ATTACHMENT 1

March 31, 2010

Town of Yountville
Town of Yountville/State of California Veterans Home
Joint Wastewater Reclamation Facility

Comments Regarding the Reissuance of NPDES Permit No. CA0038121

The Town of Yountville (Town) appreciates the opportunity to submit the following comments on the revised Tentative Order (TO) released for review and comment on March 8, 2010.

For suggested revisions to the text of the TO, underline is shown for suggested additions, and ~~strike-out~~ is shown for suggested deletions.

Comments Regarding Tentative Order – Substantive

1. The following discussion points pertain to the copper mass balance equation used in the TO to assess assimilative capacity and support a minimum Napa River-to-effluent flow ratio for the Town of Yountville/State of California Veterans Home Joint Wastewater Reclamation Facility (Joint WWRF). The results of the mass balance equation were incorporated as Discharge Prohibition III.B. (page 10). The Town believes the values utilized in the analysis are incorrect and/or overly conservative and is making the following suggestions for improvement.

a) The initial TO (issued on October 27, 2009) required a 40:1 minimum river-to-effluent ratio prior to effluent discharge to the Napa River. This value was increased from the current permitted river-to-effluent flow ratio of 25:1 and was acceptable to the Town. The Town's mixing zone study was based on simulations under the 40:1 discharge scenario. Under all critical effluent conditions that were modeled, the mixing zone length was within 200 ft and travel time through the mixing zone was 6 minutes or less. All of the compliance points specified in the *State Implementation Policy* (SIP) were addressed and determined to be acceptable for the Town's discharge under the 40:1 discharge scenario.

Using the mass balance approach in the revised TO, a minimum river-to-effluent flow ratio of 69:1 is now required for Joint WWRF discharges. This ratio is more conservative than modeled or needed to maintain assimilative capacity in the river. In addition, the minimum river-to-effluent flow ratio generated from this analysis is based on flow measurements upstream of Calistoga. This flow ratio is only relevant to Calistoga WWTP discharges.

b) The use of total annual influent flows for each Napa River discharger (Calistoga, St. Helena, and Yountville) does not reflect the existing dry season effluent discharge prohibition. The use of influent flows also does not reflect the actual volume of effluent discharge to the Napa River because each Napa River discharger recycles a

significant portion of its effluent. Below is a table that summarizes flow rates for each Napa River discharger during the 2007-2008 discharge season:

Discharger	Discharge Season	Total Influent Flow (MG)	Total Effluent Flow to River (MG)	% Discharged to Napa River
City of Calistoga WWTP	12/01/07-06/15/08	154	113	73%
City of St. Helena WWTRF	12/01/07-04/30/08	106	0	0%
Town of Yountville/Veterans Home Joint WWRF	10/01/07-05/15/08	104	46	44%

The amount of influent recycled by each agency varies depending on the amount of rainfall received and the recycled water user needs. The Town understands this limitation and the Regional Water Board's need to ensure assimilative capacity in the river during the discharge season. As such, the Town suggests the conservative approach of using total influent flow during the discharge season for the mass balance equation.

c) Effluent copper concentrations for other Napa River dischargers are not the same as effluent copper concentrations from the Joint WWRF. Below is a table that summarizes effluent copper concentrations for each Napa River discharger:

Discharger	Data Period	Concentration Range (µg/L)	95th Percentile Concentration (µg/L)
City of Calistoga WWTP	01/2005-04/2009	1.9 – 9.2	8.2
City of St. Helena WWTRF	01/2006-04/2006	3.7 – 9.4	9.8
Town of Yountville/Veterans Home WWRF	02/2006-04/2008	8.0 – 25	28

Use of the 95th percentile of actual effluent copper concentrations is a conservative approach for the mass balance equation. However, the Town requests that actual 95th percentile concentrations be used for each discharger.

d) The downstream water quality objective should be used on the right-side mass balance equation since it is the downstream Napa River flow that is being used to estimate the downstream copper load. From the Napa River Collaborative Monitoring Study, the adjusted geometric mean hardness for the Napa River downstream of Yountville is 143 mg/L (as $CaCO_3$) with a range of 103-232 mg/L as $CaCO_3$. As a conservative estimate, the minimum hardness of 103 mg/L (as $CaCO_3$) could be used to calculate the downstream copper water quality objective. Using minimum hardness, the downstream objective is 9.6 µg/L.

