

Technical Memorandum to address WQRSP issues as specified by SWRCB letter dated March 19, 2004.

DWR and USBR in cooperation with CCWD are directed to conduct modeling analysis to determine the impacts on water at CCWD's intakes due to implementing JPOD at times when CCWD is authorized to divert under its own water rights. DWR and USBR should analyze the potential impacts by comparing hydrologic conditions absent JPOD under SWRCB Decision 1485 criteria to conditions that occurs with JPOD under D-1641 criteria. DWR and USBR are directed to use the information derived from the modeling analysis to prepare a draft Water Quality Response Plan with recommendations to the SWRCB regarding whether any modeled impacts would be significant and regarding the appropriate mitigation, if any, for the impacts. DWR and USBR are not required to propose mitigation for impacts that may occur to water quality when CCWD is diverting under its CVP contract or rediverting transferred water as long as water quality objectives will be met.

Based upon the direction given by the SWRCB in the letter, DWR and USBR staff reviewed recent collaborative modeling work in order to address the SWRCB requests. DWR and USBR staff agreed that modeling work done for the current CVP-SWP Operations Planning and Criteria (OCAP) and long-term biological opinion update process contained CALSIM modeling runs that would well represent the regulatory conditions and criteria described by the SWRCB letter. From the OCAP process, DWR and USBR staff selected two modeling runs to have DWR planning perform DSM2 studies for water quality information. The two OCAP modeling runs were performed to assess CVP-SWP project operations under the following set of general regulatory conditions.

- SWRCB D-1485, Upper Sacramento River Temperature Control, Trinity River management at 340 TAF per/yr, and 2001 level of development hydrology. This model run is to simulate CVP-SWP operation capabilities circa early 1990's regulatory requirements.
- SWRCB D-1641 with JPOD and EWA operations, CVPIA B2 implementation, Trinity River management at 369 to 452 TAF per/yr, and 2001 level of development hydrology. This model run is to simulate CVP-SWP operation capabilities circa early 2000's regulatory requirements.

DWR planning staff ran the two CALSIM simulation studies results through the DSM2 model to create the 16 water year (1976 -1991) water quality simulation traces. (See attached DWR memorandum for modeling assumptions and water quality traces). DWR and USBR operations staff requested monthly water quality information at the below locations for the WQRSP analysis.

- Chipps Island or Mallard Slough
- Collinsville
- Emmaton

- Antioch
- Jersey Point
- Bethel Island
- Holland Tract
- Rock Slough
- Los Vaqueros Intake

These key locations were selected for a variety of reasons which include;

- Chipps Island and Collinsville are compliance locations for X2 criteria and for JPOD X2 permit terms and conditions.
- Emmaton, Antioch, Jersey Point are compliance locations for Agricultural water quality beneficial use objectives in Reclamation/DWR water right permit terms and are actively monitored by CVP/SWP operations staff as key real-time Delta stations for the status of salinity in the western Delta environment.
- Bethel Island and Holland Tract are actively monitored by CVP/SWP operations staff as key real-time Delta stations for the status of salinity in the interior Delta environment.
- Rock Slough and Los Vaqueros Intake are CCWD's delta intake locations. Rock Slough Pumping Plant is a significant compliance location for M&I water quality beneficial use objectives in Reclamation/DWR water right permit terms. The water quality at these locations influences the performance of the overall performance of the CVP-SWP water project operation and the overall performance of CCWD's Los Vaqueros Project. These locations are reported in both EC and Chlorides.

The key information from the two CALSIM runs simulating CVP-SWP operations under D-1485 regulatory conditions and D-1641 with JPOD regulatory conditions is;

- Surplus Flows (Excess Conditions)
- CVP Tracy P.P. exports
- SWP Banks P.P. exports
- Federal San Luis Reservoir storage
- State San Luis Reservoir storage
- JPOD exports (CVP export at Banks P.P.)

From these simulations, the basic diversion patterns of the CVP and SWP can be examined under each regulatory framework. The general timing of when Surplus Flows or Excess conditions in the Delta could occur in each regulatory framework can be examined. The general timing of when the export capacity of each project is being fully utilized to fill their respective shares of San Luis Reservoir in each regulatory framework can be examined. And finally, in the D-1641 simulation, after State San Luis Reservoir is filled, and export capacity at Banks P.P. exists, and Surplus Flow exists, JPOD under Excess conditions would be simulated.

Analysis Process

Step 1 – Set up the datasets in a common time-series format.

Based on the direction from the SWRCB letter, the operations and water quality simulation data was organized in a spreadsheet for the common 1976-1991 sequence.

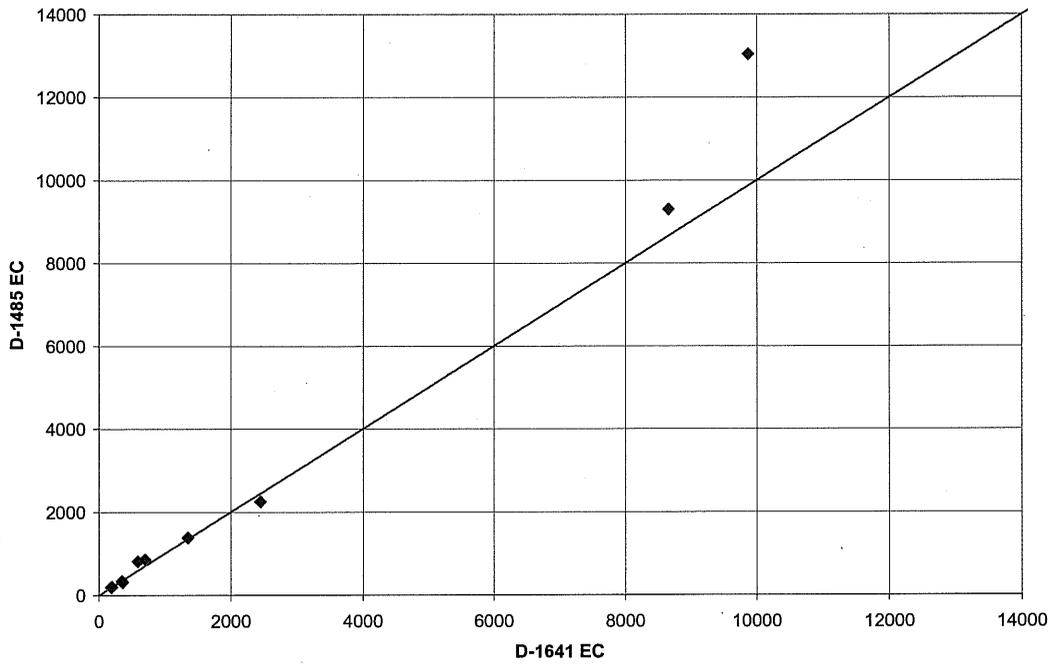
Step 2 – Filter the dataset for the D-1641 monthly timestep occurrences of JPOD under Excess conditions.

