Delta Diablo Sanitation District

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December 1, 2009

VIA ELECTRONIC MAIL (jkhela@waterboards.ca.gov) & U.S. MAIL

Mr. Jagroop S. Khela, MS, MBA, Water Resources Control Engineer
Division of Water Quality
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

SUBJECT: NOTICE OF INTENT FOR COVERAGE UNDER THE GENERAL IRRIGATION PERMIT – DELTA DIABLO SANITATION DISTRICT

Dear Mr. Khela:

Thank you for taking the time to review our Notice of Intent (NOI) and provide us with comments. Based on your comments, we are providing additional information on nitrogen loading and the antidegradation analysis. The requested information is included herein:

1. Nitrogen Loading

As we discussed, the District is not required to collect nitrogen data as part of its regular monitoring program. To respond to your request, the District collected samples on November 18, 19 and 20th and had these analyzed for Nitrate-Nitrite, TKN and Total Nitrogen. The results of the sampling are presented in the table below and have been converted to annual nitrogen loading using the agronomic application rate outlined in our NOI.

	Sample Results			Avg	Avg	Agronmic Application Rate for Recycled Water	Nitrogen Application Rate in Recycled Water
	Nov-18-09 mg/l	Nov-19-09 mg/l	Nov-20-09 mg/l	mg/l	lbs/gal	gallons/year	lbs/year
Total Nitrogen	37	36	38	37.00	0.00030877	1,228,425.67	379.29
TKN	36	35	37	36.00	0.00030042	1,228,425.67	369.04
Nitrate-Nitrite	1	0.98	1.1	1.03	0.00000857	1,228,425.67	10.52

2. Antidegradation Analysis

Based on your request we have updated the Antidegradation Analysis consistent with Recycled Water Policy Paragraph 9d(2). This update is attached to this letter.

We appreciate the effort, attention and support you have given us through the application process. If you have any additional questions, please feel free to contact me at (925) 756-1940 or amandar@ddsd.org.

Sincerely,

Amanda Roa

Amanda Roa
Environmental Compliance Engineer

MGP/AWR:awr

Attachment

cc: District File RWF.05-
Chron File

Antidegradation Analysis Consistent with Recycled Water Policy Paragraph 9d. (2)

The State Water Board's adopted Resolution No. 68-16 as a policy statement to implement the Legislature's intent that high quality waters of the state be protected to the maximum benefit of the people of the State. The purpose of this analysis is to document that the groundwater in the proposed service area is not of high quality nor is it put to beneficial use.

Central Valley Regional Board Basin Plan

The Central Valley Regional Water Quality Control Board includes the Antioch area within its Basin Plan for the Sacrament River and San Joaquin River Basins (Fourth Edition – 1998). Antioch is located within the legal boundaries of the Sacramento-San Joaquin Delta, illustrated in Figure III-1 of the Basin Plan. Because recycled water will be managed in accordance with the requirements of the State Water Board's General Permit, recycled water will not result in impacts to surface water including the waters of the Delta and this description focuses on the Basin Plan's requirements for groundwater. The Basin Plan description on beneficial uses of groundwater follows.

"*Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO). In making any exceptions to the beneficial use designation of municipal and domestic supply (MUN), the Regional Water Board will apply the criteria in State Water Board Resolution No. 88-63, 'Sources of Drinking Water Policy'. The criteria for exceptions are:*

- *The total dissolved solids (TDS) exceed 3,000 mg/l (5,000 &mhos/cm, electrical conductivity) and it is not reasonably expected by the Regional Water Board [for the ground water] to supply a public water system, or*

- *There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or*

- *The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day, or*

- *The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 CFR, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy,*

provided that these fluids do not constitute a hazardous waste under 40 CFR Section 261.3."[1]

The Basin Plan outlines objectives for groundwater quality as follows.

- *"Bacteria: In ground waters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.*

- *Chemical Constituents: Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.*

- *Radioactivity: At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, includingfuture changes to the incorporated provisions as the changes take effect.*

- *Tastes and Odors: Ground waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.*

- *Toxicity: Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances."*[2]

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[1] Basin Plan for the Sacramento River and San Joaquin River Basins, page II-2.01
[2] Basin Plan for the Sacramento River and San Joaquin River Basins, page III-10

San Francisco Bay Region Basin Plan

The Antioch service area is directly adjacent to the boundaries of the San Francisco Bay Regional Board. The San Francisco Bay Basin Plan (through January 18, 2007) states:

