

Flexibility of South Delta Permanent Barrier Operations

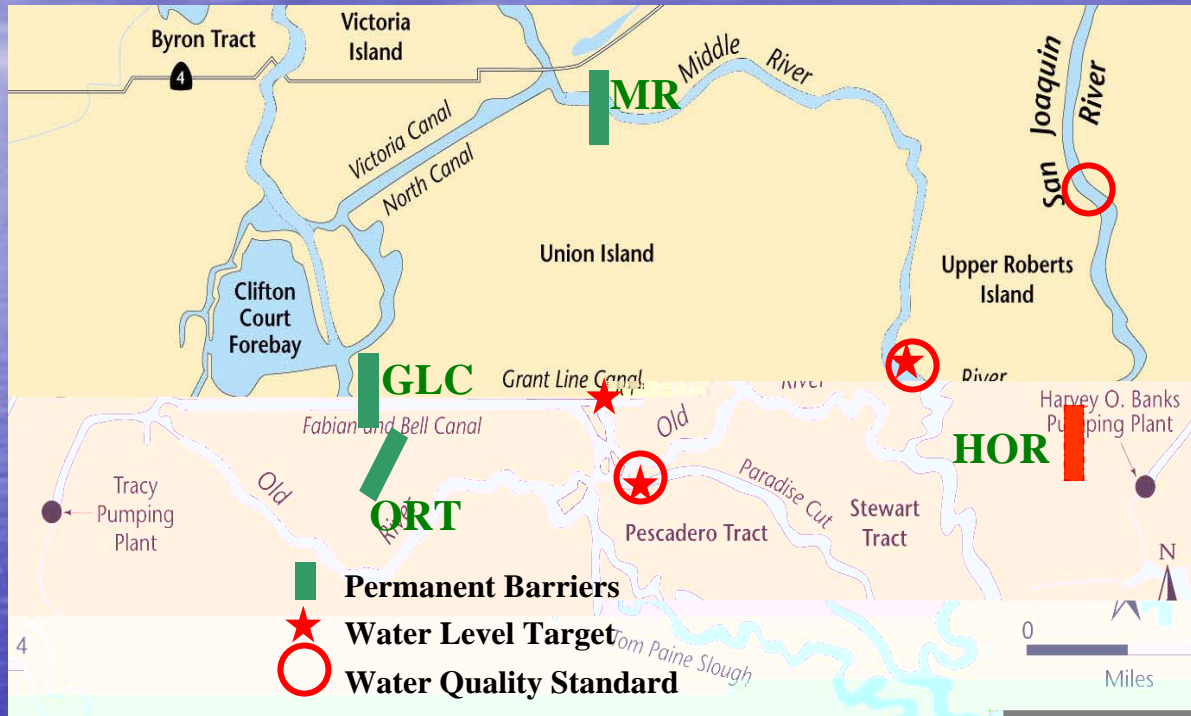
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**Department of Water Resources
Delta Modeling Section
Bay-Delta Office**

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Objectives of South Delta Permanent Barriers



- Maintain minimum water level of 0 ft msl at target locations for South Delta Farmers
- Improve water quality standards to meet D1641 requirements

