CONTRA COSTA
WATER DISTRICT

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November 15, 2004

Debbie Irvin, Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

Subject: Water quality impacts of Delta Cross Channel closures

Dear Ms. Irvin:

Contra Costa Water District (CCWD) appreciates the opportunity to provide additional input to the State Water Resources Control Board (SWRCB) regarding Periodic Review workshop topic #2, Delta Cross Channel (DCC) gates closure.

As discussed in CCWD's brief oral statement at the October 27 workshop, the SWRCB should not amend the Delta Cross Channel Gates Closure Objective in the Water Quality Objectives for Fish and Wildlife Beneficial Uses (Table 3 of the 1995 Plan) if the amendment would result in degradation of water quality at the municipal and industrial intakes (M&I) in the central and south Delta, the sources of drinking water for more than 23 million Californians. DCC closures during conditions of low Delta outflow and high exports (typical fall conditions) result in degradation of Delta water quality. Additional DCC closures under these conditions should not be approved by the SWRCB.

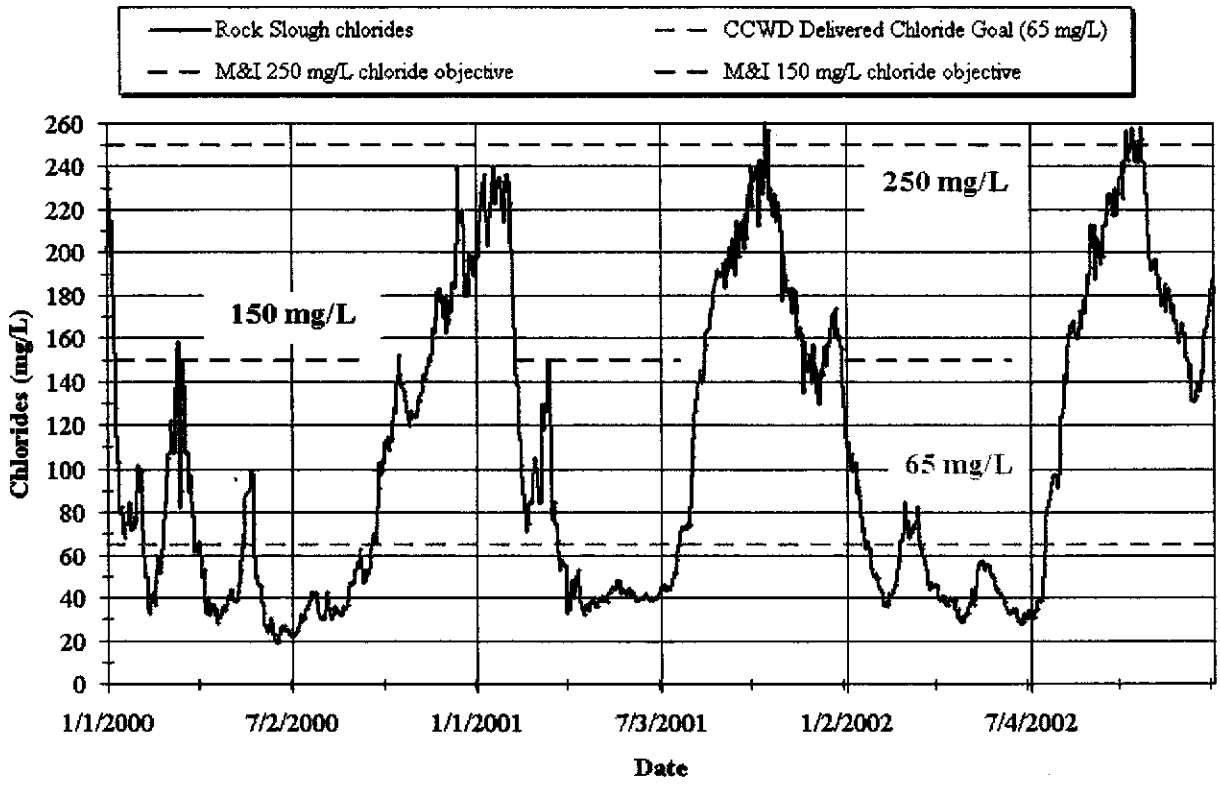
CCWD is supportive of efforts to protect fish and supported the recent CALFED Science Program experiments on the fisheries and water quality effects of DCC closures for parts of the tidal cycle and nighttime versus daytime closures. CCWD continues to support closure of the DCC in the fall for fish protection, consistent with the December 15, 1994 Bay-Delta Accord and the 1995 Plan, provided interior Delta water quality is protected.

As stated in the Department of Interior's presentation to the SWRCB on October 27, construction of the DCC was completed in 1951. The original purpose of the DCC was to maintain water quality in the interior Delta. Closing the DCC for other purposes, such as fish protection, or to meet the Emmaton water quality and Rio Vista flow objectives, has the potential to degrade water quality at CCWD's drinking water intakes in the Delta and at the Banks and Tracy Pumping Plants in the south Delta. This will adversely impact the ability of urban agencies to meet drinking water regulations.

The DCC is also generally closed for flood control and to prevent scour when the flow in the Sacramento River is 20,000–25,000 cubic feet per second (cfs) or higher. However, water quality impacts are not as likely to be a problem under sustained high Sacramento flow conditions.

Figure 1 shows the variation in daily chlorides at the intake to the Contra Costa Canal at Pumping Plant #1 (also referred to as CCWD's Rock Slough intake) over three years, January 2000 through December 2002. The May 1 Sacramento Valley water year classifications for these years were wet, dry and dry, respectively, so the chloride concentration at either the Rock Slough intake or the City of Antioch's waterworks intake was required to be at or below 150 mg/L chlorides for 240, 165 and 165 days, respectively (Decisions 1485 and 1641). During the fall and early winter in all but the wettest years, daily chlorides at CCWD's Rock Slough intake typically increase until they are close to the year-round municipal and industrial chloride objective of 250 mg/L.

Figure 1: CCWD Rock Slough Intake Chlorides



The November-January period when up to 45 days of DCC closure is allowed is generally the time of poorest water quality in the Delta. Closing the DCC at this time also makes it harder for the State Water Project and Central Valley Project operators to meet SWRCB M&I chloride objectives at Rock Slough.