"*The California Department of Water Resources (DWR) evaluated the characteristics of groundwater basins in the Region and throughout the state and summarized the results in California's Groundwater, Bulletin 118 (2003). Of special importance to the Region are the 28 groundwater basins and seven sub-basins classified by DWR that produce, or potentially could produce, significant amounts of groundwater (Figures 2-10 and 2-10A-D). Existing and potential beneficial uses applicable to groundwater in the Region include municipal and domestic water supply (MUN), industrial water supply (IND), industrial process supply (PRO), agricultural water supply (AGR), groundwater recharge (GWR), and freshwater replenishment to surface waters (FRESH). Table 2-2 lists the 28 identified groundwater basins and seven sub-basins located in the Region and their existing and potential beneficial uses.*"

The Antioch service area is directly adjacent to the groundwater basin labeled Pittsburg Plain in Bulletin 118. Table 2-2 of the San Francisco Bay Basin Plan lists this basin as having potential MUN uses. The San Francisco Bay Regional Board may make exceptions to this presumption of beneficial use for municipal or domestic water supply using the State Water Board Resolution No 88-63 criteria described above.

Bulletin 118 Descriptions

Tracy Subbasin

The Antioch service area is at the very northeastern end of the Tracy Subbasin of the San Joaquin Valley Groundwater Basin in Contra Costa County, directly adjacent to the San Joaquin River, as illustrated in Figure 1.

According to Bulletin 118 of California Groundwater, the water bearing formations include the Tulare formation, Older Alluvium, Flood Basin Deposits and Younger Alluvium.

The Tulare formation dips eastward toward the axis of the valley from the Coast Range foothills. It is comprised of discontinuous deposits of clay, silt and gravel. The Corcoran Clay is a unit near the top of the Tulare formation and forms a confining layer for underlying potable water deposits. Most of the potable groundwater use is from below this Corcoran clay however, small domestic wells sometimes obtain their supply from above the clay, but according to Bulletin 118, this groundwater is often of poor quality.

Flood Plain Deposits were likely deposited in the proposed service area over the Tulare formation. Flood plain deposits occur closer to the Delta. They are similar to the Tulare sediments and consist of primarily of silts and clays, with occasional gravels along waterways. The deposits have low permeability and do not produce large quantities of water to wells. Occasional zones of fresh water are found in these deposits, but they tend to be of poor quality.

Pittsburg Plain

According to Bulletin 118, the Pittsburg Plain groundwater basin lies within the two major drainage basins of Kirker Creek and Willow Creek. These basins discharge into Suisun Bay. The water bearing units in the basin are Pleistocene to Recent age alluvium deposits. The water bearing materials consist of highly lenticular beds of gray and brown sand, sand and gravel, and blue and yellow clay. The maximum thickness of these deposits is 400 feet. Aquifers in the basin area are hydrologically connected to the Sacramento River. There are limited data regarding the occurrence and movement of ground water in the basin.

Water quality information for the Pittsburg Plain Groundwater Basin is limited. DWR historic groundwater total dissolved solids values range from 450 mg/l to 5737 mg/l. The average total dissolved solids for 5 DWR wells is 1821 mg/l.

City of Antioch Urban Water Management Plan

The information included in Bulletin 118 is supported by the fact that groundwater is not put to beneficial use in the service area. According to the City of Antioch's Urban Water Management Plan, "*The City does not currently use groundwater nor does it plan to use groundwater by the year 2025*."

Available Groundwater Data

As part of preparing this analysis, research was conducted with the Central Valley Regional Water Quality Control Board (Regional Board). There simply is not significant data regarding groundwater quality or quantity in the area, which is consistent with the fact that the groundwater is not put to beneficial use. Data was obtained from one clean up site in the area, Oakley Road and Willow Avenue in Antioch (Diablo Sanitation District Permit # SDP-0500468) which is consistent with DWR's narrative description of the basin. This data from both monitoring and extraction wells is presented in Table 1, below.

Table 1 Water Quality Data available in the Antioch Service Area	
Well ID	TDS
DMW97-1	1540
DMW97-2	1700
DMW97-3	1640
DMW97-4	1840
DMW97-5	6700
DMW97-6	550
DMW97-7	3170
DMW97-8A	820
DMW97-9	1450
DMW97-10	670
DMW97-11	1180
DMW97-12	760
DMW97-13	1170
DMW97-14	2110
DMW97-15	1480
EW-1A	5530
EW-2	2910
EW-3	1640
EW-4	2320
EW-5	1640
EW-6	2180

