Carpinteria Sanitary District
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January 27, 2013

Mr. James Fischer
Water Resource Control Engineer
Office of Enforcement / Special Investigations Unit
State Water Resources Control Board
Via Email: jim.fischer@waterboards.ca.gov

Subject: Technical Report Submittal – CWC Section 13267
Notice of Violation for Unauthorized Discharge Events
Carpinteria Sanitary District (NPDES No. CA0047364)

Dear Mr. Fischer:

This is in response to the letter dated December 10, 2013 from Mr. Michael Thomas of the Central Coast Regional Water Quality Control Board (CCRWQCB) to the Carpinteria Sanitary District (District) relating to the Notice of Violation for Unauthorized Discharge Events to Waters of the United States; Requirement to Submit Technical Report Pursuant to Section 13267 of the California Water Code.

Attached, in electronic format, is a copy of the requested Technical Report. Appendices to the report will be concurrently transmitted using methods other than electronic mail (FTP site protocol and/or "Dropbox" upload) due to the large file size. It should also be noted that the District engaged qualified technical professionals to assist in the preparation of this Technical Report in accordance with RWQCB directives.

In addition to the attached requested information and materials, the District believes it is also important for the CCRWQCB to recall that in 2008, the District was named Small Plant of the Year for the State of California by the California Water Environment Association. My staff and I take great pride in both the condition and the performance of the District's wastewater treatment facility, as evidenced by its excellent compliance history. We therefore fully trust that your investigation will conclude that the three discharge events in question were anomalous, that the District's remedial response was prompt and thorough, and that our regulatory reporting was both complete and timely.

Moreover, based on the facts of these matters and our understanding of the SWRCB Water Quality Enforcement Policy, we remain of the opinion that the enforcement response and related investigation is not proportionate to the nature and magnitude of the three discharge events that were reported by the District. Accordingly, should either the CCRWQCB or the SWRCB elect to pursue any enforcement action relating to these events, the District hopes

that any such action will follow the tenets of that Enforcement Policy, especially those relating to fairness and consistency.

Please do not hesitate to contact me if you have any questions or require additional information. I can be reached at (805) 684-7214 x12 or by email at craigm@carpsan.com.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
CARPINTERIA SANITARY DISTRICT

Craig Murray, P.E.
General Manager

cc: Mr. Harvey Packard
Section Manager and Enforcement Coordinator
Central Coast Regional Water Quality Control Board
Via Email: harvey.packard@waterboards.ca.gov

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

01/24/14

CARPINTERIA SANITARY DISTRICT

RESPONSE TO NOTICE OF VIOLATION FOR UNAUTHORIZED DISCHARGE EVENTS

FINAL

January 2014

2880 GATEWAY OAKS DRIVE, SUITE 300 • SACRAMENTO, CALIFORNIA 95833 • P. 916.565.4888 • F. 916.565.4880

Carpinteria Sanitary District

RESPONSE TO NOTICE OF VIOLATION FOR UNAUTHORIZED DISCHARGE EVENTS

CONFIDENTIAL – ATTORNEY WORK PRODUCT DOCUMENT

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APPENDICES

1.0 INTRODUCTION

This Technical Report has been prepared in response to the Notice of Violation (NOV) for Unauthorized Discharge Events to Waters of the United States; Requirement to Submit Technical Report Pursuant to Section 13267 of the California Water Code, dated December 10, 2013. The NOV requires a technical report that addresses a list of required responses regarding the events associated with two (2) separate chemical delivery system failures at the Carpinteria Sanitary District (District) Wastewater Treatment Facility (WTF).

The information summarized herein is meant to fulfill this requirement to the Central Coast Regional Water Quality Control Board (RWQCB) and is hereby submitted on behalf of the District.

2.0 BACKGROUND

The District owns and operates the wastewater collection, treatment, and disposal system, which provides service to the City of Carpinteria and portions of Santa Barbara County. Treated wastewater is discharged from Discharge Point No. 001 to the Pacific Ocean in accordance with Waste Discharge Requirements (WDR) Order No. R3-2011-0003, National Pollutant Discharge Elimination System (NPDES) Order No. CA0047364.

2.1 Details of the Notice of Violation

As described in the NOV (included herein as Appendix A as follows:

- Disinfection system failure (October 3, 2012) – resulting in the discharge of 281,250 gallons[1] on non-chlorinated wastewater. This is reported within the NOV as a violation of Prohibition III.B "discharge of waste in any manner other than described in the WDRs."

- Dechlorination system failure (January 3 and 7, 2013) – resulting in exceedance of chlorine residual limitations. This is reported within the NOV as violation of the "instantaneous maximum limit for Total Residual Chlorine" for each of the two days in question.

2.2 Response to the Notice of Violation

The response included herein is a compilation of information obtained from the District, engineering judgment based on experience with other treatment facilities, and (as

[1] An independent volume calculation prepared herein estimates this volume to be 231,076 gallons.

appropriate) application of industry standards for design and operation of wastewater treatment facilities.

The response is organized to correspond with the structure of the information request, and is broken up into chapters for each event:

- Chapter 3.0 addresses the disinfection system failure (Oct 3, 2012 event)
- Chapter 4.0 address the dechlorination system failures (Jan 3 and 7, 2013 events)

Repeated information and results are intentional because the events (and associated responses) are similar in nature.

3.0 DISINFECTION SYSTEM FAILURE

The first event discussed in the NOV relates to the discharge of non-chlorinated wastewater due to the failure of the facility's disinfection system.

3.1 Permit Requirements for Disinfection

Order No. R3-2011-0003 includes effluent limitations for total coliform organisms to ensure adequate disinfection of discharged treated wastewater. These limitations are summarized in Table 3.1.

Table 3.1 Summary of Effluent Total Coliform Limitations[1]
Response to NOV for Unauthorized Discharge Events
Carpinteria Sanitary District

Average Weekly[2] (MPN/100 mL)	Maximum Daily[2] (MPN/100 mL)
23	2,300[3]

Notes:
1. Information summarized from effluent limitations assigned in Provision VI.A.2 of Order No. R3-2011-0003.
2. The median number of total coliform organisms in effluent shall not exceed 23 MPN/100 mL, as determined by the bacteriological result for the last 7 days for which have been completed. The number of total coliform organisms in any sample shall not exceed 2,300 MPN/100 mL at any time.
3. Applied as an instantaneous maximum.