In 1988, CCWD's customers voted to spend $450 million of their money on construction of the 100,000 acre-feet Los Vaqueros Reservoir, the Old River intake near Highway 4 and associated conveyance and pumping facilities. A key goal of the project was to be able to deliver water of 65 mg/L chlorides or better to CCWD's customers. The better water quality available to CCWD at the Old River intake and releases of high quality blending water from Los Vaqueros Reservoir have allowed CCWD to regularly achieve that goal.

Additional degradation of Delta water quality at Rock Slough and CCWD's Old River intake, due to DCC closures, requires more blending water to be released. This would represent an adverse water supply, a water quality and a financial impact for CCWD. It also reduces CCWD's ability to provide the fisheries benefits that were key requirements of the permits and approvals for the Los Vaqueros Project. In the spring, if Los Vaqueros Reservoir storage is above emergency storage levels, CCWD provides fisheries benefits by ceasing its Delta diversions for 30 days and relying on Los Vaqueros storage releases to meet customer demands.

Attachment A to this letter gives three examples of the adverse water quality effects of DCC closure on Delta water quality: October & December 1997, November 1999, and December 2000. In each case, DCC closure in the fall contributed to increases in salinity at CCWD's Rock Slough intake and, in some cases, led to exceedance of the 250 mg/L chloride objective.

Attachment B is a January 2000 letter from DWR and the U.S. Bureau of Reclamation to the CALFED Water Operations Management Team providing a chronological account of the November 1999 DCC operations and related CVP and SWP operations decision-making.

As noted in CCWD's October 27 oral comments to the SWRCB, the "up to 45 days" requirement for the November-January period, part of the 1994 Bay-Delta Accord, was intended to ensure that the DCC stayed open at least 50% of the time to protect Delta water quality. In the earlier water rights proceeding that culminated in Decision 1485, the SWRCB imposed operational constraints for the DCC to minimize diversion of young striped bass into the Central Delta. However, in D-1485, DCC closures were limited to periods when Delta outflow was greater than 12,000 cfs, and, for April 16-May 31, limited to no more than two out of four consecutive days (page 39 of D-1485).

Even in cases where closing the DCC in the fall does not cause the established M&I chloride objectives to be exceeded, the concentrations typically already well above the bromide goal set by the SWRCB in the 1991 Water Quality Control Plan (page 5-5):

> Due to the concerns with DBPs in treated water from the Delta and in keeping with the goal (not objective) of obtaining the best available drinking water, the Board finds that, wherever feasible, municipal water supply agencies should strive to obtain bromide levels of 0.15 mg/l or less (about 50 mg/L chloride in the Delta).

The then-existing safe drinking water regulations have become even more stringent and additional disinfection byproducts of concern have been identified. For example, the maximum

contaminant level for total trihalomethanes of 100 µg/L has since been reduced to 80 µg/L, and could go even lower.

CCWD requests that the SWRCB not allow more than 45 days of DCC closures during November through January, other than for flood control when Sacramento River flows reach and remain above 20,000 cfs. CCWD also requests that the language in the 1995 Water Quality Control Plan be amended to confirm that the SWRCB's intent has always been to require that the DCC remain open at least 50% of the time to protect interior Delta water quality for drinking water and other beneficial uses. The CALFED Operations Group process, which allows stakeholder input on decisions regarding Delta operations, should continue to be used. This will enable the DCC to be reopened if water quality conditions in the interior Delta deteriorate.

CCWD offers the following suggested edits to the relevant language in the 1995 Plan (Footnote 26, page 22):

> [26] For the November-January period, close Delta Cross Channel gates for ~~up to~~ a total of up to 45 days, as needed for the protection of fish and for flood control. During this period, closures beyond 45 days will be allowed solely for flood control purposes and to prevent scour while the flows in the Sacramento River flows are in excess of 20,000 cfs. ~~The timing of the gate closure will be determined by the operations group established under the Framework Agreement.~~ The USBR will determine the timing and duration of the gate closure after consultation with the USFWS, the NMFS and the DFG. Consultation with the CALFED Operations Group will satisfy this requirement.

If you have any question, please contact me at (925) 688-8187.

Sincerely,

Richard A. Denton
Water Resources Manager

Attachments:
(a) Examples of water quality impacts of DCC closures
(b) CALFED Chronology of November 1999 DCC closure and decision making

cc: Chester V. Bowling (USBR)
Alf Brandt (DOI)
Cathy Crothers (DWR)
Ken Landau (CVRWQCB)

Attachment A

Examples of the Water Quality Impacts of Delta Cross-Channel Closures

The following examples illustrate the effects of DCC closure on Delta water quality. In each case, DCC closure in the fall resulted in increases in salinity at CCWD's Rock Slough intake and, in some cases, led to exceedance of the 250 mg/L chloride objective.

For each case, the variation in daily chloride concentration at the Contra Costa Canal intake at Pumping Plant #1 is shown relative to the 250 mg/L M&I chloride objective. Also shown are the variations in net Delta outflow, the combined flow through the DCC and Georgiana Slough, and combined Banks and Tracy exports. These flow data were obtained from the Interagency Ecological Program's Dayflow report (http://www.iep.ca.gov/dayflow/index.html). Note that up until 2003, the combined flow through the DCC and Georgiana Slough was calculated from the Sacramento River flow at I Street Bridge in Sacramento. Since 2003, actual flow measurements have been used.

October & December, 1997 Closure

On October 6, 1997 (Figure 2), the DCC was closed when exports were relatively high (about 10,000 cfs) and Delta outflow was averaging about 3,500 cfs. Rock Slough chlorides increased rapidly, so Delta exports were reduced to stabilize Rock Slough chlorides at about 230 mg/L. However, in late November 1997, after a short-lived increase in Delta outflow, the DCC was again closed during a period when the Delta exports were again over 10,000 cfs. Even though the Delta outflow increased significantly just after the closure, Rock Slough chlorides continued to increase, and eventually exceeded 250 mg/L.

November 1999 Closure

On November 26, 1999 (Figure 3), the DCC was closed when exports were again relatively high (over 10,000 cfs) and Delta outflow had dipped below 5,000 cfs. Rock Slough chlorides, which had been below 200 mg/L prior to DCC closure, increased rapidly. Rock Slough chlorides reached 230 mg/L so, on December 10, Delta exports were cut back to as low 1,500 cfs. Even though this raised Delta outflow above 16,000 cfs, and the DCC was reopened, it was too late, and the 250 mg/L chloride objective was exceeded on December 20. Additional details are given in Attachment B.

