California Regional Water Quality Control Board
San Francisco Bay Region

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TO: Tam Doduc, Chair
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FROM: Bruce H. Wolfe
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SAN FRANCISCO BAY
REGIONAL WATER QUALITY CONTROL BOARD

Chlorine Policy
Deadline: 7/14/06 5pm

DATE: July 14, 2006

SUBJECT: **Region 2 comments on the draft Total Residual Chlorine and Chlorine-Produced Oxidants Policy for California, June 2006 (draft Policy)**

We are very concerned about the latest changes to the draft Policy with regard to chlorinated potable water discharges into stormdrains and waters of the State. We support the earlier version of the draft Policy.

The earlier version of the draft Policy gave the Water Boards the discretion to impose numerical effluent limits on chlorinated potable water discharges where warranted. The June version of the draft Policy explicitly states on page 6 that, "it is infeasible to use numeric effluent limits...to regulate potable water discharges that occur in the field due to the activities of drinking water utilities or agencies...Numeric effluent limits are infeasible because these discharges occur at dispersed locations in the field, there are no stationary treatment facilities at these locations, and field monitoring equipment does not currently achieve the necessary level of precision performance. The permitting authority must regulate the discharge of TRC and CPO in these discharges through requirements for appropriate best management practices."

General Concern

Potable water discharges from water agencies' distribution systems are currently regulated under the existing municipal stormwater permits in Region 2. These permits rely on the "BMP approach" to regulation, as also specified in the current version of the draft Policy. However, this BMP approach has made it difficult for the Water Board to determine compliance with the permits and to adequately protect water quality.

Specific Concerns

1) San Francisco Bay Water Board staff are concerned that the proposed rule does not provide sufficient support for the assertion that numeric effluent limits are infeasible because field equipment cannot be equipped with the continuous chlorine monitors that can be included in stationary treatment devices.

To the contrary, we have evidence that *it is feasible* to dechlorinate and monitor potable water discharges in the field[1] [2]. Therefore, it is feasible to apply numerical limits to such discharges. Field dechlorination is part of the standard operation procedures (SOPs) of the San Francisco Public Utility Commission (SFPUC) (Attachment 1) and the East Bay Municipal Utility District (EBMUD) (Attachment 2). The burden should be on dischargers to demonstrate whether it is infeasible to comply with numerical limits immediately and, if so, to request a compliance schedule.

Field dechlorinators, some of which are listed at the end of this letter, are commercially available. As such, in Region 2, we routinely require that the effluent from such activities as pressure testing of pipelines and dewatering of pipelines be dechlorinated in the field, prior to discharge to waters of the State. Order No. R2-2003-0062, our region-wide general permit for discharges from water treatment facilities for potable supply, indicates, in the self-monitoring program that, "[6] It is a violation of this permit if the field test (Standard Methods 4500-Cl F and G) shows that the effluent chlorine residual is 0.08 mg/L or greater."

Although this 80 ppb level is higher than the chorine residual discharge limits originally proposed in the draft Policy, it provides a useful confirmation that the dechlorination BMP is functioning properly. The currently proposed text of the draft Policy appears to suggest that numerical effluent limits are infeasible because the portable meters that are used to measure chlorine residual in the effluent from portable dechlorination BMPs cannot achieve reporting limits below the proposed chlorine residual objectives.

While it is true that, at present, it is difficult to consistently measure TRC and CPO levels on the order of 10 ppb in the field, this is not sufficient justification for not allowing the Water Boards to set numeric limits for potable water discharges. Field equipment that can reliably achieve detection limits on the order of 50 to 100 ppb is widely available, and some commercially available field instruments claim to have detection

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1 Tikkanen, Schroeter, Leong, and Ganesh, 2001. "Guidance Manual for the Disposal of Chlorinated Water." American Water Works Association Research Foundation.

2 American Water Works Association, California-Nevada Section, 2005. "Guidelines for the Development of Your Best Management Practices (BMP) Manual For Drinking Water System Releases."

limits of 10 to 20 ppb. We have included a sample list of devices at the end of this letter.

