## Wild and Scenic Rivers

- **Current Methods**
  - **Conceptually**
    - Definition - Annual natural flows from the designated State and Federal Wild and Scenic Rivers system.
    - IDEF0 diagram

- **Example using real data**
  - Eel River

- **Data Products**
  - What we provide
  - How public can access
    - **Process Diagram**
      - [http://www.waterplan.water.ca.gov/technical/processmaps/index.cfm](http://www.waterplan.water.ca.gov/technical/processmaps/index.cfm)
    - **Data sources**
      - [http://www.waterplan.water.ca.gov/technical/datasources/index.cfm](http://www.waterplan.water.ca.gov/technical/datasources/index.cfm)
Wild and Scenic Rivers continued…

- Legal descriptions of rivers and/or river reaches
- Watershed characteristics (drainage areas, precipitation, etc.)
- Average Year Annual Totals
- Actual Year Annual Totals for 1998-2005
- Various data reports (summary by waterway, region, etc.)
  [http://www.waterplan.water.ca.gov/waterpie/raf_data.cfm](http://www.waterplan.water.ca.gov/waterpie/raf_data.cfm)
- Narrative
- Map (GIS layer)
  [http://www.waterplan.water.ca.gov/maps/index.cfm](http://www.waterplan.water.ca.gov/maps/index.cfm)
- General Water Portfolio Information
  [http://www.waterplan.water.ca.gov/waterpie/water_portfolio.cfm](http://www.waterplan.water.ca.gov/waterpie/water_portfolio.cfm)
- The Technical Guide
  [http://www.waterplan.water.ca.gov/technical/index.cfm](http://www.waterplan.water.ca.gov/technical/index.cfm)
- Regional Reports

**Delta Outflow**

- Current Methods
  - Conceptually
    - Definition - Fresh water outflow from the Sacramento-San Joaquin Delta to protect the beneficial uses within the Delta from the incursion of saline water.
    - IDEF0 diagram

---

**Flow Diagram**

```
Water Portfolio

  Data

  Obtain DAYFLOW Data 1

  DWR ESO or Website

  DWR Operations Scheduling Section

  Envr. work team staff and O&M JOC staff

  Minimum Required Delta Outflow and Actual Delta Outflow

  Check with DWR O&M(JOC) for their review 3

  Yearly Bay Delta Outflow

  Insert into Water Budget 4

  Minimum Required Delta Outflow

  D-1641 Legislation

  Actual Delta Outflow
```

**Diagram Notes**

- Obtain DAYFLOW Data
- DWR ESO or Website
- DWR Operations Scheduling Section
- Envr. work team staff and O&M JOC staff
- Check with DWR O&M(JOC) for their review
- Yearly Bay Delta Outflow
- Insert into Water Budget
Delta Outflow (continued)

- Example using real data – 2002-2006

<table>
<thead>
<tr>
<th>Month</th>
<th>WY 2002 (Dry)</th>
<th>WY 2003 (AN-BN)</th>
<th>WY 2004 (BN-D)</th>
<th>WY 2005 (AN-W)</th>
<th>WY 2006 (W-W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCT</td>
<td>246950</td>
<td>261870</td>
<td>245950</td>
<td>257268</td>
<td>245950</td>
</tr>
<tr>
<td>NOV</td>
<td>267769</td>
<td>488210</td>
<td>267769</td>
<td>436243</td>
<td>267769</td>
</tr>
<tr>
<td>DEC</td>
<td>276694</td>
<td>152078</td>
<td>276694</td>
<td>178079</td>
<td>276694</td>
</tr>
<tr>
<td>JAN</td>
<td>276694</td>
<td>238169</td>
<td>388226</td>
<td>316294</td>
<td>388226</td>
</tr>
<tr>
<td>FEB</td>
<td>633124</td>
<td>668037</td>
<td>1515769</td>
<td>1645127</td>
<td>655736</td>
</tr>
<tr>
<td>MAR</td>
<td>700959</td>
<td>1043096</td>
<td>700959</td>
<td>969098</td>
<td>1654215</td>
</tr>
<tr>
<td>APR</td>
<td>662749</td>
<td>707623</td>
<td>675347</td>
<td>1310861</td>
<td>1243240</td>
</tr>
<tr>
<td>MAY</td>
<td>629554</td>
<td>829043</td>
<td>685091</td>
<td>2574908</td>
<td>573025</td>
</tr>
<tr>
<td>JUN</td>
<td>445264</td>
<td>438772</td>
<td>765397</td>
<td>697299</td>
<td>422479</td>
</tr>
<tr>
<td>JUL</td>
<td>307438</td>
<td>348127</td>
<td>491901</td>
<td>592025</td>
<td>399669</td>
</tr>
<tr>
<td>AUG</td>
<td>215207</td>
<td>231693</td>
<td>245950</td>
<td>422678</td>
<td>245950</td>
</tr>
<tr>
<td>SEP</td>
<td>178512</td>
<td>244663</td>
<td>178512</td>
<td>165091</td>
<td>178512</td>
</tr>
<tr>
<td>Total (ac-ft)</td>
<td>4842845</td>
<td>9163400</td>
<td>6424284</td>
<td>1049757</td>
<td>8532165</td>
</tr>
<tr>
<td>Total (maf)</td>
<td>4.84</td>
<td>9.16</td>
<td>8.42</td>
<td>14.05</td>
<td>6.53</td>
</tr>
</tbody>
</table>