December 2000 Closure

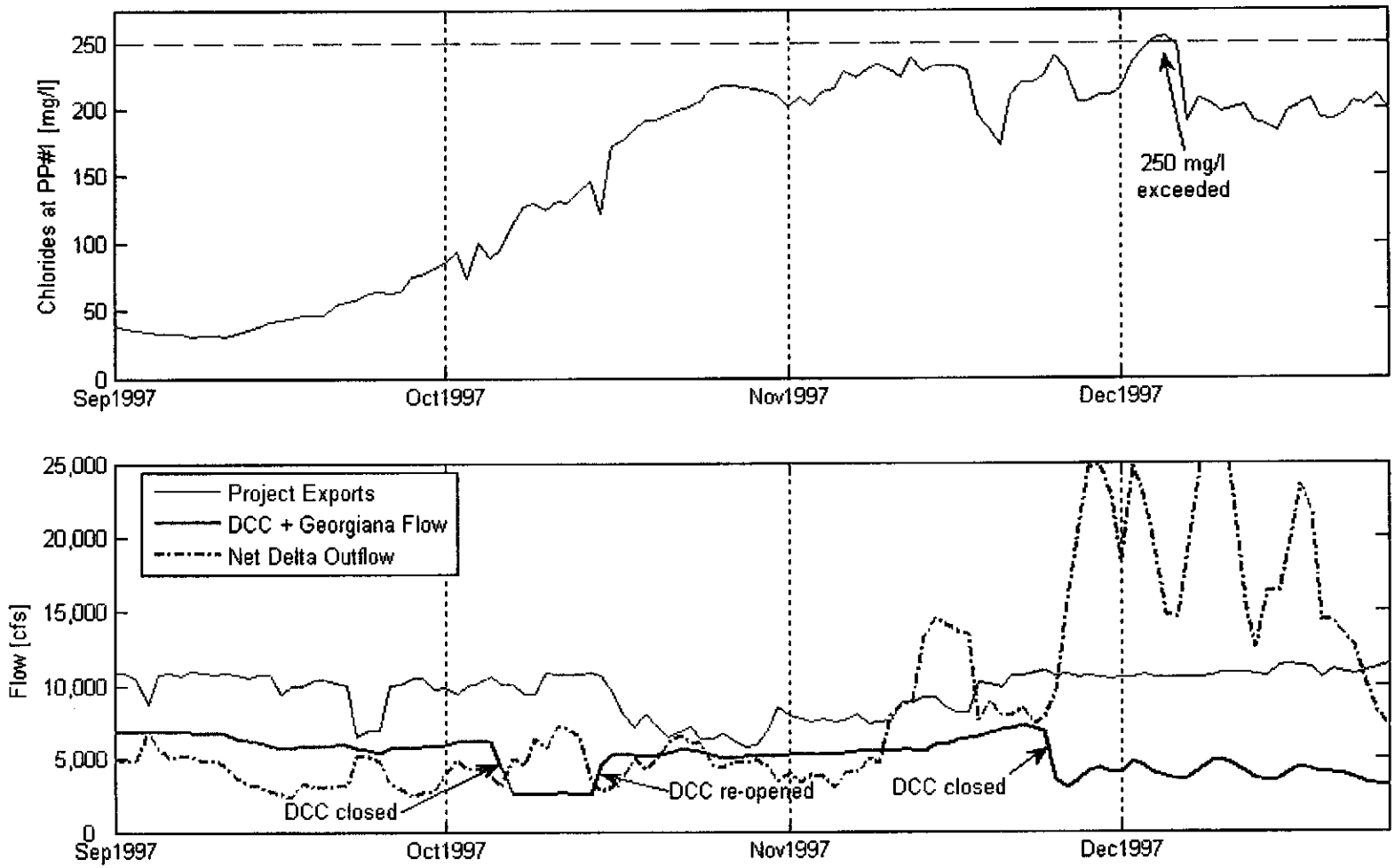
On December 22, 2000 (Figure 4), the DCC was closed for a Chinook survival experiment but reopened on December 27. Exports were again over 10,000 cfs when the DCC was closed and Delta outflow had just dipped below 3,000 cfs. Rock Slough chlorides were just above 180 mg/L and rapidly rose as high as 240 mg/L. The Delta exports were reduced on January 7, eventually going as low as 2,000 cfs for two days. The DCC was closed again on January 14, reopened on

January 23, and closed on January 26, but because of higher Delta outflows and lower exports during that period, exceedance of the M&I objective was avoided in this instance.

Flow through DCC and Georgiana

Figure 5 shows a plot of the calculated daily combined flows versus daily Sacramento River flow from Dayflow from 1970-2003. In general the DCC gates are closed or opened during the day so the values for those days lie between the fully opened and fully closed relationships. When Sacramento flow is about 12,000 cfs and the gates are open, the combined DCC and Georgiana flow is about 5,600 cfs. When the cross-channel is closed and Sacramento flow is 12,000 cfs, the combined flow is only about 2,400 cfs (only about 40% of the open-DCC flow).