The operations data was filtered to highlight the monthly timestep occurrences of JPOD under Excess conditions in the D-1641 regulatory framework simulations. For the common 1976-1991 sequence, there were 12 monthly occurrences of JPOD under Excess conditions.

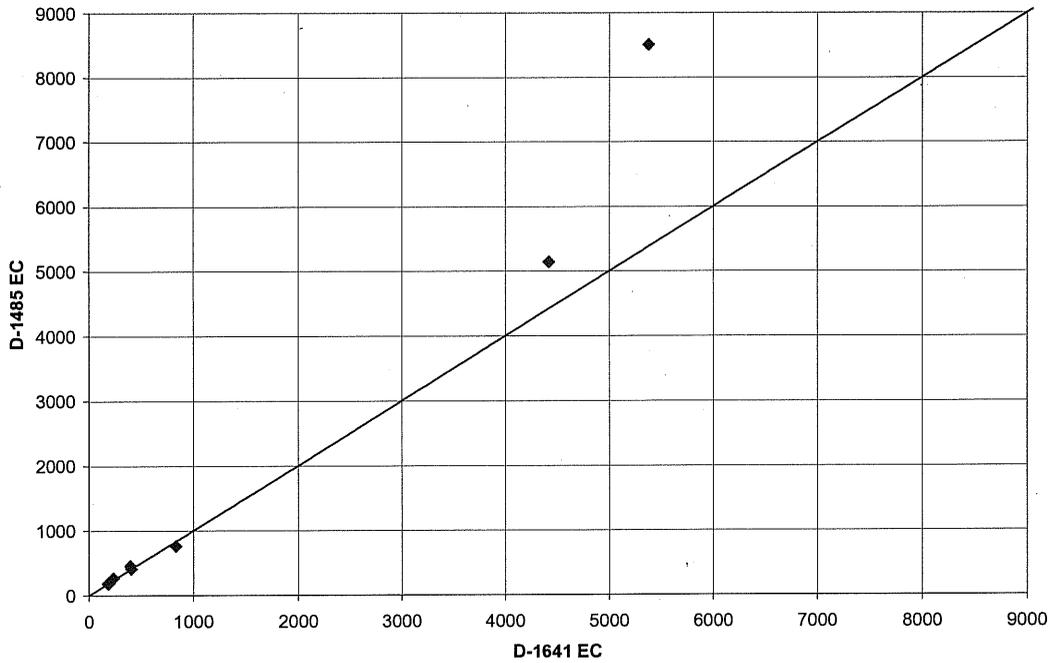
Step 3 – Illustrate graphically a comparison of water quality conditions for the 12 simulated monthly timestep occurrences of JPOD under Excess conditions under the D-1485 framework and the D-1641 framework.

Step 4 – Eliminate the simulated monthly occurrences of JPOD which would not meet imposed SWRCB JPOD permit term conditions and re-illustrate the water quality comparisons.

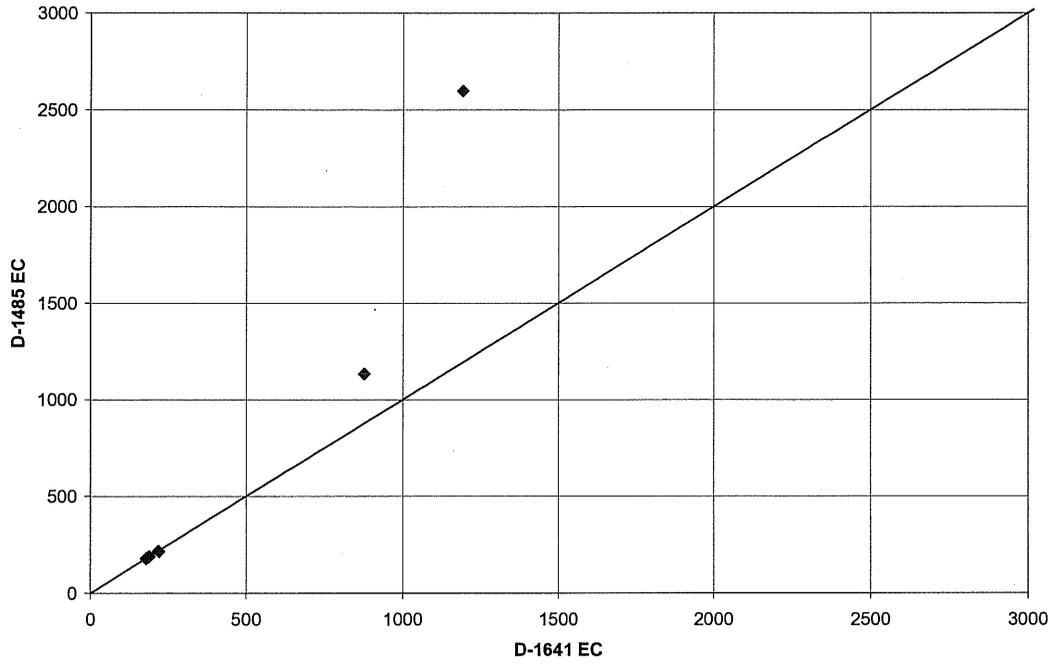
Chipps Island WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



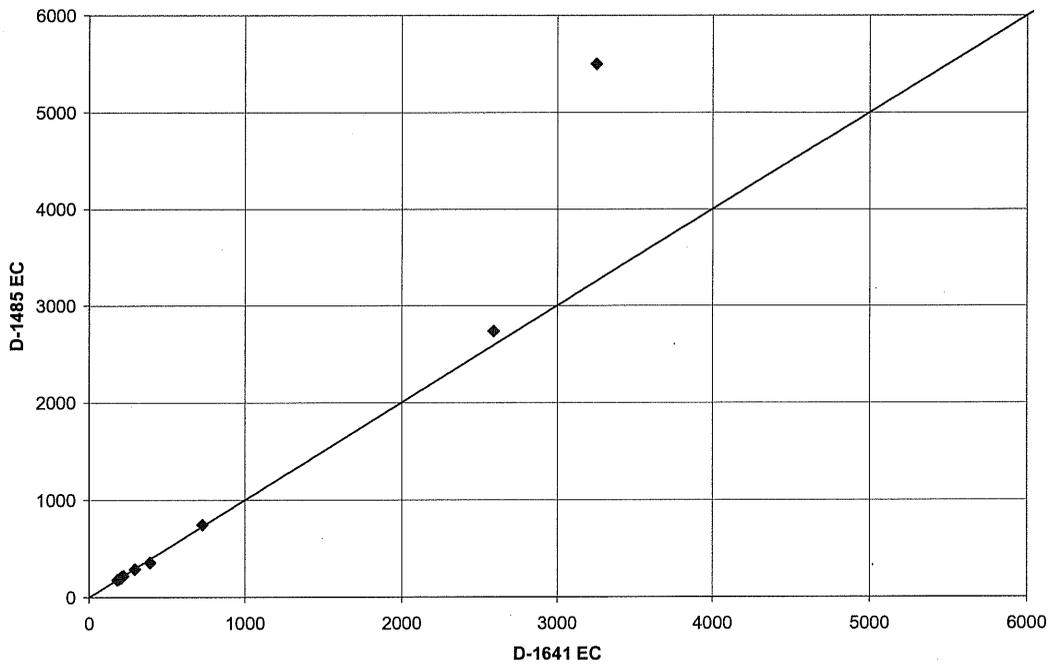
Collinsville WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



