

Helix Water District

October 18, 2006



Ms. Song Her  
Clerk of the Board  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814

Subject: Comment Letter – Revisions to the Federal Clean Water Act Section 303(d)  
List of Water Quality Limited Segments in California

Dear Ms. Her:

In January, Sweetwater Authority sent the attached letter to the State Water Resources Control Board regarding comments on the Draft 2006 Section 303(d) List. The purpose of this letter was to express the concerns of reservoir operators and providers of imported water, including Sweetwater Authority and the City of San Diego Water Department, about proposed listings which these entities feel are unreasonable, unrealistic, and unnecessary. The reasons for this view are well described in the attached letter.

Similarly, in January, the City of San Diego sent the attached letter to the State Water Resources Control Board regarding the Draft 2006 Section 303(d) List. In this letter the City of San Diego Water Department stated its concerns about the proposed listing of its nine drinking source water reservoirs, including an extensive technical discussion of the inappropriateness of most of these proposed listings.

The reservoirs of the Sweetwater Authority and the City of San Diego Water Department proposed for Section 303(d) listing are in Attachment 3.

In recent conversations with State Board staff, we have learned that development of the 303(d) list has continued; and that our issues cannot be addressed in the current process because we have identified "standards issues" - that is to say, issues with regional water quality standards - and these standards are established in the regional basin plans. If these

Ms. Song Her

State Water Resources Control Board

Re: Comment Letter – Revisions to the Federal Clean Water Act Section 303(d) List of  
Water Quality Limited Segments in California

October 18, 2006

Page 2

standards are incorrect or impractical, they may only be addressed by amending the basin plan. We believe that affected water agencies would participate in, and support, remedial amendments of the San Diego Basin Plan, but we remain gravely concerned that once drinking water reservoirs and the proposed constituents are placed on the 303(d) list, a laborious and expensive process will follow in a vain attempt to address “pollutants” that:

- Are not the result of discharges;
- Are naturally occurring constituents in our watersheds; or;
- Are the result of natural processes, such as the seasonal stratification of our reservoirs, and;
- In the case of total dissolved solids (TDS), chloride, sulfate, and other salts, result from the importation of water from the Colorado River or the Bay-Delta through the San Diego County Water Authority and the Metropolitan Water District of Southern California.

We would once again stress that drinking water reservoirs are extensively managed, special-purpose water bodies that store local and imported water prior to treatment and distribution. Water quality treatment practices effectively treat or remove regulated constituents from drinking water in accordance with state and federal laws, prior to distribution to ratepayers. These water bodies are also man-made impoundments and are very different in their character than the natural waterways, rivers, lakes, and coastal waters which are the appropriate focus of protection under the Clean Water Act.

We are in the hopes that the State Board will act to remove our reservoirs from the proposed 303(d) list. We suggest that as part of the upcoming triennial review of the San Diego Basin Plan the water agencies can work with the Regional Board to amend the Basin Plan with realistic water quality standards for drinking water reservoirs. Once this is done, if future cycles of the 303(d) listing process show genuine water quality impairments at the reservoirs these may lead to appropriate listings.

Ms. Song Her  
State Water Resources Control Board  
Re: Comment Letter – Revisions to the Federal Clean Water Act Section 303(d) List of  
Water Quality Limited Segments in California  
October 18, 2006  
Page 3

We look forward to a collaborative resolution of this issue. Please be in touch if you have questions or comments about this request, or if you need additional information.

Sincerely,

SWEETWATER AUTHORITY



Dennis Bostad  
General Manager

CITY OF SAN DIEGO  
WATER DEPARTMENT



Jim Barrett  
Director

HELIX WATER DISTRICT



Mark Weston  
General Manager

cc: Art Coe, San Diego Regional Water Quality Control Board  
Craig J. Wilson, State Water Resources Control Board  
Jeff Pasek, City of San Diego Water Department  
Maureen A. Stapleton, San Diego County Water Authority  
Debra C. Man, Metropolitan Water District of Southern California  
Mark Umphres, Helix Water District  
Dave Bolland, ACWA  
Michael Bardin, Santa Fe Irrigation District  
Rick Alexander, Sweetwater Authority

- Attachments:
1. Comment letter from Sweetwater Authority to Ms. Selica Potter dated 1/30/06
  2. Comment letter from City of San Diego to Ms. Selica Potter dated 1/31/06
  3. List of San Diego Water Department and Sweetwater Authority Drinking Source Water Reservoirs Proposed for Listing as Impaired under CWA Section 303(d)



## SWEETWATER AUTHORITY

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January 30, 2006

Ms. Selica Potter  
 Acting Clerk of the Board  
 State Water Resources Control Board  
 Executive Office  
 1001 I Street, 24<sup>th</sup> Floor  
 Sacramento, CA 95814  
 Email: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

DENNIS A. BOSTAD  
 GENERAL MANAGER  
 MARK N. ROGERS  
 OPERATIONS MANAGER

**Subject: Comments on Draft 2006 303(d) list**

Dear Ms. Potter

Sweetwater Authority and its Governing Board appreciate your extension of the comment period on the proposed 2006 303(d) list, and this opportunity to further consider and provide input to the process.

