

# RECLAMATION

*Managing Water in the West*

## St. Mary and Milk River Operations Montana Hydrology Conference May 2008

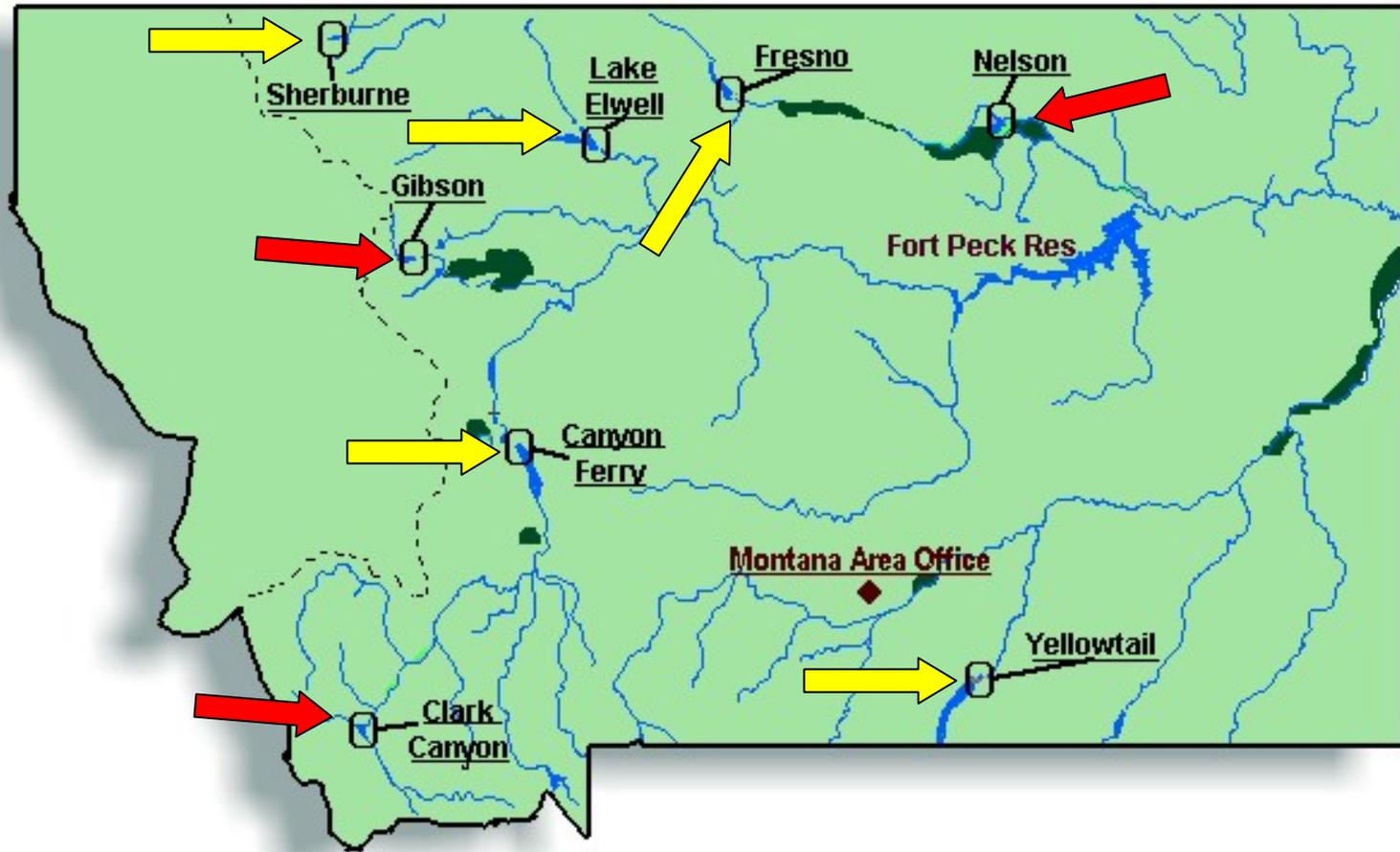


U.S. Department of the Interior  
Bureau of Reclamation

# OUTLINE

- Introduction
- Project Maps
- Project History & Facility Overview
- Operating Objectives & Criteria example
- International Cooperation
  - Background
  - St. Mary Operations
  - Milk River Operations
- Operational Challenges

