EAST BAY
MUNICIPAL UTILITY DISTRICT

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January 28, 2011

Ms. Terry Macaulay
Deputy Executive Director
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, California 95814

Dear Ms. Macaulay:

EBMUD Comments on the Notice of Preparation (NOP) for the Draft Environmental Impact Report (EIR) for the Delta Plan

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the NOP. This letter supplements our letter dated January 10, 2011, that provided input and recommendations on several areas of the proposed outline for the Delta Plan. With this letter we would like to inform you of our concerns with the California Department of Fish and Game (CDFG) report, entitled "Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta."

The attached EBMUD letter, dated October 15, 2010, details our concerns about the CDFG report, including: recommended CDFG flows frequently do not even exist in the natural state of the river; biological harm that would result to aquatic species that are targeted for protection; failure to incorporate the ongoing joint efforts of CDFG, U.S. Fish and Wildlife Service (USFWS) and EBMUD (as memorialized in a settlement agreement) to implement comprehensive flow and non-flow improvement measures such as increased dry year flows, and failure to use the best available science. CDFG finalized this report in November 2010 without resolving these important concerns, perhaps due to the inflexible statutory deadline.

The NOP for the Delta Plan EIR states that the results of the CDFG flow study will be reviewed during the development of the Delta Plan (NOP, pgs. 1 and 11). Therefore, the same EBMUD concerns are applicable to that portion of the Delta Plan. The Whitepaper on Water Resources presented to the Delta Stewardship Council at its December 16, 2010 meeting also references the flow study and says it will be used to inform ongoing programs, including development of the Delta Plan (Whitepaper, pg. 2-15, Table 2-1 on pg. 2-16).

Our expectation is that we will work through our concerns collaboratively with CDFG and build on our successful partnership efforts (CDFG, USFWS, & EBMUD) on the lower

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Mokelumne River. Additional materials, including annual reports on activities and accomplishments are available upon request. Please do not hesitate to call me at (510) 287-1629 if you have any questions concerning EBMUD's comments.

Sincerely,

Richard G. Sykes
Manager of Natural Resources

Attachment

cc: Kent Smith, CDFG
Daniel Welsh, USFWS

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October 15, 2010

Department of Fish and Game
Attn: Chad Dibble – Water Branch
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

Dear Mr. Dibble:

The East Bay Municipal Utility District (District) appreciates the opportunity to comment on the California Department of Fish and Game's (DFG) draft *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta* (September 21, 2010) (Draft DFG Report) which DFG is required to develop in consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). The District has a number of serious concerns regarding the document. The District feels that the draft flow recommendations for the Mokelumne River and the Eastside streams are based on a simulated, conceptual assumption, limited science and unrealistic flow prescriptions that exceed the natural production capacity of the watershed.

The Draft DFG Report identifies several biological objectives, including:

- For Eastside streams that flow to the Delta including the Mokelumne and Consumnes River basins, provide sufficient water flow to transport salmon smolts through the Delta during the spring in order to contribute to the attainment of the salmon protection water quality objective; and
- Delta inflows should generally be provided from tributaries to the Delta watershed in proportion to their contribution to unimpaired flow unless otherwise necessary.

EBMUD generally agrees with these objectives, but does not agree that the flow criteria establishes progress in meeting these objectives.

To provide a grounded perspective on issues raised by the draft flow criteria, our comments address the following issues:

- Limitations in the Flow Prescriptions for Mokelumne River and Eastside Streams. Table 16 of the Draft DFG Report cites Fleenor et al, 2010 as the basis for the recommended flow criteria, however, the flows prescribed have some major limitations and are based on assumptions that prevent their use as recommended flow criteria.

- Draft Flow Criteria Exceed True Natural Flow (TNF). The draft flow criteria calls for quantities of water in all year types that frequently do not even exist in the natural state of the river.

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- Biologic Harm Would be Caused by the Draft Flow Criteria. The draft flow criteria would cause early outmigration of juvenile anadromous fish prior to the time they are ready to outmigrate, leading to increased predation in the central and south Delta and increased losses from Project water exports. The criteria would also cause significant fishery impacts due to warm water because of the loss of the hypolimnion (cold water) in EBMUD's Reservoirs.