### General Comments

Sweetwater Authority is a public retail water agency in San Diego County. We own and operate two major drinking water reservoirs serving approximately 185,000 customers: Sweetwater Reservoir with a capacity of 28,800 acre-feet, and Loveland Reservoir with a capacity of 26,000 acre-feet. The two-reservoir system enables significant capture and use of "local water." In some wet periods, this has been a year's supply or more. Consequently, we are focused through a multi-part strategy on preserving water quality in the Sweetwater River watershed, and the protection of the ability to use this resource sustainably. Sweetwater Authority welcomes and encourages the support of the State and Regional Boards in helping achieve this goal.

Both reservoirs are proposed for listing for multiple constituents: dissolved oxygen and total dissolved solids (TDS) for Sweetwater, and manganese, aluminum, and dissolved oxygen for Loveland. We do not believe the listings would benefit regional water quality for the following reasons:

- Drinking water reservoirs are extensively managed special-purpose water bodies that store local and imported water prior to treatment and distribution. Water quality treatment practices effectively treat or remove regulated constituents from drinking water in accordance with state and federal laws prior to distribution to ratepayers.

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Ms. Selica Potter, State Water Resources Control Board  
January 30, 2006  
Subject: Comments on Draft 2006 303(d) list  
Page 2

- There is no viable solution for the removal of natural occurring elements prior to the water treatment process:
  - Aluminum and manganese are naturally occurring elements in the Loveland watershed, and not man-made; therefore, no party or use may be identified and held responsible to reduce loading to the reservoir.
  - Low levels of dissolved oxygen occur due to seasonal stratification in lakes and is another natural occurrence.
- Imported water causes increased TDS levels that cannot be controlled by Sweetwater Authority or other watershed stakeholders.
  - Water imported to the San Diego region by the San Diego County Water Authority from the Metropolitan Water District of Southern California typically exceeds the Region 9 Basin Plan objectives for TDS; consequently, no imported water impoundment could comply.
  - Additionally, Sweetwater Authority has proactively constructed an Urban Runoff Diversion System (URDS) around Sweetwater Reservoir to capture and treat urban runoff from the surrounding urbanized watershed. This \$15 million dollar facility has reduced TDS and other contaminants in Sweetwater Reservoir. The expense is ultimately borne by watershed residents and service area customers. Any additional expense of a 303(d) listing to these residents-taxpayers is neither warranted nor cost effective.

### **Requested State Board Action**

Revise The State Board's "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" to acknowledge that waters designated "MUN" (or potentially for other beneficial uses) that are subject to natural impacts from their watersheds, unavoidable natural processes like seasonal stratification, and/or from storage of imported water, shall not be listed as impaired when a scientific weight-of-evidence approach indicates that the exceedance of Basin Plan standards is not caused by discharges in the watershed. This approach should be used to reevaluate the proposed 2006 listings before they are adopted.

### **Additional Considerations**

Importantly, we are not requesting that our drinking water reservoirs be exempted from 303(d) listing because the State Water Resources Control Board and the Region 9 Water Quality Control Board are important allies in protecting the Sweetwater River watershed

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Ms. Selica Potter, State Water Resources Control Board  
January 30, 2006  
Subject: Comments on Draft 2006 303(d) list  
Page 3

and its valuable water resources. If in the future discharges in the watershed cause these to be jeopardized, we will rely on this partnership to address these problems. Fundamentally, the goal of the Clean Water Act is to protect water bodies from degradation caused by the discharge of pollutants. It is not protective of water quality, however, to list a drinking water reservoir as impaired when the exceedance is not the result of discharge.

We appreciate the State Board's continuing support of Sweetwater Authority's ongoing efforts to manage and protect our water supply. However, we do not believe that the inclusion of Loveland and Sweetwater Reservoirs on the 2006-303(d) list will benefit the region's water resources.

We look forward to a collaborative resolution of this issue. Please be in touch with me, or Rick Alexander (619-409-6830) if you have questions or comments about this request, or if you need additional information.

Sincerely,



Dennis Bostad  
General Manager

cc: Craig J. Wilson, State Water Resources Control Board  
John Robertus, San Diego Regional Water Quality Control Board  
Charles Yackly, City of San Diego – Water Department  
Mark Stone, City of San Diego – Water Department  
Jeff Pasek, City of San Diego – Water Department  
Maureen A. Stapleton, San Diego County Water Authority  
Debra C. Man, Metropolitan Water District of Southern California  
Mark Weston, Helix Water District  
Mark Umphres, Helix Water District  
Dave Bolland, ACWA  
Michael Bardin, Santa Fe Irrigation District  
Rick Alexander, Sweetwater Authority



ATTACHMENT 2

THE CITY OF SAN DIEGO

January 31, 2006

Email: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

Ms. Selica Potter  
Acting Clerk to the Board  
State Water Resources Control Board  
Executive Office  
1001 I Street, 24<sup>th</sup> Floor  
Sacramento, CA 95814

Ms Potter:

**SUBJECT:** Comments Regarding the Revision to Federal Clean Water Act Section 303(d) List of Water Quality Limited Segments for California

The City of San Diego appreciates your extension of the comment period for the Revision to Federal Clean Water Act Section 303(d) List of Water Quality Limited Segments for California. The Metropolitan Wastewater Department / Storm Water Pollution Prevention Division and the Water Department have reviewed the proposed 303(d) list and offer the following comments and recommendations.