e) The maximum ambient copper concentration measured in the Napa River upstream of Calistoga is 3.1 µg/L. An incorrect value of 4.1 µg/L was used for C_b in the mass balance equation. The 3.1 µg/L value was measured on 2/13/09 and used in the Joint WWRF Reasonable Potential Analysis prepared by the Regional Water Board.

f) The mass balance equation includes a "safety factor for other potential pollutant sources" to the Napa River. That safety factor was based on the combined flow volume of all three dischargers to the Upper Napa River and a copper concentration equal to Joint WWRF 95th percentile effluent concentration (28 µg/L). The Town accepts the flow volume used (Q_{trib}), but does not agree with the estimated copper concentration. It is highly unlikely that three more wastewater treatment plants will be constructed in this watershed, and if this occurred, the plants would not be permitted to discharge copper at 28 µg/L. If the safety factor is being introduced to reflect "watershed contributions" from runoff, a tributary copper concentration (C_{trib}) could be utilized. Because copper is a conservative element, the Town suggests using the maximum ambient Napa River (downstream of Joint WWRF outfall) copper concentration of 4.9 µg/L, measured by the Napa Sanitation District on July 22, 2008 (from the Napa Sanitation District Report of Waste Discharge). This concentration is a conservative approach for assessing the "watershed contribution," because it accounts for all drainage, including runoff and wastewater effluent from the Upper Napa River watershed.

g) The mass balance equation produces river-to-effluent flow ratios based on Napa River flows upstream of Calistoga. This ratio is relevant to regulation of Calistoga WWTP discharges. Due to significant watershed runoff contributions downstream of Calistoga, this ratio is not relevant as a discharge prohibition for the Yountville Joint WWRF discharges.

Using the changes suggested in a) through g) above, the minimum river-to-effluent flow ratio for Calistoga WWTP discharges is calculated as <1:1 (detailed below).

$$\text{Eq. 1} \quad Q_{RivUpstrm} + Q_c + Q_{sh} + Q_y + Q_{trib} = Q_{RivDnstrm}$$

$$\text{Eq. 2} \quad Q_{RivUpstrm}\, C_b + Q_c\, C_c + Q_{sh}\, C_{sh} + Q_y\, C_y + Q_{trib}\, C_{trib} = Q_{RivDnstrm}\, C_o$$

Where

$Q_{RivUpstrm}$ = Napa River flow upstream of Calistoga
C_b = Maximum ambient pollutant concentration at Napa River upstream of Calistoga
Q_c = 2007-2008 discharge season (12/01/07-06/15/08) total influent flow at Calistoga
C_c = 95th percentile effluent copper concentration at Calistoga
Q_{sh} = 2007-2008 discharge season (12/01/07-04/30/08) total influent flow at St. Helena
C_e = 95th percentile effluent copper concentration at St. Helena
Q_y = 2007-2008 discharge season (10/01/07-05/15/08) total influent flow at Yountville
C_e = 95th percentile effluent copper concentration at Yountville
Q_{trib} = Tributary or other source flow
C_{trib} = Tributary or other source copper concentration
$Q_{RivDnstrm}$ = Napa River flow downstream of Yountville
C_o = Napa River downstream water quality objective

And assuming

$Q_c + Q_{sh} + Q_y = Q_{trib}$
$Q_{Dnstrm} = Q_{Upstrm} + Q_c + Q_{sh} + Q_y + Q_{trib}$

Given 2007-2008 discharge season influent treatment plant flows of
Calistoga = 154 million gallons = Q_c
St. Helena = 106 million gallons = $0.69Q_c$
Yountville = 104 million gallons = $0.68Q_c$