Figure 2: October and December 1997 DCC Closures



dcc_close_2.m
12-Nov-2004 mm

Figure 3: November 1999 DCC Closure

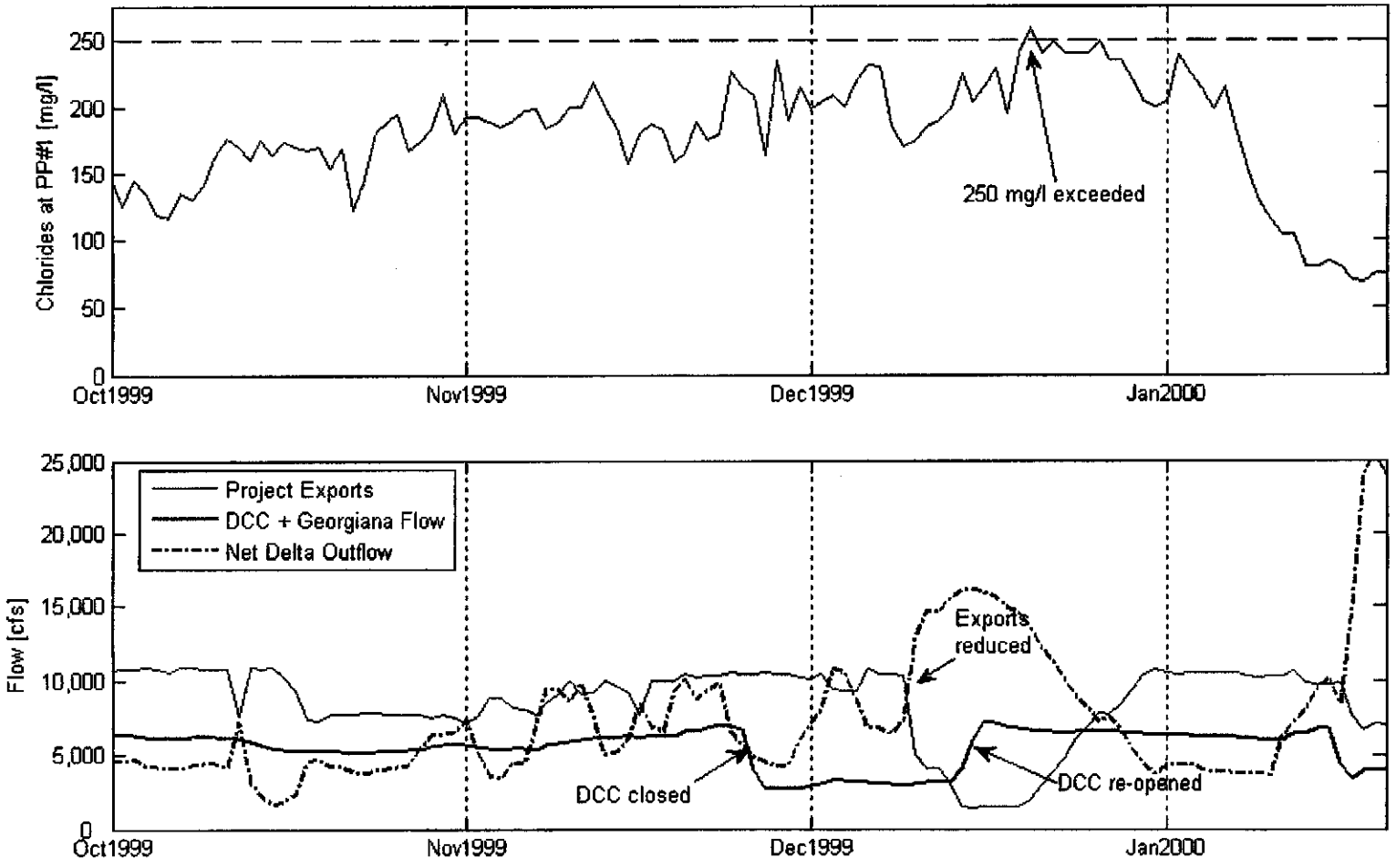


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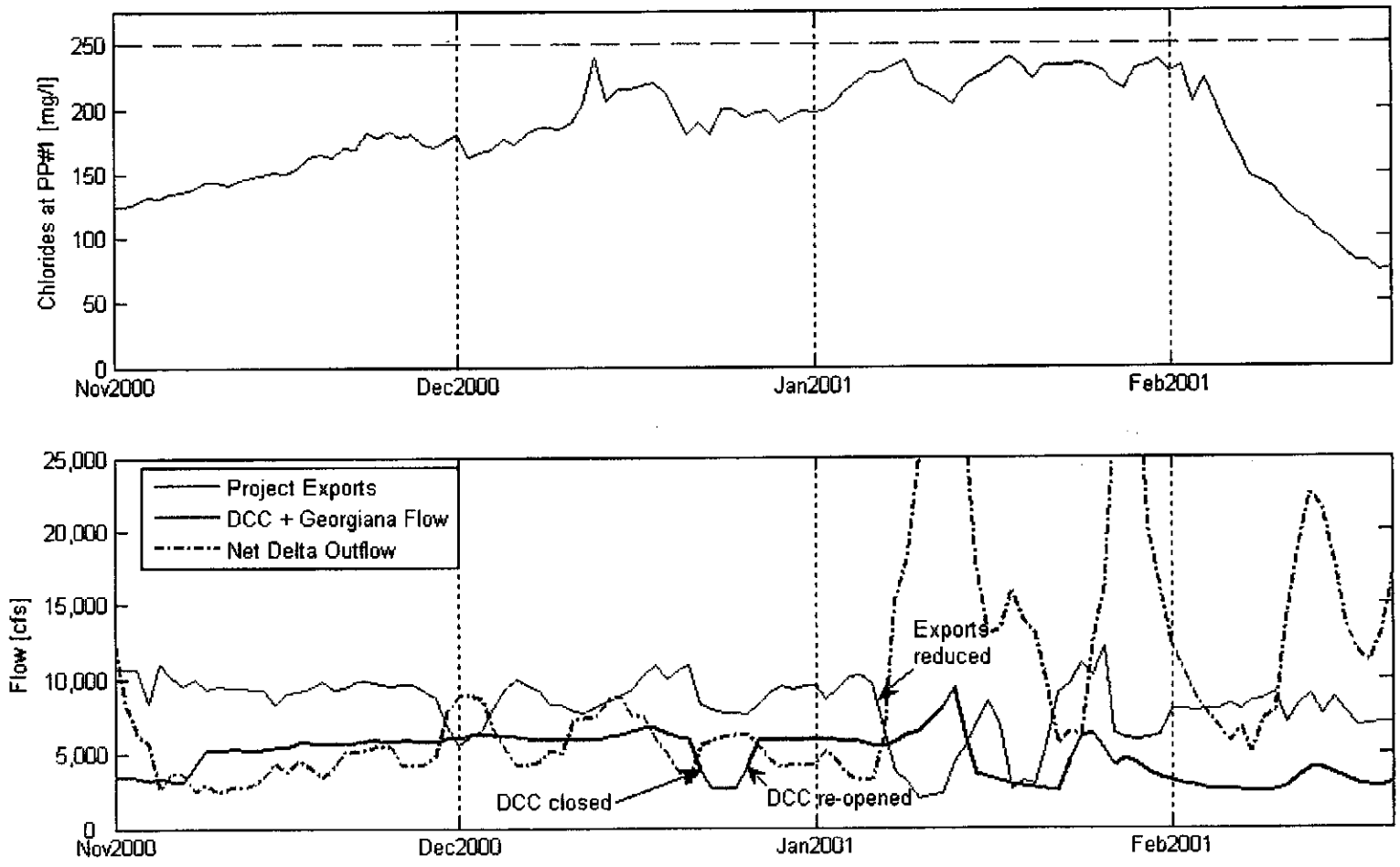
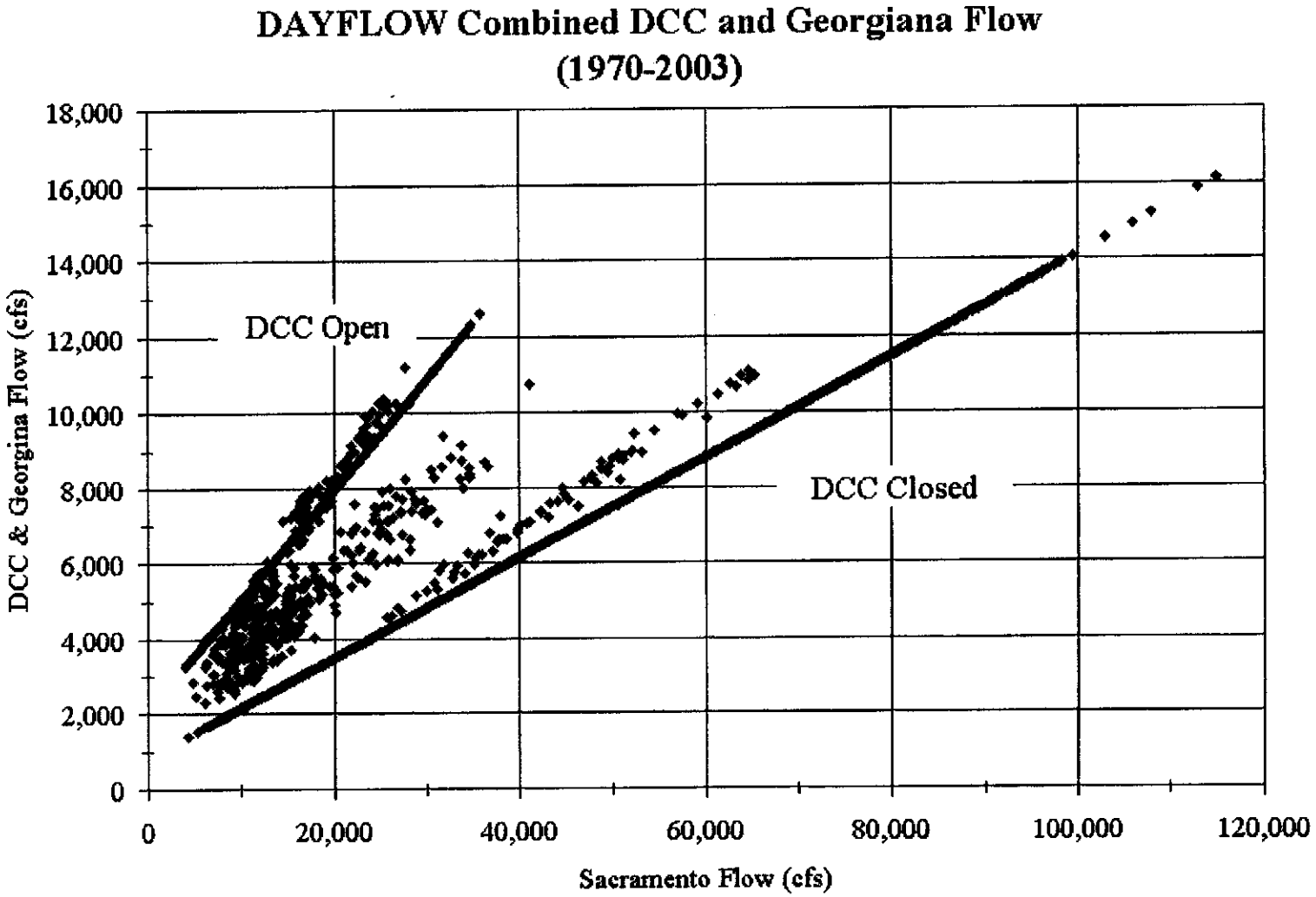
Figure 4: December 2000 DCC Closure



dcc_close_2.m
12-Nov-2004 mm

Figure 5


DAYFLOW Combined DCC and Georgiana Flow
(1970-2003)
DCC & Georgina Flow (cfs)
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
DCC Open
DCC Closed
0
20,000
40,000
60,000
80,000
100,000
120,000
Sacramento Flow (cfs)

Attachment B

Chronological Account of Recent Delta Cross-Channel Gates Operations and Related CVP and SWP Operations Decision-Making

Letter from DWR and U.S. Bureau of Reclamation
to the CALFED Water Operations Management Team

January 11, 2000

CALFED
Ops Group

January 11, 2000

Lowell Ploss
U.S. Bureau of Reclamation
Co-chair

Larry Gage
California Department of Water Resources
Co-chair

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California
· *Department of Fish and Game*
· *Department of Water Resources*
· *State Water Resources Control Board staff*

Federal
· *Fish and Wildlife Service*
· *Environmental Protection Agency*
· *National Marine Fisheries Service*
· *Bureau of Reclamation*

CALFED Water Operations Management Team

Chronological Account of Recent Delta Cross-Channel Gates Operations and Related CVP and SWP Operations Decision-Making

This memo provides an account of recent operations of the Central Valley Project and State Water Project, including the Delta Cross-Channel gate operations and to describe the CALFED Ops Group process for making decisions regarding CVP and SWP operations. It chronicles the discussions, recommendations and basis for the decisions made during the later part of November and early December. The basis for many of those decisions is not easily separated from other factors. For example, DCC closures are governed by several agreements and regulatory mechanisms including the Delta Accord, biological opinion for winter-run chinook salmon, and the State Water Resources Control Board water right order 98-9. DCC operations are also covered in the CALFED Ops Group Spring-Run Protection Plan.

The SRPP was first developed in 1996 to provide additional protection for emigrating spring-run yearlings. In 1997, a new strategy for protecting spring-run by operating the DCC gates based on real-time fishery, hydrologic, and water quality data was developed. This strategy was also incorporated into the Anadromous Fish Restoration Plan as Delta Action #6. The plan was updated again in 1998 (no additional changes were made to the plan for 1999).