# INTRODUCTION



**Montana Area Office** responsibilities include managing and overseeing operations of Reclamation storage projects in Montana east of the Continental Divide

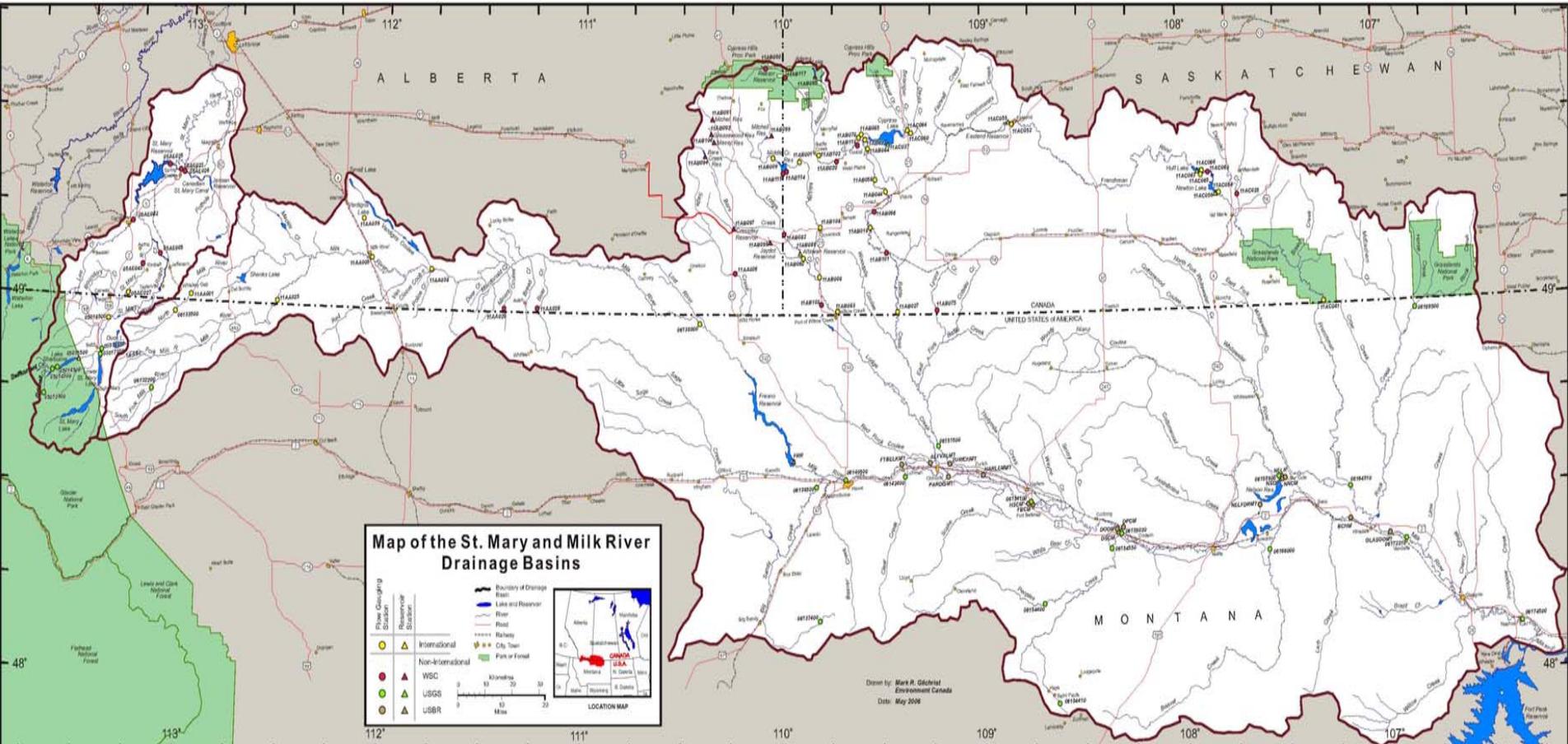
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# INTRODUCTION



