

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

Order
79-14
Order
WR
84-7
See: D-869

In the Matter of Permits 10657,
16058, and 10659 (Applications
11199, 12578, and 12716))
UNITED STATES BUREAU OF)
RECLAMATION)
Permittee)
HOWARD Y. KATO, DAVIS AUDUBON)
SOCIETY, PUTAH CREEK RIPARIAN)
OWNERS AND/OR WATER USERS)
ASSOCIATION, SOLANO COUNTY FLOOD)
CONTROL AND WATER CONSERVATION)
DISTRICT)
Interested Parties)

Order: WR 81-11
Source: Putah Creek
County: Yolo, Solano and
Napa

ORDER AMENDING AND AFFIRMING
AS AMENDED, ORDER 79-14

BY BOARD MEMBER MITCHELL:

Order No. 79-14 amending Decision 869 and Permits 10657, 10658, and 10659 having been adopted; five petitions for reconsideration of Order WR 79-14 having been filed; the Board having adopted Order WR 79-26, granting the petitions for reconsideration; the scope of reconsideration of Order WR 79-26 having been noticed, and the Board having reviewed the administrative record in the above entitled matter finds as follows:

1. Five petitions for reconsideration were filed on behalf of the following persons:

- (a) Permittee United States Bureau of Reclamation (Bureau)
- (b) Interested party Solano County Flood Control and Water Conservation District (District)
- (c) Interested party Putah Creek Riparian Owners and/or Water Users Association (Association)
- (d) Davis Audubon Society (Society)
- (e) Interested party Howard Y. Kato (Kato)

The State Department of Water Resources (Department), not a party, subsequently requested clarification of Decision 869, terms 12, 15, 16 and 17, and the effect of Water Rights Order 79-14 on these terms.

2. In 1957, Decision 869 was adopted approving issuance of Permits 10657, 10658 and 10659 to the Bureau.

3. The permits authorize the Bureau to divert and store 1,600,000 acre-feet of water in Lake Berryessa at Monticello Dam. Stored water is released downstream and flows into Lake Solano impounded by Putah Diversion Dam (also referred to as Solano Dam) where it is either diverted to Putah South Canal for Solano Project (Project) purposes or released downstream into Putah Creek. Water diverted to Putah South Canal is distributed for municipal use in Fairfield, Vallejo and Vacaville and for irrigation of up to 80,000 acres in Solano County.

4. Condition 11 of the Decision required the Bureau to release water to Putah Creek to protect prior rights and maintain groundwater recharge as it would occur from unregulated flow.

5. Condition 12 of the Decision directed the Bureau to undertake an investigation to determine the amount of water that must be released to Putah Creek to comply with Condition 11.

6. Condition 13 of the Decision provided that the Board could adopt further orders concerning the proper amount of water to be released in accordance with Condition 11.

7. Following a hearing in 1969 the Board on April 16, 1970, adopted an interim fixed monthly release schedule. More recently, the Board held a hearing on February 5, 1979, to determine whether this fixed release schedule was adequate to comply with Condition 11.

8. The Association appeared at the hearing and presented testimony in support of their contention that the existing schedule provides insufficient

flows for prior surface rights and groundwater recharge. The Association proposed a new release schedule which would correct alleged deficiencies in the current release schedule. Other parties presented additional testimony in favor of increased releases for fish and wildlife habitat. The Bureau and the District, beneficiary of the Solano Project, also appeared and presented testimony in favor of maintaining the existing schedule with some minor variations.

9. On June 21, 1979, the Board adopted Order WR 79-14 providing a modified schedule for releasing water to Putah Creek. After consideration of the issues raised by the petitioners, we conclude that, with minor changes, Order WR 79-14 is appropriate as adopted. In order to promote understanding of our conclusion, we will restate and augment our previous findings concerning this matter.

10. The petitions raise the following basic issues:

- (a) Whether additional investigations should be conducted before the Board adopts a final release schedule to protect prior rights and to maintain groundwater recharge as it would occur from unregulated flow.
- (b) Whether the Order provides for the release of sufficient water to protect prior rights and to recharge groundwater as it would occur from unregulated flow.
- (c) Whether the quantity of water that the Order requires be released to Putah Creek is inconsistent with clear Congressional directives.
- (d) Whether in Decision 869 the Board reserved jurisdiction to require the Bureau to release water to Putah Creek below Solano Dam to preserve aquatic habitat and aquatic life.

