

San Francisco Bay Regional Water Quality Control Board

REVISED TENTATIVE ORDER

AMENDMENT OF WASTE DISCHARGE REQUIREMENTS
and
RESCISSION OF CEASE AND DESIST ORDER
for
EAST BAY MUNICIPAL UTILITY DISTRICT
ORINDA WATER TREATMENT PLANT
in
ORINDA, CONTRA COSTA COUNTY

WHEREAS the California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter “Regional Water Board”), finds the following:

1. The Regional Water Board issued East Bay Municipal Utility District (hereinafter “Discharger”) waste discharge requirements that serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to the federal Clean Water Act through adoption of Order No. R2-2009-0067, on October 14, 2009. Order No. R2-2009-0067 authorizes the Discharger to discharge raw water and clarified backwash water from the Orinda Water Treatment Plant (Plant) to San Pablo Creek under specific conditions.
2. The Plant is one of six potable water treatment facilities the Discharger operates in the East Bay to treat water prior to distribution to Alameda and Contra Costa County customers. The Plant has a maximum capacity of 200 million gallons per day. The Plant receives raw water transported from the Pardee Reservoir in the Sierra Nevada foothills via the three 90-mile Mokelumne Aqueducts. The Plant routinely discharges raw water through Discharge Point E-002 and clarified backwash water through E-003. These two discharge points are shown in Attachment B (figures B-1 and B-2).
3. Order No. R2-2009-0067 established new dichlorobromomethane effluent limits based on the California Toxics Rule human health criterion and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter “State Implementation Policy”), assuming no mixing or dilution in the receiving waters. These limits were an average monthly effluent limitation (AMEL) of 0.56 micrograms per liter ($\mu\text{g/L}$) and a maximum daily effluent limitation (MDEL) of 1.1 $\mu\text{g/L}$.
4. Because the Discharger’s effluent data showed it could not readily comply with the dichlorobromomethane limitations, the Regional Water Board adopted Cease and Desist Order No. R2-2009-0068 immediately after adopting Order No. R2-2009-0067. The Cease and Desist Order established a time schedule and prescribed actions for the Discharger to comply with the

dichlorobromomethane limits by November 30, 2014. The Cease and Desist Order also established a performance-based interim MDEL of 4.9 µg/L.

5. This Order amends Order No. R2-2009-0067 to replace the dichlorobromomethane limitations with revised limitations based on a mixing zone and dilution credit in accordance with the State Implementation Policy.
6. The revised dichlorobromomethane limitations in this Order are less stringent than the limitations in Order No. R2-2009-0067, and the Discharger can comply with the revised limitations; therefore, this Order rescinds Cease and Desist Order No. R2-2009-0068 because its requirements are no longer necessary.
7. The Fact Sheet attached to this Order as Attachment F contains background information and rationale for this Order's revisions to Order No. R2-2009-0067. It is hereby incorporated into this Order and therefore constitutes part of the findings for this Order. Where factual inconsistencies arise between this Fact Sheet and the findings of Order No. R2-2009-0067, including the Fact Sheet for Order No. R2-2009-0067, the findings in this Fact Sheet supersede the findings of Order No. R2-2009-0067.
8. This Order complies with anti-backsliding and antidegradation requirements pursuant to Clean Water Act sections 402(o) and 303(d); 40 Code of Federal Regulations sections 122.44(l) and 131.12; and State Water Resources Control Board Resolution No. 68-16. A discussion for how this Order meets the anti-backsliding and antidegradation requirements is included in the Fact Sheet (Attachment F, sections G and H).
9. This Order is exempt from the provisions of Chapter 3 of the California Environmental Quality Act pursuant to California Water Code section 13389.
10. It is the policy of the State that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order is consistent with this policy with requirements that meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
11. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to consider adoption of this Order and provided an opportunity to submit written comments.
12. In a public meeting, the Regional Water Board heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED, pursuant to the provisions of California Water Code Division 7 and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder, that the Discharger shall comply with Order No. R2-2009-0067, as amended by this Order as described below. Additionally, Cease and Desist Order No. R2-2009-0068 is hereby rescinded, except for enforcement purposes.

1. Replace Table 7 of Order No. R2-2009-0067 with the following (changes are shown using underline for additions and ~~strikethrough~~ for deletions):

Table 7: Effluent Limitations for Toxic Pollutants

Parameter	Units	Effluent Limitations				
		Daily Maximum	Weekly Average	Monthly Average	Instantaneous Maximum	Instantaneous Minimum
Dichlorobromomethane	µg/L	<u>4.4</u> 4.4	--	<u>3.2</u> 0.56	--	--

2. Replace attachments B and C of Order No. R2-2009-0067 with attachments B and C of this Order.
3. Replace Monitoring and Reporting Program Table E-1 of Order No. R2-2009-0067 with the following (changes are shown using underline for additions):

Table E-1. Monitoring Station Locations

Discharge Point	Monitoring Location	Monitoring Location Description
EFFLUENT		
E-001	EFF-001	At any point between the Mokelumne Aqueduct diversion structure and the point where the Mokelumne water actually enters San Pablo Creek.
E-002	EFF-002	As above.
E-003	EFF-003	At any point in the outfall between the point of discharge to the receiving water and the point at which all waste tributary to that outfall is present.
E-004	EFF-004	As above.
RECEIVING WATERS		
<u>Creek Near E-001</u>	RW-001U	At a point in the receiving water located upstream of the discharge point where impacts from the discharge would not be expected.
	RW-001D	At a point in the receiving water within 50 feet downstream of the discharge outfall.
<u>Creek Near E-002</u>	RW-002U	As above (upstream).
	RW-002D	As above (downstream).
<u>Creek Near E-003</u>	RW-003U	As above (upstream).
	RW-003D	As above (downstream).
<u>Creek Near E-004</u>	RW-004U	As above (upstream).
	RW-004D	As above (downstream).
<u>Reservoir</u>	RW-005	<u>At a point in the mid-channel area of the reservoir midway between the inlet from San Pablo Creek and the point that transects the boat launch (see Attachment B).</u>

4. Replace Monitoring and Reporting Program Section V, Receiving Water Monitoring Requirements, including Table E-4 of Order No. R2-2009-0067 with the following (changes are shown using underline for additions and ~~strikethrough~~ for deletions):

The Discharger shall monitor receiving waters both upstream and downstream of discharge outfalls (at the receiving water monitoring locations described in Table E-1, above,) according to Table E-4, below:

Table E-4. Receiving Water Monitoring Requirements

Parameter	Units ^[1]	Sample Type ^[2]	Minimum Sampling Frequency
Standard Observations ^[3]	--	--	Quarterly ^[4]
Stream Flow Rate ^[5]	GPD	N/A	Quarterly ^[4]
Turbidity	NTU	Grab	Quarterly ^[4]

Parameter	Units ^[1]	Sample Type ^[2]	Minimum Sampling Frequency
pH	s.u.	Grab	Quarterly ^[4]
TSS	mg/L	Grab	Quarterly ^[4]
Hardness	mg/L as CaCO ₃	Grab	Quarterly ^[4]
Priority Pollutants ^[3, 4 6]	µg/L	Grab	Once per 5 years
Dichlorobromomethane	µg/L	Grab	Twice per year

Footnotes for Table E-4

- [1] Unit Abbreviations
CaCO₃ = calcium carbonate
MGD = million gallons per day
GPD = gallons per day
µg/L = micrograms per liter
mg/L = milligrams per liter
NTU = Nephelometric turbidity units
s.u. = pH standard unit
- [2] Samples shall be collected within one foot below the surface of the receiving water body, unless otherwise stipulated. The Discharger shall note in its annual report any monitoring locations that were dry or that could not be sampled, and explain why they could not be sampled. Pollutants and pollutant parameters shall be analyzed using the analytical methods described in 40 CFR 136. For priority pollutants, the methods must meet the lowest MLs specified in SIP Attachment 4. Where no methods are specified for a given pollutant, the methods must be approved by this Regional Water Board or the State Water Board.
- [3] See Regional Standard Provisions (**Attachment G**), section II.C.1 in the original Order (WQO No. R2-2009-0067)
- [4] Sampling frequency is quarterly for the first two years after the effective date of this Order.
- [5] For any discharge point that is not equipped with flow meters, flows can be estimated. The Executive Officer may require the Discharger to install flow meters during the permit term.
- [3 6] For mercury monitoring, the Discharger shall use ultra-clean sampling methods (USEPA 1669) to the maximum extent practicable and ultra-clean analytical methods (USEPA 1631). The Discharger may use an alternative method of analysis (such as USEPA 245) if that alternate method has a method detection limit (MDL) of 0.0002 µg/L or less.
- [4] Priority pollutant monitoring is not required at monitoring location RW-005.

5. This Order shall become effective immediately upon adoption.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 13, 2013.

Bruce H. Wolfe
Executive Officer

ATTACHMENT F

FACT SHEET

This Fact Sheet describes the legal requirements and technical rationale that serve as the basis for this Order's requirements. Where factual inconsistencies arise between this Fact Sheet and the findings of Order No. R2-2009-0067, including the Fact Sheet for Order No. R2-2009-0067, the findings here supersede the findings of Order No. R2-2009-0067.

A. Purpose

This Order replaces the water quality-based effluent limitations for dichlorobromomethane in Order No. R2-2009-0067 with limits based on new information presented in the *Orinda Water Treatment Plant Effluent Mixing Zone/Dilution Credits Study* (July 27, 2011, revised October 16, 2012) (hereinafter "Mixing Zone Study"). The new limits reflect dilution credits based on a mixing zone consistent with section 1.4.2 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (hereinafter "State Implementation Policy").

This Order replaces attachments B and C of Order No. R2-2009-0067 to better illustrate the discharge locations and receiving waters and show current operations that have been updated since Order No. R2-2009-0067 was adopted.

This Order creates a new receiving water monitoring location and requires ongoing dichlorobromomethane monitoring. It also simplifies the monitoring requirements to reflect that Order No. R2-2009-0067 required some monitoring for only two years and that monitoring has been completed.

Finally, this Order rescinds Cease and Desist Order No. 2009-0068 as it is no longer necessary because the Discharger is able to comply with the dichlorobromomethane limits in this Order.

B. Background

The East Bay Municipal Utility District (hereinafter "Discharger") owns and operates the Orinda Water Treatment Plant (Plant). The Plant is the largest of six potable water treatment facilities that the Discharger operates in the East Bay to treat water prior to distribution to 1.34 million Alameda and Contra Costa County customers. As the largest of the six facilities, the Plant has a maximum capacity of 200 million gallons per day (MGD) and an average output of 135 MGD. The Plant receives raw water transported from the Pardee Reservoir in the Sierra Nevada foothills via three 90-mile aqueducts called the Mokelumne Aqueducts.

The Plant discharges raw water and clarified filtered backwash water to San Pablo Creek, a water of the United States, which flows to San Pablo Reservoir within the San Pablo Creek watershed. The Plant discharges from four points: E-001, E-002, E-003, and E-004. The Discharger uses Discharge Points E-002 and E-003 routinely. It uses Discharge Point E-002 to discharge raw water flows in excess of Plant intake. It uses Discharge Point E-003 to

discharge clarified filter backwash water decanted from two settling basins. The Discharger rarely uses Discharge Points E-001 and E-004. Discharge Point E-001 is a backup outfall for Discharge Point E-002, and Discharge Point E-004 is only used to discharge raw water during rare drought conditions so it is used infrequently.

Attachment B provides a map of the area around the Plant (see Figure B-1, Site Map) and a map of the Plant showing the effluent discharge locations (see Figure B-2, Orinda Water Treatment Plant Map). **Attachment C** provides a flow schematic for the facility.

C. Dichlorobromomethane

The source of dichlorobromomethane in the Plant's effluent is the raw water it receives from the Mokelumne Aqueduct, which is chlorinated upstream of the Plant to keep bacteria and algae growth in check. Trihalomethanes, including dichlorobromomethane, are formed when chlorine reacts with organic matter in water. The formation of trihalomethanes depends on a number of variables, such as temperature, organic substrate availability, and chlorine contact time.

The dominant environmental fate and transport process for dichlorobromomethane in water is release to the atmosphere (dichlorobromomethane's vapor pressure is 50 millimeters of mercury at 20 degrees Celsius [mm Hg 20°C]). Dichlorobromomethane is moderately soluble in water (4.5 grams per liter at 20°C), and it sorbs weakly to suspended solids or sediments (its octanol-water partition coefficient [Log K_{ow}] is 1.88). Because dichlorobromomethane is a contaminant commonly present in potable water supplies, its primary route of human exposure is through ingestion, as well as inhalation while bathing in potable water or swimming in chlorinated pools.