- Mokelumne River Partnership Efforts not Acknowledged. Efforts by EBMUD, DFG, USFWS and NMFS span two decades of comprehensive examination of the lower Mokelumne River fishery ecosystem and working in partnership to protect and enhance that ecosystem. The Partnership was started by the Joint Settlement Agreement (JSA), signed by DFG, USFWS and EBMUD, which includes a comprehensive set of flow and non-flow measures. In approving the JSA, DFG agreed to support the flow and non-flow measures it contained. The draft flow criteria appear inconsistent with that commitment.

- Extensive Mokelumne River Monitoring Program & Science Database not Utilized. For almost 20 years, EBMUD has engaged in a comprehensive scientific monitoring program of the Mokelumne fishery ecosystem. This monitoring has been compiled in numerous studies and reports, which together form an extensive, up to date scientific database and library of the Mokelumne ecosystem. This database constitutes the best available science on the lower Mokelumne River and, as such, it must form the basis of any new flow criteria developed by DFG for the Mokelumne River.

Limitations in the Flow Prescriptions for Mokelumne River and Eastside Streams

DFG's recommended flow criteria (Table 16) includes Mokelumne River flows of 1,500 cfs during March and April in all water year types and Eastside stream minimum flows of 1,060 cfs during all months in all water year types. The document that is cited as the source for these recommended flows is a report published by Fleenor et al, 2010 that listed a number of limitations and contingencies that are not acknowledged in the DFG flow criteria Draft Report. The unimpaired flows identified in the Fleenor *et al* paper were used to represent potential water available to flow into the Delta. Fleenor *et al* 2010 states "The ability of the system to be managed for flood control and Delta water supplies has not been examined. There is currently not enough water to meet minimum flow limits past the peripheral conveyance intakes (functional flow 2d); exports would have to be suspended or reduced to increase environmental flows." In addition, Fleenor *et al* 2010 expresses a note of caution: "The estimates developed here are not the answer to this question (How much water do fish need?), but are intended to illustrate various approaches that may be explored to address this problem in the future." They later state: "The performance of native and desirable fish populations in the Delta requires much more than fresh water flows."

The Mokelumne River flows of 1,500 cfs are listed for **all** water year types in the DFG draft report, yet Fleenor *et a*l. 2010 included the flow suggestions as pulse flows based on wet hydrological conditions, *not* year in, year out as the draft DFG flow recommendations do. This is a significant error in the draft criteria's flow recommendations, first because as noted above there is no scientific basis to expand the frequency of such flows, and more importantly, as explained below, the water for such flows far exceeds true natural flow in most years and would also result in biological harm to the aquatic species that it purports to protect.