Other issues raised by the petitioners will be addressed while responding to these basic issues or at later points in the Order.

11. Petitioner Kato and the Association have requested that the Bureau be required to continue to investigate and report the effects of the revised release schedule on groundwater levels. Petitioner Kato has further requested that the Board reserve jurisdiction to make changes upon completion of additional investigations. The Society has requested an investigation to determine the amount of water necessary to maintain riparian vegetation, aquatic habitat and associated fish and wildlife populations as well as amounts of water necessary for local agriculture and recreation.

12. The Bureau has studied the effect of various release schedules on groundwater for 23 years. The current groundwater data collection program is designed to gather information on a regional^{1/} basis and cannot assess the impact of project releases on groundwater users who may be pumping from the Putah Creek underflow or interconnected groundwater. Such underflow or interconnected groundwater could vary greatly in availability and depth without much variation in regional depth or availability. Collection of additional data by the Bureau or others (in accordance with Condition 12) would not appreciably assist the Board in further defining groundwater recharge requirements. Further, if Project spills were to occur in each of the next five years, the requested monitoring would be of little value. Thus, due to the limited value of monitoring, in relation to Permits 10657, 10658 and 10659, and the cost involved, the requirement for continued monitoring was deleted by Order WR 79-14. Since additional investigation will not further refine groundwater recharge requirements, the Board will not continue to reserve jurisdiction for that purpose.

13. The availability of underflow and interconnected groundwater is monitored best by persons who use the water. Such users offered evidence concerning the relationship between Project releases to Putah Creek and

^{1/}The general area between the Solano Diversion Dam, the City of Fairfield, the Yolo Bypass, and the Montezuma Hills.

the water level of underflow and interconnected groundwater. The testimony indicated that the quantity of water in the Creek directly affects the water level in wells near the Creek. No additional study is needed to confirm this relationship.

14. No study need be undertaken to determine the amount of water that should be released to Putah Creek to maintain groundwater at a constant level. Condition 11 of Decision 869 required only that the project be operated in such a manner as to "maintain percolation of water from the stream (Putah Creek) channel as such percolation would occur from unregulated flow". Condition 11 did not require that recharge be sufficient to maintain groundwater at a constant level. This is particularly important since the average groundwater extractions in the area have increased significantly since the project was built.

15. Studies to determine water requirements for maintaining native creek-side vegetation and wildlife are beyond the scope of the Board's reserved jurisdiction over these permits. The Bureau was required to "make periodic surveys of Putah Creek channel in order to determine consumptive use by native vegetation". (Term 12(h) of Decision 869) These surveys were to provide information necessary to account for all the flow of Putah Creek and did not imply that the Project was responsible for maintaining or enhancing such vegetation. This term was deleted in 1970 when term 12 was amended.

16. Studies to determine the need for flows - **over and above amounts released for prior rights - to enhance aquatic habitat and fishlife in Putah Creek below Lake Solano** are also beyond the scope of the Board's reserved jurisdiction over these permits. The requirement to maintain a "live stream" in Putah Creek below Lake Solano (Decision 869, Condition 16) and the requirement to prepare a fishery study (Decision 869, Condition 17) have been the subject of much confusion. This subject will be addressed more fully later in this Order.

17. A determination whether additional studies are needed to ascertain the amount of water needed to protect prior rights and maintain groundwater recharge as it would occur from unregulated flow must turn, in part, on the quality of existing data. By requesting more study and that the Board reserve jurisdiction, petitioners Kato and the Association implicitly suggest that more water should be released to Putah Creek to protect prior rights and to maintain groundwater recharge. More directly, the Bureau and the District assert that Order WR 79-14 directs the Bureau to release more water to Putah Creek (than under the preceding order of the Board) and that the record does not contain substantial evidence to support the claim that additional water should be released.