The MRP associated with Order No. R3-2011-0003 includes continuous monitoring of total chlorine residual and grab sampling for coliform organisms (total and fecal). There are various requirements associated with violations of effluent limitations for total coliform counts as listed in notes 3, 4 and 5 of Table E-3. Table E-3 also contains a requirement that the following authorities be notified upon "loss of disinfection:"

- Central Coast RWQCB
- Department of Health Services

- “Any Mariculture Grower”

There are no specific limitations associated with the “loss of disinfection” like duration of loss, or total volume of undisinfected discharged flow.

Finally, included as Provision VII.A.2 of the MRP is a requirement to monitor for total coliform, fecal coliform, and enterococcus at receiving water-sampling stations RSW-F and RSW-G, in addition to three shore sampling stations approved by the Executive Officer, for seven days after “loss of disinfection.”

3.2 Summary of Events

According to the District, the failure of the primary sodium hypochlorite feed pump was discovered at approximately 9:30 a.m. on October 3, 2012. This occurred during the course of a routine daily treatment facility inspection, when it was noted that chemical was not being delivered to the injection point in the chlorine contact chamber (the continuous chlorine analyzer downstream of the injection point was reading 0.0 mg/L). The issue was reported to Mark Rogers (Treatment Supervisor), and action was taken by the operations staff as follows:

- Inspection of the continuous chlorine analyzer and sample feed pump confirmed normal equipment operation
- A visual inspection of the sodium hypochlorite feed pump suggested normal pump operation other than the fact that no chemical was being delivered
- Inspection of the bulk sodium hypochlorite storage tank verified that the tank level transducer was operating correctly (tank level reading of 1,200 gallons was confirmed by visual observation of chemical level in tank through inspection hatch)
- Inspection of chemical feed piping, valves, and fittings (including the associated pressure relief valve and pressure regulator) between the feed pump and the injection location at the chlorine contact chamber indicated normal operation

The facility had a pre-scheduled chemical delivery, which was initiated shortly after observation of failure of chemical delivery to the Chlorine Contact Chamber. During the transfer of chemical from the delivery truck to the chemical storage tank, the chemical feed pump returned to normal operation. This occurred at approximately 9:40 a.m. (within approximately 10 minutes of discovery of failure).

The District confirmed normal operation of the disinfection system with analysis of chlorine residual at the chlorine contact basin (via online meter and grab samples), and then initiated notification regarding the loss of disinfection to the proper authorities (as described below). In the interim, the District estimated the total volume of non-chlorinated wastewater

discharged (281,250 gallons[2]), and distributed this information to the authorities they had contacted.

After the District notified the appropriate authorities of the event, the following responses were received from the authorities listed:

- On the day of the event, the Environmental Management Branch of the California Department of Public Health (CDPH) indicated (in an telephone conversation) that, based on the volume of discharge estimated and given ocean currents at time of discharge, **no impact to shellfish growing areas would occur**.

- On the day following the event, the Santa Barbara County Environmental Health Services (EHS) indicated that there was **no need to post the beach or undertake any other response measures**.

- In a follow up phone call the day after the event (the District had left a phone message the day of the event), the Central Coast RWQCB indicated that a letter describing the events should be submitted. No other advice was received by the District in terms of additional actions or future mitigation measures.

The District followed up with written documentation sent directly to the Central Coast RWQCB on October 4, 2012, and reported the event in the California Integrated Water Quality System Project (CIWQS) electronic reporting database with submittal of their monthly monitoring report.

3.3 Causes and Circumstances of the Discharge

The presumed causes and circumstances of the discharge of non-chlorinated wastewater that occurred as a result of the failure of the facility's chlorination system are summarized in the following sections.

3.3.1 Detailed Explanation of Discovery of Discharge Events

A detailed description of how and when the discharge was discovered is included in Section 3.2, and is also broken down chronologically in Section 3.4.1.

3.3.2 Estimation of Total Volume Discharged

The total volume of non-chlorinated wastewater discharged has been estimated based on monitoring data collected from the plant supervisory control and data acquisition (SCADA) system.

Trend data for real-time chlorine residual measured near the inlet of the chlorine contact chamber is included as Appendix B1. This graph shows the entire 24 hours of 10/3/12 with the hours shown on the x-axis and measured chlorine residual near the inlet of the chlorine

[2] An independent volume calculation prepared herein estimates this volume to be 231,076 gallons.

contact basin as measured on the right hand side y-axis. As indicated by the trend line, there are dips in the measured chlorine residual starting at about midnight on October 2, 2012. This fluctuation in measured residual at the inlet of the basin is typical in the late evening hours, resulting because of reduced (yet fluctuating) influent flows, which causes the feedback loop that controls the pump to fluctuate. As indicated in the figure, the loss of chlorination (as indicated by a measured residual below 0 ppm) occurs at approximately 4:08 a.m.

This is supported by the trend lines included in Appendix B2. This figure is the same as that included in Appendix B1, but has the ORP trending (labeled "Cl 1 HRR input") and the pump output (labeled "Cl 1 MCO[%]) both superimposed on top. This figure shows a decreasing ORP in the system at the same time as the drop in chlorine residual, and a flat-lined pump output shortly before this time.

As required in the NOV, Appendix C includes tabular and graphical summaries of influent and effluent flows both one week prior and one week after the disinfection failure event.

The time period between 4:08 a.m. and 9:45 a.m. (5 hours and 37 minutes) was used to determine the total volume of discharged non-chlorinated effluent, as is supported by the trend line in Appendix B, and as was reported by the District following the event.

Independent calculations using effluent flow trending during this time period indicate a total estimated volume of discharged effluent at 231,076 gallons.

The total volume calculation for the time period when the chlorine residual dropped below zero was calculated as follows:

1) Duration = time drop ends – time drop starts

2) Flow rate in gallons per minute (gpm) = highest effluent flow from strip chart (Appendix C) at time of event (gallons/day) ÷ (24 hrs/day x 60 min/hr).

3) Volume (gallons) = duration (minutes) x flow rate (gpm)

The reported volume of 281,250 gallons was an overestimation of total volume discharged, and as such, is conservative. Refer to Appendix D for the results of the discharge volume calculations.