Currently, the U.S. Bureau of Reclamation and Department of Water Resources are in consultation with the National Marine Fisheries Service and Department of Fish and Game for protection of spring-run. The spring-run race of chinook was listed by the State Fish and Game Commission as a threatened species under the California Endangered Species Act in February 1999. NMFS listed it as a threatened species under the federal ESA in November 1999. DWR and USBR began consultation on a one-year opinion from NMFS and a one-year permit from DFG in the winter of 1999. A final opinion and permit are expected soon.

The USBR owns the DCC gates and has transferred on-site responsibility for DCC gates operations to the San Luis Delta-Mendota Canal Authority. While USBR retains ultimate responsibility for decision-making for DCC gate operations, USBR must operate the DCC gates consistent with the provisions of the regulatory mechanisms mentioned above. The USBR is also compelled to coordinate the gate operations with NMFS as part of the ongoing consultation on spring-run. Ensuring compliance with the above provisions, which are sometimes in conflict, requires USBR to coordinate DCC gate operations closely with potentially affected State and federal agencies and stakeholders. Such coordination occurs on an as needed basis to ensure that DCC gate operations are carried out based on the most up-to-date fishery and water quality information. This coordination primarily occurs within the CALFED Ops Group and its various subgroups that include the Data Assessment Team, the No Name Group, and the CALFED Water Operations Management Team.

Enclosed is a detailed account of decisions made and the basis for those decisions. We have also enclosed summaries of the Data Assessment Team and No-name Group discussions regarding salmon protection and a summary of water quality and operational data.

If you have any questions regarding this matter, please call Larry Gage at (916) 653-8583 or Lowell Ploss at (916) 979-2199.

Larry Gage
Co-Chair
CALFED Ops Group

Lowell Ploss
Co-Chair
CALFED Ops Group

Enclosures

CHRONOLOGICAL ACCOUNT AND DECISION-MAKING PROVISIONS

The DCC gates were closed on November 26, 1999 at the beginning of a minor spring tidal cycle to protect emigrating spring-run chinook salmon. This action was taken to be consistent with the CALFED Ops Group Spring-run Protection Plan and in consultation with the National Marine Fisheries Service and the Department of Fish and Game on protection of spring-run yearlings. The action is also consistent with the SWRCB water right order 98-9 that provides for closing of the DCC gates from November – January, as needed, for fishery protection.

Over the next three weeks, exports remained at capacity while water quality gradually deteriorated in the Delta. When the gates were closed on November 26, the CVP and SWP were pumping at 6,672 and 4,048 respectively. Because of continued concern on the part of the fishery agencies about protection for emigrating salmon, the DCC gates were not opened to improve water quality. In an effort to improve water quality conditions, upstream releases from Lake Oroville were increased beginning on December 8 and water exports at both the State and federal facilities were curtailed on beginning on December 10. The export curtailment (at the federal Tracy Pumping Plant) was coordinated with implementation of the Department of Interior's b(2) Implementation Plan. When water quality conditions did not improve and monitoring of chinook yearling activity in the lower Sacramento River and Delta indicated a significant decline in emigration, the DCC gates were opened for a few hours on December 14, then re-closed. They were re-opened the morning of December 15, and have remained open since, when it was realized that SWRCB Decision 1485 water quality standards would likely to exceeded.

During the week of 12/20, the DCC gates remained open and pumping at Tracy Pumping Plant and inflow to Clifton Court Forebay were gradually increased to a total of 8,000 cfs on December 27. DWR planned to continue ramping up SWP exports to about 7,000 cfs utilizing the flexibility under the U.S. Army Corps of Engineers Public Notice 5820A to capture up to one-third of Vernalis flow when it is greater than or equal to 1,000 cfs. However, tide conditions limited Clifton Court Forebay inflow to a maximum of about 6,800 cfs.

The following is a detailed daily accounting of activities and decisions.

- **November 24 (Wednesday)** – Data Assessment Team Conference Call – It is reported that although yearling spring-run salmon had been observed leaving Mill and Deer creeks in mid- to late- October, to date no indicators under the Spring-run Protection Plan that would necessitate closing the DCC gates have been triggered. It is also noted that no triggers have been pulled to begin the planned DOI b(2) export reduction (see DAT notes for November 24, 1999). However, later that afternoon, the CVP

and SWP Operations' staffs receive a call from the Department of Fish and Game's DAT representative requesting USBR to close the DCC gates based on the two-day catch of 44 spring-run sized salmon at Tisdale and three spring-run and one winter-run size salmon at Knights Landing, just reported by field crews. During the morning DAT conference call DWR and USBR operators expressed concern with potential water quality problems that may result from a spring tide predicted over the Thanksgiving weekend (November 25-28), however, there was no decision that water quality considerations should preclude closing the gates if salmon appeared and, as the DAT notes indicate, USBR was prepared for a possible gate closure over the holiday weekend

- Recommendation to close the DCC gates – DAT.
- Basis for Recommendation – Spring-run Protection Plan, ESA consultation with NMFS and DFG, and WR 98-9.

- **November 26 (Friday)** – The DCC gates are closed to protect out-migrating spring-run salmon, per the Spring-run Protection Plan and ESA consultation with NMFS and DFG. The basis for closure is detection of salmon at Tisdale and Knights Landing. At the time of the closure, Delta water quality conditions are not a concern because (1) forecasted changes in weather patterns are likely to produce storms during the first week of December, and (2) likely curtailment of export pumping consistent with the b(2) Implementation Plan.

  - Decision to close the DCC gates – USBR.
  - Basis for Decision – Compliance with Spring-run Protection Plan, on-going ESA consultation with NMFS and DFG, and WR 98-9.
  -

- **November 29 (Monday)** – Electrical Conductivity[1] has increased as expected, but still is not a major concern since (1) EC values are still below the threshold levels established under the Spring-run Protection Plan that indicate deteriorating conditions in the interior/southern Delta and concerns for maintaining SWRCB water quality requirements; (2) the DAT will discuss the need to open the gates during the next call scheduled for Wednesday, December 1; and (3) and export reductions pursuant to b(2) Implementation Plan are anticipated to be implemented within the next couple of weeks.