18. The protection of prior rights along Putah Creek is accomplished by assuring groundwater recharge as it would occur from unregulated flow. Prior to construction of the Project, large amounts of water flowed in Putah Creek during winter months. During late summer and early fall little or no water might flow in Putah Creek. A portion of the larger flows and most, if not all, of the summer flows recharged the underflow of Putah Creek and interconnected groundwater. The greater portion of winter flows passed out of Putah Creek and into the Yolo Bypass and the Sacramento and San Joaquin Delta. It is this quantity of water that the Project was constructed to capture and put to beneficial use.

19. Controversy over the amount of water Putah Creek contributes to groundwater began in the early 1950's when the project was being planned. Both the United States Geological Survey and the former State Division of Water Resources (DWR) estimated the average annual groundwater recharge under pre-project conditions from 15,000 to 30,000 acre-feet per annum (afa).

20. Twenty-three years of project operating experience and data collection have not produced a precise answer to the question of how much

water must be released to Putah Creek to assure groundwater recharge as it would occur from unregulated flow. Further, as previously indicated, collection of additional data would not appreciably assist the Board in refining groundwater recharge requirements. It is plainly time to make a decision.

21. While precise answers are not possible, there is substantial evidence to support the release schedule adopted by Order WR 79-14. The release schedule adopted by the Board in 1970 was based upon analysis of data from 12 years of releases to Putah Creek. With adjustments, it was assumed that the monthly release required to satisfy downstream surface and groundwater rights was taken as the difference between monthly releases to Putah Creek and the flow of the creek at the gaging station near Davis. Reductions were permitted during dry years. Under this schedule, normal year releases were reduced to 22,145 acre-feet per year (afa), and dry year releases were reduced to 19,223 afa. (Board Staff Report, October 1978)

22. The 1970 fixed release schedule did not allow for variation inherent in Putah Creek streamflow. During wet winters, the fixed release schedule caused excessive flow to reach the Yolo Bypass by requiring releases in excess of that needed for a live stream. During drought years the fixed release schedule may not have been sufficient to maintain a live stream to the Bypass. In the latter case groundwater users could have been deprived of recharge to which they would otherwise be entitled. (Board Staff Report, October 1978)

23. The release schedule adopted by Order WR 79-14 makes adjustments to correct for the defects in the 1970 release schedule. Under the 1979 schedule the Bureau will be required to release no more than about 27,000 afa during any year. However, this schedule is qualified by allowing the permittee the option of reducing releases so long as surface flow throughout Putah Creek is maintained and the flow at the Davis gaging station does not fall below 5 cubic feet per second.

This provision will enable the Bureau to significantly reduce the 27,000 cfs maximum release requirement in normal years. Further, the new schedule provides for higher minimum flows during the months of November and December. These flows are more likely to have a beneficial impact on groundwater than would similar releases during summer months when water is subject to higher rates of evaporation, transpiration and surface diversion. (Engineering Staff Analysis of Record, May 3, 1979)^{2/}

24. The Bureau contends that Order WR 79-14 "...reduces the firm yield of the Project contrary to its Congressional purposes." Although the Bureau's petition for reconsideration provided no supporting recitals or argument, the bare contention raises the specter of the New Melones controversy in California v. United States, 436 U. S. 32, 985 cr. 2985 (1978). In that case, the U. S. Supreme Court held that the Board may impose any condition in a water right entitlement issued to the Bureau for projects subject to Section 8 of the Reclamation Act of 1902, which is not inconsistent with clear Congressional directives. Section 8 provides that:

"... nothing in this Act shall be construed as affecting or intending to affect or to in any way interfere with the laws of any States...relating to the control, appropriation, or use, or distribution of water used in irrigation...and the Secretary of the Interior in carrying out the provision of this Act, shall proceed in conformity with such laws...."

25. Given the nature of this issue, the Bureau was requested to provide the Board additional information concerning this contention. The essence of the Bureau's response was that the revised release schedule is contrary to Congressional purposes because: (a) The construction of the Solano

^{2/} Persons wishing a fuller explanation of the Board's conclusions on this issue should consult (1) the Staff Analysis of Data Submitted by the Bureau of Reclamation in Conformance with the Terms of Decision 869 and Subsequent Amendments, October 1978; and (2) the Engineering Staff Analysis of Record, May 3, 1979, which more fully express the basis of our conclusions in Order WR 79-14 and this Order.