3.3.3 Causes of Failure

The cause of failure of the sodium hypochlorite feed system was not conclusively determined on the date of the incident (October 3, 2012). The District assumed that failure was due to air locking of the pump (as was subsequently reported), but it could have been caused by a number of other things:

- Pump failure

- Power loss
- Absence of chemical to deliver
- Clogging within the system due to debris

The District's chemical feed pumps are Encore 700 series diaphragm pumps manufactured by Wallace and Tiernan. According to the District, the Wallace & Tiernan Encore 700 chemical feed pump in question was installed in August 1998. They report that the pumps are inspected daily, that the gear oil is changed annually, and that parts are replaced as needed. Appendix E includes pertinent information including routine maintenance performed on the system since 2007, the manufacturer's specification for this pump, parts purchased by the District, and recommended operation and maintenance procedures from the equipment manufacturer. The District reports that the pumps have been exceptionally reliable over their service life, and that they had not previously experienced a failure of this nature.

Wallace and Tiernan is an industry leader in the manufacture of chemical delivery pumps. Our experience is consistent with that of the District's; that the pumps are typically quite reliable and are a favorite for many municipalities due to their robust service life. Additionally, the District inspected the pump directly following the observance that disinfection had been lost, and found no mechanical issues. As such, and because the pump regained normal operation without mechanical interference, pump failure was not likely the cause of the incident.

Other possible causes are ruled out as follows:

- The facility did not experience power loss as is verified by the consistent data trend input before and after the incident.
- The presence of chemical to deliver was confirmed by level sensor reading and visual observation after determination of loss of chlorination.

3.3.3.1 Potential for Clogging and/or Air Locking of Pumping System

Clogging of the system is possible, though the chemical strainer on the fill line for the storage tank somewhat mitigates the probability of this occurring.

Air locking in sodium hypochlorite systems is common; occurring due to the decomposition of sodium hypochlorite solution into oxygen gas and sodium chloride as follows:

$$NaOCl + NaOCl \longrightarrow O_2 + 2\ NaCl$$

Gas production during the decomposition of sodium hypochlorite can damage ball valves, isolated pipe sections, and pumps as well as result in loss of prime and "air locking" of pumps. Common design practice for sodium hypochlorite pumping systems is to use vented ball valves and high point air relief valves to prevent gasification problems.

The District's sodium hypochlorite delivery system includes a pressure relief valve on the high point in the piping downstream of the pump. This allows relief of pressure buildup within the system, but may not prevent air locking on the upstream side of the pump. Additionally, clogging due to debris within the system (if this was indeed the cause) would not be mitigated with downstream pressure relief.

The possibility of failure due to air locking or clogging is supported by the fact that the chemical feed pump returned to normal operation during the pre-scheduled delivery of bulk sodium hypochlorite solution. The additional head level in the tank created by the transfer of chemical solution could have simply cleared the "air lock" condition (or dislodged debris affecting the ball check valve) allowing the pump to resume normal operation.

Additionally, the pump inlet does not appear to be flooded at all times (i.e. low liquid levels in the tank may not be higher than the elevation at the inlet of the pump). This can create an increased risk for air locking and/or loss of prime.

3.4 District's Response to the Discharge

A narrative summary of events surrounding, and in response to, the interim loss of chlorination on October 3, 2012 is presented in Section 3.1. A timeline of events, as reported by the District, is presented in the following Section.

3.4.1 Chronological Description of Actions Taken by District

The following chronology was provided by the District, who reports that the timing is estimated, but believed to be accurate:

October 3, 2012

- **09:30 a.m**. - Joey Mendoza identifies potential problem on routine plant rounds and notifies Mark Rogers that the dose analyzer at the Chlorine Contact Chamber is reading 0.0 mg/L
- **09:35 a.m**. - Mark Bennett and Mark Rogers investigate chlorine analyzers and feed pump
- **09:40 a.m**. – Pre-scheduled bulk sodium hypochlorite delivery commences
- **09:40 a.m**. - Mark Bennett verifies tank level readings and presence of sodium hypochlorite
- **09:40 a.m.** - Sodium hypochlorite feed pump resumes normal operation
- **09:50 a.m.** - Frank Gonzales collects sample from the downstream end of chlorine contact tank
- **10:00 a.m.** - Sample analysis indicates 0.0 mg/L chlorine residual
- **10:50 a.m.** - Collection of second sample to verify restoration of chlorination

- **11:00 a.m.** - Analysis of second sample verifies >8.8 mg/L total chlorine
- **11:00 a.m.** - Mark Bennett initiates required agency notifications via telephone
    - **11:18 a.m.** – Mark Bennett calls and speaks with Vanessa Zubkousky from the Preharvest Shellfish Unit of the Environmental Management Branch of the CDPH, explaining the loss of disinfection at the plant.
    - **11:21 a.m.** – Mark Bennett calls the Central Coast Regional Water Quality Control Board and leaves voice messages with details of the loss of chlorination event for both Peter Von Langen and Harvey Packard.
    - **11:23 a.m.** - Mark Bennett calls the Santa Barbara County Environmental EHS Department and leaves a phone message providing details of the event for Willie Brummett.
    - **11:27 a.m. -** Mark Bennett again calls Ms. Zubkousky of the Preharvest Shellfish Unit of the Environmental Management Branch of the CDPH, indicating a total estimating volume of discharged non-chlorinated wastewater at 281,250 gallons.
    - **12:22 p.m.** - Mark Bennett receives return phone call from Ms. Zubkousky of the Preharvest Shellfish Unit of the Environmental Management Branch of the CDPH, indicating that the ocean currents and discharge volume would result in a maximum 1.57-mile radius and no impact to shellfish growing areas would occur.

October 4, 2012

- **8:45 a.m.** – Mark Bennett receives a return phone call from Mr. Brummett of the Santa Barbara County EHS Department, indicating that (based on the details of the event), there was no need to post the beach or take additional response measures.
- **9:15 a.m.** – Mark Bennett calls Peter Von Langen again and explains the loss of chlorination that occurred the previous day. Mr. Von Langen responds that the District is to submit a letter explaining the event and the District's response.
- **10:38 a.m.** – Mark Bennett sends an email to Mr. Ken Harris and Mr. Von Langen with the requested information (refer to Appendix F).

Documentation in support of the notifications described above is also included in Appendix F. Appendix G contains a compendium of data and records related to the short duration loss of chlorination which occurred on October 3, 2012.

3.4.2 Final Corrective Actions

The District reports that no corrective actions or repairs were made to the chemical feed pump that malfunctioned, since no mechanical issues could be identified, and because the pump regained normal operation within approximately ten minutes of observing the failure.

