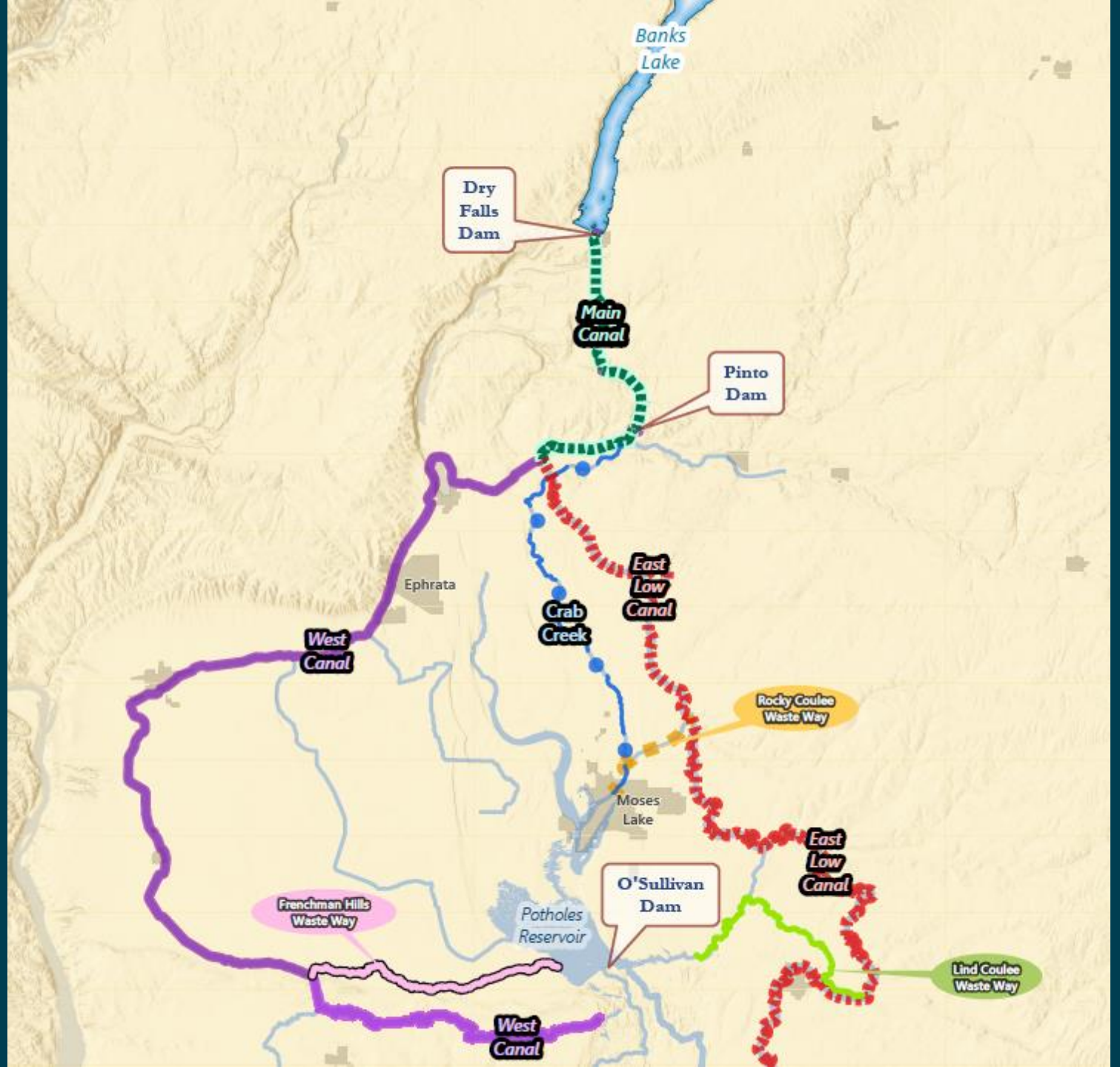


Figure 1.

Figure 2.