If field measurements on the order of 10 ppb are not achievable, potable water discharges should at least be required to demonstrate that discharges do not contain TRC or CPO in excess of the reporting limits for commercially available field equipment. A discharge of less than 100 ppb TRC or CPO is much more protective of beneficial uses than an un-monitored discharge that may exceed that level.

As such, we recommend that the draft Policy be further revised to set numerical limits equal to the chlorine residual discharge objectives or to the lowest achievable reporting limit provided by commercially available field testing equipment. This proposed revision would have the advantage of allowing the Policy to adapt to changes in field measurement technology. Over the years, field measurements for chlorine residual have gradually become more sensitive. The handheld "sensor in a pen format" meters that are based on potentiometric redox electrode technology (e.g, the ExStik Chlorine Meter listed below), which are insensitive to sample color and turbidity and, therefore, can attain detection limits of 10 ppb, have only become available in recent years. These meters can be used in accordance to Standard Method 4500-Cl I. By setting the numeric limit for chlorine residual at the lowest practicably achievable field reporting limit, the Policy could adjust to improving technology without the need to be revised by adopting any new State Board Order.

2) Since field tests are not currently capable of providing continuous measurements, the proposed policy should set a reasonable monitoring frequency for grab samples. In Region 2, we often require grab samples at 15 minute intervals until a steady state discharge condition is achieved. Once a steady state condition is achieved, the measurement frequency is relaxed to one sample for every 2 to 4 hours of operation, until the discharge ceases, or an upset in the dechlorination system requires a return to more frequent monitoring.

3) All the references to intermittent discharges were removed from the current version of the draft Policy. Chlorinated potable water discharges resulting from planned and unplanned events are best characterized as intermittent discharges and should be covered by the draft Policy. We support the instantaneous maximum concentration limits, monitoring, and reporting requirements in the earlier version of the draft Policy.

The specifically exempted activities in the current version of the draft Policy include regularly scheduled discharges at specified field locations, such as dewatering of pipelines and reservoirs, flushing distribution system piping, and flushing fire hydrants. Water Board staff are concerned that the draft Policy provides no justification for exempting utilities from monitoring these planned discharges for compliance with numeric limits. As is discussed above, even if detection limits on the order of 10 ppb cannot be consistently attained, demonstrating that discharges are at least below a

reporting limit of 50 or 100 ppb would provide a useful confirmation of the effectiveness of the dechlorination BMP. Requiring attainment of the lowest achievable field detection limit is more protective of aquatic life than requiring no numeric effluent limits at all, and also allows the policy to adapt to improvements in field measurement technology.

As evidenced in the attached SOPs of SFPUC and EBMUD, it is feasible to treat and monitor these planned discharges. Therefore, at a minimum, numerical limits should apply to these planned discharges because of the potential recurring impacts to aquatic species. Requiring attainment of the lowest achievable field detection limit is more protective of aquatic life than requiring no numeric effluent limits at all.

4) Water Board staff are also concerned that the draft Policy does not provide supporting documentation for the statement that numerical limits for TRC and CPO are infeasible. Without supporting documentation in the *Draft Substitute Environmental Document*, Water Board staff, as well as members of the interested public, has not been provided with an opportunity to review such supporting documentation and to provide comments on the relevance of the documentation to the proposed policy. We are concerned that this may not be consistent with the requirements of CEQA.

5) Under the draft Policy, the only indication that BMPs were not providing adequate removal of TRC or CPO would be the presence of dead marine life ("fish kill") in the receiving water. Effectively, this would only be after the beneficial uses of the receiving water had been impaired. This is not consistent with the directives of this Region's Basin Plan. In addition, the only enforceable action available to the Water Boards would be the use of an enforcement action against the source of the discharge that had caused the "fish kill". Such an action is unnecessarily burdensome on staff time in comparison to a simple requirement for discharges to achieve non-detect (less than 50 to 100 ppb) levels of TRC and CPO in discharged waters.