The District also reports that the pump has remained in continuous service from October 3, 2012 to the present without any further problem.

In direct response to this incident, the District did engage AIA Automation, their regular SCADA and instrumentation contractor, to create a control system alarm that would notify operations staff in the event of a low-chlorine condition at the head of the chlorine contact basin. On October 9, 2012, Mark Bennett contacted Mr. Nader Vakilian of AIA Automation requesting a quote to incorporate necessary changes to the plant SCADA system. Within two weeks (by October 21), the following modifications had been made:

- Addition of a real-time chlorine dosage display in SCADA, including trending
- Addition of low chlorine dosage alarm

The new alarm will notify District operations staff at any time, day or night, in the event of loss of chlorination.

Copies of correspondence and cost data related to this improvement are included in Appendix H.

Additionally, the District has purchased a backup Strantrol 960 disinfection controller. They currently use this system to automate chemical dosing (sodium hypochlorite for disinfection and sodium bisulfite for dechlorination) based on feedback loops with the chemical pumps that use real-time measured residual concentrations, oxidation reduction potential (ORP) readings, and wastewater flow. The purchase of the backup unit provides additional disinfection system redundancy since it is currently the most critical component in the District's disinfection unit process. Having a replacement on the shelf will allow for immediate response in the event of a controller failure.

Information on this equipment acquisition is also provided in Appendix H.

3.4.3 Planned or Proposed Capital Improvement Projects

3.4.3.1 Short Term Planned Improvements

The District is looking into the possibility of a project that would allow automatic switchover of the duty/standby-chemical feed pumps. The system currently requires manual intervention to initiate operation of the standby pump, should the duty pump fail. A project to improve this approach will include the addition of automatic valving and hard-wired control between the two pumps that will initiate operation of the backup pump when failure of the duty is detected.

3.4.3.2 Long Term Planned Improvements

The District will be replacing its entire disinfection unit process as part of a major treatment plant upgrade, which is scheduled to commence in the second quarter of 2014. This project was initiated for the purpose of replacing the facility's two aerated digesters, but includes

ancillary plant improvements including the full replacement of the chemical system. The estimated construction cost for this project is $5.14 million; over $500,000 of which is directly attributable to the chemical system replacement.

A copy of the engineer's construction cost estimate is included in Appendix I.

This capital improvement project will result in the installation of new chemical storage tanks, new chemical feed pumps and piping systems, new disinfection instrumentation and control systems, and a new chemical feed building. The new chemical system will include installing new Encore 700 series diaphragm pumps, similar to those that are currently in use at the treatment facility, based on their excellent performance history. Additionally, the new disinfection unit process will employ current instrumentation and controls, but will have improved capacity for system monitoring and alarm generation in the event of system operation issues via SCADA.

3.4.3.3 Operational Improvements

In addition to the planned capital improvement projects, the District has initiated operational modifications at the facility that will allow for more consistent tracking of information and, ultimately, decrease the risk of non-compliance. The procedure for logging of daily operations has been modified to more closely follow the recommendations for operations logging by the RWQCB. All operators have been trained with the improved logging expectations. Additionally, the District has implemented electronic field inspection sheets. As this tablet computer-based approach develops further, operational staff will have the ability to view SCADA trending and alarm conditions while out in the field.

3.4.4 Annual Operating Budget

As required by the NOV, the District's annual operating budget documentation for the past three fiscal years is included herein as Appendix J.

3.5 Monitoring and Analysis of the Discharge

The NOV requires information regarding the monitoring and analysis of the discharge, in direct relation to the event in question.

3.5.1 Sampling and Analytical Activities

The District reports that the following sampling and analytical activities occurred in response to the loss of chlorination event on October 3, 2012:

- On October 3, 2012 (at 9:50 a.m.), the District's Laboratory Director (Frank Gonzales) collected a grab sample from the outlet side of the chlorine contact chamber. Mr. Gonzales noted that the water appeared darker than normal and on his way back to the lab and notified Mark Bennett and Mark Rogers that it was likely that no chlorine residual was present.

- Analysis of the grab sample at 10:00 a.m. confirmed a total chlorine residual concentration of 0.0 mg/L.
- A second grab sample from this location was collected at approximately 11:00 a.m. and subsequent analysis indicated a total chlorine residual concentration of greater than 8.8 mg/L (thus confirming that chlorination had been restored).

Appendix G includes the daily sampling and analytical worksheet that includes the above listed samples.

No other water quality sampling was conducted in direct response to the temporary loss of chlorination.

Section VIII.A.2 of the MRP associated with Order No. R3-2011-0003 specifically requires the following:

> *"The Discharger shall monitor for total coliform, fecal coliforms, and Enterococcus at receiving water sampling stations RSW-F and RSW-G as indicated in MRP section II above, in addition to three shore sampling stations approved by the Executive Officer, for seven days after loss of disinfection."*

The District reports that they were unaware of this requirement until a visit by the RWQCB on October 28, 2013. The District reports that the requirement was uncovered during a review of the permit by the RWQCB regulator/permit writer at the meeting, and that it had appeared to the District that neither the RWQCB regulator (nor the State Water Resources Control Board staff in attendance) had been aware of the requirement before the initiation of the meeting.

A review of similar NPDES Orders for ocean dischargers reveals an inconsistency in the assignment of this requirement. Order No. R3-2013-0021 for discharge to the Pacific Ocean from San Simeon Wastewater Treatment Plant, and Order No. R3-2010-0011 for discharge to the Pacific Ocean from the El Estero Wastewater Treatment Facility [City of Santa Barbara], are two examples where similar requirements are missing. Additionally, the requirement to conduct extensive offshore water quality sampling upon "loss of disinfection" is somewhat vague as it is missing details regarding magnitude (length of disinfection loss, total volume of non-disinfected flow discharged, etc).

The District has indicated that they will seek modification to this requirement in future permit adoptions, citing its requirement likely due to legacy disinfection issues experienced at the facility in the 1980's.

3.5.2 Receiving Waters

A map identifying the location of the District's wastewater treatment facility and the point of discharge into the Pacific Ocean at the terminal end of the ocean outfall is included in Appendix K. As mentioned previously, the District received advice from the Santa Barbara

County EHS Department that beach closure was unnecessary given the magnitude of the event, and as such, no beach or other water of the United States was closed or posted in response to the reported loss of chlorination.