**Comments and Recommendations by the Storm Water Pollution Prevention Division**

The Storm Water Division would like to take this time to thank the State Board for the Water Quality Control Policy for Developing California's Clean Water Act (CWA) Section 303(d) List. We believe that a policy that is consistently applied across the state will help improve water quality. We recommend that all impaired waterbody segment listings be for particular pollutants and not for conditions. We would like to provide comments regarding a few issues to your attention.

**REGION 9 - LISTING PROPOSALS**

**Los Penasquitos Creek: Phosphate and Total Dissolved Solids**

These two proposed listings are based upon 2 and 4 samples. These listings do not meet the minimum sample size (5) for conventional pollutants as outlined in State Board Policy,



**Storm Water Pollution Prevention Program**

1970 B Street, MS 27A • San Diego, CA 92102  
Hotline (619) 235-1000 Fax (619) 525-8641

*Table 3.2: Minimum Number of Measured Exceedances Needed to Place a Water Segment on the Section 303(D) List for Conventional or Other Pollutants.*

San Diego Bay: America's Cup Harbor, Harbor Island East and West, and Marriott Marina

- Recommend that the State Board identify either total or dissolved copper as the pollutant.

REGION 9 - DELISTING PROPOSALS

The City of San Diego supports most of the beach delisting recommendations; however, PB Point is the northern portion of the Tourmaline Surf Park in the Scripps HA, does not meet the criteria for delisting and should not be delisted. Currently, the City of San Diego is conducting a special study, where future management actions can be determined to address bacteria impairments. This study is scheduled to be completed in 2006.

REGION 9 - REQUESTED AREA CHANGES

Chollas Creek: extend area 0.5 miles up the south fork

San Diego River: extend area an additional six miles upstream

We understand that the requested area changes are based upon re-evaluation of existing data. The rationale for the change was not included for review. We would appreciate the opportunity to review this rationale.

It is our understanding that the "Tributary Rule" applies to all upstream tributaries of any 303(d) impaired waterbody segment. If this application of the rule is correct, then how would an upstream expansion of a segment affect the practices of a discharger such as the City of San Diego?

Mission Bay Shoreline

Please provide an explanation of the requested change. The City of San Diego also requests time to review said evidence and be able to provide comments to the State Board regarding this issue.

REGION 9 - 303(D) TMDL SCHEDULE

The City of San Diego recommends updating the project completion dates. Currently there are four TMDLs within our boundaries that have 2005 deadlines identified and they are not completed at this time.

CEQA

Lastly, will the State Board be preparing a CEQA document for public review and comment regarding this proposed 303(d) listing? The City of San Diego requests time to review and comment on the CEQA analysis for this process.

Page 3 of 10  
Ms. Selica Potter  
January 31, 2006

If you have any questions regarding the Storm Water Division's comments or recommendations, please contact Ruth Kolb, Storm Water Specialist, at 619.525.8636 or at [rkolb@sandiego.org](mailto:rkolb@sandiego.org).

### **Comments and Recommendations by the San Diego Water Department**

The San Diego Water Department [SDWD] has reviewed the Revisions to Clean Water Act Section 303(d) List of Water Quality Impaired Segments for California and has the following comments and recommendations.

In this section we are commenting only on the proposed listing of the San Diego Water Department's source water reservoirs. Specifically, our review and comments are limited to the proposed listings of these water bodies: Barrett, El Capitan, Hodges, Miramar, Morena, Murray, Otay, San Vicente, and Sutherland Reservoirs

#### **Background**

The SDWD supplies treated drinking water to 1.3 million people in the City of San Diego and neighboring communities. The SDWD operates nine drinking source water reservoirs in San Diego County. These reservoirs impound local runoff from 926 square miles of watershed lands in San Diego County. They also store water imported into the region. The reservoirs are critical components of the regional water supply system.

The SDWD is concerned about the discharge of pollutants from upstream areas that might degrade water quality in its reservoirs. Clearly, the SDWD, the State Water Resources Control Board, and the San Diego Regional Water Quality Control Board are allies in protecting drinking source waters. We see the Clean Water Act Section 303(d) process as an important tool for protecting drinking water sources. Nonetheless, we believe many of the currently proposed listings of the SDWD reservoirs do not help to protect water quality and do not sustain any beneficial use - and therefore should not be adopted.

It is important to note that for each of the above water bodies all of the monitoring data that led to the existing or proposed listings were collected by the SDWD and supplied to the San Diego Regional Water Quality Control Board. Because we collected the samples, performed the field and laboratory analyses, assessed the results, and maintain the data archive, we are very familiar with these data.

#### **General Comments**

The SDWD has five general comments on the existing and proposed 303(d) list for reservoirs and their tributary streams.