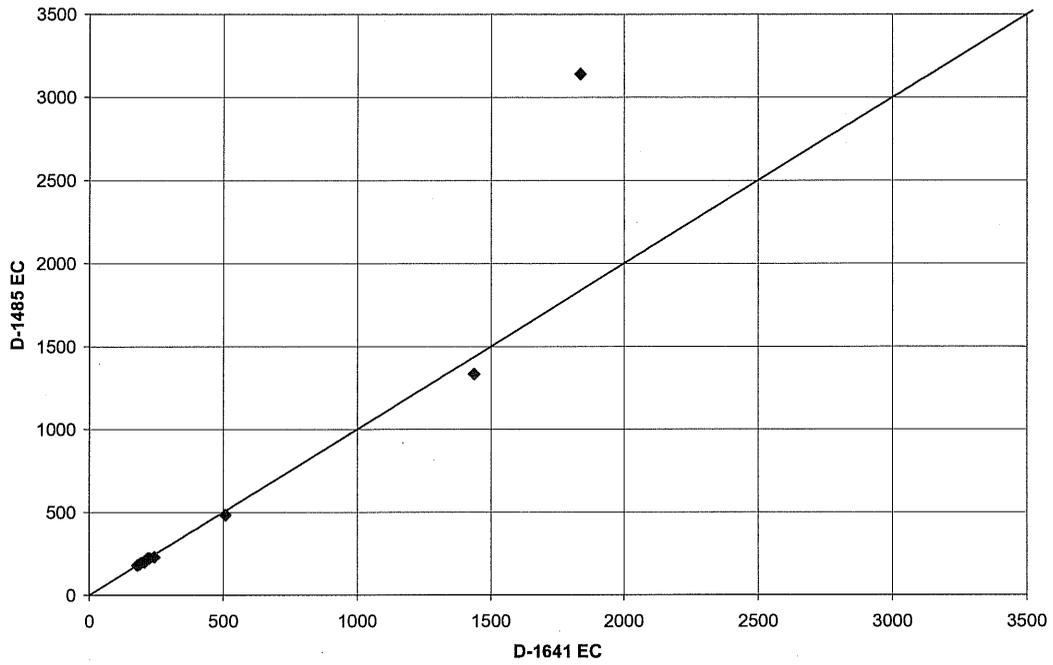
Emmaton WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



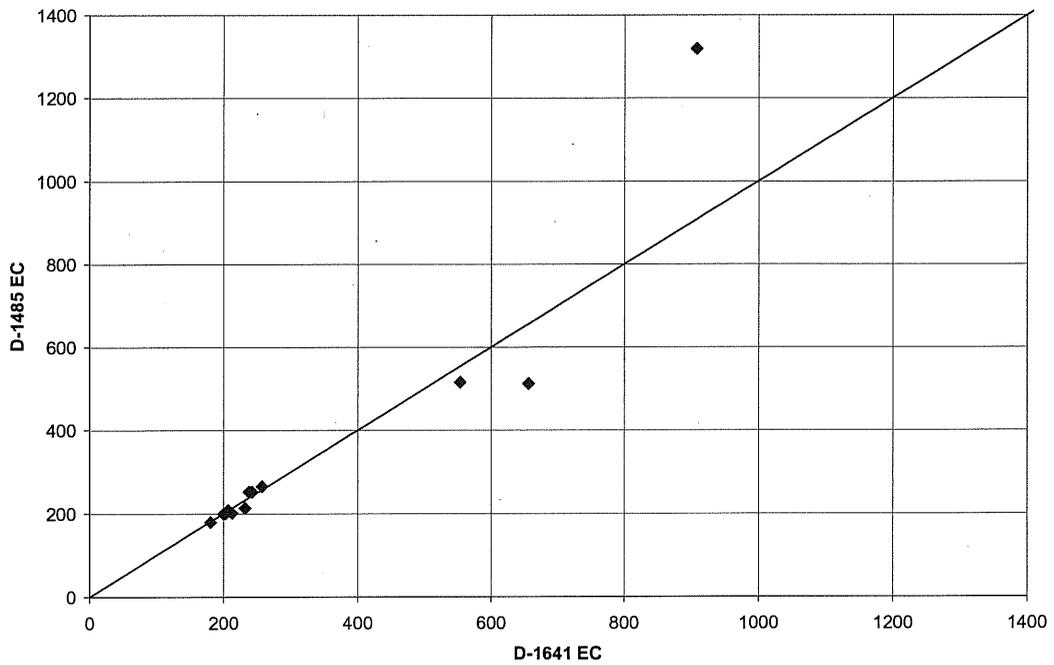
Antioch WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



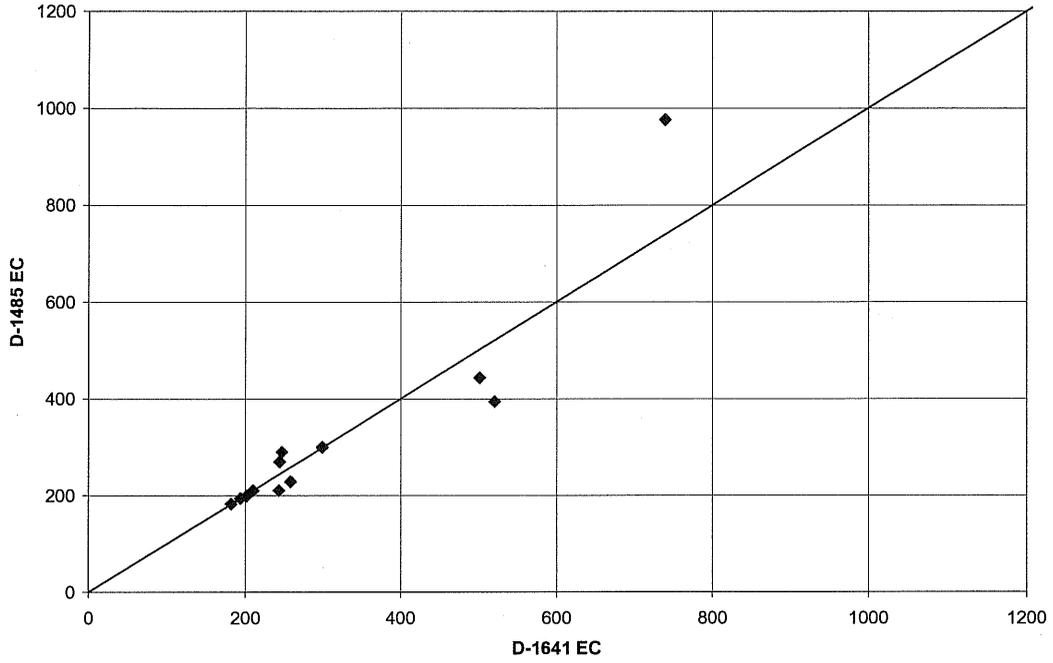
Jersey Point WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