3.6 Impacts of Discharge

3.6.1 Assessment of Impacts of Discharge Events

The District engaged Aquatic Bioassay Consulting Laboratories, Inc. of Ventura, California, to prepare a response to this item (refer to Appendix L for details). The final report concludes that no adverse impacts are expected as a result of any of the three events in question.

3.6.2 Permits, Mitigation Plans, or Restoration Activities

No permits, mitigation plans, or restoration activities were undertaken by the District in response to this event. To date, the District has not received indication that there are confirmed impacts that require mitigation.

3.7 Additional Information

The District's response was immediate and effective at mitigating continued discharge of non-chlorinated wastewater to the Pacific Ocean. In addition, follow up activities were proactive and thorough, with the exception of the requirement to conduct offshore water quality monitoring (of which the District was unaware). In our review, it appears that the District has continued to work cooperatively with the RWQCB, not only at the time of the event, but in follow up activities since.

In conclusion, the actions and conduct of the District appeared reasonable and prudent based on our independent review, and as such, we support the District's pursuit of lenience from the RWQCB regarding this matter.

4.0 DECHLORINATION SYSTEM FAILURE

The second event discussed in the NOV relates to the discharge of chlorinated wastewater due to the failure of the facility's dechlorination system. The NOV sites two separate effluent limit excursions for total effluent chlorine concentrations: January 3 and 7, 2013. However, since both occurred during a period of ongoing issues (within 4 days of each other), the following response is combined into a single section.

4.1 Permit Requirements for Total Chlorine Residual

Effluent limitations for total residual chlorine, as required by Order No. R3-2011-0003, are summarized in Table 4.1.

Table 4.1 Summary of Effluent Total Chlorine Residual Limitations[1] Response to NOV for Unauthorized Discharge Events Carpinteria Sanitary District				
	Unit	**6-Month Median**	**Daily Maximum**	**Instantaneous Maximum**
Total Chlorine Residual	μg/L(mg/L)	190 (0.19)	750 (0.75)	5,600 (5.60)
	lbs/day	3.9	16	120

Notes:
1. Information summarized from effluent limitations assigned in Provision VI.A.2 of Order No. R3-2011-0003.

Per the MRP associated with Order No. R3-2011-0003, total chlorine residual is to be monitored continuously via meter. However, Note 6 of Table E-3, specifies the collection of grab samples for compliance determination with effluent limitations for total chlorine residual.

The District uses a Wallace & Tiernan Micro 2000 online analyzer to monitor total chlorine residual to fulfill the requirements associated with the continuous monitoring requirement. Signal output from the online analyzer is transmitted to a circular chart recorder and to the plant SCADA system. The online analyzer is not Environmental Protection Agency (EPA) approved for compliance verification, but does provide an alarm condition at detection of chlorine residual, alerting the operational staff of potential dechlorination issues (in addition to fulfilling the requirement to monitor total chlorine residual continuously). Upon receipt of an alarm condition, the operator on duty collects a grab sample for laboratory analysis of total chlorine residual.

The District's Environmental Laboratory Accreditation Program (ELAP) certified laboratory performs all chlorine residual analyses of grab samples collected in accordance with the MRP. Chlorine residual analysis is conducted in accordance with Standard Methods (20th Ed.) protocol SM4500Cl G (an EPA approved method for NPDES compliance).

4.2 Summary of Events

According to the District, the initial failure of the facility's dechlorination system that resulted in exceedances of instantaneous maximum effluent limitations for total chlorine residual (January 3, 2013) was discovered at 8:26 a.m. when a high chlorine residual alarm was received by operations staff via the plant SCADA system and cellular telephone based alarm software. The issue was reported to Mark Rogers (Treatment Supervisor), and action was taken by the operations staff as follows:

- Operations staff collected an effluent grab sample for laboratory analysis (to verify compliance with effluent limitations), and it was found to contain a total chlorine residual concentration of 10,400 μg/L. This concentration exceeds the effluent limits

for daily maximum total chlorine residual and the instantaneous maximum effluent limit for total chlorine residual.

- A duplicate analysis of the same grab sample indicated a total chlorine residual concentration of 10,200 μg/L.
- Dechlorination was restored to full operability without intervention at 8:45 a.m.
- A confirming sample was collected and found to contain a total chlorine residual concentration of 300 μg/L.
- Mark Rogers called Mr. Peter Von Langen of the Central Coast RWQCB to notify him of this incident.

According to the District, the secondary failure of the facility's dechlorination system that resulted in exceedances of instantaneous maximum effluent limitations for total chlorine residual (January 7, 2013) was discovered at 7:25 a.m. when a high chlorine residual alarm was received by operations staff via the plant SCADA system and cellular telephone based alarm software. The issue was reported to Mark Rogers (Treatment Supervisor), and action was taken by the operations staff as follows:

- Operations staff collected an effluent grab sample for laboratory analysis (to verify compliance with effluent limitations), and it was found to contain a total chlorine residual concentration of 7,800 μg/L. This concentration exceeds the effluent limits for daily maximum total chlorine residual and the instantaneous maximum effluent limit for total chlorine residual.
- Dechlorination was restored to full operability without intervention at 8:00 a.m.
- A confirming sample was collected and found to contain a total chlorine residual concentration of 900 μg/L.
- Mark Bennett called Mr. Peter Von Langen of the Central Coast RWQCB to notify him of this incident.

The District subsequently reported each event in the CIWQS electronic reporting database with submittal of their monthly monitoring report.

4.3 Causes and Circumstances of the Discharge

The causes and circumstances of the discharge of chlorinated wastewater that occurred as a result of the failure of the facility's dechlorination system is summarized in the following sections.

4.3.1 Detailed Explanation of Discovery of Discharge Events

A detailed description of how and when the discharge was discovered is included in Section 4.2, and is broken down chronologically in Section 4.4.1.

4.3.2 Estimation of Total Volume Discharged

On January 3, 2013, the chlorine residual alarm was initiated at 8:26 a.m., and lasted until 8:45 a.m. (when dechlorination was restored). As such, treated flow with a total chlorine residual concentration of approximately 10.4 mg/L was being discharged for 19 minutes. Using the average effluent flow for that time period (1,190 gallons per minute), a total flow of 22,610 gallons of flow, and approximately 1.96[3] pounds of chlorine, was discharged.