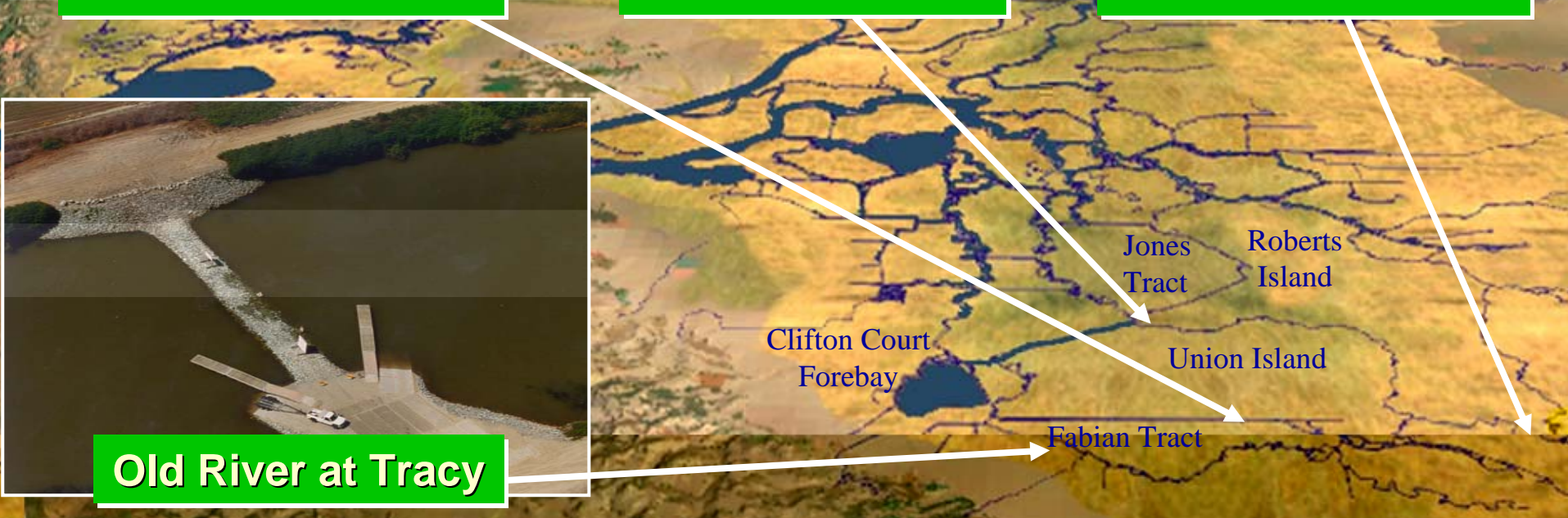
South Delta Temporary Barriers



Grant Line Canal

Middle River

Head of Old River



Old River at Tracy

Jones Tract

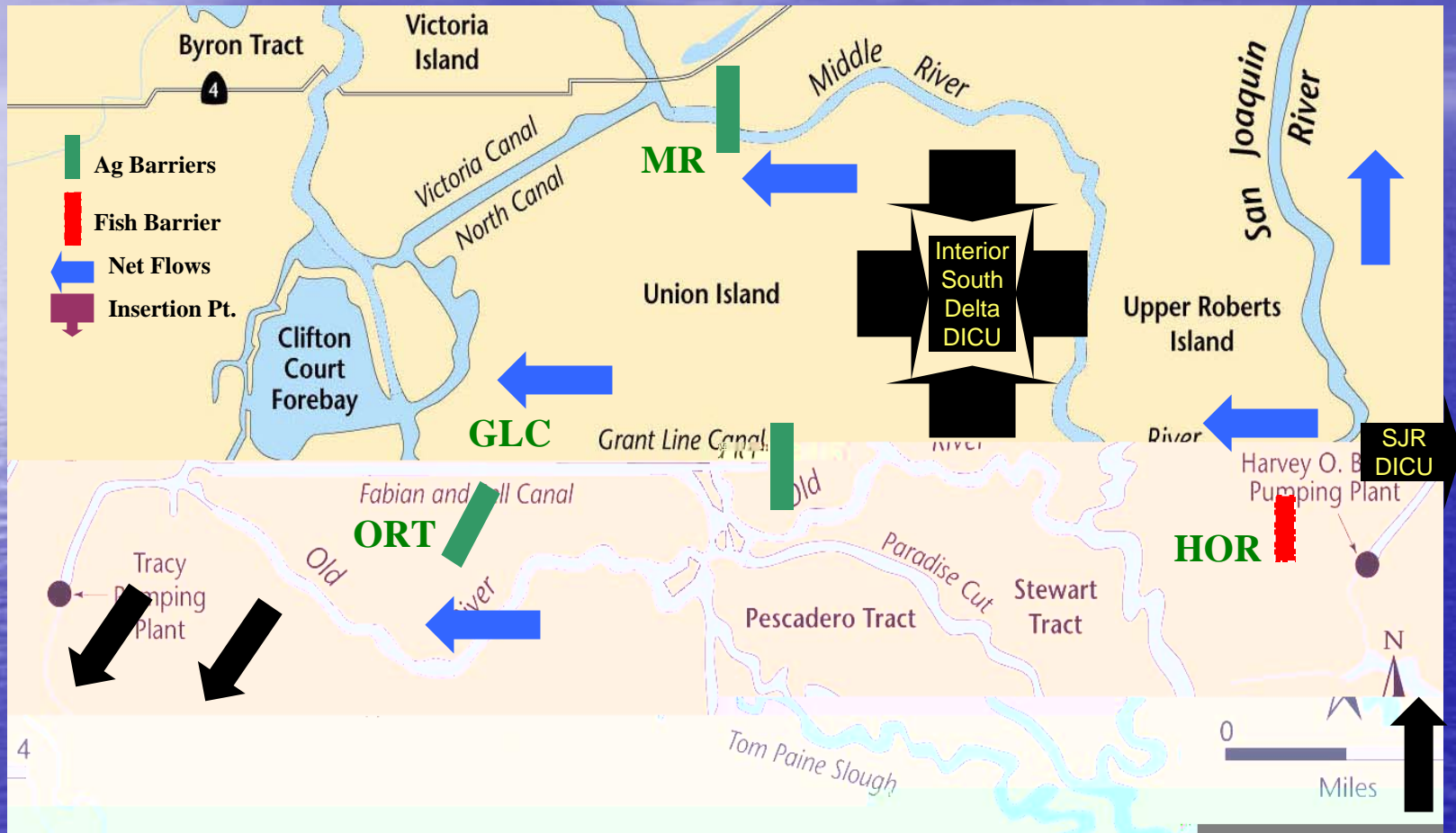
Roberts Island

Clifton Court Forebay

Union Island

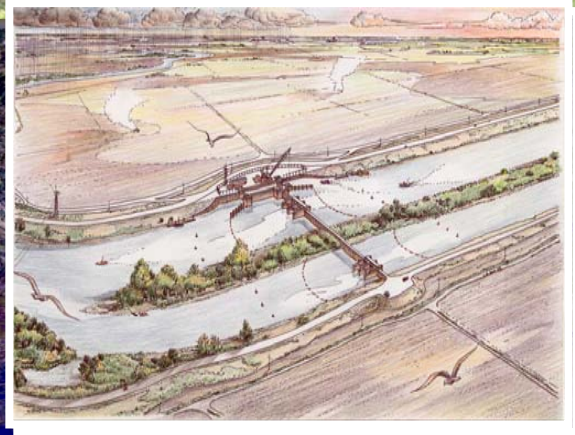
Fabian Tract

South Delta Temporary Barriers

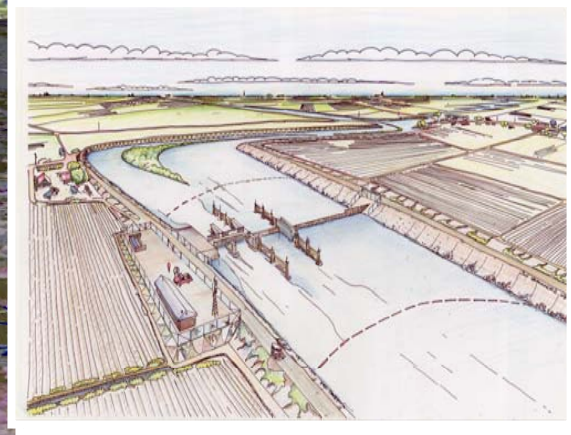


Temporary Barriers are rock barriers installed and removed every year (at certain time periods)