- Data Products
  - What we provide
  - How public can access
    - Process Diagram
      http://www.waterplan.water.ca.gov/technical/processmaps/index.cfm
    - Data sources
      http://www.waterplan.water.ca.gov/technical/datasources/index.cfm
      http://www.waterplan.water.ca.gov/waterpie/faf_data.cfm
    - Daily, Monthly and Annual Actual Delta Outflow by water year (1998-2006)
      http://www.waterplan.water.ca.gov/waterpie/raf_data.cfm
    - Narrative
      http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm#vol3
    - General Water Portfolio Information
      http://www.waterplan.water.ca.gov/waterpie/water_portfolio.cfm
    - The Technical Guide
      http://www.waterplan.water.ca.gov/technical/index.cfm
    - Regional Reports
      http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm#vol3
Instream Flow

- Current Methods
  
  o Conceptually
    
    ▪ Definition - The use of water within its natural watercourse as specified in an agreement, water rights permit, court order, FERC license, etc.
    
    ▪ IDEF0 diagram
Instream Flow continued...

Example using real data – Example of 2004 Report

<table>
<thead>
<tr>
<th>River or Creek</th>
<th>HR</th>
<th>PA</th>
<th>2004 Water Use (ac-ft)</th>
<th>B160-98 Avg. Year (taf) (rounded)</th>
<th>AW</th>
<th>Net</th>
<th>Depletion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klamath</td>
<td>NC</td>
<td>102</td>
<td>793,075</td>
<td>833</td>
<td>793,075</td>
<td>793,075</td>
<td>793,075</td>
</tr>
<tr>
<td>Trinity</td>
<td>NC</td>
<td>102</td>
<td>546,809</td>
<td>341</td>
<td>546,809</td>
<td>546,809</td>
<td>546,809</td>
</tr>
<tr>
<td>Mad</td>
<td>NC</td>
<td>103</td>
<td>45,533</td>
<td>46</td>
<td>45,533</td>
<td>45,533</td>
<td>45,533</td>
</tr>
<tr>
<td>Eel</td>
<td>NC</td>
<td>103</td>
<td>34,393</td>
<td>49</td>
<td>58,076</td>
<td>34,393</td>
<td>34,393</td>
</tr>
<tr>
<td>Russian Lagunitas Creek</td>
<td>NC</td>
<td>104</td>
<td>178,370</td>
<td>142</td>
<td>178,370</td>
<td>88,800</td>
<td>88,800</td>
</tr>
<tr>
<td>Milliken Creek</td>
<td>SFB</td>
<td>201</td>
<td>10,392</td>
<td>10</td>
<td>10,392</td>
<td>10,392</td>
<td>10,392</td>
</tr>
<tr>
<td>Walker Creek</td>
<td>SFB</td>
<td>201</td>
<td>6,533</td>
<td>6</td>
<td>6,533</td>
<td>6,533</td>
<td>6,533</td>
</tr>
<tr>
<td>Carmel</td>
<td>CC</td>
<td>301</td>
<td>3,554</td>
<td>4</td>
<td>3,554</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Nacimiento</td>
<td>CC</td>
<td>302</td>
<td>17,984</td>
<td>16</td>
<td>17,984</td>
<td></td>
<td>17,984</td>
</tr>
<tr>
<td>Piru Creek</td>
<td>SC</td>
<td>401</td>
<td>3,488</td>
<td>4</td>
<td>3,488</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Clear Creek</td>
<td>SR</td>
<td>503</td>
<td>122,688</td>
<td>25</td>
<td>122,688</td>
<td>122,688</td>
<td>-</td>
</tr>
<tr>
<td>Cache Creek</td>
<td>SR</td>
<td>505</td>
<td>6,653</td>
<td>7</td>
<td>6,653</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Putah Creek</td>
<td>SR</td>
<td>509</td>
<td>22,175</td>
<td>22</td>
<td>22,175</td>
<td>10,582</td>
<td>-</td>
</tr>
<tr>
<td>Sacramento</td>
<td>SR</td>
<td>501</td>
<td>2,071,041</td>
<td>1945</td>
<td>2,071,041</td>
<td>2,071,041</td>
<td>-</td>
</tr>
<tr>
<td>Feather</td>
<td>SR</td>
<td>508</td>
<td>954,248</td>
<td>880</td>
<td>954,248</td>
<td>954,248</td>
<td>-</td>
</tr>
<tr>
<td>Yuba</td>
<td>SR</td>
<td>508</td>
<td>376,681</td>
<td>274</td>
<td>376,681</td>
<td>252,694</td>
<td>-</td>
</tr>
<tr>
<td>Bear</td>
<td>SR</td>
<td>511</td>
<td>9,701</td>
<td>10</td>
<td>9,701</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>American</td>
<td>SR</td>
<td>511</td>
<td>234,050</td>
<td>234</td>
<td>234,050</td>
<td>234,050</td>
<td>-</td>
</tr>
<tr>
<td>Mokelumne</td>
<td>SJR</td>
<td>603</td>
<td>154,116</td>
<td>158</td>
<td>154,116</td>
<td>86,027</td>
<td>-</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>SJR</td>
<td>603</td>
<td>217,839</td>
<td>187</td>
<td>217,839</td>
<td>217,839</td>
<td>-</td>
</tr>
<tr>
<td>Tuolumne</td>
<td>SJR</td>
<td>604</td>
<td>142,804</td>
<td>214</td>
<td>142,804</td>
<td>142,804</td>
<td>-</td>
</tr>
<tr>
<td>Merced</td>
<td>SJR</td>
<td>609</td>
<td>67,507</td>
<td>79</td>
<td>67,507</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>SJR</td>
<td>606</td>
<td>718,473</td>
<td>532</td>
<td>718,473</td>
<td>718,473</td>
<td>-</td>
</tr>
<tr>
<td>Truckee</td>
<td>NL</td>
<td>802</td>
<td>56,746</td>
<td>70</td>
<td>56,746</td>
<td>56,746</td>
<td>56,746</td>
</tr>
<tr>
<td>East Walker Mono tributaries</td>
<td>SL</td>
<td>901</td>
<td>56,439</td>
<td>82</td>
<td>56,439</td>
<td>56,439</td>
<td>56,439</td>
</tr>
<tr>
<td>Owens</td>
<td>SL</td>
<td>901</td>
<td>18,825</td>
<td>25</td>
<td>18,825</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>6,884,636</strong></td>
<td><strong>6,210</strong></td>
<td><strong>6,908,319</strong></td>
<td><strong>6,540,893</strong></td>
<td><strong>1,671,223</strong></td>
</tr>
</tbody>
</table>
Instream Flow continued…