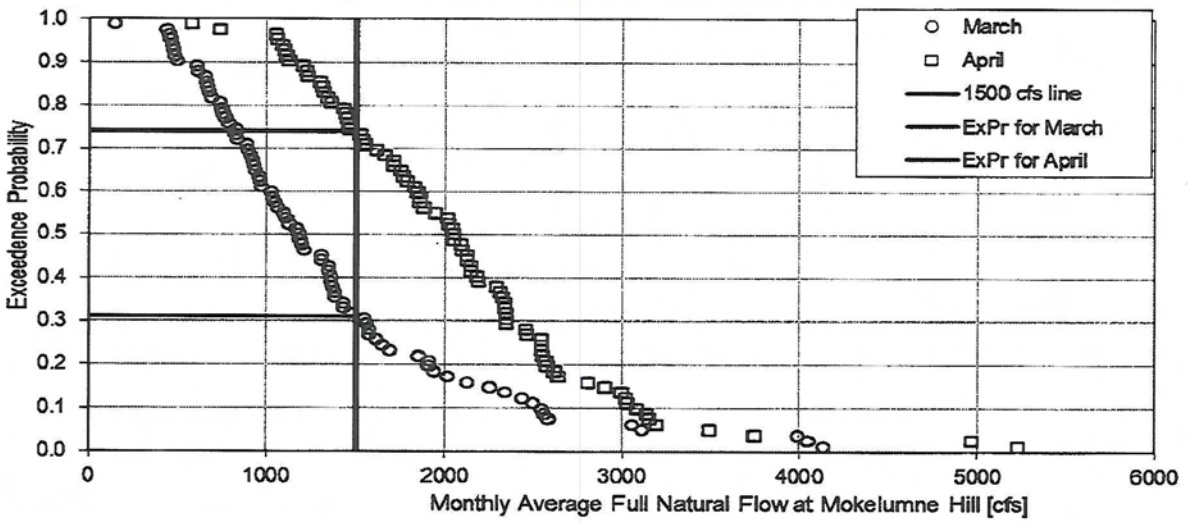
An underlying assumption of the original flow criteria (see Fleenor *et a*l. 2010) is that flows from the Eastside streams, including the Mokelumne and Cosumnes rivers, would be used to make up for Sacramento River water routed around the Delta for a peripheral conveyance. Such peripheral conveyance does not exist and even if it did, some form of through Delta conveyance would be needed to maintain water quality in the south Delta. Because of this, the District is concerned about the document's use of Fleenor *et al.* as a basis for the recommended flow criteria for Eastside streams.

DFG Draft Flow Criteria Exceeds True Natural Flow (TNF)

Based upon historical record of data, the higher pulse flow prescription for March and April would be available only 30% of the time for all water year types and exceeds the true natural flow at Mokelumne Hill in the remaining years. The draft flow criteria being proposed for every year type would also exceed the capacity of the Eastside Streams and would only be available about 41% of all the months. As related to the biological objective stated at the beginning of this letter, the Mokelumne River only contributes about 2.5 of the total unimpaired Delta inflow.

True Natural Flow estimates to Pardee Reservoir from the Mokelumne River near Mokelumne Hill (CDEC station MKM) from water year 1928 through 2008 indicate that flows equal to or greater than 1,500 cfs during March and April occur in only 30% of the water years. These data suggest that during most years, water to meet DFG's new recommended draft flow criteria (1,500 cfs in **all** water year types) to transport salmon smolts through the Delta during the spring is simply unavailable, regardless of downstream diversions. Figure 1 shows the exceedances probability for March for all years and for April for all years.

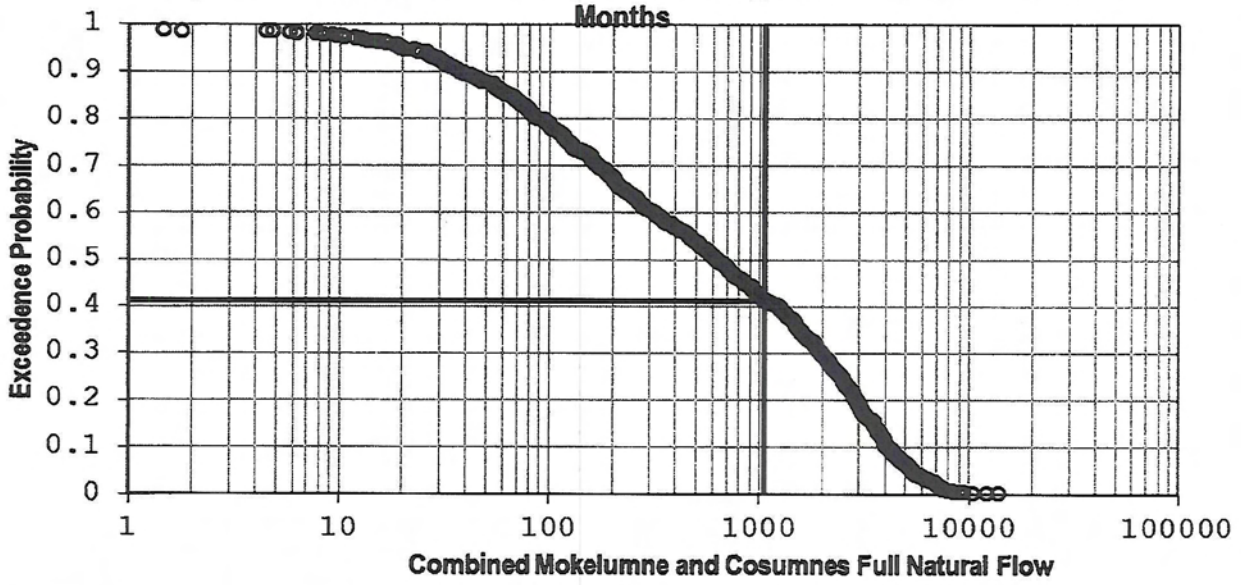
Figure 1. Exceedence Probability for 1500 cfs @ Mokelumne River in March/April