- **November 30 (Tuesday)** – USBR reports closing of the DCC gates to the CVP Water Association Operations committee and indicates the potential for export curtailments consistent with the b(2) Implementation Plan, based on similar biological triggers.

[1] Electrical Conductivity is an indirect measurement of mineral concentration. The higher the concentration of minerals in the water, the greater the electrical conductivity.

- **December 1 (Wednesday)** – DAT Conference Call. DWR notifies the DAT that Delta EC values will soon approach the salinity profile outlined in the Spring-run Protection Plan. This profile serves as an indicator of seawater intrusion that would likely lead to difficulty in managing salinity conditions in the south Delta and possible exceedences of SWRCB water quality standards. The biological indicator for beginning the b(2) export reduction occurred over the Thanksgiving weekend. However, DAT recommends delaying the b(2) export reduction until more spring-run are observed in the Sacramento area. Although no recommendations are made to open the DCC gates due to anticipated b(2) actions (export reductions), DWR staff indicates some action is needed to control salinity. Review of historical operations by DWR staff indicates a significant reduction of exports may mitigate closure of the DCC gates. DAT recommends monitoring water quality and fish movement over the next few days and convening another DAT call prior to the weekend.

  - Recommendation to keep DCC gates closed – DAT.
  - Decision to keep gates closed – USBR.
  - Basis for Recommendation and Decision – Compliance with Spring-run Protection Plan and ESA consultation with NMFS and DFG.

- **December 3 (Friday)** – DWR sends out the first in a series of water quality updates to the DAT. At this point, two stations (Jersey and Bacon) have exceeded the salinity profile and Holland is at its trigger level. However, the CVP and SWP operators make no recommendation to open the gates. The first yearling is observed near Sacramento and the DAT recommended the b(2) export reduction start as soon as possible, Tuesday, December 7. DAT recommends the DCC gates remain closed over the weekend. DAT also recommends the b(2)- related export reduction be implemented and believes this reduction will begin soon. DOI schedules 3,500 cfs export reduction for December 7.

  - Recommendation to keep gates closed – DAT.
  - Decision to keep gates closed – USBR.
  - Basis for Recommendation and Decision – Compliance with Spring-run Protection Plan and ESA consultation with NMFS and DFG.

  Water users meet with the State Administration to discuss concern of implementing export curtailments. DOI, postpones the decision to curtail export pumping pursuant to b(2) Implementation Plan after consulting with State officials.

- **December 6 (Monday)** – All salinity profile indicators specified in the Spring-run Protection Plan have been reached or exceeded. The DAT is notified of the conditions and of the need to open the DCC gates. Concern

for opening the DCC gates is more acute when it becomes apparent that CVP b(2) export reductions will not occur as planned due to concerns raised by the State Administration. The DAT is informed that DWR will recommend opening the DCC gates during the December 8 DAT conference call if no export reductions are made by then.

- **December 7 (Tuesday)** – Due to concerns raised by the State Administration, DOI defers its b(2) export reduction, pending resolution of water impact-related issues. A final decision is expected later in the week. DWR and Reclamation raised concern about potential water quality impacts resulting from continued DCC gate closures at the same time that pumping levels remained high.

- **December 8 (Wednesday)** – DAT Conference Call (a.m.) – No agreement is reached on a recommendation for operation of the DCC gates. The DAT develops three options to be considered by the CALFED Ops Group: (1) leave the gates closed and begin the b(2) export reduction; (2) open the gates halfway for a short period (assumed to be until Monday, December 13) to benefit from freshwater entering the DCC into the central and south Delta, then close the DCC gates in combination with a reduction in exports; or (3) open the DCC gates as necessary, and then close as water quality improves to an acceptable level. These options are presented to the CALFED Ops Group for resolution.

  CALFED Ops Group meeting (p.m.) – The Ops Group discusses the options developed by the DAT, but does not decide on which option should be implemented. Instead, the options will be forwarded to the CALFED Water Operations Management Team for a decision. The Water Ops Management Team will meet the next day. DWR schedules a 200 cfs increase in releases at Oroville as an initial step in anticipation of larger increases in the future as a measure to address water quality conditions and balance release contributions in response to USBR cuts at Keswick (releases are decreased because of low inflow to Lake Shasta and decreasing Shasta storage that approaches the maximum flood vacancy).

- **December 9 (Thursday)** – CALFED Water Operations Management Team Meeting – DWR and USBR announce at the meeting that they will reduce exports and increase upstream releases as a way of continuing to protect spring-run yearlings while attempting to improve water quality by increasing Delta outflow. The Water Ops Management Team discusses the magnitude of the reduction and DWR and USBR agree to a 4,000-5,000 cfs reduction in exports to begin Friday, December 10. Total exports are 10,700 cfs at the time the decision is made. Initially, combined exports of 6,000 cfs (2,700 cfs at Tracy and 3,300 cfs at Banks) are scheduled. Total release to the Feather River is increased to 3,000 cfs.

DOI informs the State agencies of its decision to implement export curtailments at Tracy consistent with implementation of the b(2) plan. Thus, Tracy pumping is reduced to about 750 cfs. After reviewing water quality conditions, DWR decides not to adjust its planned 3,300 cfs reduction in exports; the total planned export reduction is from 10,700 cfs to about 4,100 cfs.

- Decision to keep the DCC gates closed, reduce exports by 4,700 cfs and increase upstream releases – CALFED Water Operations Management Team.
- Decision to reduce exports another 1,900 cfs – DWR.
- Basis for Decision – Spring-run Protection Plan, ESA consultation with NMFS and DFG, b(2) Implementation Plan, and SWRCB water quality standards contained in Decision 1485.

- **December 10 (Friday)** – SWP and CVP combined exports are reduced to about 4,100 cfs. The SWP is at 3,300 and the CVP is at 800 cfs (one unit). A DAT conference call is scheduled for Monday, 12/13. Total release to the Feather River is increased to 3,500 cfs.

- **December 13 (Monday)** – The DAT convenes a conference call to evaluate water quality conditions and spring-run yearling status to make a recommendation on operation of the DCC gates. Some DAT members recommend opening the DCC Gates. Others believe keeping the DCC gates closed is needed to protect emigrating salmon. All members agree gate closure will provide maximum protection for spring-run. A compromise DAT recommendation is made to open the DCC gates tidally during daylight hours for the next several days. It is hoped this compromise will result in an improvement in water quality and while providing some protection for spring-run yearlings. The DAT prepares a Memorandum to the CALFED Operations Group titled "Biological Justification for Keeping Cross Channel Gates Closed for Fisheries Protection." (see attachment).