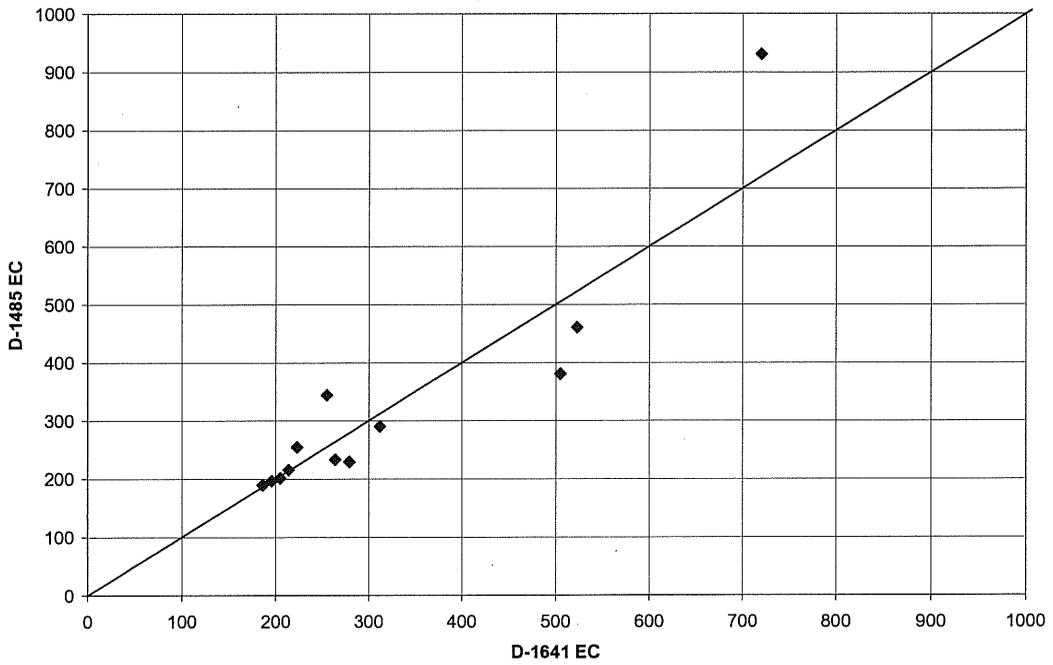
Bethel Island WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



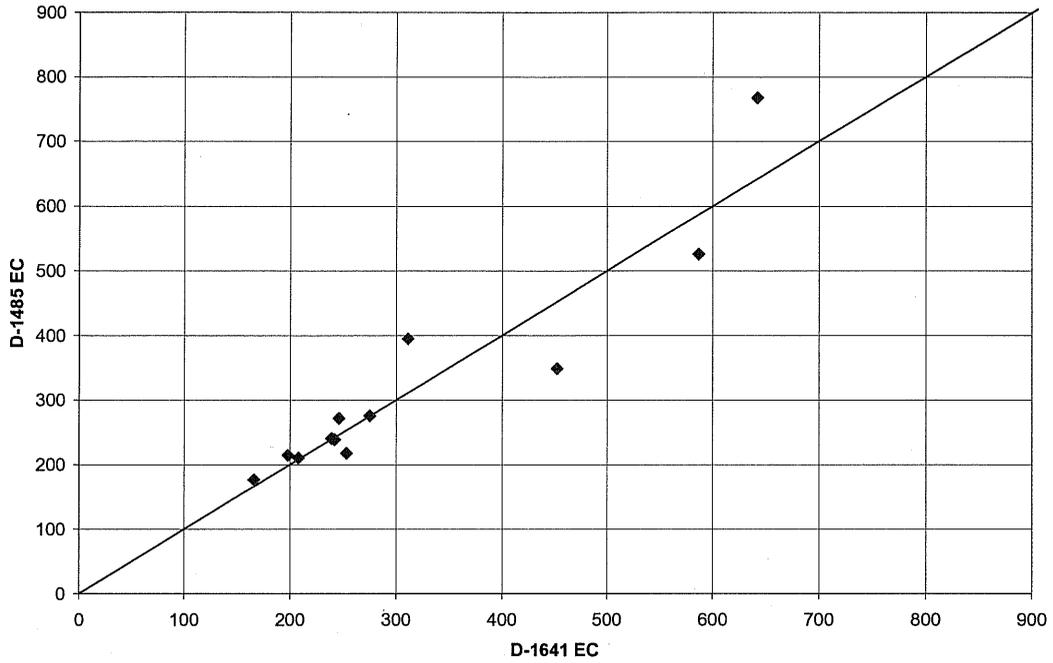
Holland Tract WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