On January 7, 2013, the chlorine residual alarm was initiated at 7:25 a.m. and lasted until 7:27 a.m. (when dechlorination was restored). As such, treated flow with a total chlorine residual concentration of 7.8 mg/L was being discharged for 2 minutes. Using the average effluent flow for that time period (1,045 gallons per minute), a total flow of 2,090 gallons of flow, and approximately 0.14 pounds of chlorine, was discharged.

Appendix M contains the District compiled summary spreadsheet indicating specific treatment plant operating parameters, including daily chemical use and effluent chlorine residual concentrations, for the period between December 27, 2012 and January 14, 2013 (one week before and after the events). Appendix M also contains tabular and graphical summaries of total influent and total effluent flow at the District's treatment facility for this period as required by the NOV.

Appendix N contains the District prepared spreadsheet of alarms, duration, flows, and pounds of chlorine discharged.

The calculations for pounds of chlorine discharged have been confirmed herein.

4.3.3 Causes of Failure

Each of the two chlorine residual incidents in question resulted from temporary loss of flow of liquid sodium bisulfite within the distribution piping systems. In each case, District staff observed chemical crystallization within the system and have attributed the problem to abnormally cold ambient air temperatures.

4.3.3.1 Sodium Bisulfite Crystallization at Low Temperatures

The District uses 25 percent sodium bisulfite solution for dechlorination. At this concentration, the solution has an approximate freezing point of $< 40^0$ F (this freezing point is increased with increasing solution concentration). This means that the more the stored solution is concentrated, the more enhanced temperature protection is needed.

[3] Flow (MGD) x concentration (mg/L) x 8.34 (conversion factor) = lbs/day

To protect against crystallization due to reduced ambient temperatures, sodium bisulfite delivery systems are typically outfitted with heat tracing and insulation. The design of the heat tracing system varies dependent on facility location (i.e. expected ambient temperatures), concentration of stored solution, pipe size and routing, and several other site-specific factors.

Consistent with industry standards, the District utilizes a heated and insulated storage tank for bulk storage of the sodium bisulfite solution. The distribution piping is insulated to prevent freezing of the solution, but does not have associated heat tracing. This may not have been incorporated into the original design due to the reduced concentration of stored chemical and due to the elevated ambient air temperatures typically observed for the area.

Temperatures observed in early January 2013 were greatly reduced from average temperatures for this area during this time of year, thus potentially leading to crystallization of the chemical (lows ranged from 33^0 F on January 3rd to 40^0 F on January 7th).

The District indicates that the crystallization of the sodium bisulfite solution was an ongoing problem for a two-week period surrounding the violation events. To mitigate the freezing temperatures, District staff used temporary piping and installed a new pipe heater and insulating blankets in an effort to prevent additional freezing issues. The District's continuous monitoring systems indicated several minor alarm conditions during this period that were not confirmed as exceedances of NPDES permit limitations.

Although not confirmed, the District suspects that the batch of sodium bisulfite solution that was in use during this period may have been irregular or had abnormal properties that contributed to the crystallization problems. This suspicion is based on the fact that the sodium bisulfite delivery system has worked properly, without chemical crystallization, throughout other very cold weather periods both before and after the incidents in question. A bulk delivery of sodium bisulfite was received on January 7, 2013, after the reported violation that day, and no further instances of chemical crystallization were reported despite the fact that very low overnight air temperatures continued at least through the following week. Most recently, the District reports that the system functioned without incident during a very cold period in December 2013.

It is possible that the sodium bisulfite received during the previous delivery was more concentrated than the expected 25 percent, thus potentially increasing the freezing trigger to a temperature higher than those ambient temperatures observed during the period in question.

4.3.3.2 Requested Pump Installation and Maintenance Information

According to the District, the Wallace & Tiernan Encore 700 chemical feed pumps in question were installed in August 1998. They report that the pumps are inspected daily, that the gear oil is changed annually, and that parts are replaced as needed. Appendix E includes pertinent information including the manufacturer's specification for this pump, parts

purchased by the District, and recommended operation and maintenance procedures from the equipment manufacturer.

As a result of the dechlorination issues experienced in early January 2013, the duty pump was disassembled for inspection purposes and some maintenance was performed to make sure that the pump was not contributing to the problem. The District reports the pump in question has performed flawlessly from January 7, 2013 to the present.

4.4 District's Response to the Discharge

A narrative summary of events surrounding, and in response to, the dechlorination issues observed in early January 2013 is presented in Section 4.1. A timeline of events, as reported by the District, is presented in the following Section.

4.4.1 Chronological Description of Actions Taken by District

The following chronology was provided by the District, which reports that the times indicated are recorded from the SCADA alarm log, and are believed to be accurate. They report that there may be up to an 8-minute difference in time of sample collection and sample analysis, because of clock differences at the facility. As noted below, issues with sodium bisulfite delivery were observed starting on December 29, 2012 and continuing through January 7, 2013 (though effluent limit exceedances were only observed on January 3rd and January 7th).

Saturday December 29, 2012

- **9:28 a.m.** – The on-call operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **10:00 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **10:05 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.
- **Immediately following sample analysis**, Paul flushes the discharge line from the sodium bisulfite pump to the injection point at the chlorine contact chamber and checks the Strantrol 960 control unit for alarms and proper operation.
- **10:23 a.m.** – Paul receives a second high chlorine residual alarm call from the SCADA auto dialer, and immediately collects a sample for analysis. The test results from this analysis were not recorded, but Paul indicates that effluent limitations for total chlorine residual were not surpassed.
- **8:51 p.m.** – Paul receives a third high residual alarm call from the SCADA auto dialer.
- **9:30 p.m.** – Paul collects a sample of effluent discharge for analysis.

- **9:35 p.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.02 mg/L is noted. Paul checks the Strantrol 960 control unit, and finds no operational issues.

Sunday December 30, 2012

No issues with dechlorination system.

Monday December 31, 2012

- **7:08 a.m.** - The on-duty operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **7:15 a.m.** - Frank Gonzales collects an effluent discharge sample for analysis.
- **7:30 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 0.03 mg/L.
- **7:55 a.m.** - Paul receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **8:15 a.m.** - Frank Gonzales collects an effluent discharge sample for analysis.
- **8:25 a.m.** - Frank performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.

Tuesday January 1, 2013

- **6:09 a.m.** - The on-duty operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **6:15 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **6:20 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L. Paul checks the Strantrol 960 control unit, and finds no operational issues.

