

TOXICITY REDUCTION PLAN

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CLEAR CREEK COMMUNITY SERVICES DISTRICT TOXICITY REDUCTION EVALUATION WORK-PLAN

FACILITY INFORMATION

- Water Board Order No.: R5-2012-0016
- NPDES Permit No.: CA0083828
- Facility Name: Clear Creek Water Treatment Plant
- Facility Description: Potable Water Treatment Facility
- Chronic Toxicity Monitoring Frequency: Once during term of permit
- Numeric Toxicity Monitoring Trigger: >1 TUc

WORK PLAN PURPOSE

The purpose of this work-plan is to provide direction in the event of exceedance of specific chronic toxicity testing results. Treatment personnel will follow the investigation guidelines as outlined below.

INVESTIGATION AND EVALUATION:

EFFLUENT (DISCHARGE) TOXICITY:

Regular chronic toxicity monitoring is to be performed once during the term of the existing five year permit. If the results exceed acceptable limits and the monitoring trigger of >1 TUc is reached the District will take the following steps to investigate and evaluate the existing condition.

- Contact local liaison at the CRWQCB and inform them of the existing condition and the steps being taken for correction.
- Gather and evaluate data from records regarding the discharge flow. Review and analyze all records including changes in chemicals, MSDS, flow rates, and water temperatures.
- Review filter plant processes to determine whether or not there could be adverse effects.
- Initiate accelerated monitoring within 14 days of notification by the laboratory.
- Monitoring will consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. Refer to the NPDES permit, page 22 for protocol.
- Attempt to identify the source of the toxicity. If the source is identified the District will make the necessary changes to the facility and shall continue the accelerated monitoring until four consecutive accelerated tests do not exceed the monitoring trigger of >1 TUc.

- Conduct visual inspections of the facilities and complete additional testing in an attempt to isolate and correct the affected area(s).
- Identify a suspect toxicant, confirm with research through literature for toxicity information.
- Research and apply methods for removal or reduction of that particular compound.
- Re-test to confirm that removing the toxicant actually eliminates the toxicity to the acceptable level.
- Consult with Basic Labs to mitigate the impact of the discharge and prevent the recurrence of toxicity.
- If District staff is unable to immediately identify the source of the toxicity, staff will contract with PACE engineering for assistance in identifying the source of the toxicity and a permanent solution.

EFFLUENT (DISCHARGE) VARIABILITY:

Several factors contribute to the perturbations observed in effluent quality. The following factors have been identified:

- Influent variables: flow, influent biochemical oxygen demand (BOD), influent suspended solids (SS);
- Environmental conditions: water temperature, wind;
- Biological and operational parameters: cell residence time, suspended solids, sludge concentration;
- Settling characteristics: sludge volume index, settleable solids;
- Size of plant and type of treatment process.

In September of 2012, treatment staff allowed the backwash holding pond to dry so the sludge could be collected and disposed of. This was done in an effort to improve the quality of water being discharged.

Treatment staff shall continue to monitor the backwash water quality and through settling and aeration, reduction of chlorine, and reduced chemical injection, reduce the contaminate levels found in the water.

SYSTEM EFFICIENCY & FACILITY TREATMENT METHODS

The potable water treatment plant efficiency is within the 95% efficiency range and is monitored by the California Department of Public Health Services for compliance to State drinking water standards.

The plant method of maximizing treatment efficiency include the real time monitoring of the entire treatment process which includes monitoring turbidity levels, chlorine injection, polymer and pac injection, streaming current detection and particle counters.

The SCADA system provides real time monitoring of all plant processes and is monitored by treatment staff every day of the week including weekends. Hard copy records are kept and reports are generated weekly and monthly for both the CRWQCB and CDPHS. Staff is always looking for ways to improve efficiency and reduce backwash water contaminates.

CURRENT PRACTICES, APPLICATIONS & HOUSEKEEPING

In an effort to reduce current possible contaminates the District has identified manganese and aluminum by-products through monitoring and testing the raw water and the backwash water. The manganese is a naturally occurring product coming from the source waters and in addition is precipitated out from the disinfection process from the addition of chlorine during the treatment process. In an effort to reduce the effluent toxicity the District removed all of the sludge build-up that was held in the primary backwash pond. This was completed in September of 2012. Numerous tests for manganese were conducted before the sludge removal as well as afterwards. This was done to determine whether or not the removal of the sludge would be a contributing factor in the reduction of manganese in the backwash water. Unfortunately, the results were not as significant as was hoped. The second method was aeration. This method is being done on a regular basis, approximately three times a week during the summer months, but not continuous. It appears to have a noticeable effect on the reduction of the manganese content in the water. The District will attempt more frequent aeration and test for results. The reduction of CL2 will also help in the reduction of the manganese content and this reduction is now at the minimum allowable for disinfection purposes as mandated by the California Department of Public Health Services.

The aluminum is a naturally occurring metal found in the raw water and a by-product of the polymer used in the treatment process. Treatment staff has attempted jar tests with different polymer and pac products in an effort to find a product that does not contain the aluminum by-product. To date this has been unsuccessful however by reducing the pac injection the aluminum content has been reduced.

In an effort to practice good housekeeping, treatment staff uses:

- The pollution prevention plan.
- Standard Operating Procedures.
- Standardized inspection of the facilities.
- Maintenance schedules for equipment.
- Identify ways to incorporate and improve water quality controls.
- Specialized training.

CHEMICAL LIST

The chemicals used in the treatment process include:

- Chlorine
- Pac 926
- Polymer ZF20

The polymer and pac are stored at the treatment plant main office building in storage containers away from any water source or water way. In the event of a spill the operator is required to read the MSDS and follow any specific instructions for clean-up.

The chlorine is stored in it's own building. One ton containers are used in the treatment operations. The location of the building is away from any water source or water way. In the event of a container failure leading to a chlorine leak the operator must refer to the Risk Management Plan kept at the water treatment plant office.

TOXICITY IDENTIFICATION EVALUATION:

If the source of the toxicity cannot be identified through the actions out-lined in Investigation and Evaluation the Toxicity Identification Evaluation (TIE) shall be performed by a professional firm qualified to conduct the evaluation.

SOLUTION:

The ultimate goal is to achieve 100% elimination of the backwash waters. This will be achieved by the recycling of the backwash waters produced. This project is moving forward with the help of the USBR and the local engineering firm PACE Civil. All of the environmental work for the project has been completed that includes the NEPA, the CEQA, and the Notice of Exemption. Preliminary project plans and job estimates are complete and the USBR construction permit has been approved. The District intends to file for a USBR WaterSMART grant. The application for the grant is nearly complete and will be a matching funds grant. The construction permit is holding until the grant application is filed before the end of this year.