6) According to a study prepared for EBMUD (Maria W. Tikkanen, John Schroeter, Lawrence Y.C. Leong, and Rajagopalan Ganesh, *Guidance Manual for the Disposal of Chlorinated Water*), "chlorine may be toxic to many species protected under the Endangered Species Act, even at very low concentrations." Before the State Board adopts any policy without numeric limits for discharges of potable water, we recommend that the State Board initiate consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service to determine whether or not such a policy might result in an unacceptable take of listed species.

Finally, to further demonstrate the feasibility to treat and to monitor the potable water discharges, we would like to offer the following information for your consideration:

Example Commercially Available Field Dechlorinators

The Transmate Dechlorinator, available from Romac Industries (www.romacindustries.com) in combination with Vita-D-Chlor dechlorination chemicals from Integra Chemical (www.Vita-D-Chlor.com).
The LPD-250 Diffusing Dechlorinator from Pollard Water (http://pollardwater.com)
The Hose15NST2.5 Dechlorinator from Pollard Water (http://pollardwater.com)

Example Commercially Available Field Test Kits

The ExStik Chlorine Meter has a reporting limit of 10 ppb, with an accuracy of 10 percent (www.extech.com).
The ExStik 4-in-1 Water Quality Meter has a reporting limit of 10 ppb, with an accuracy of 10 percent (www.extech.com).
The LaMotte Chlorine Test Kit can measure chlorine residual at 20, 40, 60, 80, and 100 ppb. (http://pollardwater.com)
The Hanna Chlorine Digital Colorimeter has a resolution of 10 ppb and an accuracy of 30 ppb. (http://pollardwater.com)
The Geneq Model TC-300 Tri-Meter has a detection limit of 20 ppb and an accuracy of 20 ppb. (www.geneq.com)
The Geneq Model C 114 C – Hanna Turbidity Chlorine Kit has a detection limit of 10 ppb and an accuracy of 30 ppb (www.geneq.com)
The Hach Chlorine (Free & Total) Test Kit, Model CN- 70 has a detection limit of 20 ppb (www.hach.com).
The Hach Chlorine (Free & Total) Test Kit, Model CN- 80 has a detection limit of 20 ppb (www.hach.com).

We appreciate the opportunity to comment on the draft Policy and would welcome the opportunity to work with State Board staff to resolve our concerns. If you have any questions, please contact Shin-Roei Lee at 510-622-2376 or srlee@waterboards.ca.gov.

Attachments

Attachment 1 – Region 2 Comments on draft Policy

Water Board Comment: The following is a description of two large discharge points from the SFPUC's potable water system that are not part of any treatment facility. Chlorinated potable water, which must be dechlorinated, is often discharged from these points in large quantities. The Alameda East dechlorination system is designed to turn on automatically, when needed. The Revised Policy would not permit regulating these discharges with effluent limits, as we read it.

City and County of San Francisco PUC
East Bay Field Facilities
Operations Plans for Sunol Valley De-Chlorination

Alameda East De-Chlorination Facility

The equipment is fully automatic and may start at any time.
There are two mixing/feeding tanks each containing 200 gallons. The tanks and related pumping equipment are checked daily. Mixes are made as needed. The feed solution contains three pounds of sodium thiosulfate per gallon of water.
There are two Wallace & Tiernan series 44 chemical feed pumps each with a maximum capacity of 125 gallons per hour.
As the water level increases in the Alameda East Shaft a gem switch is activated, which in turn actuates the chemical feed pumps.

San Antonio De-Chlorination Facility

The equipment is manually started and set for proper chemical feed when Hetch Hetchy water is pumped into the reservoir.
There are two sodium bisulfite tanks. Each tank has a capacity of 1,600 gallons. The tanks and related pumping equipment are checked weekly. Sodium bisulfite is delivered as a liquid as needed. There are four prominent chemical fed pumps. There are two 68.4 gallons per hour pumps and two 167.1 gallons per hour.