To protect human health from exposure to dichlorobromomethane in receiving waters, the California Toxics Rule contains a water quality criterion of 0.56 µg/L for waters where both water and organisms are consumed. San Pablo Creek and San Pablo Reservoir are integral elements of the Discharger's drinking water treatment and distribution system; therefore, both support the municipal and domestic supply (MUN) beneficial use. San Pablo Reservoir also supports the ocean, commercial, and sport fishing (COMM) beneficial use. Thus, the California Toxics Rule water quality criterion of 0.56 µg/L applies to these waters.

D. Compliance with Previous Order

The Regional Water Board issued Order No. R2-2009-0067 on October 14, 2009, establishing dichlorobromomethane effluent limits based on the California Toxics Rule human health criterion and the State Implementation Policy. These limits were an average monthly effluent limitation (AMEL) of 0.56 µg/L and a maximum daily effluent limitation (MDEL) of 1.1 µg/L. Because no information was available to justify a mixing zone or dilution credits at the time, these effluent limits did not account for mixing and dilution in the receiving water.

Because the Discharger's effluent data showed it could not readily comply with the dichlorobromomethane limitations, the Regional Water Board adopted Cease and Desist Order No. R2-2009-0068 immediately after adopting Order No. R2-2009-0067. The Cease

and Desist Order established a time schedule and prescribed actions for the Discharger to comply with the dichlorobromomethane limits by November 30, 2014. The Cease and Desist Order also established a performance-based interim MDEL of 4.9 µg/L. In September 2008, the Discharger moved its chlorination point closer to the Plant, reducing the chlorine contact time. Now less dichlorobromomethane is produced, but the Discharger is still unable to comply with the effluent limits in Order No. R2-2009-0067.

E. Mixing Zone and Dilution Credits

State Implementation Policy Section 1.4.2 allows the Regional Water Board to grant mixing zones and dilution credits. The Mixing Zone Study created a model of water transport from the effluent discharge point throughout the reservoir, and it then linked the empirical effluent dichlorobromomethane concentration data with reservoir concentration data to calculate the degree of dilution of dichlorobromomethane as it is transported downstream from the Plant. The Mixing Zone Study found that a mixing zone extending from Discharge Point E-002 (the discharge point farthest upstream) to a point 2.7 miles downstream in San Pablo Reservoir (see Attachment B) complies with State Implementation Policy requirements and the corresponding dilution ratio is 6:1 (i.e., the dilution credit, D, is 5, or 5 parts ambient receiving water to one part effluent).

1. Mixing Zone Based on Incompletely Mixed Discharges

The mixing zone and dilution credit for this discharge are based on site-specific information and State Implementation Policy procedures for incompletely mixed discharges, as discussed below. The State Implementation Policy allows mixing zones and dilution credits to be based on the procedures for incompletely mixed discharges if the procedures for completely mixed discharges are inappropriate due to site-specific issues, as is the case here. The site-specific issues are as follows:

- a. The allowance of a mixing zone is appropriate because the pollutant limits at issue are primarily based on protection of water to support a municipal supply, but the pollutant itself is the direct result of operations that are required and necessary for providing that same critical public need of potable water for public consumption.
- b. The use of the procedures for completely mixed discharges would result in an overly conservative dilution credit of 0.01:1 due to the high variability in natural creek flows and a creek base flow rate that is less than the discharge flow rate on most days. Meaningful dilution does not occur until the combined flow of the discharge and creek reaches San Pablo Reservoir.
- c. The revised discharge limits using a mixing zone would still ensure compliance with the drinking water standard (or Maximum Contaminant Level, MCL) for total trihalomethanes within the entirety of the mixing zone. The MCL for total trihalomethanes is 80 µg/L. Dichlorobromomethane is one of four pollutants that make up the total trihalomethanes MCL. The maximum effluent concentration of dichlorobromomethane was 2.3 µg/L (discussed in section F.2 below). The other three trihalomethane pollutants are chloroform (maximum detected in discharge at 45 µg/L), bromoform (non-detect at <0.69 µg/L), and chlorodibromomethane

(maximum detected at 0.4 µg/L). Under a worst case scenario (i.e., when the highest concentrations of all four compounds occur at the same time), the total trihalomethanes concentration in the discharge would be 48.4 µg/L, which is below the total trihalomethanes MCL of 80 µg/L.

The site-specific issues discussed above justify a mixing zone based on the procedures for an incompletely mixed discharge. Specifically, the procedures for a completely mixed discharge would be too limiting for the Discharger to continue its operations necessary to provide safe drinking water to its customers. Moreover, by using the incompletely mixed procedures to establish the mixing zone that would extend into San Pablo Reservoir rather than being limited to San Pablo Creek, the resulting dichlorobromomethane concentrations will not cause human health risks or diminish the use of the receiving water bodies for their designated beneficial uses, particularly as municipal water supply.

2. Requirements for Incompletely Mixed Discharges

State Implementation Policy section 1.4.2.2 requires that mixing zones be as small as practicable. The mixing zone proposed in the Mixing Zone Study is as small as practicable, reaching past the creek inlet to San Pablo Reservoir where the majority of mixing occurs. In accordance with State Implementation Policy section 1.4.2.2.A, the mixing zone does not do any of the following:

- a. *Compromise the integrity of the entire water body.* At 18.7 miles long, San Pablo Creek drains a watershed area of 41 square miles above San Pablo Reservoir. The mixing zone encompasses 1.3 miles of the creek, or about 7 percent of the creek above the reservoir. San Pablo Reservoir is 4.2 miles long, with an average surface area of 720 acres and average volume of 12.5 billion gallons of water. Based on the range of water surface elevations, the mixing zone comprises a maximum of 7 percent of the reservoir volume. Because the mixing zone occupies relatively small areas and volumes of San Pablo Creek and San Pablo Reservoir, it will not compromise the integrity of these waters.
- b. *Cause acutely toxic conditions to aquatic life passing through the mixing zone.* The mixing zone will not cause acutely toxic conditions to aquatic life because dichlorobromomethane poses little threat to aquatic organisms at the concentrations discharged. Neither the California Toxics Rule nor the Basin Plan has a water quality objective to protect aquatic life from dichlorobromomethane. Moreover, U.S. EPA has not recommended any water quality criterion for dichlorobromomethane to protect aquatic life. The State Water Resources Control Board's (State Water Board) *Compilation of Water Quality Goals* refers to 11,000 µg/L total halomethanes as the lowest observable effects level for freshwater aquatic life. This concentration is far above effluent concentrations; therefore, no acutely toxic effects are expected from dichlorobromomethane within the mixing zone.