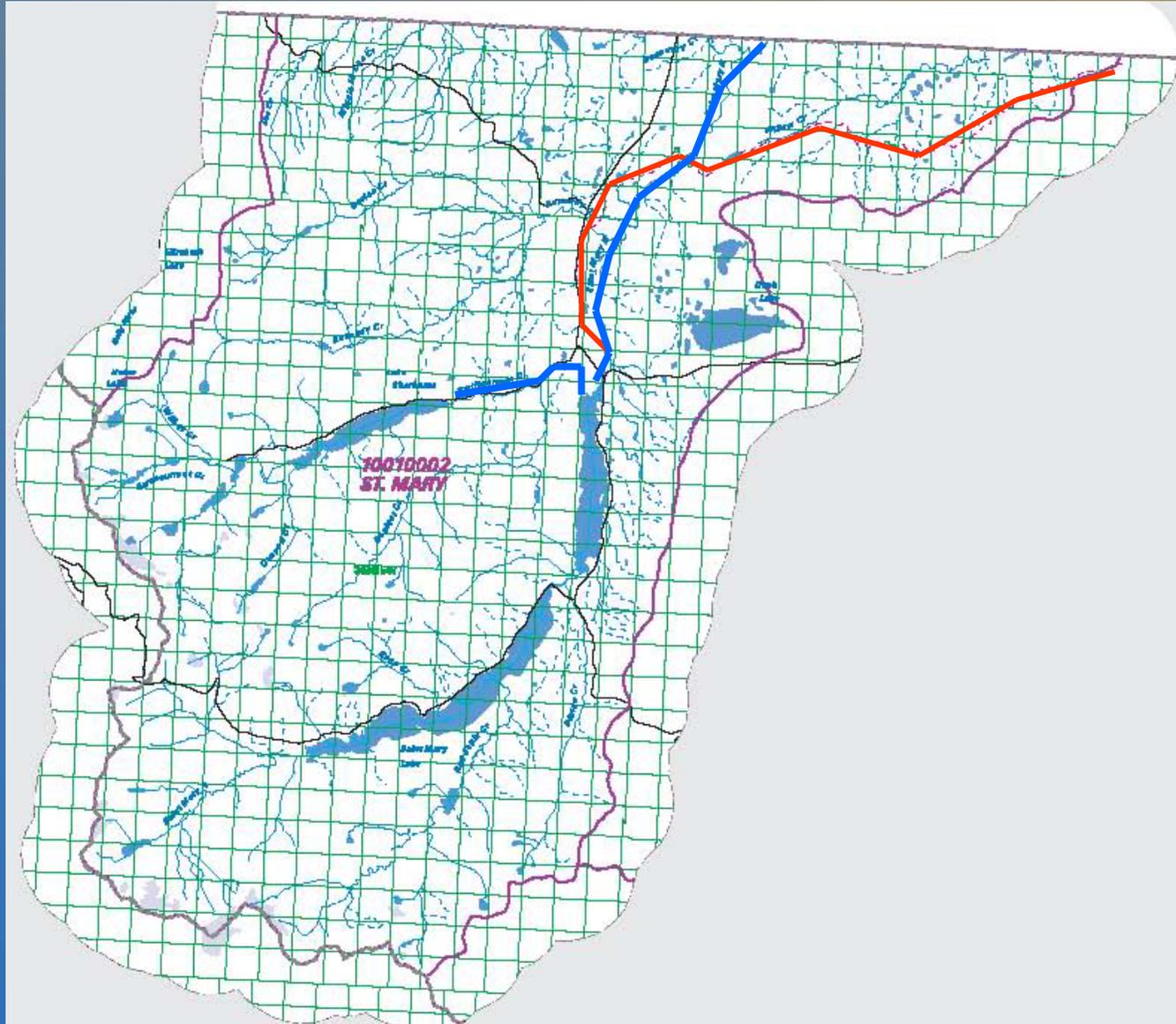
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# INTRODUCTION