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Dechlorination of Potable Water Discharges – Tablet Method

Purpose

This SOP describes procedures to be used in manually dechlorinating discharges of EBMUD distribution system water using sodium sulfite tablets prior to release into storm sewer systems or receiving waters to satisfy the requirements of the Regional Water Quality Control Board.

Discharges Requiring Dechlorination

All discharges from the distribution system must be dechlorinated, with the exception of those identified under 'Exempt Discharges' below. Discharges to be dechlorinated include those generated in the course of:

- trench dewatering during distribution system maintenance and construction activities when water in trench is from leaking water pipe, and not exclusively from groundwater
- main or hydrant flushing (for any purpose)
- hydrant testing
- main dewatering (for any purpose)
- aqueduct dewatering
- Any other activity requiring discharge of chlorinated water (other than exempt discharges as defined below)

Exempt Discharges

The following discharges are exempt from the dechlorination requirement:

- Discharges of raw, untreated water with no chlorine residual
- Discharges of groundwater (water from groundwater table with no chlorine residual, not water from main or service leak; if unsure, assume water has a chlorine residual and must be dechlorinated)
- De minimus discharges - De minimus discharges include small discharges from a variety of District activities that generate very small discharges of approximately 1,000 gallons or less that are similar to discharges from households
- Unplanned discharges at unstaffed locations (e.g., reservoir overflows)
- Discharges to land - Any discharges to land that are absorbed into the ground and involve minimal or no runoff
- Discharges from system leakage (e.g., leakage from the underdrain system of the District's 26 open cut reservoirs, leakage from reservoir altitude valves and leakage from water treatment plant basins)

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Priority of Dechlorination Relative to Other Jobsite Tasks

For any job involving dechlorination, jobsite tasks should be prioritized in order of the following concerns:

1. Worker Health and Safety (e.g., don safety gear, set up traffic control, identify any site contamination concerns)

2. Public Health & Safety (e.g., stop flows from breaks that are impeding traffic or threatening homes or businesses, operate valves as necessary to prevent contamination of mains and minimize number of customers out of water)

3. Environmental Protection (e.g., set up dechlorination and/or sediment control equipment as necessary, ensure trench spoils are disposed of properly)

Scope of this Procedure

This procedure addresses manual dechlorination of District-generated potable water discharges with a chlorine residual of 2.5 mg/L or less. Dechlorination of discharges of superchlorinated water with a chlorine residual of 50-200 mg/L are not addressed in this procedure. Dechlorination of superchlorinated water discharges from District jobs is currently handled by System Water Quality using their own internal procedures.

Dechlorination of potable or superchlorinated water discharges from applicant and capital construction jobs are done by a contractor per District specifications. The specifications dictate that the contractor ensure that the discharge has zero chlorine residual, a pH between 6.5 and 8.5 and a dissolved oxygen content of 5.0 mg/L or greater. The specifications do not give instructions for making up dechlorinating solution or determining appropriate feed rates.

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Overview of Dechlorination Procedure

Dechlorination of chlorinated water discharges is accomplished by the addition of tablets comprised of 90% sodium sulfite to the discharge flow. For discharges from trenches during main breaks, the tablets are placed inside synthetic mesh fabric pockets sewn together in a grid or line (called a "dechlor mat" or "dechlor strip" respectively). The dechlor mat or strip is laid across the flow path or over the storm drain and either weighted down or nailed to the street to keep it in place. For discharges from hydrants or blowoffs, tablets are either placed inside a chamber on the flow diffuser or inside synthetic mesh pockets attached to the discharge face of the diffuser. In all cases, as the discharged water flows over and around the tablets, chemical is released as the water contacts the tablets, reacting with and destroying the chloramines. The key to the success of this procedure requires effective contact between the flow and the tablets. This is accomplished by ensuring the tablets are well distributed across the flow path. The tablets must be spaced no more than 4" apart for gravity discharges at ambient pressure. For discharges under pressure, the tablets should be spaced as close together as possible without constricting the flow. The various tablet holder designs are fabricated to ensure that this specification is met.

The first responder to a main break may install dechlorination tablets only if there is a secured location for the tablets and approval is obtained from a Supervisor.