South Delta Improvements



Grant Line



Middle River



Head of Old River



Old River @ DMC

SWP
CVP



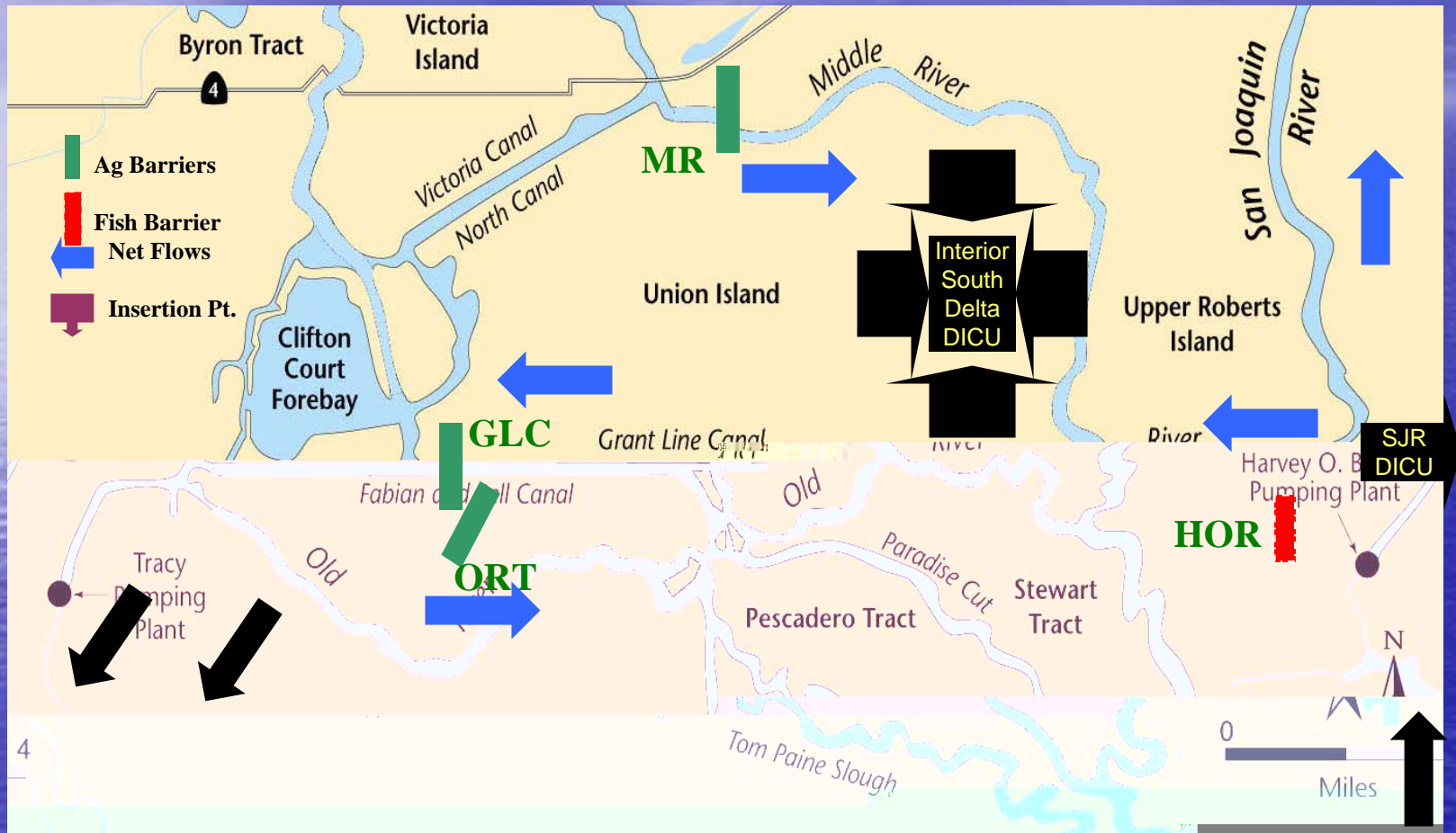
Plan C Barriers Operation - Basic Concept

Operate Ag Barriers to Protect Water Levels and Improve Water Quality (on a as needed basis)

- The choice for the number of barriers operated depends on the hydrology
- Fish barrier is operated during VAMP and Fall
- All Ag barriers fully open during flood tide
- When operated, Middle River and Old River Ag Barriers are fully closed during ebb tide
- Grant Line Canal Ag Barrier only partially open during ebb-tide to prevent water level problems