Eq. 2 (in terms of Calistoga WWTP flows) results in

$Q_{RivUpstrm}\ C_b + Q_cC_c + 0.69Q_cC_{sh} + 0.68Q_cC_y + Q_{trib}C_{trib} = Q_{RivDnstrm}\ C_o$
$Q_{RivUpstrm}\ C_b + Q_cC_c + 0.69Q_c\ C_{sh} + 0.68Q_cC_y + (Q_c + Q_{sh} + Q_y)C_{trib} = (Q_{Upstrm} + Q_c + Q_{sh} + Q_y + Q_{trib})\ C_o$
$Q_{RivUpstrm}\ C_b + Q_cC_c + 0.69Q_cC_{sh} + 0.68Q_cC_y + (2.37Q_c)C_{trib} = (Q_{Upstrm} + 4.74Q_c)\ C_o$

Using copper as a pollutant with the least amount of assimilative capacity (i.e., both background and effluent concentration closest to the objective), yields

$Q_{RivUpstrm} * 3.1 + Q_c * 8.2 + 0.69Q_c * 9.8 + 0.68Q_c * 28 + (2.37\ Q_c) * 4.9 = (Q_{RivUpstrm} + 4.74\ Q_c) \times 9.6$

Because
C_b = 3.1 µg/L
C_o = 9.6 µg/L, which is based on a minimum downstream (Napa River downstream of Yountville) hardness of 103 mg/L as $CaCO_3$
C_y = 28 µg/L (95th percentile value of Yountville's effluent; 25 ug/L is the maximum measured)
C_{sh} = 9.8 µg/L (95th percentile value of St. Helena's effluent; 9.4 ug/L is the maximum measured)
C_c = 8.2 µg/L (95th percentile value of Calistoga's effluent; 9.2 ug/L is the maximum measured)
C_{trib} = 4.9 µg/L (maximum receiving water copper concentration in the Napa River downstream of Yountville Joint WWRF effluent discharge, NSD station CC-1)

Solving for the ratio of $Q_{RivUpstrm}$ to Q_c results in

$Q_{RivUpstrm}/Q_c = 0.009/1$
Or <1:1 as a minimum river-to-effluent flow ratio for Calistoga WWTP discharges

Substituting values for Q_y and Q_{sh} into resulting ratio for Q_c reveals that a minimum 1:1 river-to-effluent flow ratio (as measured upstream of Calistoga) for all three dischargers is required to maintain assimilative capacity for copper in the Upper Napa River. However, the San Francisco Bay Water Quality Control Plan (Basin Plan) prohibits "Any wastewater which has particular characteristics of concern to beneficial uses at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1." To comply with the Basin Plan, the Calistoga WWTP is not permitted to discharge until the Napa River flowrates are ten times greater than the effluent flow. Safety factors are built into the minimum river-to-effluent flow requirements for the downstream discharges of St. Helena WWTRF (25:1 as measured at the St. Helena River Gage) and the Yountville Joint WWRF (40:1 as measured at the Napa River near Napa Gage).

The mass balance exercise demonstrates that the minimum river-to-effluent flow ratios that are currently permitted for each discharger are greater than required to ensure available assimilative capacity is being maintained in the Napa River.

The suggested changes to the Tentative Order are detailed below:

Water Quality Control Plans II.H. (page 7)

While the effluent temperature is typically higher than the receiving water temperature, the flow rate of the discharge is much less than of the river (~~69:1~~ 40:1 minimum river to effluent ratio) and will not significantly increase the temperature of the river.

Discharge Prohibitions III.B. (page 10)

Discharge of treated wastewater to the Napa River is prohibited unless the river to effluent flow ratios is at least ~~69:1~~ 40:1.

Water Quality Control Plans III.B. (page F-7)

While the effluent temperature is typically higher than the receiving water temperature, the flow rate of the discharge is much less than the river (~~69:1~~ 40:1 minimum river to effluent ratio) and will not significantly increase the temperature of the river.

Discharge Prohibition III.B (Discharge which does not receive a minimum ~~69:1~~ 40:1 river-to-effluent ratio is prohibited) IV.A.2. (page F-10)

This prohibition is based on best professional judgment to ensure that the Discharger's discharge does not fully utilize the assimilative capacity of the Napa River in consideration of other permitted wastewater discharges to this same segment of the water body, specifically the Cities of Calistoga and St. Helena. Compliance with this requirement also ensures compliance with, and is thus based in part on, Basin Plan Table 4-1, Discharge Prohibition 1, which prohibits discharge of any wastewater that does not receive a minimum dilution of at least 10:1.

