CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION

RESOLUTION NO. R1-2007-0058

Denial of Petition to the California Regional Water Quality Control Board, North Coast Region to Order the Montague Water Conservation District, Owner and Operator of Dwinnell Reservoir to Submit a Report of Waste Discharge and/or to Issue Waste Discharge Requirements

WHEREAS, the California Water Quality Control Board, North Coast Region, (Regional Water Board) finds that:

1. On March 15, 2007 and later revised on April 24, 2007, Mr. Felice Pace, Klamath River Basin resident and landowner, submitted a petition requesting that the Regional Water Board order the Montague Water Conservation District ("MWCD") (referred to in the Petition as the Montague Irrigation District) as the owner and operator of Dwinnell Reservoir, to submit a report of waste discharge and/or to issue waste discharge requirements. The Petition, in part, requested that the Regional Water Board:

   - Establish appropriate restrictions and prohibitions on the release of *Anabaena*, a toxic blue-green algae (BGA) from Dwinnell Reservoir.
   - Issue waste discharge requirements (WDRs) to MWCD for discharge of *Anabaena*, temperature, dissolved oxygen and pH loads.
   - Investigate if toxic sediments (dioxins, penta and other highly toxic substances) originating at the J.H. Baxter Superfund site in Weed are present in Lake Shastina sediment or fish tissue.

2. The Regional Water Board heard arguments and comments from Petitioners, MWCD and the public on this matter during its regularly scheduled Board meeting on April 26, 2007, in Santa Rosa, California. This item does not constitute an adjudicatory hearing. This Resolution is informational only and does not result in any action taken toward any party, except for the denial of the petition.

3. The Shasta River drains a 795 square mile basin in northern California, within Siskiyou County, and flows generally northward into the Klamath River. Dwinnell Dam, constructed in the late 1920s, impounds the waters of Shasta River at approximately river mile 40, forming Dwinnell Reservoir (also known as Lake Shastina). Water is diverted at the reservoir for irrigation by MWCD, and for drinking water supply to the town of Montague. Although it is a relatively small reservoir, with a storage capacity of approximately 50,000 acre-feet, the reservoir only fills in above normal runoff years due to the relatively modest yield from upstream watershed areas, seasonal water use, and appreciable seepage loss from the reservoir. Typically, between 10,000 and 17,000 acre-feet of water stored in the reservoir are released into the MWCD canal during the April 1 through October 1 irrigation season. With the exception of above normal water years when Lake Shastina is full, the only flow releases made to the Shasta River below Dwinnell Dam are those intended to satisfy the needs of several water users downstream of the dam.

4. California Water Code section 13260(a) requires that any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the state, other than into a community sewer system, shall file with the Regional Water Board a ROWD containing such information and data as may be required by the Regional Water Board, unless the Regional Water Board waives such requirement. Discharges from the tailrace of a dam can be considered a "discharge of waste" under the Porter-

Cologne Water Quality Control Act. (*Lake Madrone Water District v. SWRCB*, 209 Cal.App.3d 163(1989).)

5. Section 303(d) of the Clean Water Act requires states to identify waters that do not meet applicable water quality standards and further requires the US EPA to list such waters on the 303(d) impaired waters list. The Clean Water Act also requires that states or the US EPA establish Total Maximum Daily Loads (TMDLs) for waters on the impaired water list. Such TMDLs shall be established at levels necessary to implement applicable water quality standards with seasonal variations and a margin of safety. The Shasta River is listed as impaired for temperature and dissolved oxygen.

6. Anadromous fish populations currently using the Shasta River watershed include fall Chinook, coho salmon, and steelhead trout. The Shasta River was once one of the most productive streams of its size for anadromous fish in California. The historic fall Chinook population in the Shasta River basin was large, and has experienced sharp declines since the 1930s. The spring Chinook run in the Shasta, which historically was one of the largest spring Chinook runs in the Klamath basin, is now extirpated. Migration barriers, high summer water temperatures, reduced summer flows, habitat degradation, and low summertime dissolved oxygen conditions have all been cited as contributors to these declines.