East Low Canal

- Additional capacity developed for OGWRP surface water delivery
- As OGWRP facilities come online
  - Flow for irrigation delivery will increase
  - Flow in the East Low Canal for Potholes Reservoir feed water will continue
  - Timeframe of peak flows will expand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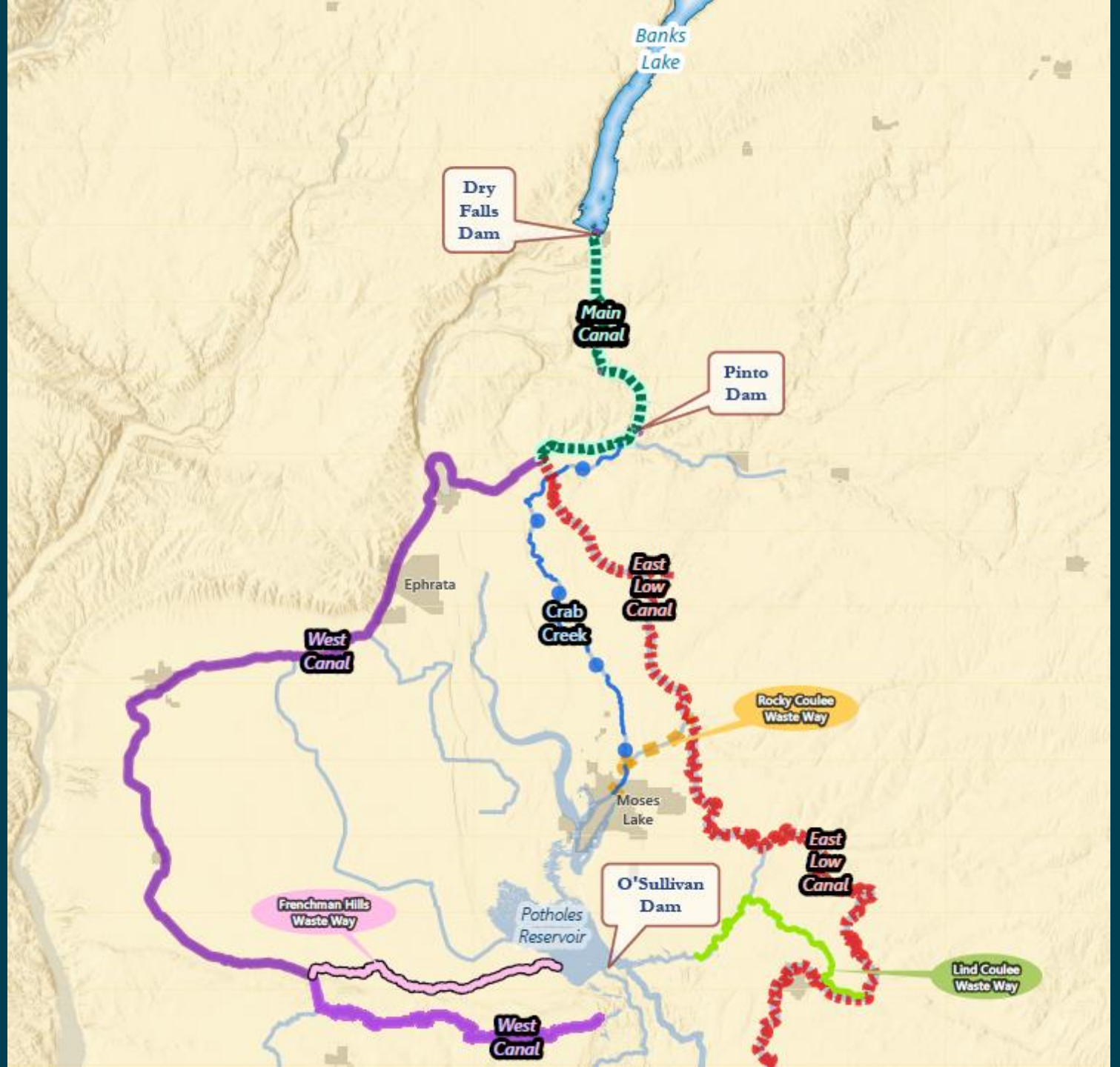
Main Canal
Pinto Dam
East Low Canal
Ephrata
Crab Creek
West Canal
Rocky Coulee Waste Way
Moses Lake
East Low Canal
O'Sullivan Dam
Frenchman Hills Waste Way
Potholes Reservoir
Lind Coulee Waste Way
West Canal