Allocation of assimilative capacity of the river for the three wastewater discharges is based on each discharger's 2008 influent flows to each of the three treatment plants, plus a safety factor for other potential pollutant sources to the water-body, which is assumed to be equal to all three wastewater discharges flows combined and concentrations based on Napa River downstream data. This analysis also assumes the ~~load~~ concentration of pollutants from the wastewater sources is ~~approximately proportional to each source's wastewater flow (i.e., concentrations approximately equivalent) because of similarities between service areas~~ equal to the 95th percentile of effluent concentrations. Finally, it conservatively assumes that water quality-based pollutants are conservative, in other words, will not break down or convert into a less toxic state. The river-to-effluent ratio is based on the principals of conservation of mass and flow in the river as shown in the following formulas and calculations:

[Insert revised equation and variables]

2. The revised TO includes changes to copper and zinc effluent limits based on minimum upstream hardness values. The Town believes this approach does

not reflect actual impacts to the receiving water and deviates from Regional Water Board policy for determining the applicable hardness used to calculate water quality objectives for hardness-dependent metals. Since August 2003, the Regional Water Board, has used the adjusted geometric mean (AGM) receiving water hardness (combined upstream and downstream values) in all NPDES permits. Hardness data collected by the Napa River Collaborative Monitoring Program is presented in the table below:

Sampling Location	Sampling Date	Concentration (mg/L as $CaCO_3$)
Upstream (Napa River upstream of Calistoga)	02/25/02	58
	04/25/02	80
	07/18/02	120
	10/14/02	80
	10/15/03	81
	11/19/03	124
	12/17/03	75
	01/21/04	73
	04/23/07	82
	04/21/08	98
	04/24/08	100
	02/13/09	64
Downstream (Napa River downstream of Yountville)	02/25/02	110
	04/25/02	150
	07/18/02	190
	10/14/02	150
	10/15/03	232
	11/19/03	206
	12/17/03	103
	01/21/04	128
	05/03/07	140
	04/24/08	180
	02/13/09	110

The AGM for this combined data set is 106 mg/L as $CaCO_3$.

The California Sportfishing Protection Alliance (CSPA), in its comments to the initial Tentative Order, argued for minimum upstream hardness based on State Water Resources Control Board (State Water Board) Order No. WQ 2008-0008, which remanded the City of Davis NPDES permit that has not since been re-issued by the Central Valley Regional Water Quality Control Board. Citations of Order No. WQ 2008-0008 in the CSPA comment letter were taken out of context, and the comment letter does not include current hardness selection policies of the Central Valley Regional Water Board.

Since the State Water Board remand of the City of Davis NPDES permit, the Central Valley Regional Water Board has adopted a policy of using minimum effluent hardness for metals that exhibit a downward concaving relationship

between design hardness and resulting water quality objective. These metals include cadmium (chronic), chromium III, copper, nickel, and zinc. For metals that exhibit an upward concaving relationship between design hardness and resulting water quality objective, a combination of minimum receiving water and effluent hardness values are used to calculate applicable water quality objectives.

USEPA is currently in the process of developing guidance for selection of the appropriate hardness for use in calculating water quality objectives for hardness-dependent metals. Until this guidance is available, the Town suggests that the current policy for hardness selection (using the AGM), which has been used by the San Francisco Regional Water Control Board since August 2003, be continued.

The suggested changes to the Tentative Order are presented below:

Receiving Water Hardness IV.C.2.e. (page F-15)

Ambient hardness values are used to calculate freshwater WQOs that are hardness dependent. In determining WQOs for this Order, Regional Water Board staff used a hardness of ~~64~~ 106 mg/L as $CaCO_3$, which is the ~~lowest of 12~~ adjusted geometric mean of 21 hardness data points collected in the Napa River upstream and downstream of the discharge point through the "Collaborative Napa River Receiving Water Evaluation".