- Data Products
  - What we provide
  - How public can access
    - Process Diagram
      http://www.waterplan.water.ca.gov/technical/processmaps/index.cfm
    - Data sources
      http://www.waterplan.water.ca.gov/technical/datasources/index.cfm
    - List of requirements by water year type
      http://www.waterplan.water.ca.gov/waterpie/af_data.cfm
    - Daily, Monthly and Annual flows for 1998-2005
      http://www.waterplan.water.ca.gov/waterpie/af_data.cfm
    - Unmet Amounts
      http://www.waterplan.water.ca.gov/waterpie/af_data.cfm
    - Various data reports (summary by waterway, region, etc.)
      http://www.waterplan.water.ca.gov/waterpie/af_data.cfm
    - Narrative
      http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm#vol3
    - Map (GIS layer)
      not available online yet…
    - General Water Portfolio Information
      http://www.waterplan.water.ca.gov/waterpie/water_portfolio.cfm
    - The Technical Guide
      http://www.waterplan.water.ca.gov/technical/index.cfm
    - Regional Reports
      http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm#vol3

For all flow-based categories

- Discussion Topics
  - CA Water Plan Update 2005 Parking Lot
    http://www.waterplan.water.ca.gov/docs/ac/water_plan_parking_lot_12-04-2006_.pdf
  - CA Water Plan Update 2009 and beyond
    - General info on Update 2009 -
      http://www.waterplan.water.ca.gov/cwpu2009/index.cfm
    - Expanded list of fish flow requirements and releases
      - Ongoing effort to coordinate a comprehensive approach with DFG and SWRCB
    - Improve the presentation of consumptive vs. non-consumptive environmental water
    - Refine the representation of environmental water in the inflow-outflow method and the applied, net and depletion water balances.
    - Convert spreadsheets into databases that can be used as modules for the Inflow-Outflow model.
    - Need a statewide modeling approach to river flows!
      - Simulation model
      - Integrated gw/sw model
      - GIS Hydro

Contact Info: Jennifer Kofoid, (916) 653-7574, jkofoid@water.ca.gov