Source: CDEC Data, Mokelumne Hill (MKM) Full Natural Flow for WY 1927-2008

The water necessary to meet DFG's criterion of Eastside stream minimum flows of 1,060 cfs year-round in **all** water year types may also be unavailable during most years and months. Full Natural Flow for the Cosumnes River at Michigan Bar (CDEC station CSN) and the Mokelumne River near Mokelumne Hill (CDEC station MKM), indicates that flows equal to or greater than 1,060 cfs occur in just 41% of the months (water years 1928-2008). (See Figure 2.)

Figure 2. Exceedence Probability for 1060 cfs @ Eastside Streams for all Months



Source: CDEC Data, Mokelumne Hill (MKM) Full Natural Flow and Cosumnes River at Michigan Bar (CSN)

Based on the CDEC flow data, it appears that the DFG prescription for juvenile salmon outmigration flows in the Mokelumne River and minimum flows in the Eastside streams is in conflict with the objective of providing Delta inflows in proportion to Mokelumne River and Eastside streams contribution to unimpaired flow.

Biologic Harm Would Be Caused by the Draft DFG Flow Criteria

EBMUD has sampled juvenile Chinook salmon outmigration in the lower Mokelumne River since the early 1990s. In the lower Mokelumne River, a bimodal emigration pattern occurs with a distinct fry emigration period in January through March and a distinct smolt emigration period in May through June. Under higher flow conditions, more fry typically disperse downstream from spawning areas soon after emergence. These movements result in dispersal of fry throughout the lower reaches of the spawning streams and upper reaches of the Bay-Delta estuary, where they seek out shallow river margins, floodplains, and tidal wetlands. These fry are dependent on the Delta and estuary for the majority of their rearing before emigrating as smolts in the late spring. During dryer hydrologic conditions, more fry remain near the spawning areas, where they rear for several months before emigrating in the late spring.

Although increased flow may reduce travel time to and through the Delta (Perry 2010) and may reduce predation pressure, numerous studies using juvenile fall-run Chinook salmon that outmigrate through the Delta from March through June have suggested that survival is negatively associated with Delta water exports (Kjelson et al. 1981; Brandes and McLain 2001; Newman and Rice 2002; Newman 2003). These studies indicate that the survival of both fry and smolts is lower in the central Delta (San Joaquin River) than in the northern Delta (Sacramento River) because of increased exposure to the pumps and higher mortality rates caused by entrainment and other sources of mortality (e.g., predators). Thus, juveniles that emigrate from the Mokelumne River to the central Delta as fry during January through March may be at greater risk from Delta water exports and predation than those that emigrate as smolts in May through June. In other words, the draft flow critera calling for 1,500 cfs in the Mokelumne River in March and April would have the effect of flushing out juvenile salmonids from the Mokelumne to the Delta before they are ready. A better alternative that would benefit both fry and smolts would be to reroute the Mokelumne River more directly to the Sacramento River via Lost, Snodgrass and Meadows sloughs as identified in Russ Brown's Delta Corridors Proposal. This alternative would shorten the migration route, provide tidal floodplain rearing habitat for fry, increase production and life history diversity of Mokelumne River salmonids and would significantly contribute towards the State Board's salmon protection water quality objective.[1]