7. The Regional Water Board adopted the *Shasta River Temperature and Dissolved Oxygen Total Maximum Daily Loads* (TMDLs) in June 2006, which became effective January 2007 after U.S. EPA approval. The TMDLs require actions to improve temperature and dissolved oxygen conditions in the watershed, including actions specific to both Dwinnell Dam and Lake Shastina. The TMDL Implementation Plan provides:

   "*Within 2 years of EPA approval of the TMDL, the MWCD shall report in writing to the Regional Water Board on a plan to bring the discharge from Dwinnell Dam into compliance with water quality standards, the TMDLs, and the NPS Policy.*"

   "*Within 2 years of EPA approval of the TMDL, the responsible parties* (MWCD, City of Weed, County of Siskiyou, Caltrans, Communities of Lake Shastina, U. S. Forest Service, U.S. Bureau of Land Management, and private timber owners) *shall complete a study of water quality conditions and factors affecting water quality conditions in Lake Shastina, and develop a plan for addressing factors affecting water quality conditions to bring Lake Shastina into compliance with water quality standards, the TMDLs, and the NPS Policy. The study and plan shall be submitted to the Regional Water Board Executive Officer for review, comment and approval. Within 5 years of EPA approval of the TMDL, the responsible parties shall begin implementing the plan.*"

8. In its response to this petition, MWCD affirmed its commitment to the development of a comprehensive water quality monitoring plan for Lake Shastina, in conjunction with other responsible parties identified in the TMDL. MWCD intends to engage the Regional Water Board, the County, local, state and federal agencies and lakeside communities in the development of these plans and will seek partnerships to fund and implement the plans

9. The TMDL Implementation Plan contains the following conditional waiver of waste discharge requirements: "*The Regional Water Board hereby waives the requirement to file a Report of Waste Discharge (RWD) and obtain Waste Discharge Requirements (WDR), pursuant to Water Code section 13269, for discharges addressed by this Action Plan for*

*dischargers that choose to participate in the on-going collaborative programs and implement recommended measures as applicable, as described in Table 4. Should a discharger choose not to participate, or if the Regional Water Board's Executive Officer determines additional measures are necessary and provides the discharger with written notice to that effect, the discharger must submit a Report of Waste Discharge (RWD) and filing fee to the Regional Water Board immediately or in accordance with the written notice.*" To the extent that MWCD complies with the actions listed in Table 4 for which it is listed as a responsible party, MWCD will be in compliance with the waiver.

10. A number of issues raised in the Petition are not specifically addressed in the Shasta River Temperature and Dissolved Oxygen TMDLs. These include toxic blue-green algae, pH and presence of dioxin and other toxic substances in lake sediment and fish tissue.

11. Blue-green algae are commonly found in many freshwater systems. They thrive in warm, nutrient rich, slow moving to stagnant water bodies such as lakes, ponds, reservoirs and sluggish stream reaches having adequate sunlight for growth and reproduction. Many species of blue-green algae produce toxic compounds known as cyanotoxins. Microcystin and anatoxin toxins are the two most common cyanotoxins encountered in California. Health risks from exposure to moderate concentrations of cyanotoxins during recreational activities can cause skin rashes, eye irritations, allergic reactions, gastrointestinal upsets and other illnesses. Exposure to high levels of microcystin in recreational and drinking water supplies promote is tumor growth and progressive chronic liver damage, and death in vertebrates. Exposure to high levels of anatoxin in recreational and drinking water supplies can elicit acute neurological effects; chronic effects, if any, are unknown (WHO 1999). While the issue has come to the attention of the Regional Water Board in portions of the Klamath River, these conditions could also be present in Lake Shastina, as it is known that water within the reservoir contained *Anabaena flos-aquae* when sampled in July, 2004. Anabaena flos-aquae is known to produce hepatoxin.

12. When sampled in July 2004 by Regional Water Board staff, *Anabaena flos-aquae* cell densities were generally low with maximum values on the order of 1000 cell/ml. These samples were collected in the main body of the reservoir where algae blooms are distributed roughly throughout the upper layer. Wind can accumulate blooms in shoreline scums, however, and cell densities can be increased by 1000 times or more. *Anabaena flos-aquae* fixes atmospheric nitrogen, thereby increasing nitrogen loads to the reservoirs. When the algae dies, the nutrients within the algal cells are either stored in the bottom sediments within the reservoir or are released into the water column. These stored and/or released nutrients, especially phosphorus, often enhance nutrient enrichment in the reservoir, thus propagating additional blooms of BGA in a self-sustaining "feedback loop." There is some anecdotal evidence of visible and extensive algal mats and scum in Dwinnell Reservoir.