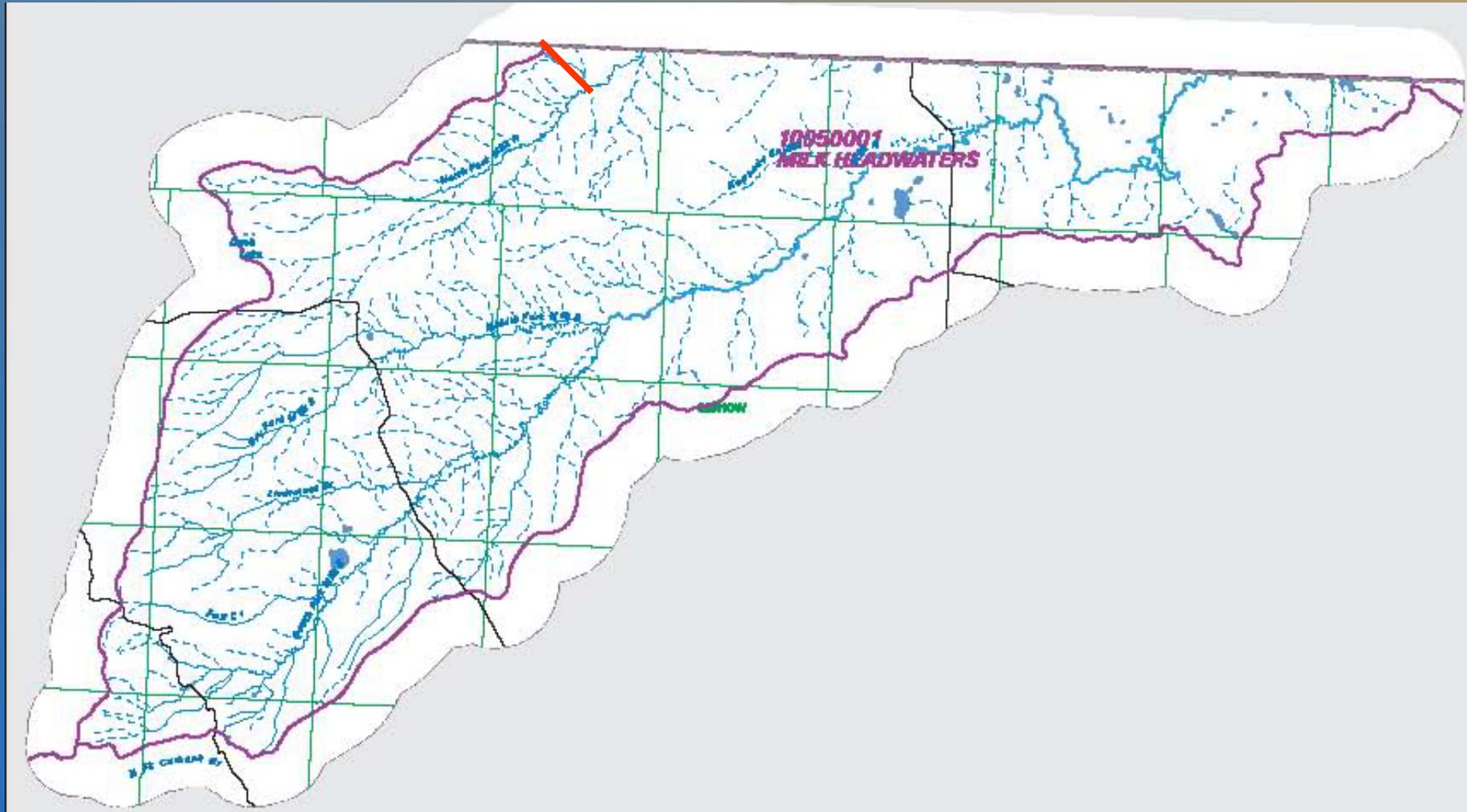
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# ST. MARY MAP



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# UPPER MILK RIVER MAP



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# PROJECT HISTORY

- St. Mary Canal 1907-15
- Boundary Waters Treaty signed 1909
- First water delivered for irrigation in 1911
- The Nelson Dikes 1914-15
- St. Mary Diversion Dam was completed 1915
- Lake Sherburne Dam was completed in 1914-21
- IJC Order on division of water 1921
- Fresno Dam in 1937-39

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# LAKE SHERBURNE



Total Storage	66,200 AF
River Outlet Capacity	2,100 cfs
Spillway Capacity	4,000 cfs