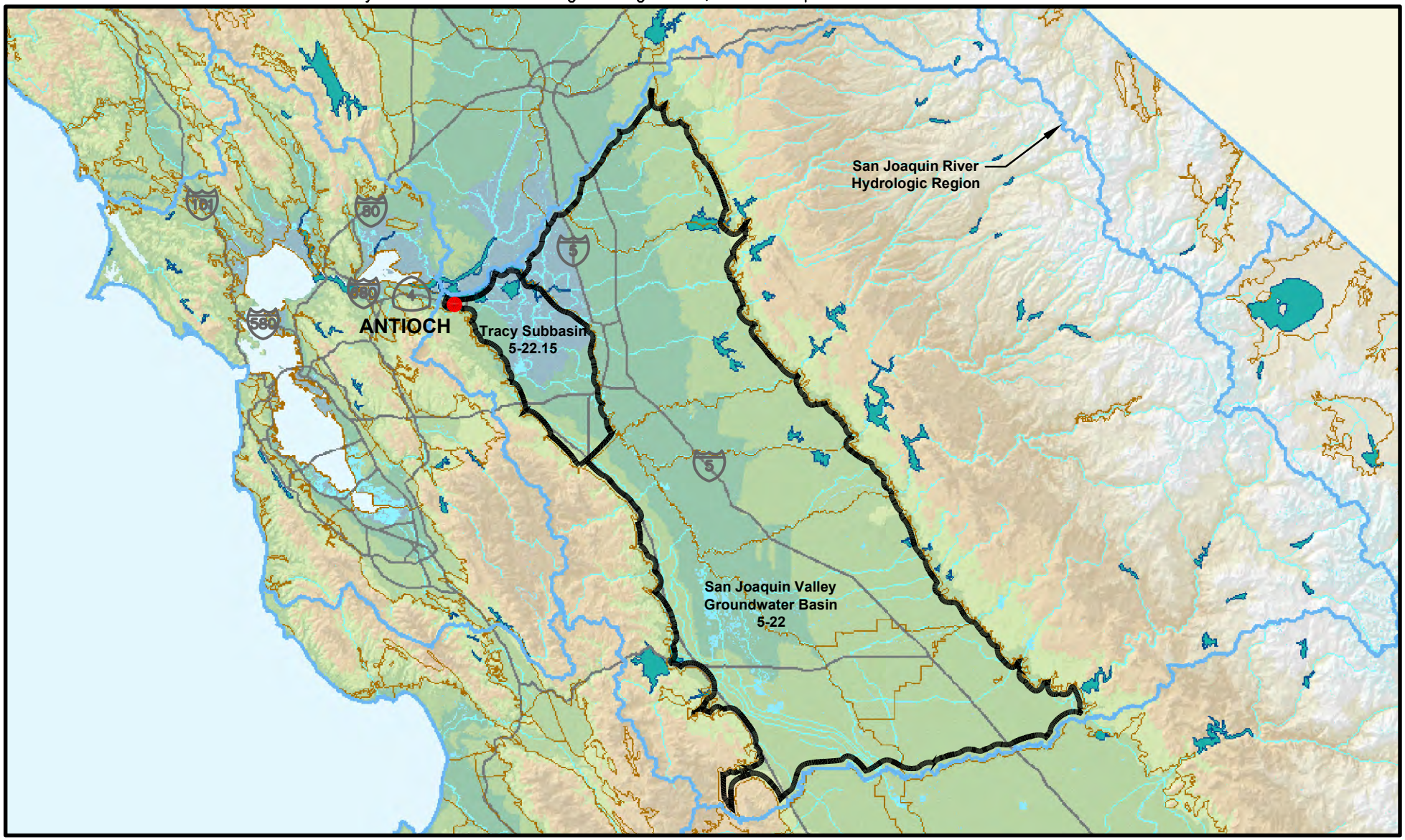
Conclusions

While both the Central Valley Region and San Francisco Bay Region Basin Plans make a presumption of beneficial groundwater use, State Water Board Resolution No.88-63 criteria do allow exceptions to be made to this presumption. The groundwater in the Antioch service area appears to satisfy the criteria specifically:

- While groundwater quality data in the area is quite limited, the available data indicates relatively poor quality water with TDS close to or in excess of 3,000 mg/l within the service area;
- The City of Antioch's Urban Water Management Plan makes the clear statement that the City does not intend to use groundwater, hence the state and regional boards have no basis for an expectation that groundwater would supply municipal uses;
- The Antioch service is entirely supplied by imported water delivered by the City of Antioch and no municipal water supply wells exist in the service area.

Because of the poor quality and limited use of the basin, Resolution No. 68-18's intent to protect high quality waters for beneficial uses is not triggered and an assimilative capacity calculation is not applicable. Resolution No. 88-30's exception criteria can be met and the presumption of beneficial use for municipal supply is not appropriate in this case.

J:\11811 - Delta Diablo\11811-09-001 Antioch Recycled Water Permit\CAD\Figure 1.dwg Oct 27, 2009 - 2:54pm



Legend

- DWR Hydrologic Regions
- Groundwater Basins
- 5.22 Basin Number
- 15 Subbasin Number
- Rivers & Streams
- Lakes
- Highway

0 25 50 MILES

Recycled Water Program Location Map

Delta Diablo Sanitation District
Contra Costa, CA
11811-09-001
October 2009

WINZLER & KELLY

Figure 1