Project was authorized only if the Secretary of the Interior determined that the cost of the proposed project would be paid for in accordance with the cost-benefit assessment provided by the Reclamation Act of 1939; (b) that the Secretary made such a determination based on the estimated or projected firm water supply that would be developed; and (c) that an increase in releases to Putah Creek would reduce the Project's firm yield; (d) that the quantity of water delivered to the District and the revenues obtained therefrom would be reduced; and (e) the Secretary's determination that the Project would pay for itself within 50 years would be confounded.

26. The Board has previously concluded that a Congressional directive as used in the Supreme Court's decision means a prohibition or requirement contained in a law adopted by Congress.^{3/} Clearly the foregoing circumstance cannot be qualified as a Congressional prohibition. Estimates of Project yield and amounts of water to satisfy prior rights and groundwater recharge as it would occur from unregulated flows are just estimates. That the Bureau does not view such estimates as Congressional directives is evidenced by the fact that the Bureau did not petition the Board to reduce releases to Putah Creek to 22,145 afa until 1969 after 12 years of operational releases exceeding the 15,000 afa estimate upon which the Secretary made his decision.

Further, as noted in paragraph 23, review of the new release schedule does not lead to the conclusion that the Project's firm yield will be reduced. We conclude this contention is without merit.

27. The Bureau also contends that any reduction in the firm yield will infringe upon the Bureau's contract to deliver water to the District.

28. The Bureau, in designing the Solano Project, estimated precipitation, runoff, streamflow, and made allowances for water needed for prior rights. The yield thus estimated is not a precise number but falls

^{3/} See Order WR 79-16.

within a normal range of accuracy inherent to planning studies. Jurisdiction was reserved for the purpose of obtaining actual operating experience and additional data so as to refine the estimates. Yield is not a precise amount.^{4/} Any water project operator runs a risk of not being able to deliver the estimated yield. That risk is dependent upon the detail to which planning studies were done, the judgment of the planners and the degree to which historical hydrologic conditions accurately predict the future.

29. The record does not indicate that Order WR 79-14 will reduce the yield of the Project. During the period 1957-76, median flows past Solano Dam were 69,343 acre-feet. (See Table VI-1 of the October 1978 staff report.) The release schedule adopted in Order WR 79-14 and the reduction allowed in releases when flows at Davis exceed 5 cfs will probably result in lower releases than the old "live stream criteria" adopted by the Bureau after Decision 869.

30. The action taken by the Board in Order WR 79-14 represents a refinement of the release schedule imposed to protect prior rights, not a change.

31. The Association, the Society, and the Department raise the issue of whether the Board reserved jurisdiction in Decision 869 to require the Bureau to release water to Putah Creek below the Solano Dam to preserve aquatic habitat and aquatic life.

32. Testimony concerning the water needs for fishlife was received at the 1956, 1969 and 1979 hearings. The importance of the Putah Creek fishery was noted in Decision 869. The Board recognized that Putah Creek had been one of the most important Smallmouth Bass fishing streams in the State. It was noted that water to be released from Monticello Dam would be too cold for Smallmouth Bass. As a result, the State Department of Fish and Game

^{4/} The Bureau's 1975 contract with the District states that the contract was executed on the "assumption" that certain amounts of water would be produced.

proposed to stock trout in Putah Creek between Monticello Dam and the Solano Dam. It was understood that the Smallmouth Bass fishery would be replaced with a trout fishery above the Solano Dam.

33. Three conditions were included in Decision 869 for the protection of fishlife. All three conditions were adopted substantially as proposed by the Department of Fish and Game. The first condition required a minimum flow of 10 cfs between Monticello Dam and Lake Solano (Condition 15). The second condition required that the water released from Lake Solano to satisfy prior rights be released in a manner that would maintain a "live stream" as far downstream as possible, consistent with the purposes of the project and the requirements of downstream users (Condition 16). The third condition included the requirements of water for maintenance of fishlife in Putah Creek as one of the objectives in the study to determine proper releases for prior vested rights and groundwater recharge (Condition 17).