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# LAKE SHERBURNE



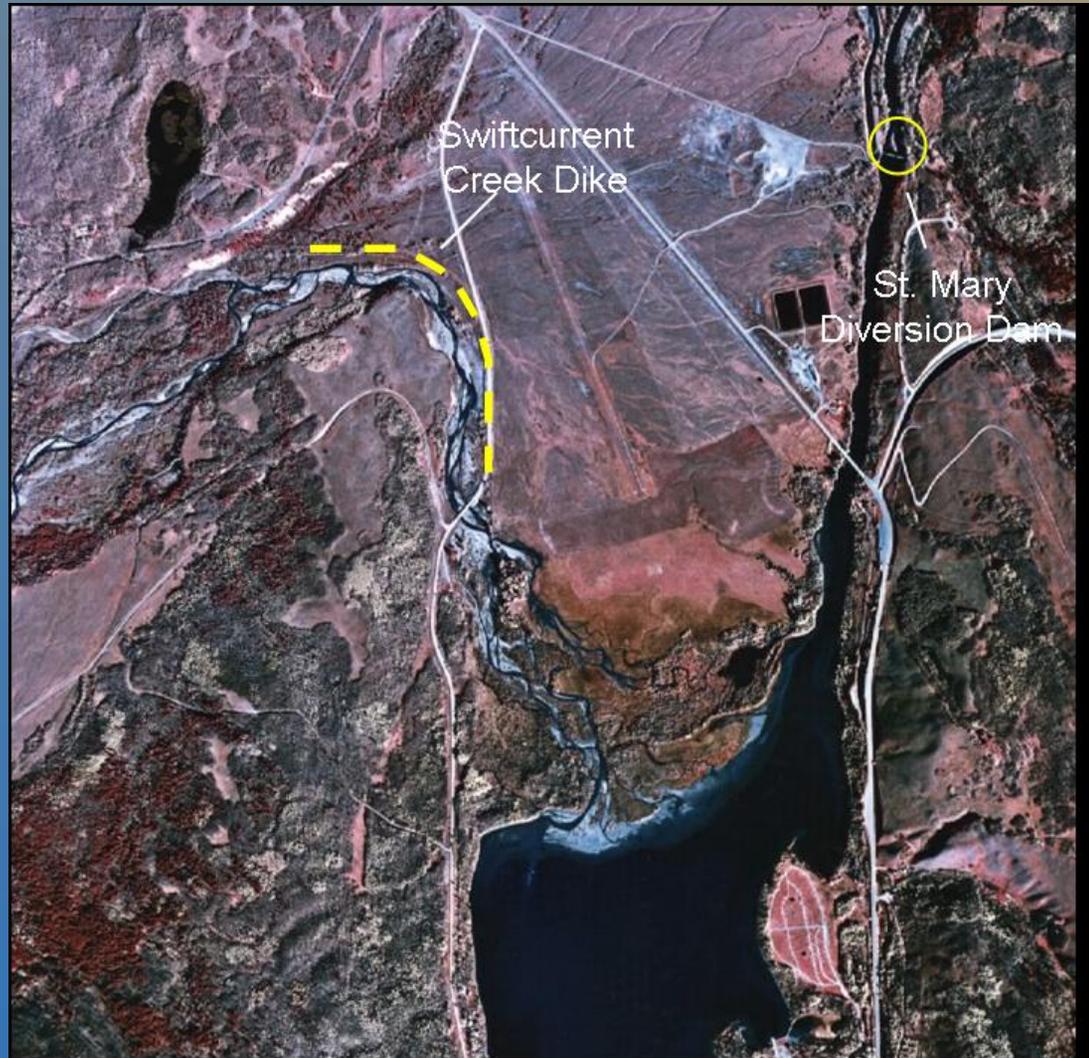
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# LAKE SHERBURNE