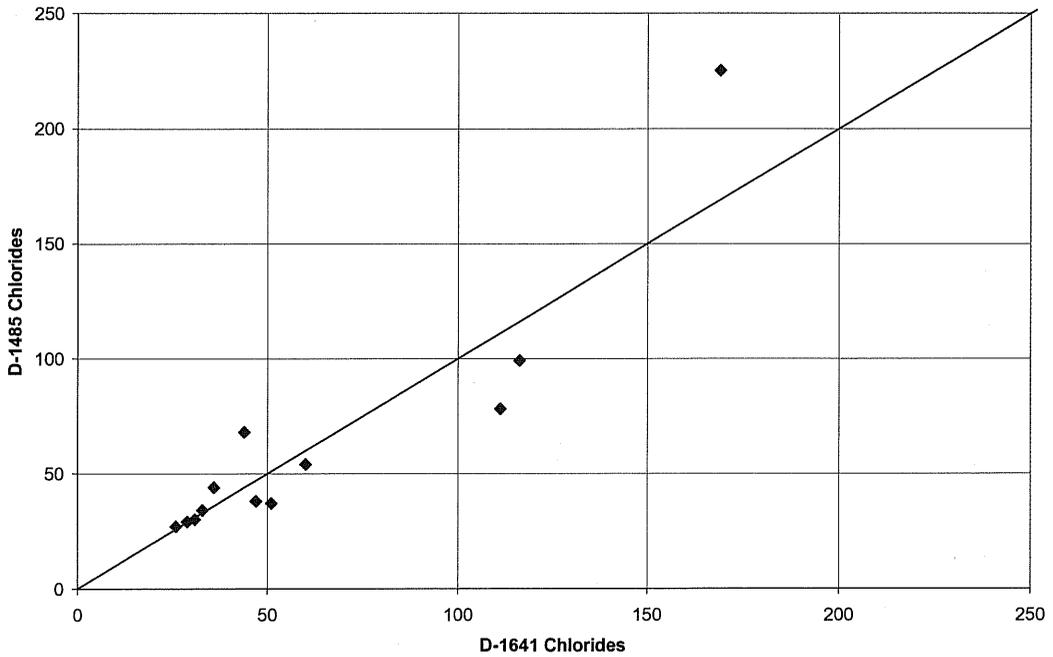
Rock Slough WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



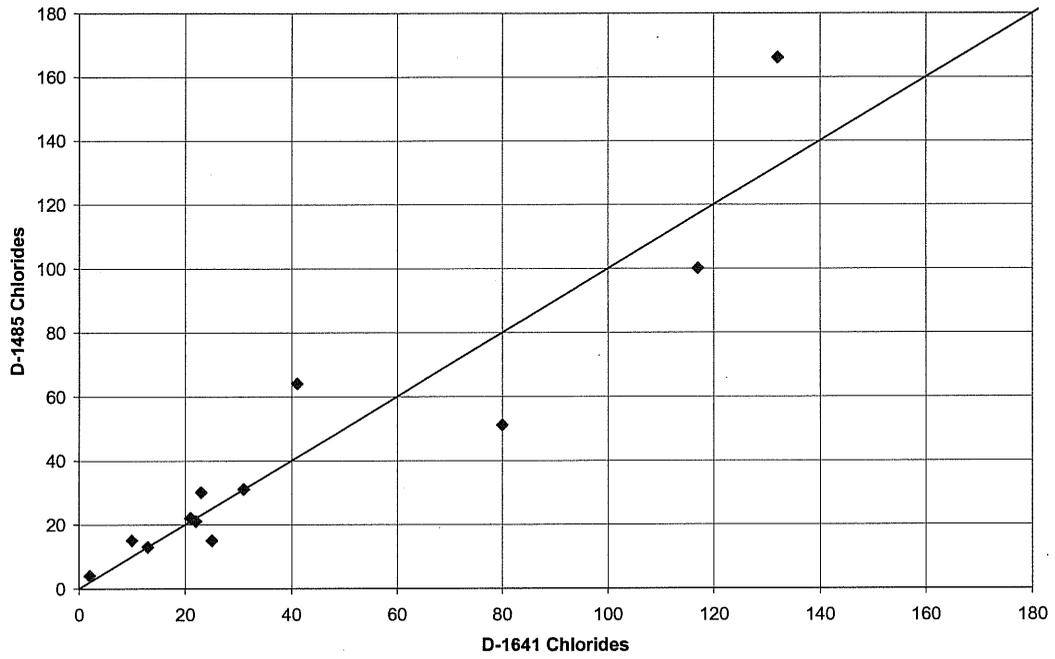
Los Vaqueros Intake WQ
JPOD under Excess Conditions
D-1641 vs. D-1485



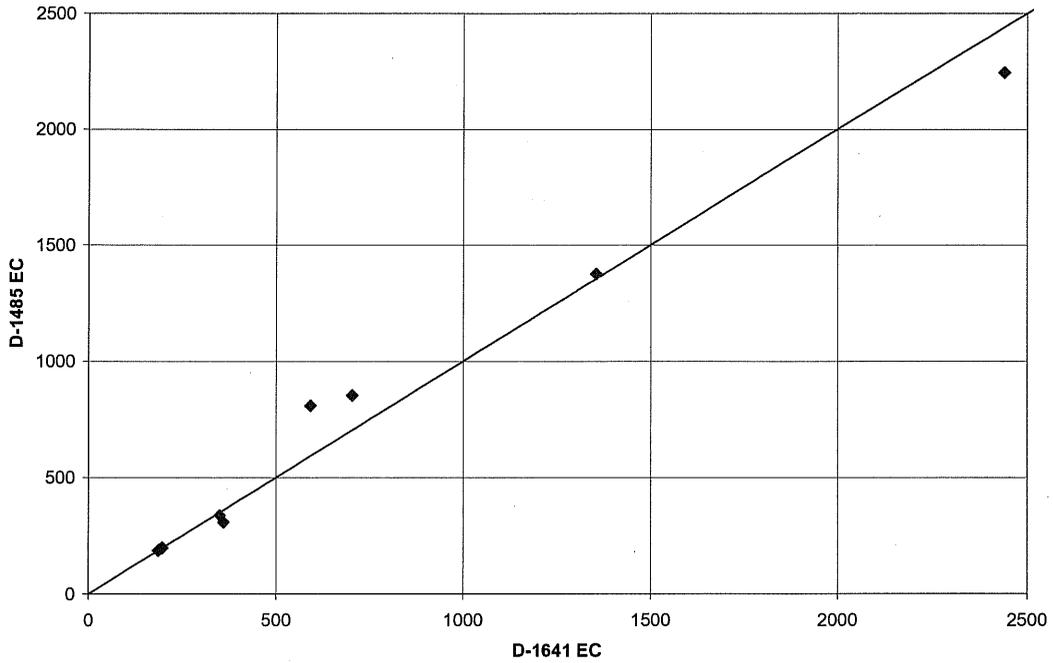
Rock Slough Chlorides
JPOD under Excess Conditions
D-1641 vs. D-1485