South Delta Permanent Barriers – Plan C Operation

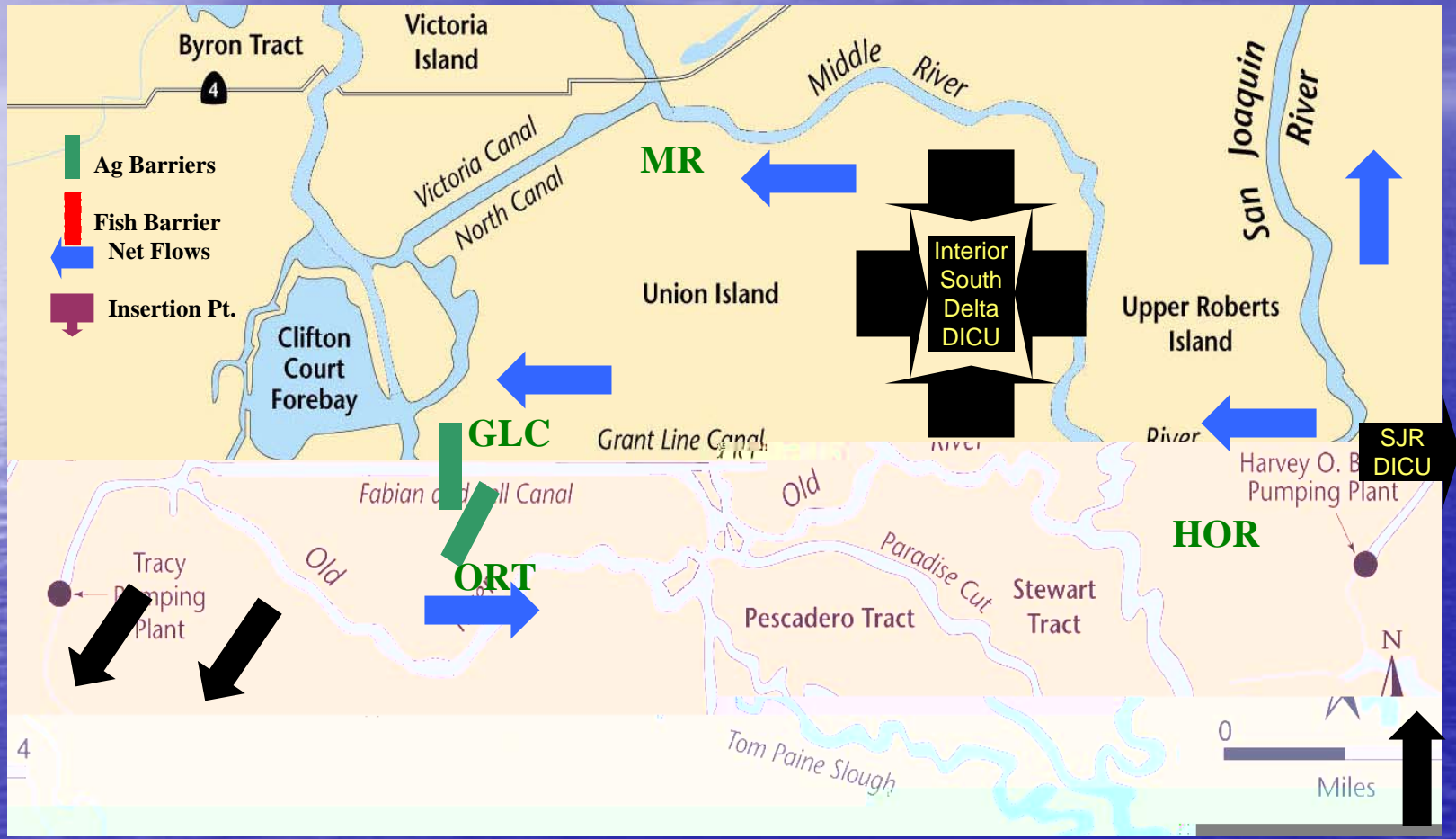
Low SJR Flows (< 2500 cfs) or HOR Operating



- Middle and Old River Barriers are closed during ebb tide
- GLC Barrier is partially opened during ebb tide

South Delta Permanent Barriers – Plan C Operation

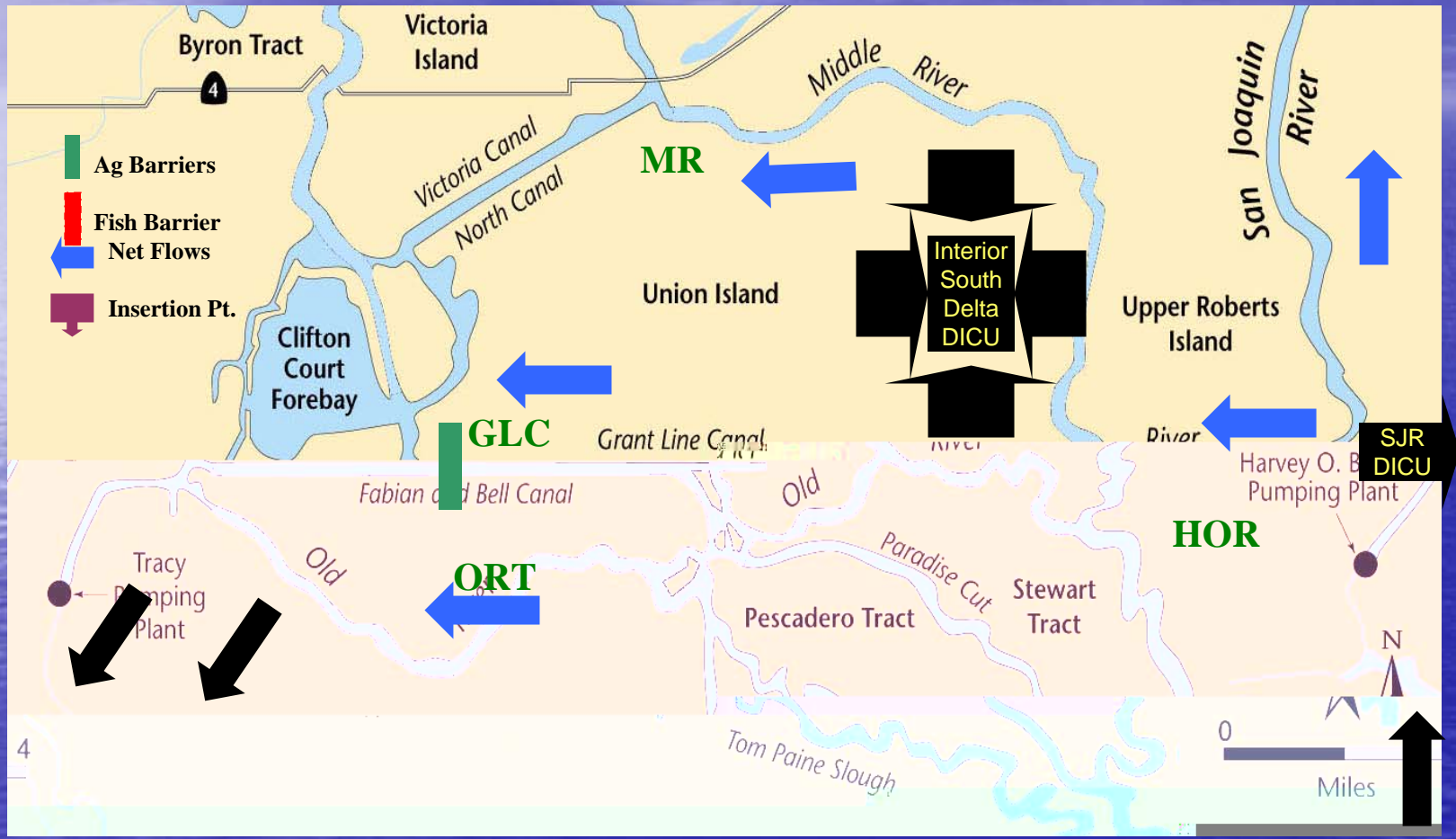
Intermediate SJR Flows ($2500 < \text{SJR} < 4000$ cfs) & HOR Open