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Dechlorination Equipment

The following equipment is needed for dechlorination when following this procedure:

Item	Warehouse Code #
• Dechlor mat (3' x 4') **-or-**	014322
• Dechlor strip (6" x 36") **-or-**	014321
• Diffuser with tablet chamber **-or-**	to be determined
• Diffuser with mesh tablet holder **-and-**	to be determined
• Dechlor tablets (45 lb bucket) **-and-**	014320
• DPD Powder-Pop Dispenser **-and-**	014312
• Personal Protective Equipment (goggles and rubber gloves)	various

Changes to Procedure

This procedure may evolve over time as new dechlorination chemicals or methods become available that make dechlorination of potable water discharges quicker and/or easier. First responders may install dechlorination tablets if a secured location is determined and approval is obtained from the Supervisor on duty. The secured location is required to prevent liability associated with public health and safety issues.

Chemical Health & Safety Information

Sodium sulfite is a stable chemical with a low order of toxicity. It presents no major hazards in and of itself, however, it (like virtually all chemicals) can react with certain other chemicals and cause a potentially hazardous situation (see WARNING below). Inhalation of dust can cause irritation of the respiratory tract; however, exposure to dust is negligible when the chemical is in tablet form. Ingestion may cause gastrointestinal irritation and diarrhea (if sufficient quantities are ingested). It is not carcinogenic or mutagenic. When the chemical is heated, sulfur dioxide can be produced.

Chemical Handling & PPE Requirements

Level D personal protective equipment (PPE) is required when handling sodium sulfite. Level D protection includes splash goggles and chemical resistant gloves. Do not inhale vapors from closed container (upon opening). Mats and diffusers with tablets (new or used) should be stored in vehicles in secondary containment to prevent particles of sodium sulfite from being deposited directly onto vehicle, tool or other surfaces. Plastic containers that can completely contain the dechlor mat, strip or diffuser constitute adequate secondary containment. If the container is subject to overturn or objects falling into it during transport, the container should be sealed with a lid.

Otherwise, a lid is not necessary.

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WARNING!

Some work units that will be using sodium sulfite for dechlorination also use calcium hypochlorite (HTH) or sodium hypochlorite to disinfect water distribution system mains or appurtenances. These two chemicals can react when mixed in the presence of water. The reaction can produce heat and both hydrogen and chlorine gas, creating both a potentially toxic and explosive/flammable atmosphere. These chemicals and associated mixing and dispensing equipment must be kept segregated from each other at all times. Should the chemicals become mixed, call Workplace Health and Safety (WHS) at 287-0740 (during normal work hours) or page the on-call WHS person at (510) 419-9514. If disposal is required, WHS will contact Environmental Compliance Section staff.

First Aid

Eye Contact: Hold lid open and flush with copious amounts of water and transport to the nearest medical facility for evaluation.

Skin Contact: Wash thoroughly with soap and water.

Ingestion: Give copious amounts of water and transport to the nearest medical facility for evaluation.

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Procedure 1 - Dechlorination Procedures for Releases from Trenches During Main Breaks

Task	Procedure
1. Fill pockets of dechlor mat or strip with dechlor tablets	Put one tablet in each pocket of the dechlor mat (3' x 4') or strip (6" x 36"). If the pocket contains a partially-used tablet, add another tablet only if there is room.
2. Place dechlor mat or strip mat in flow path	Place the dechlor mat or strip across (perpendicular to) the flow path downstream of sediment control devices (e.g., pea gravel bags). Nail the mat or strip to the street using street nails (through the grommets in either end of the mat) or weigh the mat or strip down to ensure that it stays in place. If the flow path is more than the dechlor mat or dechlor strip, or there is more than one flow path (flow is spreading out in more than one direction), use additional mats to ensure all water from the source is crossing a mat. If the flow is deep (more than 1" above the top of the dechlor mat) and/or the flowrate is very high (>300 GPM), a second mat should be placed downstream of the first mat to ensure adequate dechlorination.
3. Monitor mat or strip	Check the dechlor mat periodically to ensure some tablet remains in each pocket and that all flow is crossing at least one mat.
4. Clean up	When the discharge is complete, move the dechlor mat(s) or strip(s) to the storm drain(s) the discharge was entering, and place it on the upstream side of the grate. Hose the flow path to remove any tablet residual, ensuring that the flow enters the storm drain(s) upon which the dechlor mat(s) or strip(s) is installed. If the flow path separates and some flow travels to a different storm drain, a dechlor mat or strip should be installed at that location as well. Retreive the dechlor mat or strip and store it in its secondary container on the field vehicle.