1] The proposed listings of the reservoirs are based on only a small portion of the available data. The SDWD has been extensively monitoring its reservoirs for sixteen years. This has resulted in tens of thousands of data points, all of which are available to the State Board and the Regional Board. Only a fraction of these data were considered by State

Page 4 of 10  
Ms. Selica Potter  
January 31, 2006

Board staff - had the full set of data been used there would probably be different outcomes. The SDWD has identified cases where a reservoir has been proposed for listing based on a limited data set, but where consideration of all available data leads to the conclusion that the water body-pollutant combination should not be listed. Examples are detailed in comments #7 and #8, below.

We urge the State Board to consider all available data prior to deciding on the proposed revisions of the 303(d) list.

2] The SDWD believes that listing reservoirs which store imported water as not meeting the water quality standards for Total Dissolved Solids [TDS] and for individual salt constituents does not help to protect water quality and does not sustain any beneficial use. We recommend against listing any reservoir that stores imported water for TDS or individual salt constituents. Details on this matter are in comment #6, below.

3] Many of the proposed listings of the SDWD's reservoirs are for water quality constituents where the exceedances are the result of naturally occurring sources or are the result of a natural process within the reservoir. In these cases the exceedances are not the result of a discharge of a pollutant. The scientific weight-of-evidence approach shows that these exceedances are due to natural causes and, therefore, these water body-pollutant combinations should be dropped from the proposed list. Examples are the proposed listing of reservoirs for color, pH, manganese, and iron, which are detailed in comments #7, #9, and #10, below.

4] To further address our concerns in comments #2 and #3, the SDWD recommends that the State Board's "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" be revised to acknowledge that reservoirs with the beneficial use designation "MUN" (or potentially for other beneficial uses) that store imported water, or are affected by natural processes in their watersheds or in the reservoirs, should not be listed as impaired when a scientific weight-of-evidence approach indicates that the exceedance of Basin Plan standards is not caused by discharges in the watershed. Further, we recommend that this approach should be used to reevaluate the proposed 2006 listings before they are adopted.

5] Even though most of the suggested "impairments" of the reservoirs in no way effect the suitability of the reservoirs as sources of drinking water, the SDWD is concerned that these listings of the drinking water sources might alarm the public. It is our understanding that the inclusion of a SDWD reservoir on the 303(d) list does not impose any sort of statutory limitation on the use of the reservoir as a source of supply to our system, and we are confident that suggested "impairments" pose no health risk or operational constraint for these drinking water sources. We recommend that the State Board and San Diego Regional Board explicitly state this in all documents relating to the 303(d) list.

Specific comments

The SDWD has the following specific comments on the proposed 303(d) list for reservoirs and tributary streams.

6] Listing reservoirs which store imported water as not meeting the water quality standard for Total Dissolved Solids [TDS] and for individual salt constituents does not help to protect water quality and does not sustain any beneficial use.

Water imported into the San Diego region by the Metropolitan Water District of Southern California and the San Diego County Water Authority has TDS close to or greater than the water quality objective set in the Water Quality Control Plan for the San Diego Basin (9) (San Diego Basin Plan). Imported water generally has TDS of about 500 mg/l. Evaporative concentration slightly increases the TDS of stored water. As a result, any reservoir that stores imported water will have TDS of 500 mg/l or greater. The Basin Plan's water quality objective for TDS for the SDWD's reservoirs is 300 mg/l [El Capitan and San Vicente Reservoirs] or 500 mg/l [Miramar and Murray Reservoirs]. Thus, it is essentially impossible for these reservoirs to meet the water quality objective for TDS. The exceedances of TDS at the reservoirs are not the result of the discharge of a pollutant to the reservoirs; rather, the TDS concentrations are an inherent quality of the imported water stored in the reservoirs.

Similar to TDS, the SDWD believes that listing reservoirs for the major salt constituents, specifically chloride and sulfate, does not help to protect of water quality or sustain beneficial uses. Imported water usually carries these salts in concentrations that are greater than the Basin Plan's water quality objectives.

We believe this matter needs to be addressed and remedied in the next Triennial Review of the San Diego Basin Plan; i.e., the Basin Plan should be changed such that it recognizes the inherent characteristics of imported water and sets appropriate water quality standards for reservoirs that store imported water. In the meantime, we recommend that no SDWD reservoirs be listed for TDS, chloride, or sulfate. Specifically, we recommend that the following water body – pollutant combinations be dropped from the proposed 303(d) list:

- El Capitan Lake [Reservoir] - Total Dissolved Solids [Staff Report, Volume 1, p. 28 and Fact Sheets, Region 9, p.60]
- Miramar Reservoir - Sulfates [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.124]
- Miramar Reservoir - Total Dissolved Solids [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.126]
- Murray Reservoir - Total Dissolved Solids [Staff Report, Volume 1, p. 229 and Fact Sheets, Region 9, p.134]
- San Vicente Reservoir - Chloride [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.232]
- San Vicente Reservoir - Sulfates [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.241]

- San Vicente Reservoir - Total Dissolved Solids [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.243]

7] The listing of SDWD reservoirs for the pollutant "color" is not protective of any beneficial use of the reservoirs. The San Diego Basin Plan establishes a numerical water quality objective for color for inland surface waters at 20 color units. It is our understanding that this numerical objective for color was derived from state and federal drinking water standards. In this context, color is an optical property of water affecting the aesthetic palatability of treated drinking water, and has meaning only when treated drinking water is dispensed into a container and viewed by a person. In the reservoirs, the numerical measurement of color at the low levels set by the San Diego Basin Plan has no significance as an indicator of water quality - color is not toxic to aquatic organisms; color is not harmful to recreational users; color does not affect the aesthetic quality of raw water in a reservoir.