- Old River Barrier is closed during ebb tide
- GLC Barrier is partially opened during ebb tide

South Delta Permanent Barriers – Plan C Operation

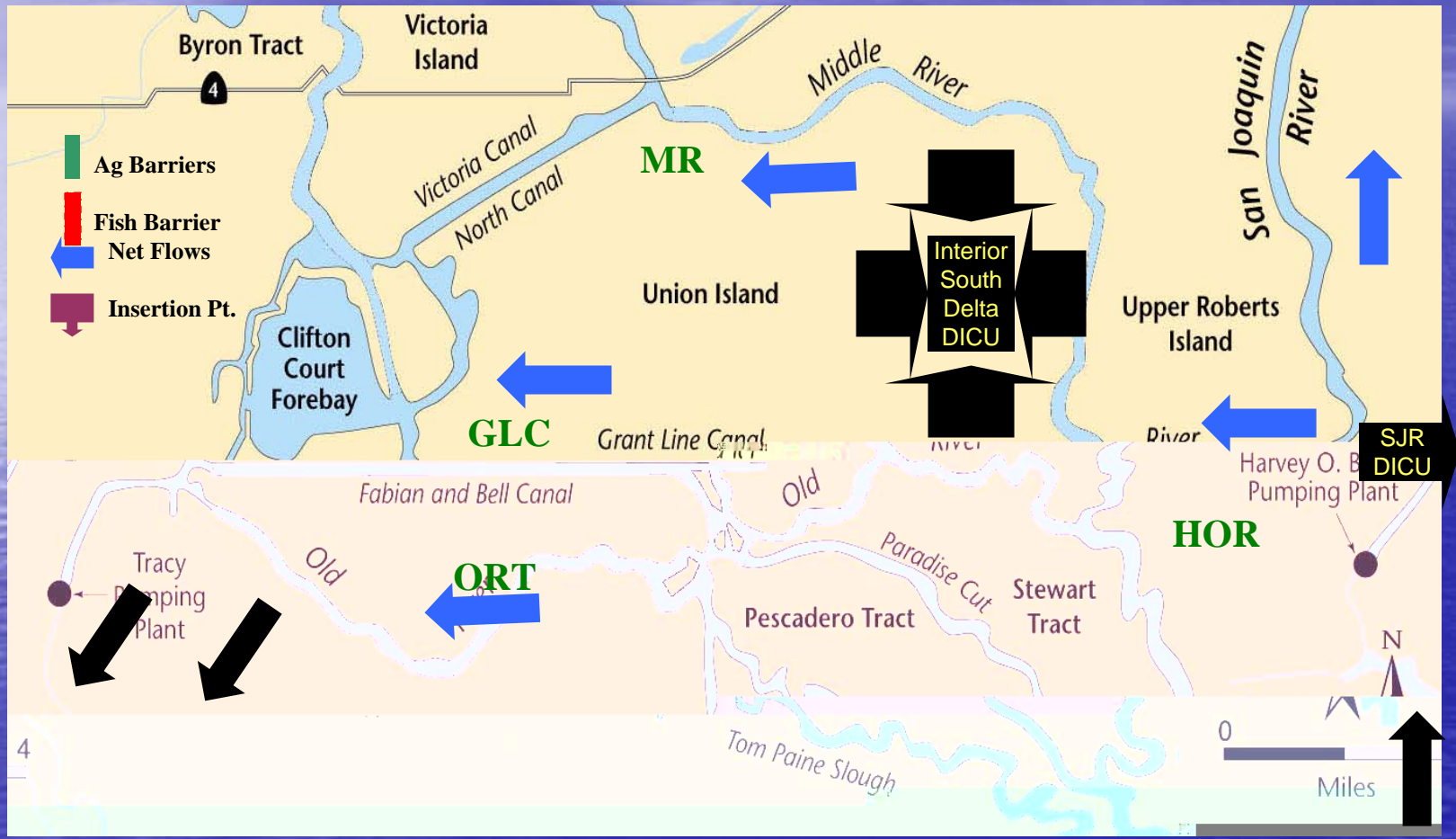
High SJR Flows ($4000 < \text{SJR} > 8000$ cfs) & HOR Open