Procedure 2 - Dechlorination Procedures for Releases Directly from Hydrants or Blowoffs

Task	Procedure
1. Fill diffuser chamber or mesh pockets with tablets	If using a flow diffuser outfitted with a cylindrical tablet chamber, fill the chamber with tablets. If the chamber is partially filled with partially used tablets, add as many new tablets as will fit while still allowing the cap to be screwed back on. If using a flow diffuser with a dechlor mat attached to the face of the diffuser, put one tablet in each pocket and close the snap on each pocket. If a pocket contains a partially-used tablet, only add another tablet if there is room.
2. Install diffuser on hydrant, fire hose or blowoff	Screw the diffuser to the hydrant, fire hose or blowoff as you normally would.
3. Check downstream chlorine residual	Determine if there is any chlorine present in the downstream discharge using the procedures described below.
4. Monitor tablets	Check the supply of tablets in the tablet chamber or mesh pockets periodically to ensure that there is tablet remaining throughout the discharge.

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Measuring Chlorine Residual

Method of Measurement

Total chlorine is measured by adding DPD reagent to a sample of a given discharge. If a pink or red color develops when reagent is added to the sample, chlorine is present. This is known as colorimetric analysis. Absence of color indicates there is no detectable chlorine present.

Measuring Equipment

DPD Powder Pop Dispensers manufactured by HF Scientific, Inc. are used to dispense the reagent into the sample. Any clear, clean sample container may be used for collecting and analyzing the sample. The dispensers are designed to dispense enough reagent for 10 mL of sample; however, for this application, it is not necessary to be accurate in the amount of sample collected. An appropriate amount of sample is approximately 1/8 of a pint jar.

Applicability of Method

This method of analyses can only be used for relatively clean, clear water. It cannot be used to detect the presence or absence of chlorine in opaque muddy water, such as that discharged from trench dewatering operations. There is no simple and accurate field method for detection of chlorine residual in opaque muddy water; therefore, in cases where the discharge is opaque, field staff will need to rely solely on the dechlorinating agent dosing guidance given in this procedure (i.e., there is plenty of visible tablet remaining and there is contact between the flow and the tablets) to ensure effective dechlorination.

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Procedure 2 - Measuring Chlorine Residual Hach Pocket Colorimeter

Task	Procedure
1. Collect sample	Collect the sample as far downstream of the point of dechlorination as possible before the flow enters a storm drain or receiving water. Rinse the sample container in the discharge flow and then collect a sample.
2. Add reagent	Turn the DPD Powder Pop Dispenser upside down once and then right side up (with blue plastic button at top). Uncap the bottom of the dispenser. Hold the dispenser over the sample container and press the blue button once fully to dispense reagent.
3. Mix reagent	Gently swirl the sample container for 20 seconds. Allow to stand for 3 minutes to allow the color to fully develop.
4. Assess color/Dispose of sample	Visually assess the sample after 3 minutes or as soon as a detectable pink or red color is present. A pink or red color will form in the sample container with reagent if chlorine is present. *Note: You know chlorine is present as soon as color develops so if it takes less than 3 minutes for color to develop you need not wait the entire 3 minutes before assessing the color. However, you cannot conclude that the sample is clear (i.e., there is no detectable chlorine residual) until you wait the entire 3 minutes. Holding the sample container up against a blank piece of white paper and/or comparing the sample with reagent to a sample without reagent is often helpful in determining whether color is present. Accuracy is not affected by undissolved reagent powder. If the ratio of sample to reagent is too large (i.e., there is too much sample), chlorine may be present but the pink color may be too faint to see. In this case, adding more reagent will help confirm whether a pink color and therefore, chlorine, is present. An appropriate amount of sample for the amount of reagent dispensed in one application is approximately 1/8 of a pint jar.* The sample (with or without reagent) may be disposed of in the flow stream.
5. Rinse and store sample container(s) and store reagent	If a pink color develops, adjust mat placement, add tablets, or add additional mats and re-analyze as necessary. Otherwise, rinse sample container(s) with clean water (if available), wipe or shake off excess water and store appropriately. Store the DPD Powder-Pop Dispenser in a dry area. The reagent will tend to cake if it becomes moist and the dispenser rendered unusable (if this occurs see section on disposal of reagent later in this procedure). Storage inside a dry plastic bag is recommended.