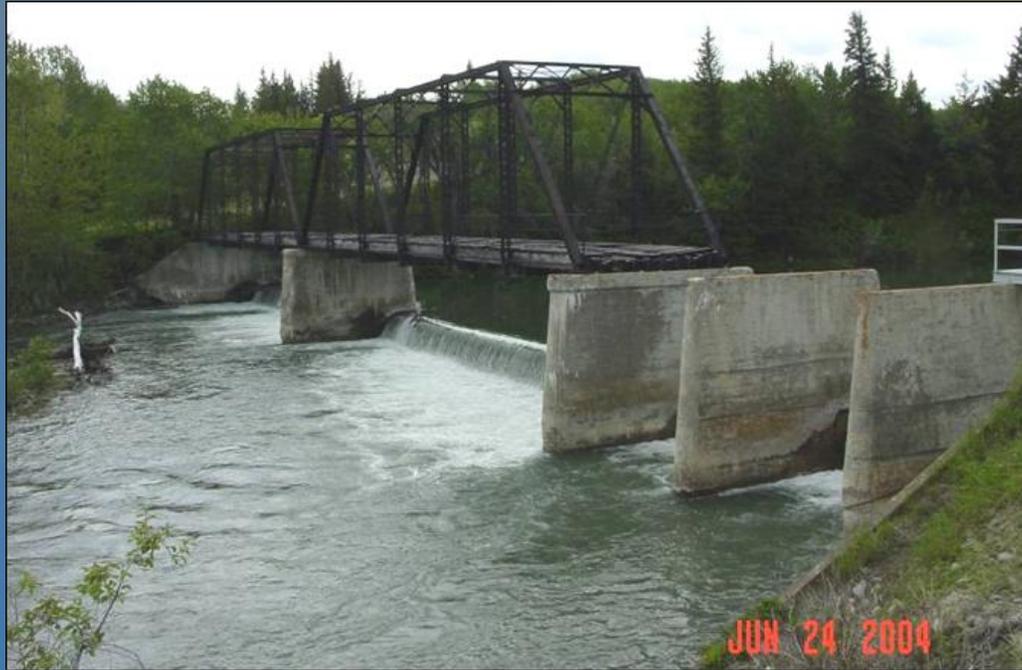
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# SWIFTCURRENT CR. & LOWER ST. MARY LAKE



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# ST. MARY DIVERSION DAM & CANAL



Design Diversion Capacity

850 cfs

Current Diversion Capacity

700 cfs

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# FRESNO RESERVOIR



Total Storage	92,800 AF
River Outlet Capacity	2,180 cfs
Spillway Capacity	51,360 cfs

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# FRESNO RESERVOIR



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# NELSON RESERVOIR



Total Storage	79,000 AF
Outlet Capacity	750 cfs
Spillway Capacity	n/a

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# OPERATIONAL OBJECTIVES & CRITERIA

- IRRIGATION
- MUNICIPAL USE
- FLOOD CONTROL
  - Elevation 2567 (March)
- FISH AND WILDLIFE
- RIVER AND LAKE RECREATION
- WATER QUALITY