Wednesday January 2, 2013

- **4:37 a.m.** - The on-duty operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **5:25 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **5:30 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.02 mg/L. Paul checks the Strantrol 960 control unit, and finds no operational issues.
- **7:00 a.m.** – Operations staff initiates the replacement of the chlorine residual analyzer probe, recalibrates the disinfection analyzer, recalibrates the chlorination analyzer, and flushes the chemical pump discharge and suction lines. Staff also notes

temperature readings of the sodium bisulfite solution at the tank (68^0 F) and at the point of injection (63^0 F).

Thursday January 3, 2013

- **4:14 a.m.** - The on-duty operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **5:25 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **5:30 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.02 mg/L. Paul checks the Strantrol 960 control unit, and finds no operational issues.
- **5:40 a.m.** - Paul receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **5:45 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **5:50 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L. Paul checks the Strantrol 960 control unit, and finds no operational issues.
- **5:51 a.m.** - Paul receives a third high chlorine residual alarm call from the SCADA auto dialer.
- **5:55 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **6:00 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L. Paul checks the Strantrol 960 control unit, and finds no operational issues.
- **7:00 a.m.** – Operations staff flushes the suction and discharge piping for the sodium bisulfite pumps. The discharge line is flushed for a longer period of time than it was the previous day in hopes that it all of the crystallized sodium bisulfite in the line will be removed. Staff also changes the diaphragm on sodium bisulfite pump # 1, and cleans the pump head and check ball chambers on both bisulfite pumps. The residual analyzer is recalibrated again. Staff cleans the level transducer and the strainer on the suction piping from the chemical storage tank.
- **8:26 a.m.** - Paul receives a fourth high chlorine residual alarm call from the SCADA auto dialer.
- **8:40 a.m.** – Frank Gonzales collects a sample of effluent discharge for analysis.
- **8:45 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 10.4 mg/L. A duplicate analysis results in a total chlorine residual reading of 10.2 mg/L. Frank collects a second sample for analysis.

- **8:55 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 0.03 mg/L.
- **11:10 a.m.** - Paul receives a fifth high chlorine residual alarm call from the SCADA auto dialer.
- **11:35 a.m.** – Frank Gonzales collects a sample of effluent discharge for analysis.
- **11:45 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.

In the afternoon of January 3rd, Mark Rogers calls Peter Von Langen to inform him of effluent discharge incident.

Friday January 4, 2013

- **1:02 a.m.** - The on-duty operator (Paul Sweningson) receives a high chlorine residual alarm call from the SCADA auto dialer. The alarm condition had returned to normal by the time Paul arrived at the plant.
- **1:45 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **1:50 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L. Paul notes temperature readings of the sodium bisulfite solution at the point of injection (63^0 F), and flushes the discharge line with plant water.
- **5:43 a.m.** - Paul receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **6:00 a.m.** – Paul collects a sample of effluent discharge for analysis.
- **6:05 a.m.** – Paul performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.
- **7:00 a.m.** – Operations staff flushes the suction and discharge piping for the sodium bisulfite pumps. Operators change the diaphragm and the check balls on sodium bisulfite pump # 2, as well as adjusting the drive pulley to a larger pulley. Staff also adjusts the chlorine residual alarm set point for the standby pump operation to -0.50 mg/L (from 0.00 mg/L).
- **11:11 a.m.** - The on-duty operator (Joey Mendoza) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **11:20 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **11:25 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.

Saturday January 5, 2013

- **3:12 a.m.** - The on-duty operator (Joey Mendoza) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **3:30 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **3:35 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 3.01 mg/L. Joey flushes the discharge line and pumps.
- **4:46 a.m.** - Joey receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **4:58 a.m.** - Joey receives a third high chlorine residual alarm call from the SCADA auto dialer
- **5:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **5:10 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.02 mg/L. Joey notes that the sodium bisulfite system pressure regulator is plugged with crystals so cleans and reinstalls the regulator.
- **7:17 a.m.** - Joey receives a fourth high chlorine residual alarm call from the SCADA auto dialer.
- **7:25 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **7:30 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.08 mg/L.
- **7:32 a.m.** - Joey receives a fifth high chlorine residual alarm call from the SCADA auto dialer.
- **8:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **8:05 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L. Joey cleans the suction and discharge piping for the sodium bisulfite system, as well as the pressure regulator and backflow preventer on the sodium bisulfite pump discharge piping.
- **11:08 a.m.** - Joey receives a sixth high chlorine residual alarm call from the SCADA auto dialer.
- **11:10 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **11:15 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.06 mg/L. Joey sets up a temporary tank for sodium bisulfite dechlorination and performs a full discharge line flush. The system is put system back online when flush is completed.

Sunday January 6, 2013

- **12:49 a.m.** - The on-duty operator (Joey Mendoza) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **1:05 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **1:10 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.08 mg/L. Joey notes plugging due to crystallization in the sodium bisulfite system regulator, sets up a temporary tank for bisulfite dechlorination, and performs a full discharge line flush. The system is put system back online when flush is completed.
- **3:30 a.m.** - Joey receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **4:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **4:05 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **5:43 a.m.** - Joey receives a third high chlorine residual alarm call from the SCADA auto dialer.
- **6:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **6:10 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **7:44 a.m.** - Joey receives a fourth high chlorine residual alarm call from the SCADA auto dialer.
- **8:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **8:05 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.
- **11:04 a.m.** - Joey receives a fifth high chlorine residual alarm call from the SCADA auto dialer.
- **11:15 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **11:20 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **11:23 a.m.** - Joey receives a sixth high chlorine residual alarm call from the SCADA auto dialer.
- **11:35 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **11:45 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L. Joey sets up a temporary tank for bisulfite dechlorination

and performs a full discharge line flush. The system is put system back online when flush is completed.