Moreover, Order No. R2-2009-0067 requires whole effluent toxicity testing to demonstrate compliance with acute toxicity effluent limitations. These limits do not account for any dilution; therefore, compliance with these limits ensures that acutely

toxic conditions will not exist inside the mixing zone. The Discharger has tested the Discharge Point E-003 discharge for acute toxicity, and 11 of the last 12 quarterly samples show 100 percent rainbow trout survival. The remaining sample resulted in 37 percent survival in January 2011, but, when retested, resulted in 95 percent survival. (Though the cause of this isolated toxicity incident could not be determined, the Discharger reviewed its operational changes at the Plant since that incident occurred to address the most likely potential toxicant to minimize recurrence.) The high survival rate indicates that organisms passing through the mixing zone are unlikely to experience acute toxicity.

- c. *Restrict the passage of aquatic life.* As discussed above, the discharge will not cause acutely toxic conditions to aquatic life, so it will not threaten aquatic life passing through the mixing zone. Moreover, dichlorobromomethane is not viscous and does not affect water clarity, so it does not create a physical or visual barrier that could restrict the passage of aquatic life.
- d. *Adversely impact biologically sensitive or critical habitats, including, but not limited to, habitats of species listed under federal or State endangered species laws.* The mixing zone will not harm biologically sensitive or critical habitats because discharges from the Plant have been occurring for many years without any adverse impacts to biologically sensitive or critical habitats. Surveys conducted on the eastern side of San Pablo Reservoir and within San Pablo Creek have not identified the presence of red-legged frogs, the only potential species of concern in the area of the discharge. The closest red-legged frog sightings have been in the education pond at Wagner Ranch School, downstream of the Plant. Red-legged frogs may use San Pablo Creek for brief periods, as they move between pond and creek habitats in the area; however, they do not tend to stay in San Pablo Creek due to the presence of largemouth bass, bullfrogs, and other predators. Dichlorobromomethane is not known to harm frogs or any other aquatic life at the concentrations discharged.
- e. *Produce undesirable or nuisance aquatic life.* Dichlorobromomethane is not a biostimulant or plant nutrient so it will not cause growth of aquatic nuisance species. The Plant's discharges have occurred for many years without producing undesirable or nuisance aquatic life. Moreover, this Order does not alter the current receiving water limitations that prohibit bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.
- f. *Result in floating debris, oil, or scum.* The mixing zone will not result in floating debris, oil, or scum because dichlorobromomethane is not an oil, does not float, and does not cause scum. The low dichlorobromomethane concentrations in the discharge are completely dispersed within the discharge. This Order does not alter the current receiving water limitations that prohibit floating debris, oil, or scum at any place and at any time.
- g. *Produce objectionable color, odor, taste, or turbidity.* Dichlorobromomethane at discharge concentrations does not significantly affect color, odor, taste, or turbidity.

Dichlorobromomethane is a colorless, clear liquid so it will not produce objectionable color or turbidity in the mixing zone. A study of rats fed varying dichlorobromomethane concentrations found a taste-aversion threshold of 700 parts per million (ppm). For humans, the odor threshold for dichlorobromomethane is 1,680 milligrams per cubic meter. Discharge concentrations of dichlorobromomethane are in the one one-thousandths of a parts per million range, which do not come near these taste and odor levels.

- h. *Cause objectionable bottom deposits.* The mixing zone will not cause objectionable bottom deposits because dichlorobromomethane does not readily bind to sediment or persist in the environment. The State Implementation Policy defines objectionable bottom deposits as an accumulation of materials or substances on or near the bottom of a water body that creates conditions adversely impacting aquatic life, human health, beneficial uses, or aesthetics. These conditions include, but are not limited to, the accumulation of pollutants in sediments and other conditions that result in harm to benthic organisms, production of food chain organisms, or fish egg development. This Order does not alter the current prohibition against bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses. The Plant's discharges of settled filter backwash water and high quality raw water have occurred for many years without causing objectionable bottom deposits.
- i. *Cause nuisance.* The mixing zone will not cause a nuisance because dichlorobromomethane is colorless and odorless at discharge concentrations. California Water Code section 13050(m) defines "nuisance" to mean anything that meets all three of the following criteria:
- is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property;
 - affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and
 - occurs during, or as a result of, the treatment or disposal of wastes.

The mixing zone is not injurious to health because, within it, there is compliance with the drinking water MCL standard (see E.1.c), and there is compliance with the water quality standard for protection of health from consumption of fish. The water quality standard for dichlorobromomethane for consumption of fish is 46 µg/L. There is compliance with this standard throughout the mixing zone.

The mixing zone will not result in dichlorobromomethane concentrations that are indecent or offensive to the senses (see E.2.g above) and will not interfere with the comfortable enjoyment of life or property. The discharges have occurred for many years without causing any nuisance. Order No. R2-2009-0067 specifically prohibits

discharges from causing a nuisance as defined in California Water Code section 13050.

- j. *Dominate the receiving water body or overlap a mixing zone from different outfalls.* The dichlorobromomethane mixing zone will not dominate the receiving waters or overlap any other mixing zones. As discussed above, the mixing zone encompasses about 7 percent of the total creek length and at most 7 percent of the reservoir volume. Because the mixing zone occupies relatively small areas and volumes of the receiving waters, it will not dominate them. Moreover, the Regional Water Board has not established any other mixing zones in these receiving waters.
- k. *Be allowed at or near any drinking water intake.* The mixing zone is not at or near a drinking water intake. The Sobrante Water Treatment Plant intake is located at the far side of San Pablo Reservoir, opposite the Plant, about 3 miles from the mixing zone boundary. The reservoir water quality in this area meets the California Toxics Rule water quality criterion of 0.56 µg/L. Therefore, the mixing zone does not affect the use of San Pablo Creek and San Pablo Reservoir as a source of drinking water.

In accordance with State Implementation Policy section 1.4.2.2.B, the mixing zone protects beneficial uses, including the MUN and COMM beneficial uses. The mixing zone also does not affect the use of San Pablo Reservoir for sport fishing because fish move freely in the reservoir and thus are only exposed to waters within the mixing zone less than 7 percent of the time. Even within the mixing zone, fish are exposed to dichlorobromomethane concentrations generally below the California Toxics Rule water quality criterion. Only 17 of 218 samples collected within the mixing zone contained detectable dichlorobromomethane concentrations, and only 2 samples contained concentrations above the California Toxics Rule criterion (both of which occurred in the near side of the mixing zone as opposed to the far side where maximum mixing and dilution is observed). Moreover, the California Toxics Rule human health protection criterion for the consumption of organisms alone, when drinking water is not an issue, is 46 µg/L, far greater than the reservoir concentrations. Therefore, the potential for human exposure to dichlorobromomethane as a result of sport fishing is unlikely to pose a significant health risk.