In addition, the draft DFG flow criteria would completely undermine the cold water management efforts set forth in EBMUD's permits and license. Section F.5 of the JSA requires EBMUD to use its best efforts to maintain the cold water stratification in its Mokelumne reservoirs (Pardee and Camanche) with a minimum of 28,000 acre feet of hypolimnetic volume in Camanche Reservoir through October whenever Pardee

Reservoir volume exceeds 100,000 acre feet. This cold water is then released by EBMUD to the lower Mokelumne River during the fall anadromous fishery spawning season to protect and benefit that fishery. However, if too much water is released from the reservoirs prior to October, as would be the case under the draft flow criteria, the cold water hypolimnion can be lost, meaning that the water released to the river during the spawning season is too warm, thereby adversely impacting the fishery. Since the JSA was approved in 1998, EBMUD, working with DFG, has successfully used its best efforts to maintain the hypolimnion, thereby benefitting the fishery. However, the large magnitude of the draft flow criteria, which as noted above exceed the TNF much of the time, would deplete the reservoirs earlier in the year, increasing the likelihood that the cold water hypolimnion will be lost and thereby harming the anadromous fishery. This dynamic agreed to in the JSA – of careful reservoir management to preserve the hypolimnion when possible – must be preserved. The existing JSA temperature management provision and EBMUD's operational practices to preserve cold water were developed from years of studying actual river and reservoir temperatures on the Mokelumne. It is unreasonable and inconsistent with the approved JSA to recommend an unfounded gross flow requirement that fails to recognize this ongoing management.

Mokelumne River Partnership Efforts and Experience are not Consistent with the Draft Flow Criteria

Beginning in the early 1990's, EBMUD, DFG, and USFWS engaged in a multi-year, comprehensive examination of the Mokelumne River fishery ecosystem. These efforts included extensive monitoring of fishery populations and exploration of potential flow and habitat measures to benefit Mokelumne River fisheries. The culmination of these combined efforts was the 1998 Joint Settlement Agreement between EBMUD, DFG and USFWS, which set forth a comprehensive package of flow and non-flow measures on the Mokelumne River. DFG agreed that these measures would protect and enhance the anadromous fishery resources of the lower Mokelumne River. Some of these species are the same aquatic species that are the subject of DFG's draft flow criteria document.

Since the execution of the JSA, DFG and EBMUD, along with USFWS and NMFS, have engaged in years of working in partnership on the Mokelumne River to review and approve habitat enhancement projects. The Lower Mokelumne River Partnership has reviewed and approved numerous projects targeted at improving habitat along the lower Mokelumne River. Projects approved for funding include modeling and design work for spawning gravel enhancement which has allowed for the placement to date of 40,000yd^3 of gravel within the project area; construction of two side channels to increase rearing habitat within the upper reach of the river; removal of a dam on Murphy Creek to allow for steelhead passage; and many other projects to improve the habitat within the (Lower Mokelumne River) LMR watershed.

Outside of the partnership, EBMUD has worked on numerous projects to identify and address issues related to the LMR. As an example, the District has worked with Mokelumne River Fish Hatchery managers to identify critical practices in operations

within the facility to improve survival of outgoing salmon. Specific items include funding the constant fractional marking program, predator removal below WID, funding the construction of a net-pen to imprint and acclimate salmon smolts, purchase of a UV filtration system, and many other improvements. The District has also furthered the telemetry research which began with California Urban Water Agency (CUWA) funds, continued with partnership money and has established a long-term commitment to identifying key migration routes and potential impediments as they relate to LMR salmonids.

Partnership efforts also include close coordination on an adaptive management process to review and modify flows to benefit the fishery. An example of such coordinated efforts was the 2009 adaptive management flow change under which JSA flows were shifted from the spring to the fall to provide attraction flows to returning Mokelumne River anadromous fish.

In addition, just two years ago in 2008, the Partnership engaged in a 10-year overall review of the JSA. The document signed by EBMUD, DFG, and USFWS summarized the findings of the Partnership Steering Committee with respect to the progress and accomplishments resulting from the first ten years of the JSA and recommended strategies and measures for continued implementation, including continued implementation of the flow requirements specified in the JSA.