None of the other basin plans in California establish a numerical standard for color. Rather, each of the other basin plans has a only narrative objective for color, for example "Waste discharges shall not result in coloration of the receiving waters which causes a nuisance or adversely affects beneficial uses" [Water Quality Control Plan, Santa Ana River Basin (8), p. 4-3].

In short, the numerical objective for color in the San Diego Basin Plan, and the proposed listing of reservoirs for color, does nothing to sustain beneficial uses or protect water quality.

The SDWD believes that the numerical standard for color in the San Diego Basin Plan should be eliminated or modified. This should be addressed and remedied in the next Triennial Review of the San Diego Basin Plan. In the meantime, we recommend that no SDWD reservoirs be listed for color. Specifically, we recommend that the following water body - pollutant combinations be dropped from the proposed 303(d) list:

- Barrett Lake [Reservoir] - color [Staff Report, Volume 1, p. 27 and Fact Sheets, Region 9, p.14]
- El Capitan Lake [Reservoir] - color [Staff Report, Volume 1, p.28 and Fact Sheets, Region 9, p.52 ]
- Morena Reservoir - color [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.128]
- Otay Reservoir, Lower - color Staff Report, Volume 1, p.29 and [Fact Sheets, Region 9, p.163]
- San Vicente Reservoir - color [Staff Report, Volume 1, p.30 and Fact Sheets, Region 9, p.234]

8] El Capitan Reservoir is proposed for listing for Antimony and Beryllium [Staff Report, Volume 1, p. 28 and Fact Sheets, Region 9, p. 48 and p. 50, respectively]. We recommend that these two proposed listings be dropped because of errors in assessing the data and

Page 7 of 10  
Ms. Selica Potter  
January 31, 2006

because assessment of all of the available data clearly shows that these constituents do not rise to the level needed to list.

The SD Basin Plan water quality objective [WQO] for Antimony in the El Capitan HA is 0.006 mg/l [SD Basin Plan, Table 3-4, p. 3-9]. The Fact Sheets states that two of ten samples collected between 1996 and 2000 exceeded the WQO. The SDWD's data archive does not support this assessment. In the SDWD's data archives, of 87 samples from El Capitan Reservoir, collected from April 12, 1995 to November 9, 2005, only one exceeded the WQO of 0.006 mg/l. From Table 3.1 of the Listing Policy, for a sample size of 87, the minimum number of exceedances needed to place the water segment – pollutant combination on the 303(d) list is eight. Thus, the water segment – pollutant combination should not be listed.

The SD Basin Plan water quality objective [WQO] for Beryllium in the El Capitan HA is 0.004 mg/l [SD Basin Plan, Table 3-4, p. 3-9]. The Fact Sheets states that two of two samples collected between 1999 and 2000 exceeded the WQO. The SDWD's data archive does not support this assessment. In the SDWD's data archives, of 84 samples from El Capitan Reservoir, collected from April 12, 1995 to November 9, 2005, one exceeded the WQO of 0.004 mg/l. From Table 3.1 of the Listing Policy, for a sample size of 84, the minimum number of exceedances needed to place the water segment – pollutant combination on the 303(d) list is eight. Thus, the water segment – pollutant combination should not be listed.

With regard to the proposed listing of El Capitan Reservoir for Antimony and Beryllium, it is important to note that in more than 80 samples analyzed for each pollutant only one sample measured greater than the WQO, and for both pollutants the exceedance was from the same sample, collected on September 8, 1999. For both exceedances, the measured value was more than one hundred times greater than the next highest measured value in the entire data set. This is an extraordinarily unlikely coincidence, and argues that these results are not representative of the water in El Capitan Reservoir. The high measured values are almost certainly the results of either a) a contaminated sample container, or b) a sample of reservoir water that, by chance, contained suspended mineral particles rich in Antimony and Beryllium; i.e., a non-representative sample.

A report of the SDWD's entire data set for Antimony and Beryllium at El Capitan Reservoir from 1995 to 2005 is in Attachment A.

9] The proposed listing of SDWD reservoirs for the pollutant "pH (high)" is not appropriate because elevated pH results from natural processes in the reservoirs and is not the result of the discharge of a pollutant. Additionally, the proposed listing of the reservoirs for pH (high) is based on only a small portion of the available data. Consideration of the full data sets would likely lead to conclusions not to list.

