Recent DWRSIM Modifications

- Study support and verification
  - Revised internal error checks
  - Specialized Isolated Facility Logic
- Stanislaus River Operation
- Delta Consumptive Use met from Isolated Facility

Revised Stanislaus Operation

- Better reflect current interim operations
- Replace step functions with interpolation
  - Stanislaus River fish flows, includes pulse
  - Stockton East
  - Oakdale/SSJID
  - Central San Joaquin ID

Delta CU from Isolated Facility

- New Delta flow-network sub model
- Interface sub model to main model
- Interface with input/output systems
- New input data development
- Interface with operational algorithms

Show Old and new Delta Schematics to illustrate change

This is a place holder, will not be in presentation.

Delta CU from Isolated Facility Implications

- Has a water supply cost
  - Moves demand from San Joaquin River to Sacramento River
  - Possible internal routing affects

Future DWRSIM Modifications

- Implement Artificial Neural Network for Flow-Salinity Transformation
- Revise Delta Modeling Implementation

Artificial Neural Network for Salinity-Flow Relationship

- Uses more information than current relationship
- Trained on model data so can be updated for new Delta configurations and operations
- Sacramento Inflow Requirement not Delta Outflow Requirement

Original Delta Modeling Implementation

- Coordinated Operating Agreement
- Export Determination
- Delta treated as a "point"

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Show Original DWRSIM Delta Schematic to illustrate

This is a place holder, will not be in presentation.

Export Determination

- Min Export
  - Meet Demands
  - Desired Level South of Delta Storage
- Max Export
  - Maximum Physically Possible
- Assume release from upstream for Min not Max

Coordinated Operating Agreement (COA)

- 'Balanced and Surplus Conditions'
- Storage Withdrawals - Export = In Basin Use (IBU), if positive
- Export - Storage Withdrawals = Unstored Water for Export (UWE), if positive
- Rules to allocate IBU or UWE
- NOTE: Can not have both at once!
- Designed to be a post processing operation

Original Delta Modeling Procedure

- Operate upstream of Delta
- Compute "TAUF" by water balance
- Compute SWP/CVP releases
- Compute SWP/CVP exports
- Compute additional SWP/CVP releases
- Re-operate upstream of Delta

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Current Delta Modeling Implementation

- Coordinated Operating Agreement
- Export Determination
- Delta Operations and Routing

Delta Operation and Routing Modeling

- Cross Channel Gates
- Isolated Facility Operation
- South Delta Export Limits
- Flow Splits
- Export Ratio Limits
- In Delta Storage
- Interior Flow Requirements

Delta Operation and Routing Procedure

- Flow network based "sub-model"
- Operation logic spread throughout model
  - Setup flow-network
  - Re-iterate entire months
- **Changes in internal Delta operation may change Sacramento inflow requirements**

Show and review interior operations on newest Delta Schematic

This is a place holder, will not be in presentation.

Current Delta Modeling Procedure

- Operate upstream
- Compute "TAUF"
- Compute SWP/CVP Releases & Exports
- Compute Delta Operations
- Check "TAUF" computation
- Compute additional SWP/CVP releases
- Re-operate upstream of Delta
- Check Export Ratio

Current Delta Modeling Implementation Problems

- Code complex and hard to modify
- Incremental nature of solution
- Delta now modeled as a network, not a point

Proposed Delta Modeling Implementation

- Operate upstream
- Set 'assumed' Delta Operations & Solve
  - Exports, including export ratio
  - Facility operations
  - Internal/Outflow requirements
- Compute SWP/CVP releases
- Re-operate upstream

Proposed Implementation Benefits

- Makes the Delta a point again for COA purposes
- Separates COA and Operation logic
- Clean up existing code
- Allow future development

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