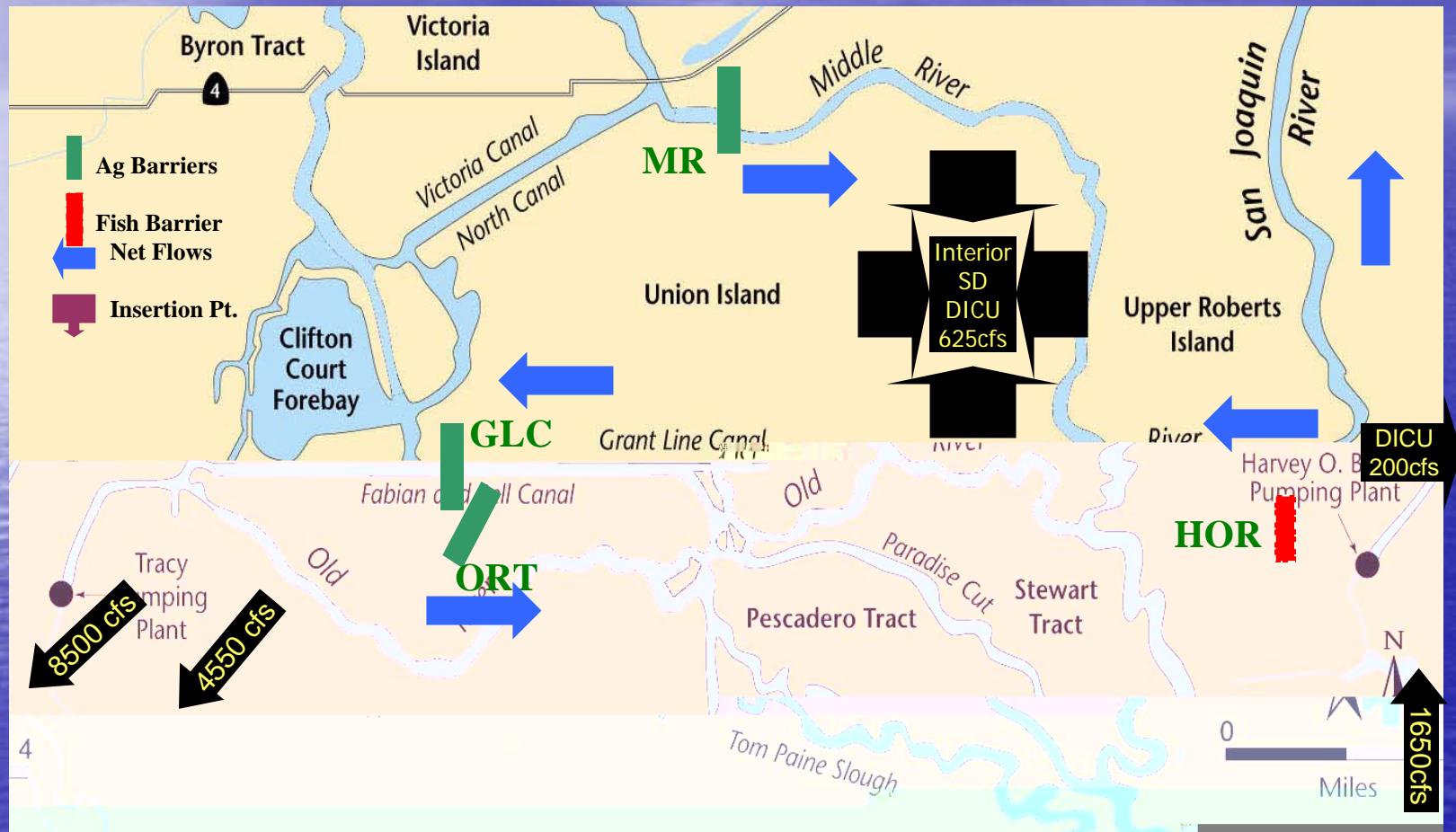
- GLC Barrier is partially opened during ebb tide