In summary, for over a decade EBMUD has worked in partnership with DFG and USFWS on implementing non-flow habitat projects on the Mokelumne and adaptively modifying the JSA flows where appropriate to effectuate biological benefits. As noted below, this has resulted in an extensive scientific database on the Mokelumne fishery that EBMUD is seeking to ensure is recognized in programs and planning efforts including the NOAA Fisheries Central Valley Recovery Plan. The draft flow criteria are not consistent with the Partnership and the updated scientific data that has been developed. EBMUD therefore urges DFG to instead consider this updated scientific data and management actions by the Partnership and revise the draft flow criteria accordingly.

Extensive Mokelumne River Monitoring Program & Science Database are not Recognized in the DFG Draft Report

For almost 20 years, EBMUD has engaged in a comprehensive scientific monitoring program of the Mokelumne fishery ecosystem. This program includes actual video monitoring of returning adult salmonids; in-river redd surveys; juvenile outmigration monitoring; fish community surveys; spawning habitat assessments; benthic macroinvertebrate assessments; telemetry studies; and many other short-term studies related to fisheries resources within the Mokelumne. Once such core scientific research is conducted, EBMUD then prepares reports and studies summarizing results and findings. As a result, EBMUD has developed an extensive database and library on the Mokelumne fishery. The library is current and will continue to grow as more information is collected and analyzed, and additional reports are completed. Note that these studies

on the Mokelumne fishery and ecosystem are not theoretical documents on potential actions and outcomes, but are based on actual field observation of the fishery at issue here: the Mokelumne River fishery ecosystem. From 1998 – 2008, at least 12 peer reviewed articles were published on issues related to the Lower Mokelumne River, including a number authored by EBMUD staff biologists. For over a decade, EBMUD has sponsored a bi-annual conference on issues specific to the Mokelumne River. Through its commitment to science-based monitoring and management, EBMUD contributes extensively to the data available to resource managers in the Central Valley. Since 1995, well over 50 monitoring reports have been published by EBMUD and distributed to Mokelumne River Technical Advisory Committee members. The following is a link to recent monitoring reports:

http://www.ebmud.com/our-water/water-supply/long-term-planning/state-water-resources-control-board-delta-flow-criteria-pr

This scientific database is the best available science and constitutes the "current understanding of the needs of individual species" on the Mokelumne River that should form the basis of any DFG flow criteria. DFG must rely on this existing, focused database and library to support any draft flow criteria for the Mokelumne River and Delta.

In summary, the District believes that instead of relying on the Fleener *et al.* 2010 flow prescriptions, DFG should base its flow criteria recommendations on the extensive studies and data that EBMUD has compiled in partnership with DFG and USFWS and NMFS over the past 20 years. This database and library is based on actual field observations in and on the lower Mokelumne River and includes a broad range of species. As such, that data represents the best available science on the Mokelumne River and it, not a single university study, must form the basis of any new flow criteria.

EBMUD looks forward to further discussing the efforts on the Mokelumne and the implications for DFG's flow criteria. The District has been operating on the Mokelumne River in partnership with DFG and USFWS under the terms of the JSA that the three parties agreed to and signed in 1998. Our hope is that any final flow criteria for the Mokelumne River fully reflect the Partnership efforts and scientific database while remaining consistent with the terms of the JSA. In closing, we want to stress that EBMUD has a long and successful history of working in partnership with DFG on management of the Mokelumne River and is committed to continuing that relationship in the future. If you have any questions regarding these comments, please contact EBMUD's Manager of Fisheries and Wildlife, Mr. Joe Miyamoto at (510) 287-2021 or miyamoto@ebmud.com.

Sincerely,

Alexander R. Coate
Director of Water and Natural Resources Department

cc: Kent Smith, DFG
Joseph R. Johnson, DFG
Richard G. Sykes, EBMUD
Joseph Miyamoto, EBMUD

1. Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Water Board Resolution No. 2006-0098. Table 3. Page 14.

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