In the SDWD's reservoirs [and other reservoirs in southern California] pH in surface waters is directly influenced by photosynthesis in the reservoir. Photosynthetic activity of

naturally occurring planktonic algae consumes dissolved carbon dioxide from the water; the depletion of dissolved carbon dioxide shifts the carbonate – bicarbonate equilibrium, which drives pH towards higher values. Because photosynthesis requires abundant sunlight, this process is limited to the well-lit surface waters, and elevated pH values are found only in surface waters. Furthermore, the phenomenon has both a seasonal and a diurnal component. Elevated pH occurs in late-spring through early-fall because there is sufficient sunlight to drive photosynthesis during these seasons. Because photosynthesis requires light it is limited to daylight hours, and at night photosynthesis ceases and respiration dominates; this results in a shift of pH toward lower values. The SDWD's monitoring of its reservoirs is done in the daytime - as a result, our data set captures the elevated pH values but misses the lowered pH values.

The important point of the above discussion is that the elevated pH values we've measured in the reservoirs results from a natural process [photosynthesis] – it is not the result of the discharge of any pollutant.

In assessing pH at the reservoirs the State Board staff only used data from samples collected at the surface of the reservoirs. As described above, measurements of pH at the surface are commonly not representative of pH through the entire depth of a reservoir. The SDWD measures pH in profile at its reservoirs, collecting data at one meter intervals through the water column. These profiles have been done weekly since 1989. This yields a huge data set for measured pH at each reservoir. Our preliminary review shows that, when all data are considered, the number of pH values exceeding the water quality objective does not rise to the level needed to list. We request additional time to complete the assessment of our data sets and forward that assessment to the State Board.

For these reasons, the SDWD recommends that the proposed listing of reservoirs for pH (high) be dropped. Specifically, we recommend that the following water body – pollutant combinations be dropped from the proposed 303(d) list:

- Barrett Lake [Reservoir] - pH (high) [Staff Report, Volume 1, p. 27 and Fact Sheets, Region 9, p.18]
- El Captian Lake [Reservoir] - pH (high) [Staff Report, Volume 1, p. 28 and Fact Sheets, Region 9, p.62]
- Hodges, Lake [Reservoir] - pH (high) ) [Staff Report, Volume 1, p. 28 and Fact Sheets, Region 9, p.101]
- Morena Reservoir - pH (high) [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.132]
- Murray Reservoir - pH (high) ) [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.140]
- Otay Reservoir, Lower - pH (high) [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.171]
- San Vicente Reservoir - pH (high) [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.243]
-

- Sutherland Reservoir - pH (high) [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.260]

10] The proposed listing of SDWD reservoirs for manganese and iron is not appropriate because the elevated levels of iron and manganese result from natural processes occurring within the reservoir, and are not the result of the discharge of a pollutant.

Like other reservoirs in southern California, the SDWD reservoirs have an annual cycle of temperature and density stratification. Beginning in spring, the annual cycle is this:

- surface water, warmed by sunlight energy, becomes less dense and "floats" atop the deep water;
- a distinct thermocline develops separating the surface water from the deep water;
- the surface water is well mixed by wind energy and, from contact with the atmosphere, remains well aerated;
- the deep water is isolated from the atmosphere and becomes "stagnant;"
- these conditions persist through summer and fall;
- by mid-winter the surface water cools to the point that its temperature and density is similar to the deep water; and
- wind energy mixes the entire reservoir from top to bottom.

As a result of seasonal stratification, in the late summer and fall deep water in the reservoir becomes anoxic; i.e., depleted of oxygen. Under anoxic conditions at the sediment / water interface some compounds, including manganese and iron, become soluble and are released from the sediment into the water. Concentrations of the soluble compounds become higher in the deep water. In winter stratification breaks down, the reservoirs mix from top to bottom, and the entire water volume is well oxygenated. Under these conditions the compounds become insoluble and are returned to the sediment as precipitates. Thus, there is an annual cycling of manganese and iron within the reservoir, mediated by natural seasonal stratification. Elevated concentrations of manganese and iron are found only in deep water and peak in summer and fall. As an example of this condition, Attachment B shows average monthly values for manganese at San Vicente Reservoir for 1995 to 2005. These data are typical for other SDWD reservoirs.

The above discussion demonstrates that seasonal concentrations of manganese and iron are the result of natural processes in the reservoirs. They are not the result of the discharge of a pollutant. For these reasons, the SDWD recommends that the proposed listing of reservoirs for manganese and iron be dropped. Specifically, we recommend that the following water body - pollutant combinations be dropped from the proposed 303(d) list:

- Barrett Lake [Reservoir] - Manganese [Staff Report, Volume 1, p. 27 and Fact Sheets, Region 9, p.16]
- El Captian Lake [Reservoir] - Manganese [Staff Report, Volume 1, p. 28 and Fact Sheets, Region 9, p.58]
- Hodges, Lake [Reservoir] - Manganese [Staff Report, Volume 1, p. 28 and Fact

Page 10 of 10  
Ms. Selica Potter  
January 31, 2006

- Sheets, Region 9, p.97]
- Morena Reservoir - pH (high) [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.130]
  - Otay Reservoir, Lower - Manganese [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.167]
  - San Vicente Reservoir - Manganese [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.249]
  - Sutherland Reservoir - Manganese [Staff Report, Volume 1, p. 30 and Fact Sheets, Region 9, p.258]
  - Otay Reservoir, Lower - Iron [Staff Report, Volume 1, p. 29 and Fact Sheets, Region 9, p.165]

If you have any questions regarding the San Diego Water Department's comments or recommendations, please contact Jeffery Pasek, Senior Biologist, at [619]527-7405 or [jpasek@sandiego.gov](mailto:jpasek@sandiego.gov).