South Delta Permanent Barriers – Plan C Operation

Very High SJR Flows (> 8000 cfs) & HOR Open

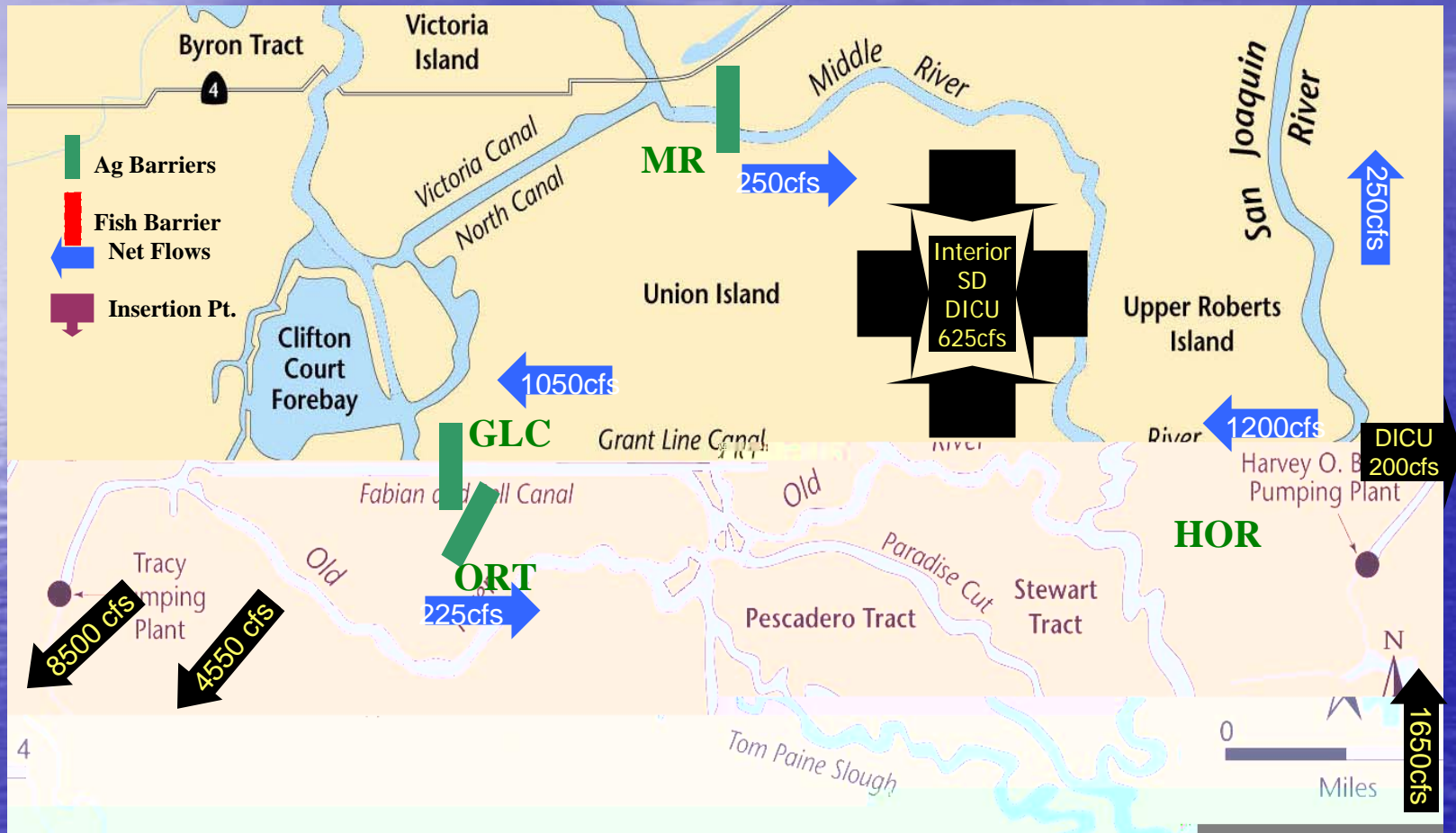


Hydrology and Barriers Operation 2020 Integrated - July 1985



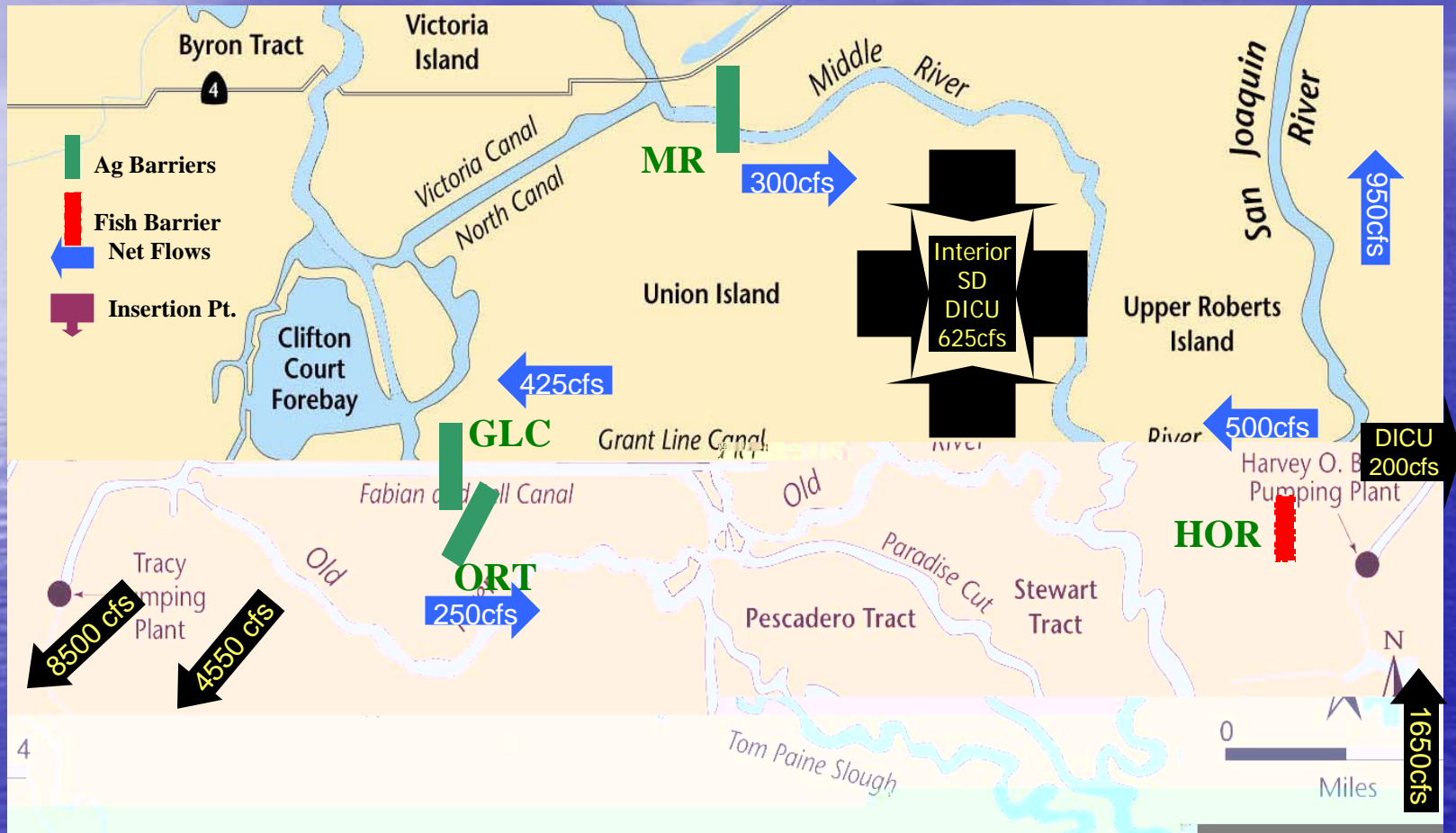
- Middle and Old River Barriers are closed during ebb tide
- GLC Barrier is partially opened during ebb tide