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# INTERNATIONAL COOPERATION

- U.S. Geological Survey



- Water Survey Canada



- Alberta



- Saskatchewan



- Montana



- Reclamation

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# INTERNATIONAL COOPERATION

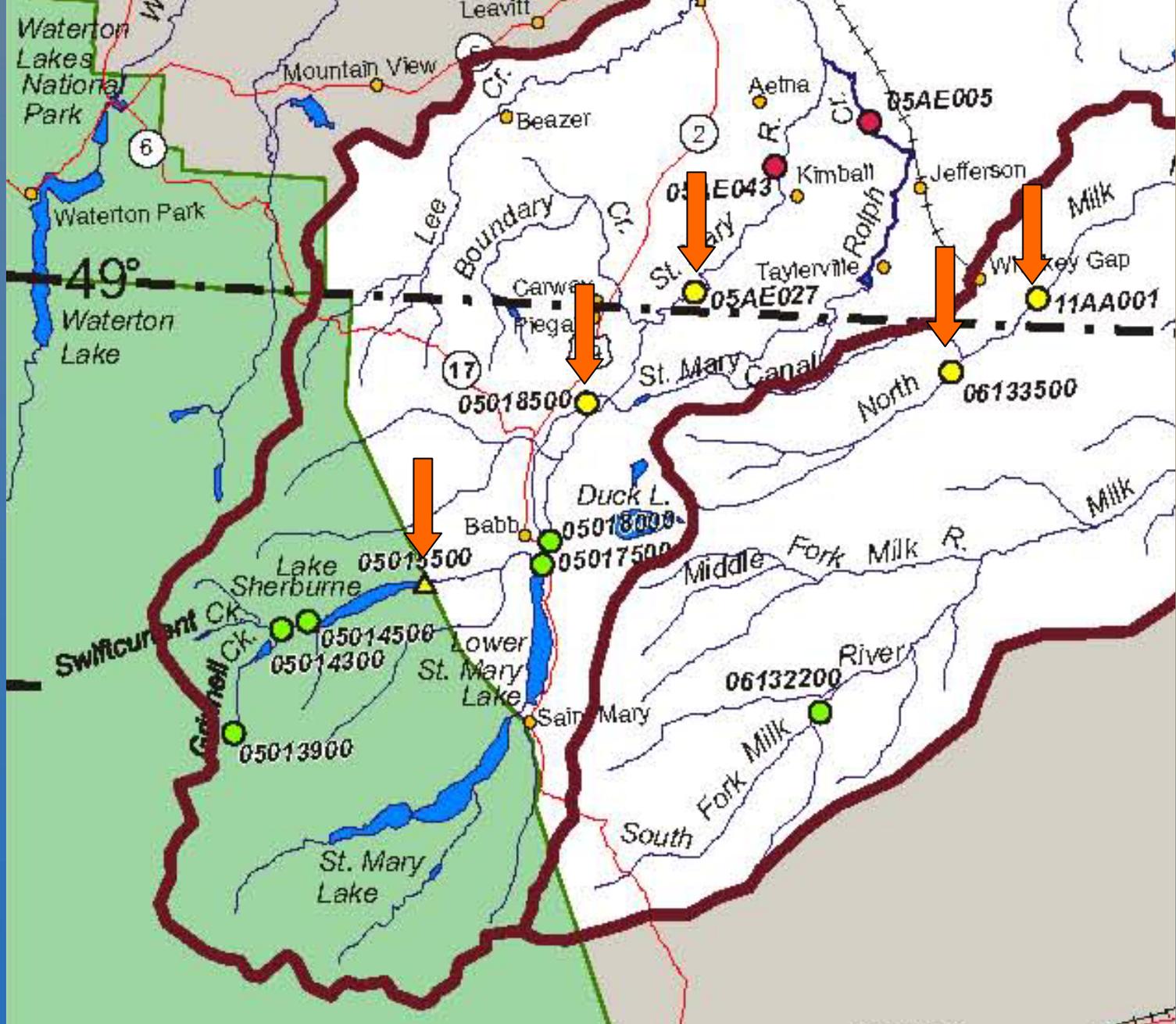
## Background

- 1909 Boundary Waters Treaty
  - Applied to all waters on Northern US Border
- 1921 Order of the International Joint Commission
  - Provided method of measurement and division of water
- Letter of Intent (1991 & 2001)
  - Allowed both countries more flexibility when water is used

# ST. MARY OPERATIONS IJC Accounting



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# IJC Accounting-St. Mary

- Is it irrigation season (April 1-October 31)?
  - No: 50/50
  - Yes: US 25%/Canada 75%
- What is the natural flow?
  - Up to 666 cfs (25/75)
  - Flow Above 666 (50/50) plus 166 cfs (US share)
- Is the US allowed a cumulative deficit?

# IJC Accounting-St. Mary

## How Reclamation Operates:

- Begin moving storage in spring
- Utilize 4,000 cfs-day deficit (thru May 31)
- Repay 2,000 cfs-days with runoff (June 1-July 15)
- Supplement St. Mary River during summer
- Balance water deficits on St. Mary and Milk by October 31