Sincerely,



Chris Zirkle  
Deputy Director  
Metropolitan Wastewater Department  
Storm Water Division



Mark Stone  
Deputy Director  
Water Department  
Operations Division

- Enclosures:
1. Attachment A: Antimony and Beryllium in El Capitan Reservoir, 1995-2005
  2. Attachment B: Average Monthly Manganese in San Vicente Reservoir, 1995-2005

cc:

- John Robertus, San Diego Regional Water Quality Control Board
- Craig Wilson, State Water Resources Control Board
- Mic Stewart, Metropolitan Water District of Southern California
- Marcia Torobin, Metropolitan Water District of Southern California
- Tim Miller, Deputy City Attorney, City Attorney's Office
- Dennis Bostad & Rick Alexander, Sweetwater Authority
- Dave Bolland, Association of California Water Agencies
- Mark Umphres, Helix Water District

State Water Resources Control Board  
 January 31, 2005  
 Attachment A

San Diego Water Department  
 Water Quality Laboratory  
 Antimony and Beryllium in El Capitan Reservoir, 1995 - 2005

Sample Date	Source*	Antimony, mg/l	Beryllium, mg/l
12-Apr-95	ECA-0	ND #	ND
21-Nov-95	ECA-0	0.000172	ND
3-Jan-96	ECA-0	ND	ND
5-Jun-96	ECA-0	0.0001	ND
11-Sep-96	ECA-0	0.000126	ND
6-Nov-96	ECA-0	ND	ND
4-Dec-96	ECA-0	ND	ND
5-Feb-97	ECA-0	0.00121	
6-Mar-97	ECA-0	0.000109	ND
7-May-97	ECA-0	ND	ND
4-Jun-97	ECA-0	ND	ND
3-Sep-97	ECA-0	0.000211	ND
3-Dec-97	ECA-0	0.000237	ND
4-Feb-98	ECA-0	0.000575	ND
4-Mar-98	ECA-0	ND	ND
3-Jun-98	ECA-0	0.000289	ND
2-Sep-98	ECA-0	ND	ND
7-Oct-98	ECA-0	ND	ND
2-Dec-98	ECA-0	ND	ND
3-Feb-99	ECA-0	ND	ND
3-Mar-99	ECA-0	ND	ND
2-Jun-99	ECA-0	ND	ND
7-Jul-99	ECA-0	ND	ND
4-Aug-99	ECA-0	ND	ND
8-Sep-99	ECA-0	0.0432	0.0255
8-Dec-99	ECA-0	ND	ND
9-Feb-00	ECA-0	ND	ND
8-Mar-00	ECA-0	ND	ND
3-May-00	ECA-0	ND	ND
7-Jun-00	ECA-0	ND	ND
5-Jul-00	ECA-0	ND	ND
9-Aug-00	ECA-0	ND	ND
6-Sep-00	ECA-0	ND	ND
4-Oct-00	ECA-0	ND	ND
8-Nov-00	ECA-0	ND	ND
6-Dec-00	ECA-0	ND	ND
3-Jan-01	ECA-0	ND	ND
7-Feb-01	ECA-0	ND	ND
7-Mar-01	ECA-0	ND	ND
2-Apr-01	ECA-0	ND	ND
7-May-01	ECA-0	ND	ND
6-Jun-01	ECA-0	ND	ND
2-Jul-01	ECA-0	ND	ND
1-Oct-01	ECA-0	ND	ND
5-Dec-01	ECA-0	ND	ND

WQC for Antimony in El Capitan HA 0.006 mg/l  
 total number of samples 87  
 samples >0.006 mg/l 1

WQC for Beryllium in El Capitan HA 0.004 mg/l  
 total number of samples 84  
 samples >0.004 mg/l 1