34. Condition 16 should be considered in conjunction with Condition 11 of Decision 869 requiring the Bureau to release water to Putah Creek to protect prior rights and to maintain groundwater recharge as it would occur from unregulated flow. In the absence of Condition 16, the Bureau would have been permitted to release a great deal of water during a few months of the year and little or no water for most of the year. During the early years of operation the Bureau chose to comply with Conditions 11 and 16 by releasing water from the Solano Dam at the same rate as inflow to Lake Berryessa and Lake Solano. Releases were reduced when flow at the lower gaging station at Davis was greater than 5 cfs. The record does not disclose that the Bureau ever undertook the study called for by Condition 17.^{5/}

^{5/} The record does show that the Department of Fish and Game conducted a study of the trout fishery requirements in Putah Creek above Solano Dam and presented a report on the subject to the Board at the 1969 hearing. A need for additional flows below Lake Berryessa during the late fall months was demonstrated. The deficiency was resolved in the Board order adopted in 1970 by increasing the flow requirement in those months in the fixed release schedule.

35. On April 16, 1970, the Board amended Condition 11. The new condition required the Bureau to release fixed amounts of water for each month to Putah Creek below Solano Dam. The requirement that the Bureau implement a live stream release program (Condition 16) was by implication rescinded by the adoption of the fixed release schedule. It does not follow, however, that the Board rescinded the objective of maintaining fishlife in Putah Creek consistent with project purposes and the rights of prior users or that the Board rescinded the study required by Condition 17.

36. During the proceeding to consider whether a fixed release schedule should be adopted (June 17, 1969), and the proceeding to consider whether the fixed release schedule should be amended (February 5, 1979) the Board did not receive evidence suggesting how releases from Solano Dam to protect prior rights might be made consistent with the objective of maintaining fishlife below Solano Dam as far as possible. Order WR 79-14 should be amended to reflect the Board's continued reserved jurisdiction over this matter to allow a study to be conducted if recommended by the California Department of Fish and Game.

37. It should be recognized, however, that Putah Creek has already been enhanced by releases from Solano Dam. More water now flows in Putah Creek immediately below Solano Dam during late summer and fall than was the case in most pre-project water years. The fixed release schedule adopted by the Board in 1970 required releases from Solano Dam to Putah Creek of only 25 cfs during November. Order WR 79-14 may further increase releases in November and other months. In addition, the provision for reduced releases during dry years was eliminated in Order WR 79-14. This change in the release schedule should aid fishlife and fish habitat by providing greater summer flows in dry years.

38. A careful reading of conditions 12 through 17 of Decision 869, leads us to conclude that releases of water below Putah Diversion Dam were to satisfy only prior rights and groundwater recharge. Jurisdiction was not reserved to require the Bureau to release additional quantities of water to Putah Creek below Putah Diversion Dam to preserve aquatic habitat and aquatic life. Jurisdiction was reserved to make prior rights releases as beneficial as possible to the fish life below Solano Dam.

39. Petitioner Kato and the District contend that the Board should have prepared and adopted environmental documents along with Order WR 79-14. The Board finds that the project is exempt as an ongoing project in accordance with Title 14, California Administrative Code, Section 15070(b) and Title 23, California Administrative Code, Section 2715(b). A Notice of Exemption was prepared and sent to the Secretary for Resources on August 1, 1979.

40. The Bureau contends that Order WR 79-14 requires that water be wasted and unreasonably used in violation of Water Code Sections 100 and 275. The Bureau cites no legal authority for this contention. The fact that prior rights are entitled to protection from the effects of the project hardly constitutes waste or unreasonable use. Further, that portion of Condition 11 authorizing the reduction of releases from Solano Dam when flows at the Davis Gage exceed 5 cfs enables the Bureau to conserve all practicable amounts of water while protecting prior rights to surface waters and interests in groundwater.

41. The Bureau contends that by adopting Condition 22 of Order WR 79-14, the Board is asserting that it has the authority to require operation of the Solano Project in a manner "inconsistent with Congressional directives".

42. Condition 22 in Order WR 79-14 is in part a restatement of Condition 10, Decision 869 which reads as follows:

"All rights and privileges under this permit including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the State Water Rights Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion."

The State Water Resources Control Board is the successor agency to the State Water Rights Board. Water Code Sections 100 and 275 were and are the legal basis for the inclusion of this condition in permits for water rights.