F. Water Quality-Based Effluent Limitation Calculations

1. Water Quality Criterion

The most stringent applicable dichlorobromomethane water quality criterion is the California Toxics Rule criterion for protection of human health from consumption of water and organisms, 0.56 µg/L.

2. Reasonable Potential Analysis

As explained in the Fact Sheet for Order No. R2-2009-0067, there is reasonable potential that the discharge could cause or contribute to exceedances of the water quality criterion because the maximum effluent concentration observed (4 µg/L) exceeds the water quality criterion (0.56 µg/L), demonstrating reasonable potential by State Implementation Policy Trigger 1. More recent data, collected after the Discharger changed its chlorination

practices in September 2008 and reduced its dichlorobromomethane generation, still demonstrate reasonable potential because the more recent maximum effluent concentration (2.3 µg/L), observed at monitoring location EFF-003, still exceeds the water quality criterion.

3. Water Quality-Based Effluent Limitations

The dichlorobromomethane water quality-based effluent limitations, an AMEL of 3.2 µg/L and an MDEL of 4.4 µg/L, are calculated according to State Implementation Policy procedures. They account for the mixing zone and the dilution ratio within the mixing zone, 6:1 (D=5) and a calculated dichlorobromomethane coefficient of variation of 0.25. This coefficient of variation reflects effluent variability at monitoring location EFF-002, which is less than variability at monitoring location EFF-003 and therefore results in more stringent limits. The details of the calculation are shown in Table F-1.

Table F-1: Dichlorobromomethane Effluent Limit Calculations

PRIORITY POLLUTANT	Dichlorobromomethane
Units	µg/L
Basis and Criteria type	CTR HH
CTR Criteria -Acute	
CTR Criteria -Chronic	
Water Effects ratio (WER)	
Lowest WQO	0.56
Site Specific Translator – MDEL	
Site Specific Translator – AMEL	
Dilution Factor (D) (if applicable)	5
No. of samples per month	4
Aquatic life criteria analysis required? (Y/N)	N
HH criteria analysis required? (Y/N)	Y
Applicable Acute WQO	
Applicable Chronic WQO	
HH criteria	0.56
Background (Maximum Conc for Aquatic Life calc)	
Background (Average Conc for Human Health calc)	0.04
Is the pollutant Bioaccumulative (Y/N)? (e.g., Hg)	N
ECA acute	
ECA chronic	
ECA HH	3.16
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N
Avg of effluent data points	0.74
Std Dev of effluent data points	0.18

CV calculated	0.25
CV (Selected) – Final	0.25
ECA acute mult99	
ECA chronic mult99	
LTA acute	
LTA chronic	
minimum of LTAs	
AMEL mult95	1.21
MDEL mult99	1.71
AMEL (aq life)	
MDEL(aq life)	
MDEL/AMEL Multiplier	1.40
AMEL (human hlth)	3.16
MDEL (human hlth)	4.44
minimum of AMEL for Aq. life vs HH	3.2
minimum of MDEL for Aq. Life vs HH	4.4
Current limit in permit (30-day average)	0.56
Current limit in permit (daily)	1.1
Final limit – AMEL	3.2
Final limit – MDEL	4.4

4. Feasibility of Compliance

Effluent data collected after the Discharger changed its chlorination practices in September 2008 and reduced its dichlorobromomethane generation indicate that the Discharger can readily comply with the new dichlorobromomethane effluent limits. A statistical analysis of dichlorobromomethane concentrations at monitoring location EFF-003, where the highest dichlorobromomethane concentrations have been measured, shows that the 95th percentile of the effluent concentrations (1.8 µg/L) is less than the AMEL (3.2 µg/L), and the 99th percentile (2.1 µg/L) is less than the MDEL (4.4 µg/L). Therefore, the Discharger can comply with these new limits, and Cease and Desist Order No. R2-2009-0068 is no longer necessary.

G. Anti-backsliding

Clean Water Act sections 402(o) and 303(d), and 40 Code of Federal Regulations section 122.44(l), generally prohibit backsliding in NPDES permits. These anti-backsliding provisions require revised effluent limitations to be at least as stringent as those previously in place, with some exceptions under which they may be relaxed. Because the less stringent

dichlorobromomethane effluent limitations in this Order meet the following exceptions, they comply with anti-backsliding requirements.

- Clean Water Act section 402(o)(2)(B)(i) permits less stringent effluent limitations if new information is available that was unavailable at the time of permit issuance and would have justified less stringent limits when the previous limits were established. The Mixing Zone Study provides new information on the fate and transport of dichlorobromomethane in San Pablo Creek and San Pablo Reservoir that was unavailable when Order No. R2-2009-0067 was issued. Had this information been available, it would have justified granting a dilution credit in accordance with State Implementation Policy section 1.4.2, which would in turn have resulted in less stringent effluent limits.
- Clean Water Act section 402(o)(2)(C) permits less stringent effluent limitations if necessary because of events over which the discharger has no control and for which there is no reasonable remedy. The dichlorobromomethane in the effluent results from upstream chlorination performed to comply with California Department of Public Health regulations implementing State and federal drinking water quality laws necessary to protect public health and to maintain critical drinking water infrastructure. In correspondence dated October 13, 2009, the California Department of Public Health states that it is technically infeasible to remove trace dichlorobromomethane concentrations from the large volume of raw water received at the Orinda Water Treatment Plant. Dichlorobromomethane creation and discharge are thus beyond the Discharger's control and no reasonable remedy exists.

H. Antidegradation

Antidegradation policies require that existing water quality be maintained unless degradation is justified based on specific findings. State Water Board Resolution No. 68-16 sets forth California's antidegradation policy. Consistent with 40 Code of Federal Regulations section 131.12, Resolution No. 68-16 incorporates the federal antidegradation policy. The Basin Plan implements, and incorporates by reference, the State and federal antidegradation policies. Permitted discharges must be consistent with these policies.

This Order establishes less stringent dichlorobromomethane effluent limits than those in Order No. R2-2009-0067. The higher limits are consistent with antidegradation policies because (as discussed below in more detail): 1) the existing high quality of the receiving waters is maintained. Little or no degradation will occur; 2) to the extent that any degradation could occur, beneficial uses will remain fully protected, despite limited water quality degradation; and 3) because all beneficial uses remain fully protected, the resulting water quality will provide maximum benefit to the people of California, accommodating important economic and social development in the San Francisco Bay Region.