  SWP and CVP operators recommend opening the DCC gates to provide an opportunity for improvement in water quality. Although Jersey Point is showing signs of declining salinity, the remaining stations continue to exceed the profile values and are likely to result in exceeding the water quality standards during the next spring tidal cycle. Without fully opening the DCC gates, SWP and CVP operators believe compliance with D-1485 water quality standards will be compromised. Thus, SWP exports are further reduced to 800 cfs. Combined exports are about 1,600 cfs.

  - Decision to further reduce SWP export operations – DWR.

- Basis for Decision – Compliance with SWRCB D-1485, Spring-run Protection Plan and continued ESA consultation with NMFS and DFG.

- **December 14 (Tuesday)** – The DCC gates are opened from about 9 a.m. to 2 p.m. The intent is to operate the DCC gates during daylight hours and during a portion of the tidal cycle that pushes Sacramento River flow south through the cross-channel. Daylight hour operations are easier for the USBR to staff and considered safer. Keeping the DCC gates closed on the ebb tide in the Sacramento River may help minimize the numbers of fish that enter the DCC. SWP and CVP operators continue to recommend opening the DCC gates full time to provide an opportunity for improvement in water quality.

  - Decision to tidally operate the DCC gates; keep them open during daylight hours – USBR.
  - Basis for Decision – Compliance with SWRCB D-1485, Spring-run Protection Plan and continued ESA consultation with NMFS and DFG.

- **December 15 (Wednesday)** – The DCC gates are opened at 9 a.m. A DAT conference call is held in the morning and a No Name Group (NNG) conference call is held in the afternoon.

  As of December 15, no SWRCB water quality standards are exceeded, however the next spring tide starts on the 16th. DWR operators expect the SWRCB water quality standard for Contra Costa Canal Pumping Plant Number 1 to be exceeded within the next 7 days, even if the gates remain open. Water Quality standards at Clifton Court and Tracy may also be exceeded.

  During its conference call, the DAT concludes the DCC gates need to be open more than 6 hours a day for water quality control. The USBR and DWR operators propose opening the gates fully, waiting for water quality to improve then ramping up exports to circulate high quality water into the central and south Delta.

  The fishery biologists request an export schedule to ensure pumping does not increase unchecked while the gates are open. A schedule for increasing exports and water quality criteria to define when the DCC gates could be closed are developed for the 2 p.m. NNG conference call.

  The No Name Group recommends keeping the gates open and ramping up Banks exports at a rate of 500 cfs per day. The export increase is to begin when Jersey Point is at about 0.9 mS/cm. The ramping will stop when combined exports reach about 4,100 cfs on Wednesday (December 22).

- Decision to keep the gates open – USBR.
- Decision to ramp Banks exports up – DWR.
- Basis for Decision – Spring-run Protection Plan and continued ESA consultation, SWRCB D-1485, and DAT and NNG Recommendations.

- **December 17 (Friday)** – NNG Conference Call — DWR and USBR report they are holding exports at 800 cfs at Tracy and at 800 cfs at Banks. Salinity near the confluence and along the San Joaquin River is improving and conditions in the interior/southern Delta are holding steady.

- **December 20 (Monday)** – The NNG holds a conference call to review recent operations and to develop recommendations for future operations. Salinity in the Delta has improved because of the gate opening and 16,000 cfs of Delta outflow since the previous Wednesday. However, the State Water Resources Control Board's maximum daily chloride standard of 250 mg/l is exceeded at the Contra Costa Canal Pumping Plant No.1 with a reported average daily value of 258 mg/L.

- **December 21 (Tuesday)** – DAT Conference call. During the discussion, the fishery biologists develop biological criteria and operational recommendations for closing the DCC gates for spring-run chinook salmon protection. The recommendations are intended to assist the operators and biologists work through the period from December 21 to January 3 when some agency staff will be on vacation. The recommendation is that when specified fish indicators are observed, the DCC gates be closed for 5 days to allow the fish to pass. If water quality does not allow for the DCC gates to be closed, then the recommendation is to reduce exports to 4,100 cfs.

- **December 22 (Wednesday)** – NNG conference call. The NNG reviews the DAT plan and an operations plan to ramp up exports from 4,000 cfs to 8,000 cfs over four days, holding reservoir releases constant and keeping the DCC gates open unless fish observations triggered a request for closure by DAT. The recommendation is to these plans through December 27. The NNG and DAT schedule a conference call for Monday the 27th, to discuss operations and the latest water quality and fishery data.

- **December 27 (Monday)** – Combined NNG and DAT conference call. Salinity levels in the Delta are generally good, with the exception of Rock Slough. Fish monitoring reveals no apparent significant salmon migration occurred over the holiday weekend. Contra Costa resumes pumping at Contra Costa Canal which is to be blended with lower salinity Los Vaqueros Reservoir water. USBR announces planned reductions in reservoir releases: Keswick releases will be reduced from 5,500 cfs to 5,000 over three days beginning December 28 and Nimbus from 2,350 to

2,000 cfs beginning December 28. Given the current salinity levels and the DCC gates remaining open, DWR and USBR will begin increasing exports on Tuesday, December 28. DWR will go to 5,000 cfs on December 28, then 6,680 cfs on December 29. USBR will adjust pumping from 4,000 cfs to about 4,200 cfs beginning December 28. DWR needs to finalize pumping schedules through the New Year's weekend, no later than by Wednesday. Another DAT/NNG conference is scheduled for Wednesday, December 29, to discuss weekend operations, monitoring plans, and contingencies for operation of the DCC. DWR will develop a description of currently relevant factors governing operation of the DCC, to assist with any upcoming decisions regarding closure or re-opening.

- **December 29 (Wednesday)** – NNG and DAT conference call. The fish monitoring continues to indicate no significant migration of spring-run yearlings through the Delta. The fish triggers developed for closure of the DCC gates have not been reached. Monitoring will continue over the weekend. A double trigger has been developed for closure of the DCC gates based both on fish monitoring and water quality. Additionally criteria have been developed to open the DCC gates if water quality becomes a concern. The next NNG calls will be on Friday, December 31 and Monday January 3.