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Disposal of Powdery Tablet Waste and DPD Reagent

Shelf Life of Tablets

Tablets have a relatively long shelf life unless exposed to high temperatures (>85°F). At higher temperatures, tablets may crumble. During the summer months, crews may need to place enough tablets for daily use in coolers for storage on trucks at the beginning of each work day. Supply buckets stored in the yard must be kept in a cool location.

Disposal of Powdered Tablet Waste

As long as tablets are in large enough pieces to be retained within the mesh dechlor, diffuser chamber or diffuser mesh pockets, they can be used for dechlorination per the procedures contained herein. Small amounts of powdery or granular tablet waste from tablet supply buckets or secondary containers should be mixed with water and discharged to the sanitary sewer via a utility sink at a District facility.

Disposal of Contaminated Tablets

Should another chemical or hazardous substance become mixed with fresh or used tablets, call Environmental Compliance at 287-1641 for assistance with disposal during normal work hours. If the mixture produces a discernible reaction, cordon off the area and call WHS immediately (287-0740 during normal work hours; 437-7363 during off hours). If the reaction is extreme, call 911.

Disposal of Unused DPD Reagent

Empty DPD reagent dispensers may be disposed of in the regular trash. DPD reagent dispensers that can no longer be used but still contain reagent (i.e., the reagent powdered has become solidified) should be stored in hazardous waste storage areas for pick up by hazardous waste disposal contractors under contract with Environmental Compliance Section.

History of Dechlorination Field Management Practices

The ECS developed *Field Management Practices for Main Discharges* in 1994 that included criteria for determining requirements for dechlorination of potable water discharges. These criteria were revised in December 1997 in preparation for the District's conversion to chloramines for drinking water disinfection. The District and many other water agencies use chloramines in treating drinking water to comply with the federal requirement to maintain a disinfection residual throughout the service area. Chloramines are significantly more persistent than free chlorine, when discharged to a surface water environment.

The presence of chloramines in potable water significantly broadened the scope of dechlorination required within the District, and expanded the number of impacted employees and field crews. As a result, new dechlorination procedures were developed and a District-wide training effort was completed shortly before the conversion to chloramines began in February 1998. These new dechlorination procedures consisted of metering liquid sodium thiosulfate solutions into the discharges from a carboy. These were summarized in an initial FMP titled *Dechlorination of Potable Water Discharges (EBMUD, February 10, 1998)* that was subsequently revised on April 21, 1998.

As a result of concerns and issues raised by District work groups and the unions concerning these new procedures, a joint labor-management task group was formed in July 1998 to evaluate alternatives to the use of liquid sodium thiosulfate solution for dechlorination of potable water discharges. ECS directed a series of pilot testes and field tests, and in September 1998, the task group recommended the use of sodium sulfite tablets in mats as an alternative dechlorination method. This recommendation was based on the observation that the tablets and the mats are safer and easier for field crews to use.

In a memo dated March 8, 1999, the Director of Operations and Maintenance instructed O&M staff to begin using sodium sulfite tablets for dechlorination throughout the District. ECS completed training of CMD and PCD staff in these new procedures during April 1999.