1. No Significant Degradation Will Occur

The potential for degradation is evaluated by comparing (1) the receiving water quality likely to result from the less stringent dichlorobromomethane limits to (2) the environmental baseline. The environmental baseline is the water quality present in 1968

unless subsequent lowering was due to regulatory action consistent with anti-degradation policies. In this case, because Order No. R2-2009-0067 complied with antidegradation policies, the environmental baseline is the water quality that would have existed had the Discharger been able to comply with Order No. R2-2009-0067's limits. Monitoring data representing conditions resulting from the previous limits do not exist because the Discharger was unable to comply with them. However, data representing the conditions resulting from the less stringent limits in this Order do exist because the existing conditions for which we have monitoring data reflect the fact that the Discharger has taken no specific actions to meet the limits in Order No. R2-2009-0067. A simple and conservative approach to comparing these scenarios is to compare existing water quality (conditions reflecting this Order) to a no-dichlorobromomethane-discharge scenario (environmental baseline conditions that would over-state any possible degradation). In other words, the potential degradation the revised limits could cause can be no greater than the degradation that exists now due to the dichlorobromomethane currently discharged.

Administrative Procedures Update (APU) No. 90-004 allows a "simple" antidegradation analysis when potential water quality degradation would be spatially localized or when a proposed action would produce only minor water quality effects. Degradation resulting from this Order, if any, would be limited to the spatial extent of observed dichlorobromomethane concentrations; where dichlorobromomethane cannot be detected and its effects cannot be observed, it cannot be said to degrade San Pablo Creek or San Pablo Reservoir. Data for existing conditions indicate that dichlorobromomethane concentrations throughout most of the creek and reservoir are very low, or not detected. Dichlorobromomethane has been detected only within the 1.3-mile section of creek flowing into the reservoir and the portion of the reservoir near the edge of the mixing zone. Beyond these areas, no dichlorobromomethane has been detected. Therefore, throughout most of the reservoir and upstream San Pablo Creek, there would be no degradation. Degradation within the portion of creek between the discharge and the reservoir, and the portion of the reservoir near the edge of the mixing zone, would at most be minor, as described in section E, Mixing Zone and Dilution Credits, above (see the last paragraph in particular). Because any degradation would be spatially localized and produce only minor effects, this simple antidegradation analysis is sufficient, and a complete antidegradation analysis is unwarranted.

2. Beneficial Uses and Attainment of Water Quality Standards

San Pablo Creek and San Pablo Reservoir support a number of beneficial uses, which are listed below in Table F-2. In particular, both San Pablo Creek and San Pablo Reservoir support the MUN beneficial use, and San Pablo Reservoir supports the COMM beneficial use. As human consumptive uses, MUN and COMM are the focus of this antidegradation analysis because the dichlorobromomethane water quality objective is based on human health risk. The existing water quality (the same water quality that will exist after issuance of this Order) exceeds levels necessary to support all of these beneficial uses including MUN and COMM (see section E.1.c and E.2, last paragraph in particular). Therefore, degradation of these waters by dichlorobromomethane may be allowed if

necessary to support important economic or social development in the area and when the degradation maximizes benefits for the people of the State of California. With the beneficial uses maintained and minimal antidegradation, San Pablo Creek and San Pablo Reservoir water quality standards will not be compromised from higher discharge limitations of dichlorobromomethane.

Table F-2: Beneficial Uses of San Pablo Creek and San Pablo Reservoir

Receiving Water Name	Beneficial Uses
San Pablo Creek	Fish migration (MIGR) Cold fresh water habitat (COLD) ¹ Rare freshwater habitat (RARE) ¹ Contact water recreation (REC-1) ^{1, 2} Non-contact water recreation (REC-2) Fish spawning (SPWN) Warm freshwater habitat (WARM) Wildlife habitat (WILD) Municipal and domestic supply (MUN)
San Pablo Reservoir	Commercial or recreational collection of fish intended for human consumption (COMM) ¹ Cold fresh water habitat (COLD) Municipal and domestic supply (MUN) Water contact recreation (REC-1) ² Non-contact water recreation (REC-2) Fish spawning (SPWN) Warm freshwater habitat (WARM) Wildlife habitat (WILD)

Notes:

¹ These beneficial uses were applied to San Pablo Creek or San Pablo Reservoir since the Permit was adopted in 2009 based on amendments to the San Francisco Basin Plan through December 31, 2011.

² The East Bay Municipal Utility District prohibits water contact recreation to protect public health.

3. Economic and Social Development

When receiving water quality is sufficient to protect beneficial uses, State Water Board Resolution No. 68-16 and 40 Code of Federal Regulations section 131.12 allow degradation when necessary to support important economic or social development in the area and when the degradation maximizes benefits for the people of the State of California. With this Order, the potential for minor degradation, to the extent that any degradation might occur at all, is necessary because the discharge is part of drinking water infrastructure critical to 1.3 million people within East Bay communities and chlorination (causing the presence of dichlorobromomethane) necessary to continue drinking water deliveries that meet State and federal laws and regulations ensuring clean and safe potable water. Given the San Francisco Bay Region’s reliance on potable water and its importance to California’s economy, accommodating the discharge and its at most minor water quality degradation would benefit the people of the State of California.

I. Authority for Permit Modification

Federal regulations at 40 Code of Federal Regulations section 122.62(a)(2) authorize the Regional Water Board to amend Order No. R2-2009-0067 because new information exists that was unavailable and not considered when Order No. R2-2009-0067 was adopted. In addition, Provision VI.C.1.c of Order No. R2-2009-0067 allows the Regional Water Board to modify or reopen the permit prior to its expiration if water quality studies provide a basis for determining that a permit condition should be modified. The Discharger requested this modification and provided the Mixing Zone Study to support its request.

J. Notification of Interested Parties

The Regional Water Board notified the Discharger and other interested agencies and persons of its intent to amend the waste discharge requirements for this discharge as set forth in Order No. R2-2009-0067 and to rescind Cease and Desist Order No. R2-2009-0068. The Regional Water Board provided an opportunity to submit written comments and recommendations. Notification was provided through the Contra Costa Times.

K. Written Comments

Staff determinations are tentative. Interested persons were invited to submit written comments concerning the tentative amendment and rescission order. Comments were to be submitted either in person or by mail to the Regional Water Board at 1515 Clay Street, Suite 1400, Oakland, California 94612, to the attention of Susan Glendening. To receive full consideration and a written response, written comments were to be received at the Regional Water Board offices by 5:00 p.m. on January 11, 2013.