Monday January 7, 2013

- **3:53 a.m.** - The on-duty operator (Joey Mendoza) receives a high chlorine residual alarm call from the SCADA auto dialer.
- **4:15 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **4:20 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 2.10 mg/L. Joey sets up a temporary tank for bisulfite dechlorination, and performs a full discharge line flush. The system is put system back online when flush is completed.
- **5:09 a.m.** - Joey receives a second high chlorine residual alarm call from the SCADA auto dialer.
- **5:30 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **5:38 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.01 mg/L.
- **5:55 a.m.** - Joey receives a third high chlorine residual alarm call from the SCADA auto dialer.
- **6:10 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **6:15 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **6:24 a.m.** - Joey receives a fourth high chlorine residual alarm call from the SCADA auto dialer.
- **6:50 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **6:55 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **6:35 a.m.** - Joey receives a fourth high chlorine residual alarm call from the SCADA auto dialer.
- **7:00 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **7:05 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **7:09 a.m.** - Joey receives a fifth high chlorine residual alarm call from the SCADA auto dialer.
- **7:17 a.m.** – Joey receives a sixth high chlorine residual alarm call from the SCADA auto dialer.

- **7:20 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **7:30 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 0.00 mg/L.
- **7:25 a.m.** - Joey receives a seventh high chlorine residual alarm call from the SCADA auto dialer.
- **7:30 a.m.** – Joey collects a sample of effluent discharge for analysis.
- **7:40 a.m.** – Frank performs the sample analysis and notes a total chlorine residual concentration of 7.80 mg/L.
- **7:49 a.m.** - Joey receives an eighth high chlorine residual alarm call from the SCADA auto dialer.
- **8:00 a.m.** – Frank collects a sample of effluent discharge for analysis.
- **8:05 a.m.** – Joey performs the sample analysis and notes a total chlorine residual concentration of 0.09 mg/L. Operators on duty clean suction and discharge piping for the sodium bisulfite system as well as the pressure regulator and backflow preventer on the sodium bisulfite discharge piping. A delivery was also received of sodium bisulfite solution at this time (Appendix N).

In the morning of January 7th, Mark Bennett calls Peter Von Langen with the RWQCB and leaves a message informing him of the effluent discharge incident.

- **3:09 p.m.** - Peter Von Langen returns the phone call to Mark Bennett and indicates that details regarding the discharge incident are to be submitted with the monthly report.

For each effluent limit exceedance for total chlorine residual (January 3 and January 7), the Central Coast Regional Water Quality Control Board was directly notified by telephone on the day of the occurrence. Additionally, the incidents were subsequently reported via CIWQS. No other entities or regulatory agencies were notified.

Appendix O contains a printout of the SCADA alarms received between January 2, 2013 and January 9, 2013. District call out records, daily worksheets and laboratory analysis worksheets are contained in Appendix P for the period in question.

4.4.2 Final Corrective Actions

As noted in the detailed log of events in Section 4.3.1, there were several direct action items that the District took in response to the issues associated with the sodium bisulfite system:

- The diaphragms and check balls on both sodium bisulfite pumps were replaced
- Additional insulation was installed on accessible portions of the sodium bisulfite delivery piping

- The delivery system was flushed numerous times in response to specific alarm events
- Temporary bypass piping was set up on differing occasions for use in keeping the system operational while the discharge lines were being flushed. The District reports that this bypass piping has been retained in place and will be used in the future if similar problems are experienced. Costs for this bypass piping and associated fittings were nominal and funded from the regular operating budget.

4.4.3 Planned or Proposed Capital Improvement Projects

The District will be replacing its entire disinfection unit process as part of a major treatment plant upgrade, which is scheduled to commence in the second quarter of 2014. This project was initiated for the purpose of replacing the facility's two aerated digesters, but includes ancillary plant improvements including the full replacement of the chemical system. The estimated construction cost for this project is $5.14 million; over $500,000 of which is directly attributable to the chemical system replacement.

A copy of the engineer's construction cost estimate is included in Appendix I.

This capital improvement project will result in the installation of new chemical storage tanks, new chemical feed pumps and piping systems, new disinfection instrumentation and control systems, and a new chemical feed building. The new chemical system will install new Encore 700 series diaphragm pumps similar to those that are currently in use at the treatment facility, based on their excellent performance history as well as similar instrumentation and controls (with improved capacity for system monitoring and alarm generation in the event of system operation issues).

4.4.3.1 Operational Improvements

In addition to the planned capital improvement projects, the District has initiated operational modifications at the facility that will allow for more consistent tracking of information and, ultimately, decrease the risk of non-compliance. The procedure for logging of daily operations has been modified to more closely follow the recommendations for operations logging by the RWQCB. All operators have been trained with the improved logging expectations. Additionally, the District has implemented electronic field inspection sheets. As this tablet computer-based approach develops further, operational staff will have the ability to view SCADA trending and alarm conditions while out in the field.

4.4.4 Annual Operating Budget

As required by the NOV, the District's annual operating budget documentation for the past three fiscal years is included herein as Appendix J.

4.5 Monitoring and Analysis of the Discharge

The NOV requires information regarding the monitoring and analysis of the discharge, in direct relation to the effluent limitation events in question.

4.5.1 Sampling and Analytical Activities

Effluent sampling and total chlorine residual analysis was conducted as detailed in Section 4.4.1. No other effluent water quality sampling or receiving water sampling was conducted in direct response to the reported exceedances of effluent limitations for total chlorine residual.

Appendix P includes the daily sample worksheets with all samples taken for both permit compliance determination and for process control.

4.5.2 Receiving Waters

A map identifying the location of the District's wastewater treatment facility and the point of discharge into the Pacific Ocean at the terminal end of the ocean outfall is included in Appendix J. No beach or other water of the United States was closed or posted in response to the chlorine residual effluent limitation violation event discussed herein.

4.6 Impacts of Discharge

4.6.1 Assessment of Impacts of Discharge Events

The District engaged Aquatic Bioassay Consulting Laboratories, Inc. of Ventura, California, to prepare a response to this item (refer to Appendix L for details). The final report concludes that no adverse impacts are expected as a result of any of the three events in question.

4.6.2 Permits, Mitigation Plans, or Restoration Activities

No permits, mitigation plans, or restoration activities were undertaken by the District in response to this event. To date, the District has not received indication that there are confirmed impacts that require mitigation.

4.7 Additional Information

The District's response was immediate and effective at mitigating the discharge of chlorine residual to the Pacific Ocean. In addition, follow up activities were proactive and thorough. In our review, it appears that the District has continued to work cooperatively with the RWQCB, not only at the time of the event, but in follow up activities since.

In conclusion, the actions and conduct of the District appeared reasonable and prudent based on our independent review, and as such, we support the District's pursuit of lenience from the RWQCB regarding this matter.

APPENDICES ARE BEING SENT SEPARATELY