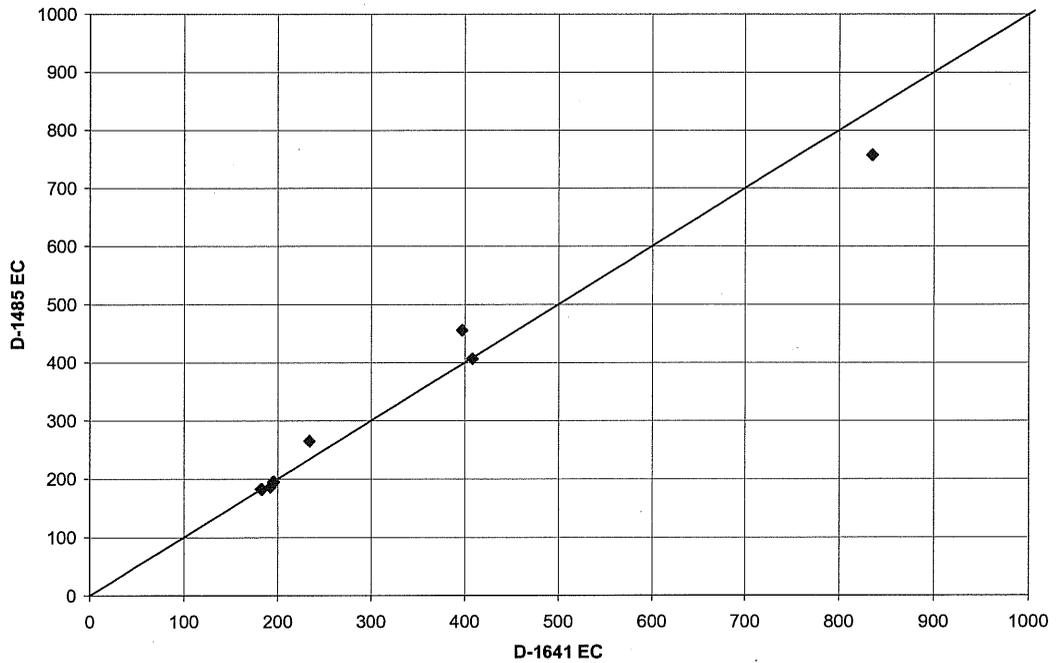
Los Vaq. Intake Chlorides
JPOD under Excess Conditions
D-1641 vs. D-1485



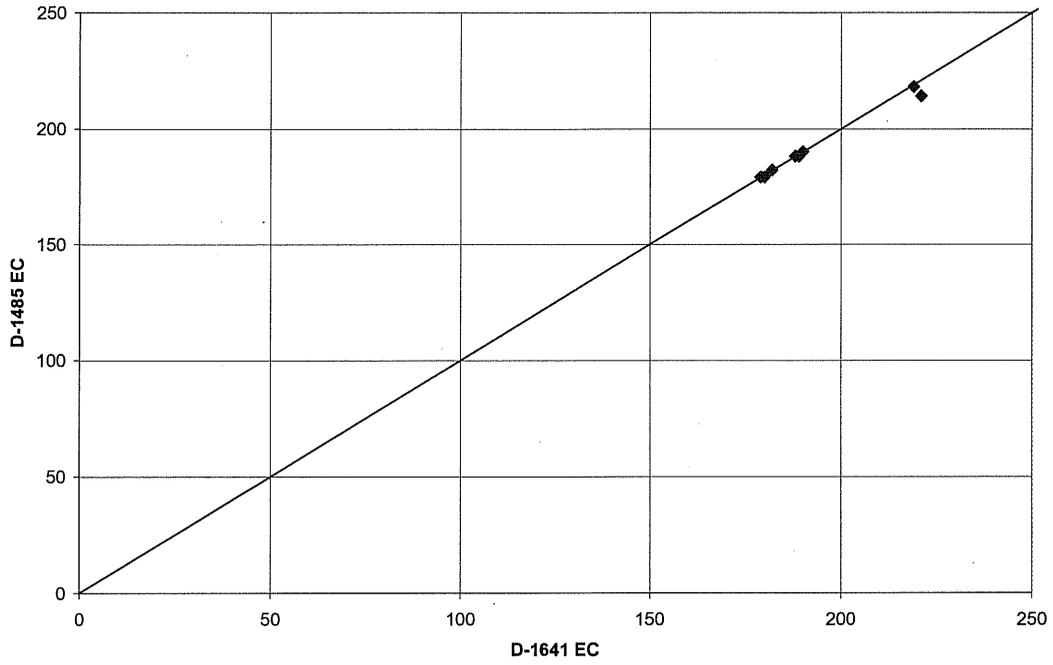
Chippis Island WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



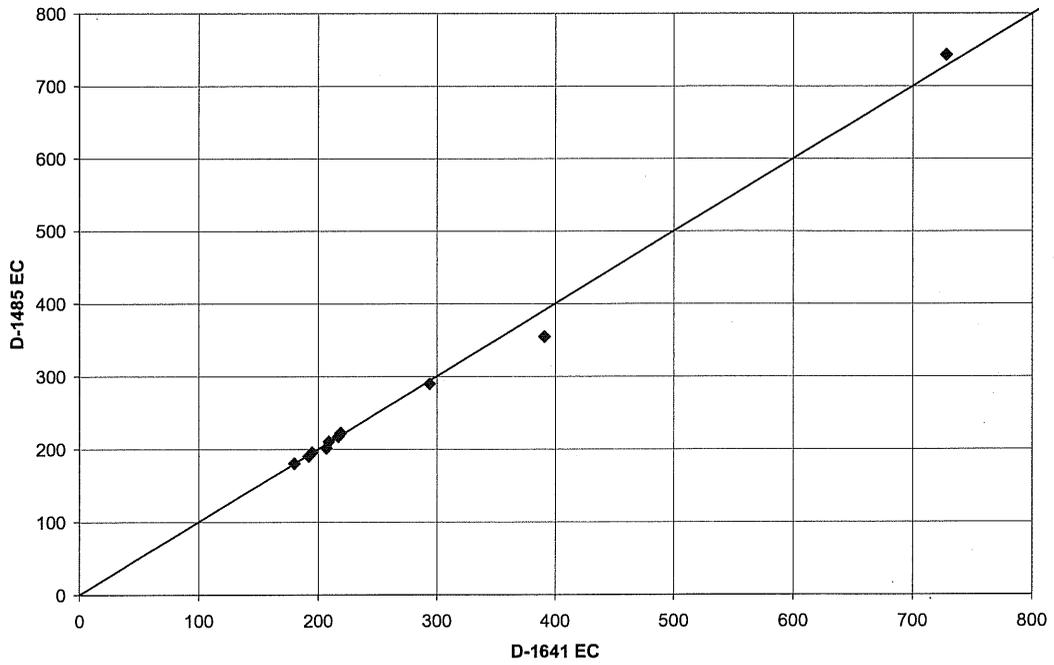
Collinsville WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