3. Based on the response to Comment #2 regarding applicable receiving water hardness, the following changes are suggested for hardness-dependent water quality based effluent limitations. The limits shown were derived using a hardness value of 106 mg/L as $CaCO_3$, D=6 for copper, D=5 for zinc (as requested in the Mixing Zone Study Final Report). The maximum daily effluent limitation for copper is based on the current permitted value.

IV.B. Table 7. Effluent Limitations for Toxic Pollutants (page 12)

Parameter	Units	Final Effluent Limitations [1][2]	
		Average Monthly	Maximum Daily
Copper	µg/L	~~26~~ 41	~~52~~ 78
Zinc	µg/L	~~250~~ 350	~~500~~ 700

Copper IV.C.4.c.(1) (page F-22)

(a) WQOs. The most stringent WQOs for copper are the freshwater aquatic life criteria from the Basin Plan: ~~6.4~~ 9.8 and ~~9.2~~ 15 micrograms per liter (µg/L), chronic and acute, respectively, expressed as total metal, based on a hardness of ~~64~~ 106 mg/L as $CaCO_3$.

(b) RPA. This Order establishes effluent limitations for copper because the MEC of 25 µg/L exceeds the governing WQO for copper, demonstrating Reasonable Potential by Trigger 1.

(c) WQBELs. Effluent limitations for copper, calculated according to SIP procedures with a default CV of 0.6 and D=6, are an AMEL of ~~26~~ 41 µg/L and an MDEL of ~~52~~ 82 µg/L. The existing copper maximum daily effluent limitation is 78 µg/L, which is less than the MDEL

calculated. Because of antibacksliding, effluent limitations for copper for this Order are an AMEL of 41 µg/L and an MDEL of 78 µg/L.

(d) Feasibility of Compliance. ~~Feasibility to comply with effluent limits is inconclusive. Statistically, there may be intermediate compliance infeasibility because the 95th percentile (28 µg/L) is greater than the AMEL (26 µg/L); and the mean (19 µg/L) is greater than the long term average of the projected distribution of the effluent data set after accounting for effluent variability (17 µg/L). However, the highest concentration measured since February 2006 was 25 µg/L, which is below both the MDEL of 52 µg/L and AMEL of 26 µg/L).~~ It is feasible for the Discharger to comply with the copper effluent limits because the 95th percentile (28 µg/L) is less than the AMEL (41 µg/L); the 99th percentile (32 µg/L) is less than the MDEL (78 µg/L); and the mean (18.9 µg/L) is less than the long-term average of the projected lognormal distribution of the effluent data set after accounting for effluent variability (44 µg/L).

Zinc IV.C.4.c.(2) (page F-22)

(a) WQOs. The most stringent WQOs for zinc are from the Basin Plan for protection of freshwater aquatic life: ~~82~~ 126 µg/L for both acute and chronic criteria, expressed as total metal, based on a hardness of ~~64~~ 106 mg/L as $CaCO_3$.

(b) RPA. This Order establishes effluent limitations for zinc because the MEC (190 µg/L) exceeds the applicable WQO for this pollutant, demonstrating Reasonable Potential by Trigger 1.

(c) WQBELs. Final WQBELs for zinc calculated according to SIP procedures with a default CV of 0.6 and D=5, are an AMEL of ~~250~~ 350 µg/L and an MDEL of ~~500~~ 700 µg/L.

Effluent Limit Calculations (Table F-8, page F-28)

[Revise table as needed to reflect limits based on 106 mg/L as $CaCO_3$**]**

4. The Town requests approval to use values from the USGS flow gage (Napa River near Napa) to determine the river-to-effluent flow ratio during discharge and the Town's current method of reporting the ratio. The requested changes are shown below.

Effluent Monitoring (footnote to Table E-3, page E-5)

[10] The Discharger shall calculate the river-to-effluent ratio once per day whenever discharge to the Napa River is occurring. The river flow-to-effluent ratio shall be reported as the ratio of the instantaneous flow rate of the Napa River measured at USGS Station No. ~~11456000~~ 11458000 (at 8am every morning) to the ~~instantaneous flow of the~~ effluent discharge flowrate during the previous 24 hours (8am to 8am) measured at EFF-002.