L. Public Hearing

The Regional Water Board held a public hearing on the tentative amendment and rescission order during its regular meeting at the following date and time, and at the following location:

Date: February 13, 2013
Time: 9:00 a.m.
Location: Elihu Harris State Office Building
1515 Clay Street, 1st Floor Auditorium
Oakland, CA 94612

Contact: Susan Glendening, (510) 622-2462, email
SGlendening@waterboards.ca.gov

Interested persons were invited to attend. At the public hearing, the Regional Water Board heard all testimony pertinent to the discharge, amendment of waste discharge requirements, and rescission of cease and desist order. An opportunity for oral testimony was provided; however, for accuracy of the record, important testimony was requested to be in writing. The current Regional Water Board agenda and any changes in dates or locations were posted at its web address, <http://www.waterboards.ca.gov/sanfranciscobay>.

M. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review this decision of the Regional Water Board. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

N. Information and Copying

Supporting documents, comments received, and other information related to this action are on file and may be inspected at the address above at any time between 9:00 a.m. and 5:00 p.m., Monday through Friday. Copying of documents may be arranged by calling 510-622-2300.

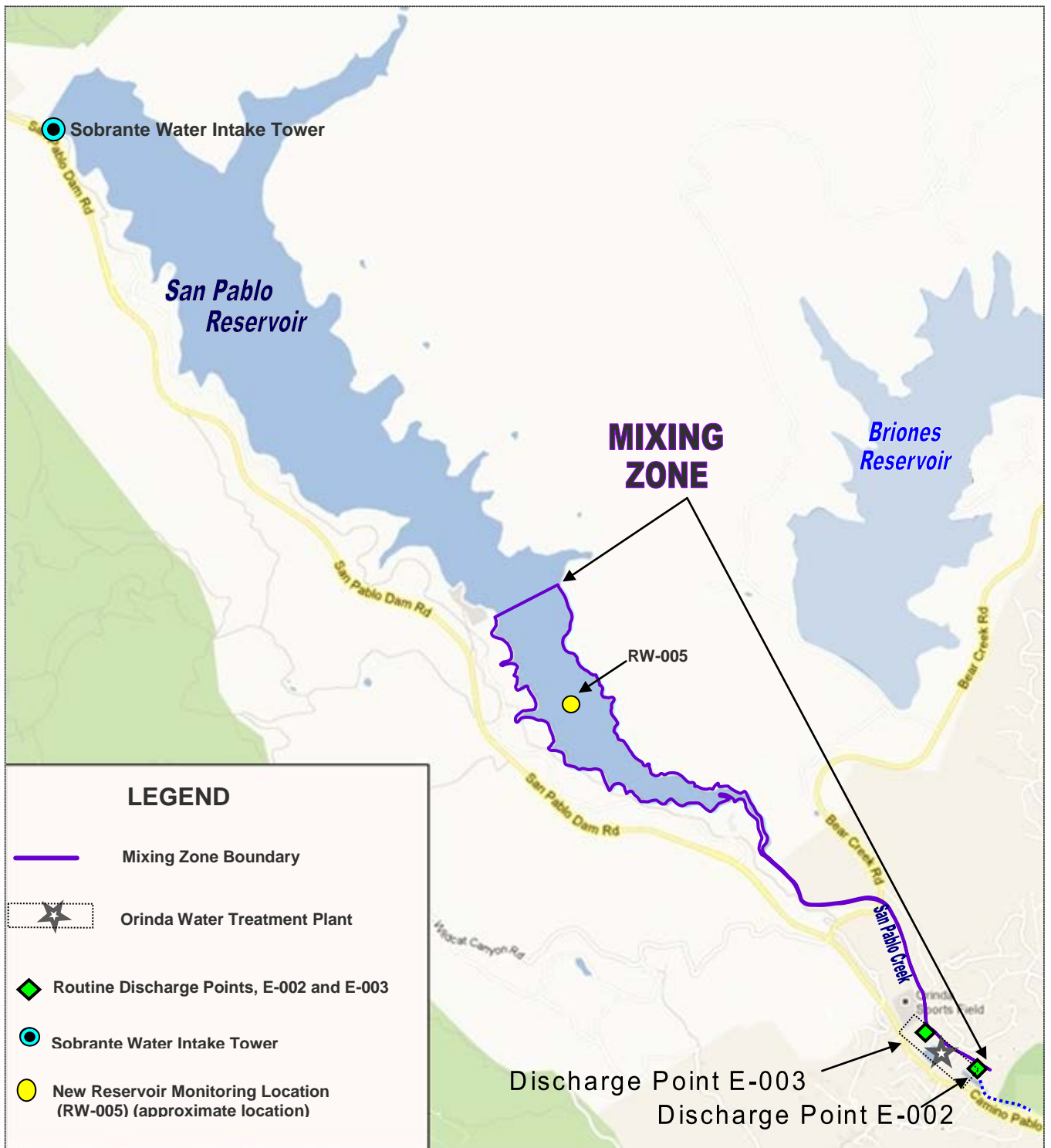
O. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this action should contact the Regional Water Board, reference this facility, and provide a name, email address, and phone number.