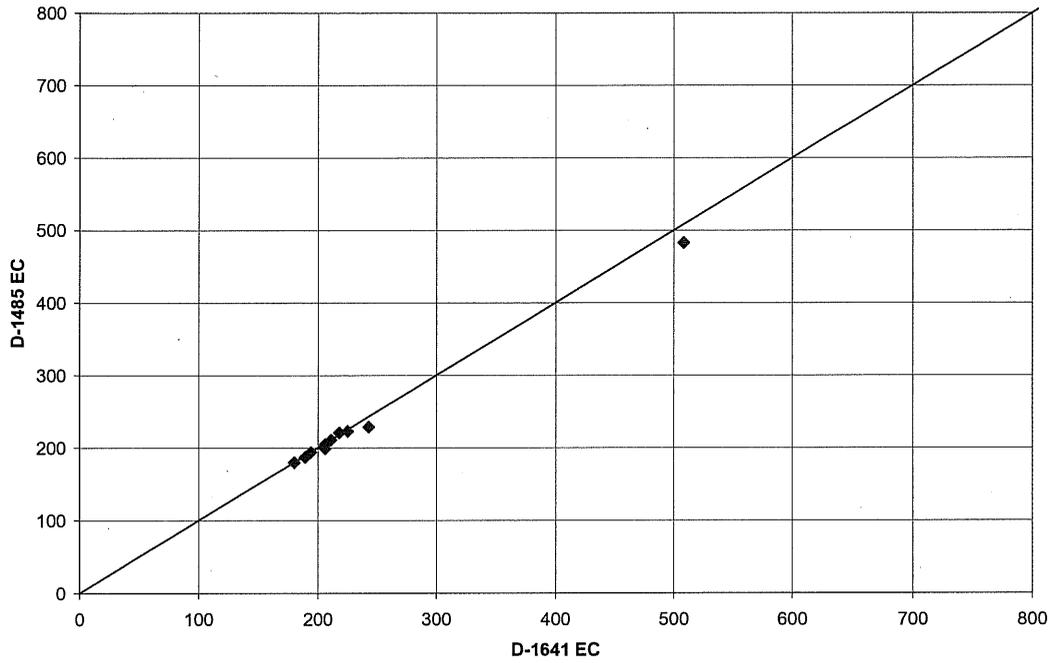
Emmaton WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



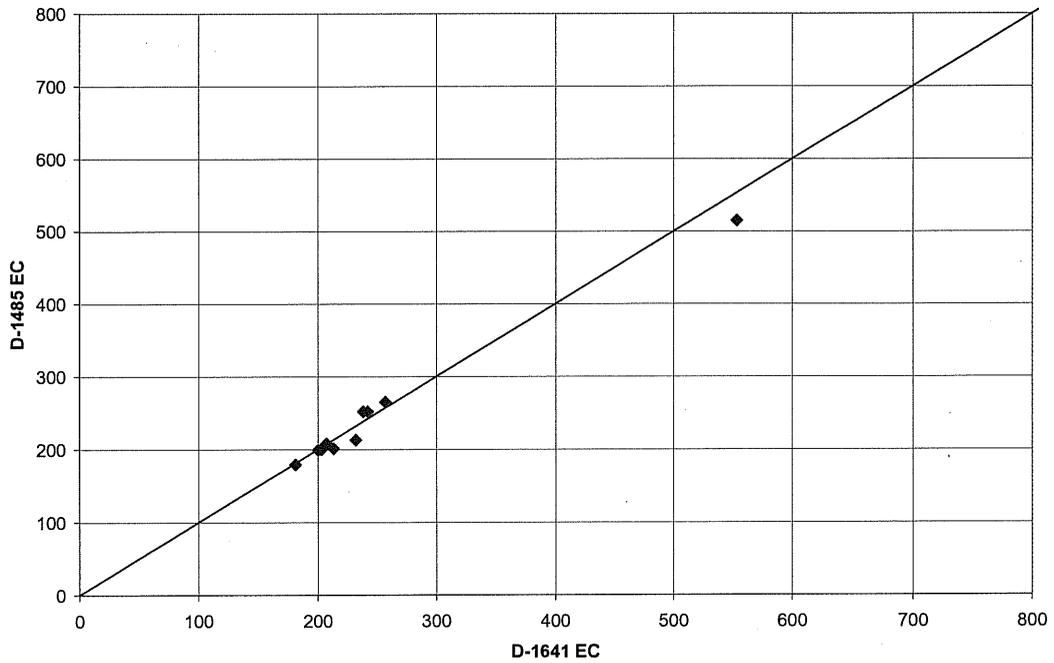
Antioch WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



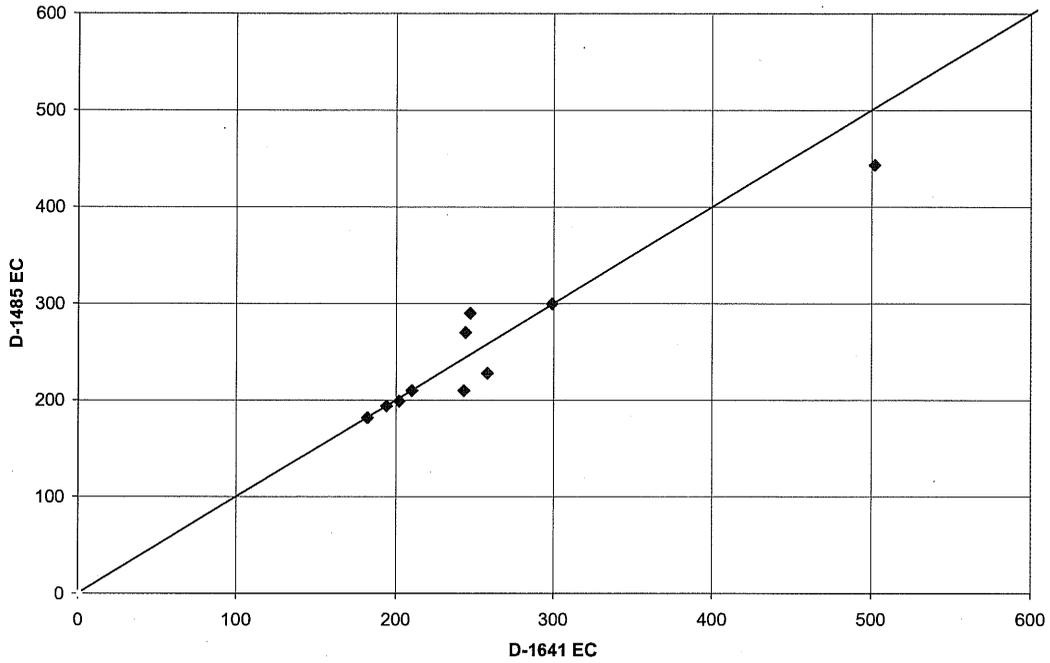
Jersey Point WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