43. Condition 10 is restated in Order WR 79-14 as Condition 22. Condition 22 provides:

"Pursuant to California Water Code Sections 100 and 275, all rights and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this permit with a view to minimizing waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source. Permittee may be required to implement such programs as (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation."

44. Plainly, the first paragraph of Condition 22 is merely a simple restatement of Condition 10. The second paragraph of Condition 22 makes no substantive addition to the first paragraph. Rather, the second paragraph contains language which is explanatory of the first paragraph.

45. Congress has provided that the Solano Project be subject to California law of water rights (see paragraph 24 above). Condition 10 as amplified by Condition 22 is part and parcel of California water law. **Stated most simply, the Bureau's objection appears to be that Congress has somewhere clearly directed that the project be operated free from California's Constitutional prohibitions of waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. That very general objection has no merit. However, at such time, if ever, that the Board may hold a hearing in accordance with Condition 22, the Bureau may raise specific objections to any measures the Board may consider imposing on the Bureau.**

46. The Bureau contends that Order WR 79-14 is vague and uncertain as to the Bureau's rights to have the release schedule modified during dry years.

47. Order WR 79-14 provides that the following Condition 21 be added to the Bureau's permits:

"Should a prolonged drought create an emergency by threatening the water supply to municipalities dependent on the Solano Project, the Board may, upon petition by permittee and opportunity for hearing, modify the release schedule set forth above for the duration of such emergency."

Order WR 79-14 does not define the conditions of a prolonged drought. At any time the Bureau believes that a prolonged drought which threatens municipal supply exists, it may petition the Board. At that time the particular hydrologic conditions of that period will be evaluated.

48. The Association has expressed concern regarding Condition 21. It contends that the condition will favor Solano Project beneficiaries with water that should be received by holders of prior water rights and users of groundwater along Putah Creek.

49. The release schedule provided by Order WR 79-14 is an averaging process. This schedule may result in higher releases during drought years and lower flows in wet years than would occur from unregulated flow. An extended drought could cause an emergency water shortage in municipalities dependent on the Solano Project for a water supply. During a drought, scheduled releases would provide more streamflow for prior rights along Putah Creek than would exist under pre-project conditions. In order to avoid this result, Condition 21 allows the Bureau to petition for a temporary reduction of the release schedule. In acting on such a petition, the Board would still be required to satisfy prior rights to the extent they would have been satisfied by unregulated stream flow. An alternative would be to eliminate Condition 21 and return to the live stream criteria which, during a drought, would reduce releases to practically nothing.* None of the parties have advocated the return to the live stream requirement. Live stream releases would adversely affect both downstream and Project water users. Condition 21 does not favor irrigation interests who receive Project water. Cutbacks in irrigation deliveries would not cause term 21 to take effect. Severe irrigation cutbacks could be made before emergency level municipal cutbacks would be considered. We conclude that Condition 21 is appropriate.

50. Petitioner Kato objects to finding No. 2 of Decision 79-14 which states that "Project spills contribute much more to maintaining groundwater recharge than do controlled releases." We agree that the statement is not entirely accurate. Finding No. 2 of Order WR 79-14 should be changed to read as follows:

"The relationship between project releases and groundwater recharge is not easily quantified. Factors which influence groundwater recharge, other than project releases, include:
underflow from other groundwater areas, tributary inflow below

*The live stream criteria permitted releases to be reduced to an amount equal to the unregulated flow of the creek.

Lake Solano, rising groundwater, sewage discharges, changes in groundwater extractions, availability of vacant groundwater storage space and deep percolation of rainfall and applied irrigation water in areas other than the Putah Creek stream channel.^{6/}

However, a qualitative relationship can be shown. That is, groundwater storage declines when releases approximate either the past live stream or fixed release schedule. During those years in which large spills occur, groundwater storage increases."

51. In addition to its contentions, the Association has requested that the Bureau not be allowed to reduce releases from Solano Dam to Putah Creek when a flow of 5 cfs is at the Davis Gage unless the Bureau installs and operates a gage to measure the flow at Stevenson Bridge to assure a flow of water at that point.