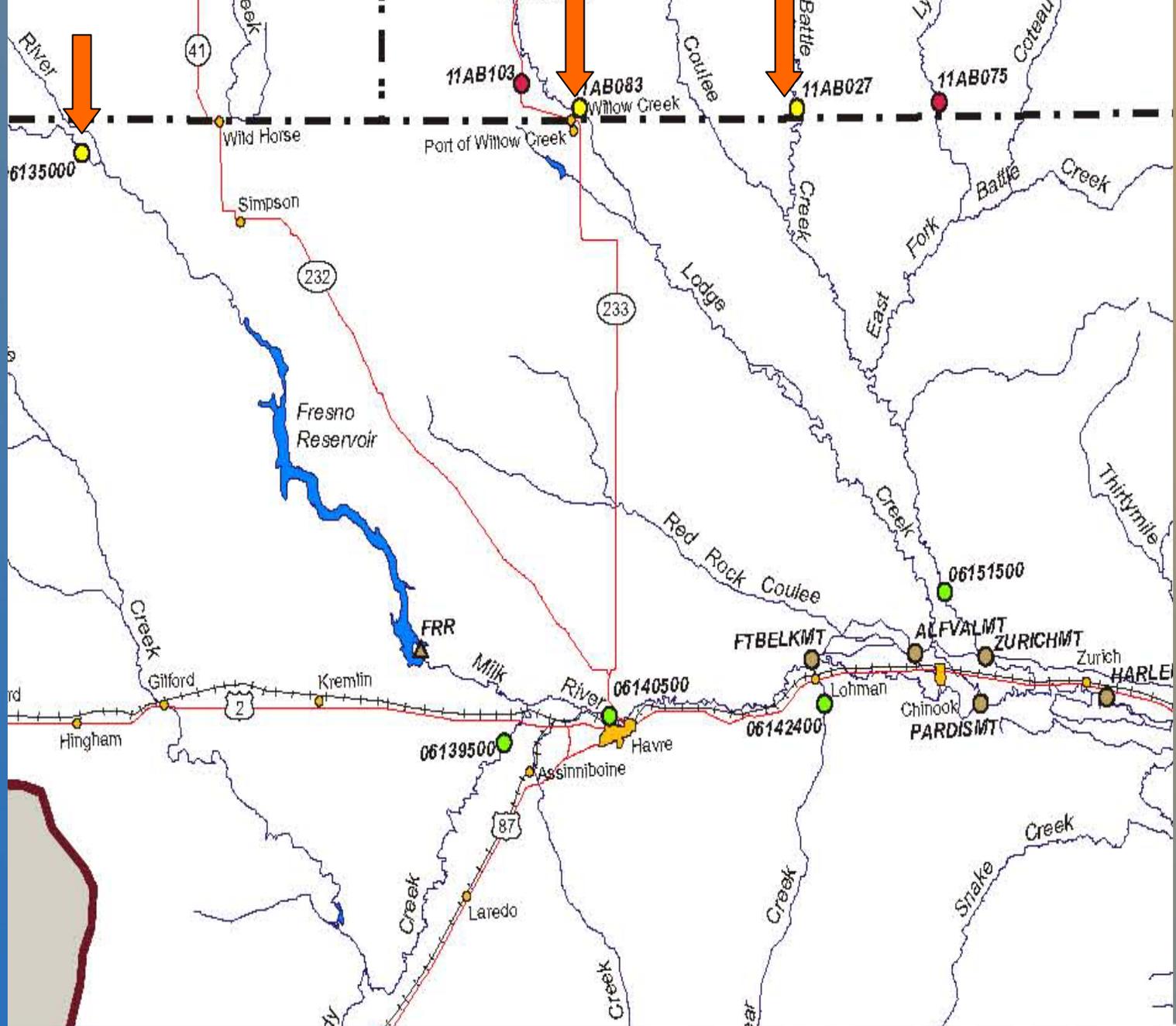
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# MILK RIVER OPERATIONS

## IJC Accounting



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# IJC Accounting-Milk River

- Is it irrigation season (April 1-October 31)?
  - No: 50/50
  - Yes: US 75%/Canada 25%
- What is the natural flow?
  - Up to 666 cfs (75/25)
  - Flow Above 666 (50/50) plus 500 cfs (US share)
- Is the Canada allowed a cumulative deficit?

# IJC Accounting-Milk River

## How Reclamation Operates:

- No storage capacity in Canada
- Most flows in early spring reach Fresno
- Canada allowed 2,000 cfs-days deficit (June 1-Sept 15)
- Fill Fresno early prior to irrigation releases
- Some flood control provided by Fresno
- Fill Nelson with natural flow below Fresno

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# OPERATIONAL CHALLENGES



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# OPERATIONAL CHALLENGES

## 1) Managing water to meet:

- Treaty requirements with varying hydrologic conditions
- State law
- Reclamation still has responsibilities for meeting Project purposes

## 2) Water supply forecasting

## 3) IJC accounting and associated variables

# OPERATIONAL CHALLENGES

## Current Work

### 1) Managing Water

- Communication with agencies and customers
- Coordinate operations with Canada

### 2) Forecasting

- Soil moisture
- Satellite

### 3) IJC Accounting

- 95% of upgraded streamgaging sites updated to High Data Rate transmitters
- Milk River Technical Working Group (evaporation)
- Consumptive use in both countries (Alberta's Demo Project)

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# CONTACT INFORMATION

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# THANK YOU



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