State Water Resources Control Board  
 January 31, 2005  
 Attachment A

Sample Date	Source*	Antimony, mg/l	Beryllium, mg/l
9-Jan-02	ECA-0	ND	ND
6-Mar-02	ECA-0	ND	ND
10-Apr-02	ECA-0	ND	ND
5-Jun-02	ECA-0	0.00051	ND
10-Jul-02	ECA-0	ND	ND
9-Oct-02	ECA-0	ND	ND
6-Nov-02	ECA-0	ND	ND
11-Dec-02	ECA-0	ND	ND
8-Jan-03	ECA-0	ND	ND
5-Feb-03	ECA-0	ND	ND
9-Apr-03	ECA-0	ND	ND
7-May-03	ECA-0	ND	ND
4-Jun-03	ECA-0	ND	ND
14-Jul-03	ECA-0	ND	ND
4-Aug-03	ECA-0	ND	ND
10-Sep-03	ECA-0	ND	ND
8-Oct-03	ECA-0	ND	ND
3-Nov-03	ECA-0	ND	ND
3-Dec-03	ECA-0	ND	ND
31-Dec-03	ECA-0	ND	ND
7-Jan-04	ECA-0	ND	ND
4-Feb-04	ECA-0	ND	ND
3-Mar-04	ECA-0	ND	ND
7-Apr-04	ECA-0	ND	ND
5-May-04	ECA-0	ND	ND
9-Jun-04	ECA-0	ND	ND
7-Jul-04	ECA-0	ND	ND
4-Aug-04	ECA-0	ND	ND
9-Sep-04	ECA-0	ND	ND
6-Oct-04	ECA-0	ND	ND
3-Nov-04	ECA-0	ND	ND
8-Dec-04	ECA-0	ND	ND
5-Jan-05	ECA-0	ND	ND
9-Feb-05	ECA-0	ND	ND
2-Mar-05	ECA-0	ND	ND
6-Apr-05	ECA-0	ND	ND
4-May-05	ECA-0	ND	ND
8-Jun-05	ECA-0	ND	ND
5-Jul-05	ECA-0	ND	ND
3-Aug-05	ECA-0	ND	ND
14-Sep-05	ECA-0	ND	ND
9-Nov-05	ECA-0	ND	ND

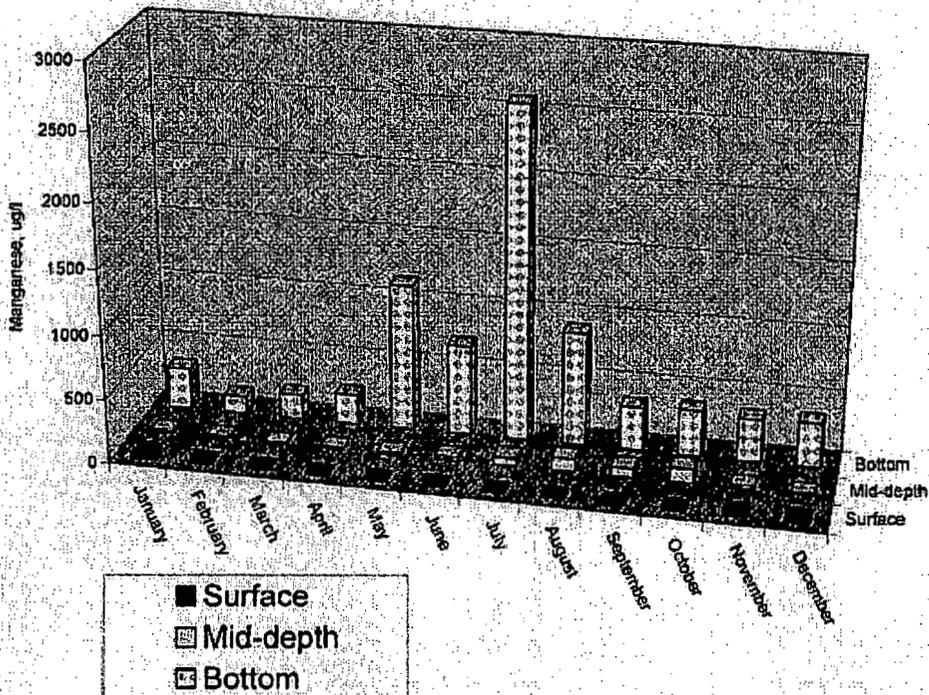
State Water Resources Control Board  
 January 31, 2005  
 Attachment B

Water Quality Laboratory

**Average Monthly Manganese in San Vicente Reservoir  
 1995 - 2005**

These data are the average of all values for each month  
 Units are ug/l

Month	SVA-O Station A Surface	SVA-MID Station A Mid-depth	SVA-BTM Station A Bottom
January	34.0	15.6	335
February	11.7	10.4	143
March	4.22	1.49	196
April	4.37	7.78	238
May	3.37	14.3	1154
June	2.29	22.5	718
July	1.98	60.1	2587
August	1.95	101	900
September	1.77	73.2	348
October	1.77	115	365
November	22.5	24.8	336
December	22.3	8.93	353



### ATTACHMENT 3

#### Lists of San Diego Water Department and Sweetwater Authority Drinking Source Water Reservoirs Proposed for Listing as Impaired under CWA Section 303(a)

##### City of San Diego Water Department

Reservoir	Constituents
Barrett Reservoir	Color Manganese pH (high)
El Capitan Reservoir	Color Manganese TDS pH(high)
Hodges Reservoir	Color Manganese Nitrogen Turbidity pH(high) Phosphorous TDS Turbidity
Miramar Reservoir	Sulfates TDS
Morena Reservoir	Color Manganese pH (high)
Lower Otay Reservoir	Color Iron Manganese Nitrogen, ammonia (Total Ammonia) pH(high)
San Vicente Reservoir	Chloride Color Manganese Sulfates TDS pH(high)
Sutherland Reservoir	Color Manganese pH (high)

(continued on back)

**ATTACHMENT 3 (continued)**

**Sweetwater Authority**

<b>Reservoir</b>	<b>Constituents</b>
Loveland Reservoir	Aluminum Manganese Dissolved Oxygen
Sweetwater Reservoir	Dissolved Oxygen Total Dissolved Solids