52. Term 11 of Order WR 79-14 requires that a live stream or continuous thread of water must exist at all points between Solano Dam and the Davis gage whenever releases are less than the scheduled rate. Measurement of a thread of streamflow by a flow recorder would be difficult and of questionable accuracy. Also, measurement at Stevenson Bridge would not guarantee the existence of a continuous thread of water downstream. The best method for observation of the continuous thread of water would be through visual observations by landowners adjacent to Putah Creek.

53. The Association further requests that the release schedule adopted by Order WR 79-14 be amended to assure that releases occur evenly over a monthly period.

54. The Association is concerned that the Bureau may release water in a fluctuating manner. The Association fears that large releases will be averaged with smaller releases in order to meet the flow requirements specified in Term 11, WR Order 79-14. The project record of operation shows that since the 1970 amendment to D 869 the Bureau has not released water in

^{6/} Project releases include scheduled and unscheduled (spills) amounts of water passing to Putah Creek from the Solano Dam.

this manner. Release rates are specified in cubic feet per second which is an instantaneous rate to be constantly maintained. If the Board had intended to allow averaging, then monthly release requirements would have been specified in acre-feet per month.

CONCLUSION

55. After consideration of the foregoing objections and requests, it is concluded that Order WR 79-14 be amended as provided below.

ORDER

NOW, THEREFORE, IT IS ORDERED that Order 79-14 be amended as follows:

1. Finding No. 2 shall be changed to read:

"The relationship between project releases^{7/} and groundwater recharge is not easily quantified. Factors which influence groundwater recharge, other than project releases, include: underflow from other groundwater areas, tributary inflow below Lake Solano, rising groundwater, sewage discharges, changes in groundwater extractions, availability of vacant groundwater storage space and deep percolation of rainfall and applied irrigation water in areas other than the Putah Creek stream channel.

However, a qualitative relationship can be shown.

That is, groundwater storage declines when releases approximate either of the past live stream or fixed release schedules. During those years in which large spills occur, groundwater storage increases."

^{7/} Project releases include scheduled and unscheduled (spills) amounts of water passing to Putah Creek from Lake Solano.

2. Term 11. shall be changed to read as follows:

Permittee shall release water into the Putah Creek channel from Monticello Dam and past the Putah Diversion Dam in accordance with the following schedule:

| <u>Month</u> | <u>Required Release (cfs)</u> |
|--------------|-------------------------------|
| Oct. | 20 |
| Nov. | 50 |
| Dec. | 50 |
| Jan. | 35 |
| Feb. | 30 |
| Mar. | 30 |
| Apr. | 30 |
| May | 40 |
| Jun. | 40 |
| Jul. | 43 |
| Aug. | 34 |
| Sept. | 20 |

Releases in excess of amounts in the above schedule are not required. However, permittee may reduce releases whenever both of the following conditions exist: (1) there is continuous surface flow between the Putah Diversion Dam and the Davis Gage (mile 7.2) and (2) there is a flow of not less than 5 cubic feet per second (cfs) at the Davis Gage. Flows must be gaged by suitable facilities capable of measuring flows of 5 cfs.

IT IS FURTHER ORDERED that Order WR 80-14 be amended by adding the following new condition:

24. The permittee shall consult with the California Department of Fish and Game (Department) to determine if the release rates required in Condition 2 above, could be adjusted to increase substantially the fishery resource in Putah Creek below the Solano Diversion Dam. If the Department determines that a substantial increase is possible, the permittee and the Department shall submit jointly to the Board by January 1, 1982, a plan for a fishery study as required by Term 17 of Decision 869. Upon approval by the Board, the Department or the permittee shall conduct the study. If the Department conducts the study, the permittee shall reimburse the Department for the cost of the study not in excess of \$5,000. The Board retains jurisdiction over subject permits to act on the results of the study after opportunity for hearing. However, jurisdiction on this matter will be terminated without further Board action if the Department determines that enhancement is not a reasonable expectation of a fishery study.

Dated: August 20, 1981

BY L. L. Mitchell
L. L. Mitchell, Vice-Chairman

Carla M. Bard
Carla M. Bard, Chairwoman

Will B. Dunlap
Will B. Dunlap, Member

F. K. Aljibury
F. K. Aljibury, Member