Monthly Averaged Net Flows – HOR Open 2020 Integrated - July 1985



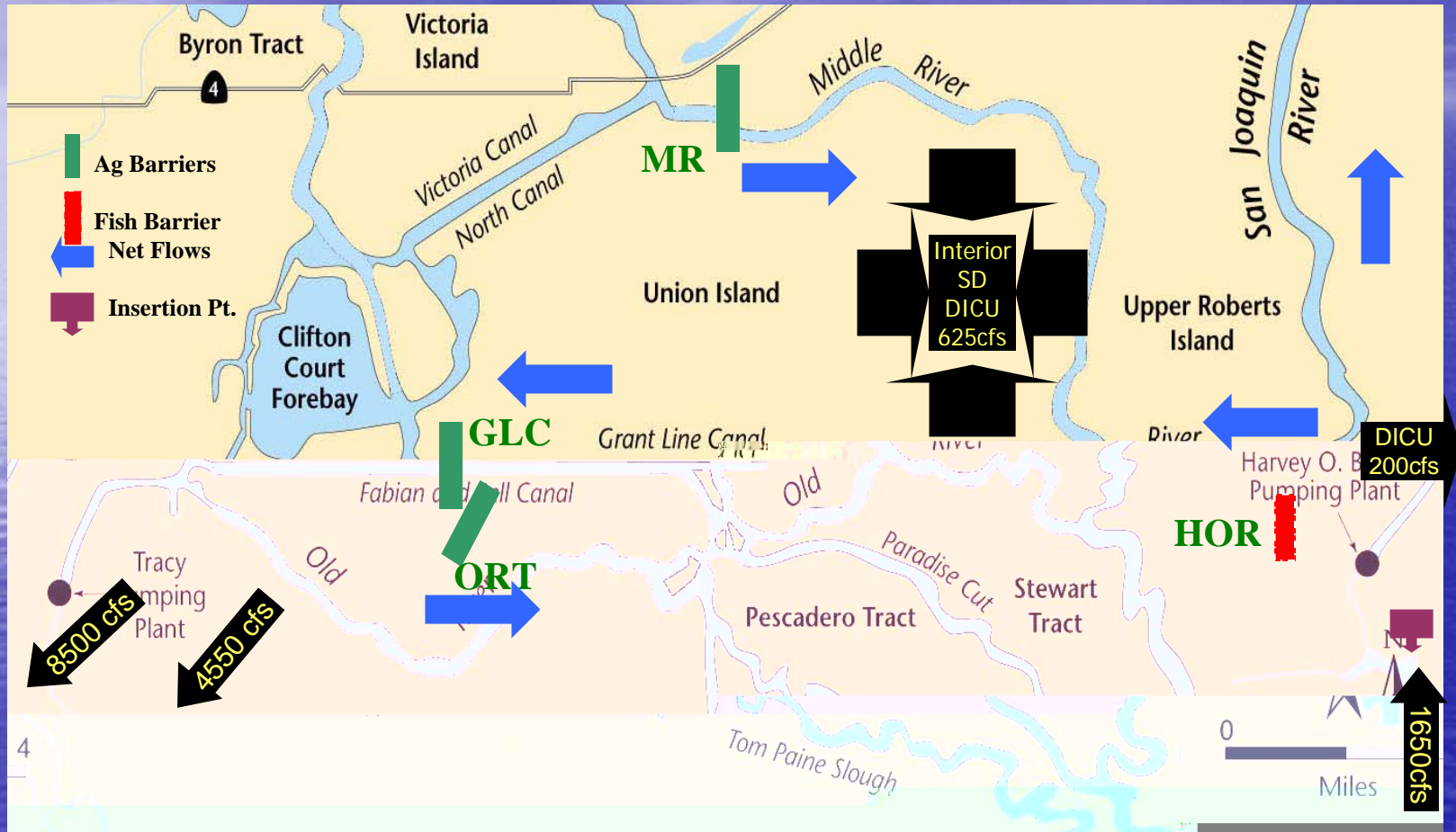
- Middle and Old River Barriers are closed during ebb tide
- GLC Barrier is partially opened during ebb tide, HOR is open

Monthly Averaged Net Flows – HOR Regulated 2020 Integrated - July 1985



- Middle and Old River Barriers are closed during ebb tide
- GLC Barrier is partially opened during ebb tide, HOR is regulated

Comparison of HOR Open Vs. HOR Regulated Using PTM Runs for 2020 Integrated - July 1985



- Middle and Old River Barriers are closed during ebb tide
- GLC Barrier is partially opened during ebb tide

Take Home Message

- Permanent barriers provide flexibility in the operation. They can be operated to achieve desired goals (meet minimum water levels and improve water quality) on a as needed basis.
- The operation of Plan C barriers depends on hydrology and the time of the year.
- Regulated Fish barrier at HOR provides two fold benefits besides fish benefit.
 1. It provides more flows remain in the main SJR stem to improve DO and EC.
 2. It improves the efficiency of Ag barriers.

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