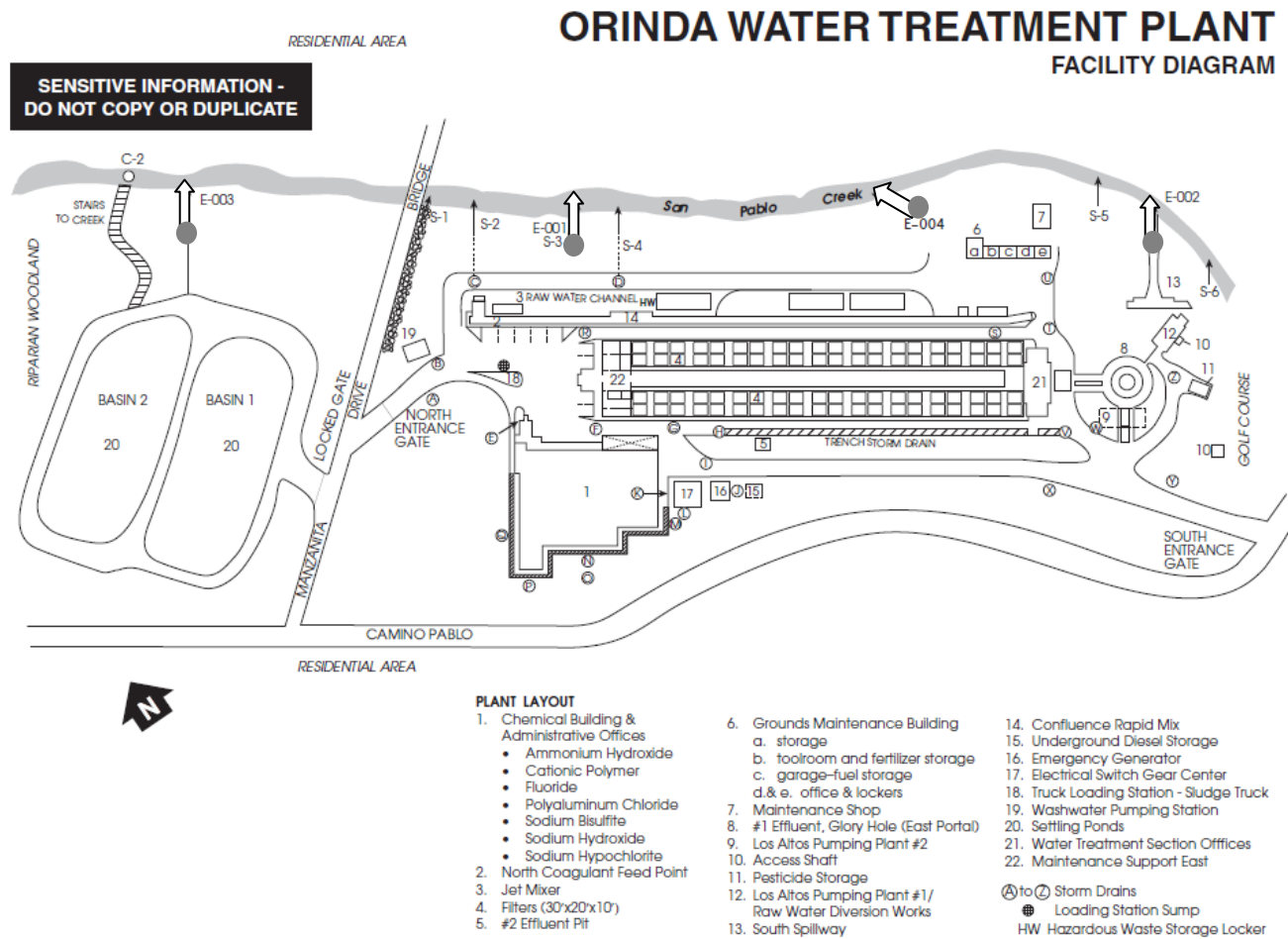
P. Additional Information

Requests for additional information or questions regarding this Order should be directed to Susan Glendening at 510-622-2462 or by email at SGlending@waterboards.ca.gov.

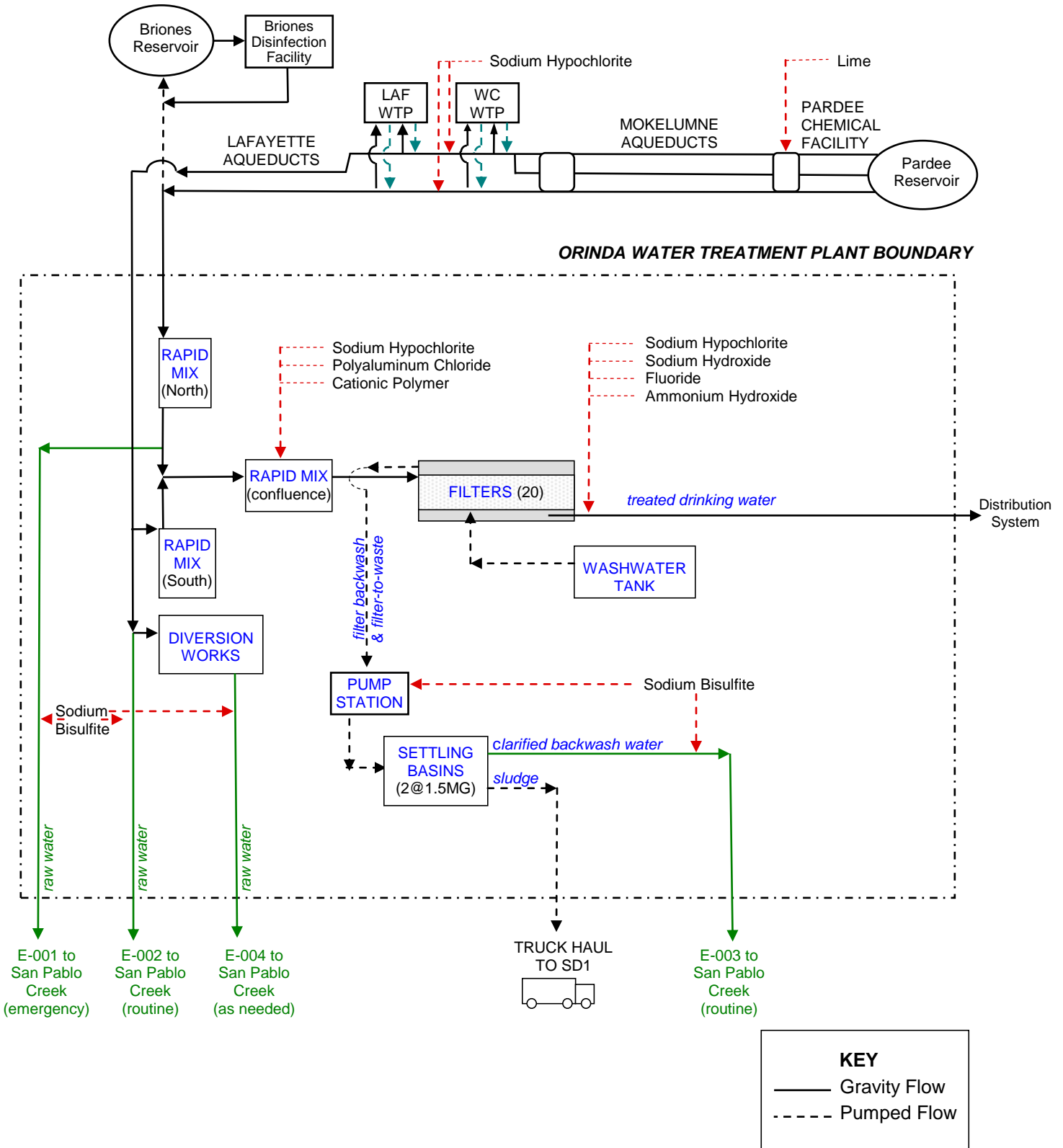
Attachment B – Figure B-1, Site Map with Mixing Zone



Attachment B – Figure B-2, Plant Map



ATTACHMENT C - FLOW SCHEMATIC



Attachment C – Flow Schematic Diagram