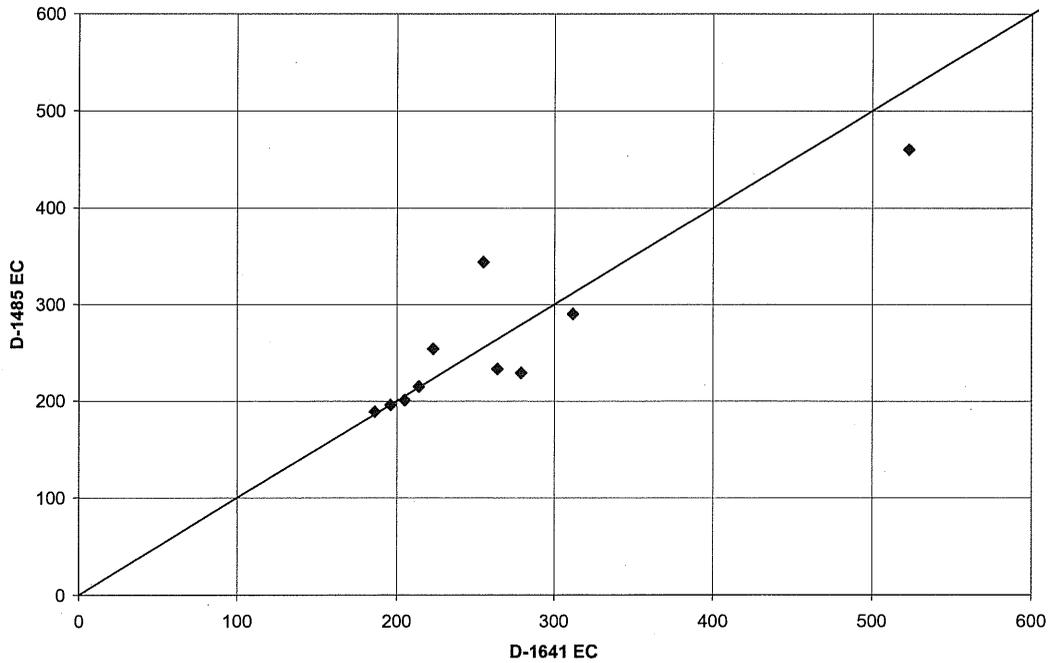
Bethel Island WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



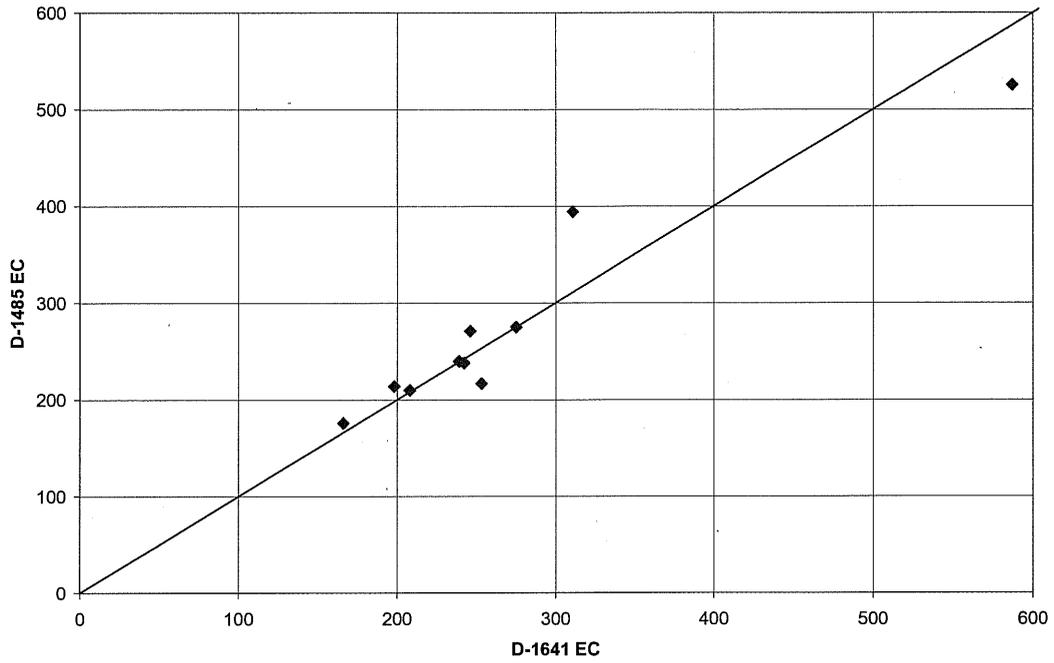
Holland Tract WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



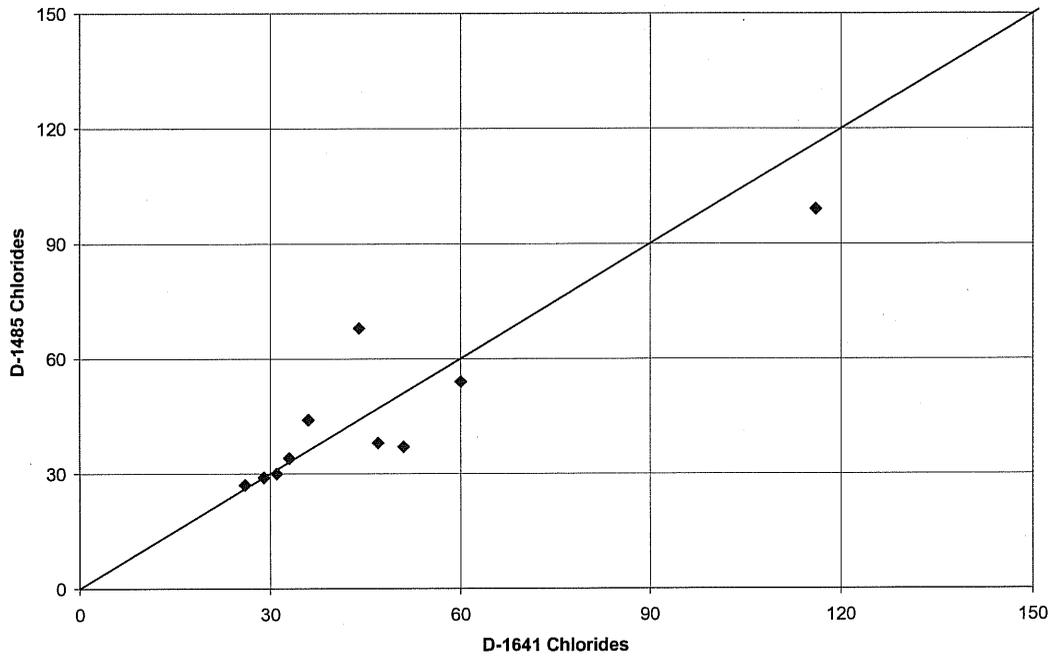
Rock Slough WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions



**Los Vaqueros Intake WQ
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions**



**Rock Slough Chlorides
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions**



Los Vaq. Intake Chlorides
JPOD under Excess Conditions
& SWRCB WQ Permit Conditions