13. The State Water Resources Control Board (SWRCB) and California Department of Health Services (DHS) have developed draft guidance recognizing the World Health Organization's (WHO) Tolerable Daily Intake and Guideline Values for microcystin toxin in water. To date, none of the organizations have established Guideline Values for anatoxin toxin in water. The Tolerable Daily Intake is applicable to drinking water, and Guideline Values relate to exposure during recreational water use. Risk levels and guidelines for BGA cells and microcystin toxin include:
    a. Drinking Water: 1 part per billion microcystin
    b. Bathing and recreational waters:

i. Low Probability of Adverse Health effects: 4 ppb microcystin or 20,000 cells/ml
ii. Moderate Probability of Adverse Health Effects: 20 ppb microcystin or 100,000 cells/ml

14. Water within and discharged from a reservoir that contains high levels of BGA may violate water quality objectives contained in the *Water Quality Control Plan for the North Coast Region* (Basin Plan). At the present time, there is no quantitative scientific data for specific concentrations of toxins produced *by Anabaena flos-aquae* to suggest that Dwinnell Reservoir exceeds health alert toxicity guidelines. Additional field sampling and laboratory analyses would provide more data to assess *Anabaena flos-aquae* cell counts and anatoxin toxin concentrations in Dwinnell Reservoir.

15. This Resolution directs Regional Water Board staff to work with MWCD and other responsible parties and stakeholders to develop funding and resources to carry out studies and monitoring to better understand BGA and pH in Dwinnell Reservoir.

16. Petitioner also refers to the past presence of toxic sediments (dioxins, penta and other highly toxic substances) originating at the J.H. Baxter Superfund site in Weed in Beaughton Creek, a tributary of Lake Shastina, and hence the possibility of contamination of lake sediments and/or fish tissue. The TMDL does not address toxic lake or fish tissue issues, nor are the J.H. Baxter responsible parties required to take any action under the TMDL.

17. Regional Water Board files for the J.H. Baxter Superfund site include documentation of direct discharges from the site to Beaughton Creek and investigative results have found toxics associated with chemicals used at the site in the creek. Past investigations have tested for toxics in sediment and fish tissue from Beaughton Creek, but no documentation is available showing the potential accumulation of toxics in Dwinnell Reservoir. (File reports on sediment and fish sampling include: Camp Dresser & McKee, February 2, 1989; US EPA, April 23, 1992; James L. Grant & Associates, September 4, 1992; Entrix, February 4, 1994; and TRC June 1999.) Assessment of fish tissue at Dwinnell Reservoir is an effective and reasonable approach to investigate the potential presence of toxics in the lake. Therefore, the Regional Water Board will direct staff to continue working with responsible parties for the J.H. Baxter Superfund site to resolve issues related to the collection of fish tissue samples from Lake Shastina for analysis of chlorinated dibenzo-p-dioxins and dibenzofurans.

NOW, THEREFORE, BE IT RESOLVED THAT,

1. Petitioners' request that the Regional Water Board require MWCD to submit a ROWD and/or issue WDRs for Dwinnell Dam and Lake Shastina is DECLINED;

2. Staff shall work with MWCD and other responsible parties and stakeholders to develop funding and resources to carry out studies and monitoring to better understand BGA and pH in Dwinnell Reservoir;

3. The Executive Officer of the Regional Water Board shall provide a public report on the progress and results of these efforts no later than December of 2007 and again in December of 2008. The Executive Officer of the Regional Water Board shall publicly notify the Regional Water Board of the pH and BGA monitoring plan in place for 2008 no later than April of 2008;

4. Staff shall work with MWCD, Siskiyou County Health Department, and other interested parties to ensure that all efforts are made to effectively inform the public of any health concerns associated with BGA that may arise in Dwinnell Reservoir;

5. Staff shall continue to work with responsible parties for the J.H. Baxter Superfund site to resolve issues related to the collection of fish tissue samples from Lake Shastina for analysis of chlorinated dibenzo-p-dioxins and dibenzofurans.

CERTIFICATION

I, Catherine E. Kuhlman, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, North Coast Region, on July 25, 2007.

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Catherine E. Kuhlman