5. The Town suggests the following deadline for submittal of required monthly Self-Monitoring Reports (SMRs) to the Regional Water Board. This schedule is consistent with the region-wide reporting deadlines specified in a letter sent by the Regional Water Board to all Permitted NPDES Wastewater Dischargers on December 2, 2003.

Self Monitoring Reports X.B. (page E-8)

~~Monthly SMRs shall be due on the 30th day following the end of each calendar month, covering samples collected during that calendar month.~~ Monthly SMRs shall be due on the 1st day of the second month following the month of sampling. Annual Reports shall be due on February 1 following each calendar year.

6. The Town monitors the flow of recycled water from the Joint WWRF on a daily basis. However, flow meters at individual recycled water user sites are only read monthly. For consistency with current practices, the following change in recycled water flow reporting is requested.

Recycled Water Monitoring Requirements VII. (page E-6)

The Discharger shall monitor the flow of all treated effluent that is reused for any purpose. For each calendar month, the Discharger shall report ~~the total daily flow volume (MG) of recycled water for each day,~~ the monthly average flow rate (MGD)~~, the maximum daily flow rate (MGD), the minimum daily flow rate (MGD),~~ and the total monthly flow volume (MG) to all recycled water users.

7. The Town requests the following changes be made to the Fact Sheet to indicate the correct monitoring results for toxic pollutants during the previous permit term.

Previous Effluent Limitations (Order No. R2-2004-0017) and Monitoring Data for Toxic Pollutants (Table F-4, page F-5)

Parameter	Units	Final Limits		Interim Limits		Monitoring Data from 02/06 to 04/08)
		Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Highest Daily Concentration
Chlorodibromomethane	µg/L	2.4	4.8	-	-	J 0.1
Bis(2-ethylhexyl)phthalate	µg/L	14	28	-	-	J 1.6

Comments Regarding Tentative Order – Typographical/Non-Substantive

8. The Town suggests correction of the following typographical errors.

Permit Information I.B. (page F-3)

The discharge of treated wastewater from the Facility to the Napa River, a water of the United States, is currently regulated by Order No. R2-2004-0017 (NPDES Permit No. CA0038121), which was adopted on March 17, 2004, became effective on June 1, ~~2003~~ 2004, and expired on April 30, 2009.

Dioxin-TEQ IV.C.4.c.(4) (page F-24)

To determine if the discharge of dioxin or dioxin-like compounds from the Facility has reasonable potential to cause or contribute to a violation of the Basin Plan's narrative bioaccumulation WQO, Regional Water Board staff used TEFs to express the measured concentrations of ~~16~~ 17 dioxin congeners in effluent and background samples as equivalent to 2,3,7,8-TCDD.

Total Ammonia IV.C.4.c(6) (page F-26)

(a) WQOs. The Basin Plan contains WQOs for un-ionized ammonia of 0.025 mg/L as an annual median and 0.16 mg/L as a maximum for Central San Francisco Bay and upstream reaches of the Bay. Regional Water Board staff translated these WQOs for un-ionized ammonia to equivalent total ammonia concentrations (as nitrogen) since (1) sampling and laboratory methods are not available to analyze for un-ionized ammonia; and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on pH, salinity, and temperature of the receiving water. To translate the Basin Plan's un-ionized ammonia objectives, Regional Water Board staff used pH and temperature data from ~~October 2003 through January 2004 from an upstream monitoring station on the Napa River near St. Helena and a downstream station approximately 3 miles downstream from the outfall~~ February 2002 through February 2009 from a monitoring station in the Napa River upstream of Calistoga and a monitoring station in the Napa River downstream of the Yountville discharge location.

…

The equivalent total ammonia chronic and acute WQOs are ~~1.76~~ 1.17 mg/L and ~~0.45~~ 1.93 mg/L, respectively.

(b) RPA. This Order establishes effluent limitation for total ammonia because the MEC (8.0 mg/L) exceeds the most stringent WQO (~~0.45~~ 1.17 mg/L) for this pollutant, demonstrating Reasonable Potential by Trigger 1.

Effluent Monitoring (Table E-3, page E-5)

[8] Monitoring for temperature shall occur concurrently with monitoring for ammonia and pH for determination of the ~~ionized~~ un-ionized fraction of ammonia.