West Canal

- Improvements made to increase Frenchman Wasteway capacity
- Spring feed water for Potholes Reservoir via Frenchman
- Potentially becoming important as a fall feed water route in the future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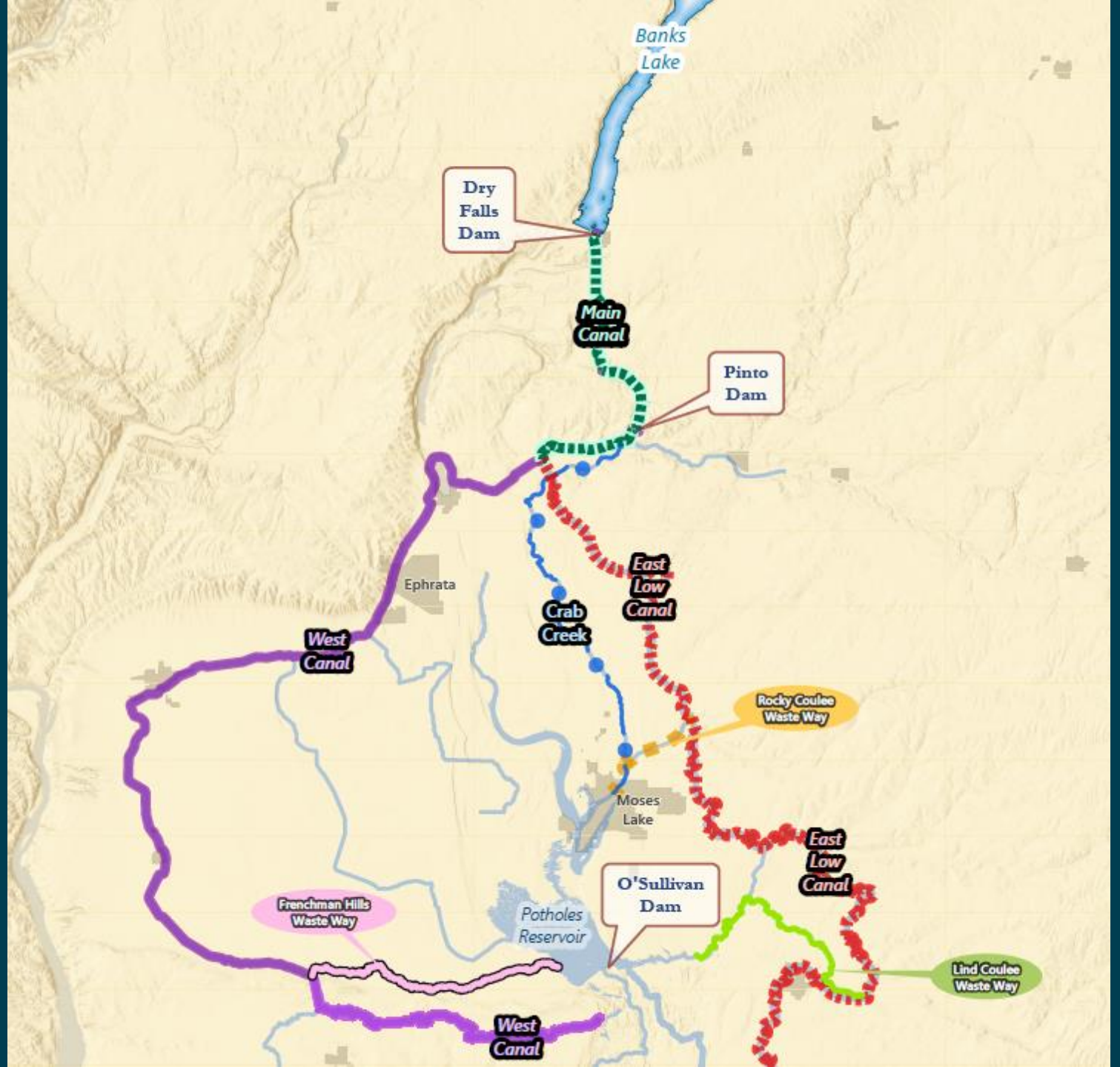
Potholes Supplemental Feed Routes

- Frenchman Wasteway capacity improvements
- Crab Creek natural channel
- Combined – will supplement Reclamation's ability to direct water to Potholes Reservoir
- Rocky Coulee and Lind Coulee will still be important water sources for Potholes Reservoir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Columbia Basin Project Irrigation Operation

- Always adjusting to meet current conditions
- Within irrigation season variability every year – predominantly climate driven
- Longer term operational shifts due to large scale changes in irrigation practices and increased water demand through development
- Reclamation and irrigation districts work together to ensure canal capacity will serve the maximum number of irrigators

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