

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**ORDER R2-2004-0001
WATER REUSE REQUIREMENTS FOR:**

THE PRESIDIO TRUST of SAN FRANCISCO

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. The Presidio of San Francisco (Presidio), is being converted from a U.S. Army base to a national park site. The Presidio Trust (Trust), a federal government corporation, was created by Congress in 1996 to administer and manage in accordance with the Presidio Trust Act (16 U.S.C. sections 460bb appendix) the 1,168 acre inland area of the Presidio, known as Area B. The National Park Service (NPS) administers and manages the 323 acre shoreline area of the Presidio, or Area A, which includes Crissy Field and the newly restored Crissy Marsh.

The Trust submitted a Report of Waste Discharge and Draft Engineering Report for the *Production, Distribution and Use of Recycled Water*, dated December 6, 2002, for the construction and operation of a new tertiary wastewater treatment and disposal system (the project) to serve the Presidio and adjacent facilities. The Presidio abuts the Pacific Ocean and San Francisco Bay, at the northwestern tip of the San Francisco peninsula, just south of the Golden Gate Bridge. A regional location map of the Presidio is in Figure 1, Attachment 1.

2. The purpose of the proposed project is to reduce potable water demand and the amount of potable water consumed for non-potable uses (i.e., landscape irrigation) at the Presidio, and to provide a reliable year-round and drought-proof source of recycled water for the Presidio that meets or exceeds Title 22 standards for Disinfected Tertiary Recycled Water. An additional objective is to reduce wastewater flows entering the City and County of San Francisco's (CCSF's) combined sewer system, and in particular reduce the Presidio's contribution to cumulative flows affecting the operation of the (CCSF's) Southeast Water Pollution Control Plant (SEWPCP).

By this Order, the Trust is authorized a) to operate the recycled water treatment system specified in this Order within Area B of the Presidio; b) to use recycled water in designated areas within Area B of the Presidio; and c) to supply users outside or adjacent to Area B of the Presidio as specified by this Order.

EXISTING WASTEWATER/STORMWATER COLLECTION SYSTEMS

3. Currently the Presidio has two separate sewer systems: one for sanitary sewage (wastewater) and one for stormwater. Stormwater is collected and conveyed to the Pacific Ocean, San Francisco Bay and Crissy Marsh. Wastewater is presently collected and conveyed to the City and County of San Francisco (CCSF) combined sewer system. The majority of these flows are transported via the "Presidio Main," which is located at the park's northeastern corner near Gorgas/Lyon Gate within the Letterman District (see Figure 1).

SURFACE WATER ON THE PRESIDIO

4. There are several water bodies within the Presidio. Lobos Creek, the only remaining naturally occurring surface water drainage in the Presidio, originates near the southern boundary of the Presidio and discharges to the Pacific Ocean. Just over one mile in length and recharged by groundwater released from springs and seeps, it is the primary potable water source for the park. Recycled water irrigation is specifically prohibited in the Lobos Creek watershed. Crissy Marsh, located on San Francisco Bay on the northern boundary of the Presidio, is an 18-acre tidal salt marsh that was restored as part of the larger 100-acre Crissy Field Restoration Project. In addition there are several small water bodies in the Presidio: Mountain Lake, Tennessee Hollow's El Polin Spring, and Dragonfly Creek. Mountain Lake is a natural, unlined lake occupying approximately four acres and likely fed by groundwater, with some contribution from surface water runoff. The area around El Polin Spring, also referred to as Tennessee Hollow, contains three tributaries and is currently being studied by the Trust for ecological restoration opportunities.

Except as specified, use of recycled water is prohibited in the areas of the above-identified surface waters and will not have a significant impact on their water quality. Subject to NPS consent, recycled water irrigation is allowed on Crissy Field, which is adjacent to Crissy Marsh.

5. PRODUCER, DISTRIBUTOR and USERS

The Trust will produce and distribute recycled water to designated Recycled Water Use areas. Phase 1 of the recycled water project will produce up to 200,000 gallons per day (gpd) for use at both the Letterman Digital Arts Center (LDAC) site in Area B and Crissy Field in Area A. The recycled water project will eventually be expanded under Phase II for flows up to 500,000 gpd. Additional designated Recycled Water Use Areas include the Main Post, National Cemetery, Fort Scott, the Lombard Corridor areas, and possibly areas within CCSF jurisdiction if requested by the City. These areas are not expected to be supplied by the project, if at all, until Phase 2. The designation of Phase I and Phase II Use Areas is not intended to be restrictive: a Use Area may become part of a different project phase, provided that the alternative Use Area is supplied and managed in accordance with the terms of this Order. The proposed Recycled Water Use Areas are presented in Figure 2, Attachment 2.

Users supplied by the project, either Phase 1 or Phase II, will be responsible for operation and maintenance of the on-site distribution systems under their respective jurisdiction and for compliance with use conditions and prohibitions as specified in separate user agreements entered into between the Trust and Users and consistent with this Order.

The LDAC, which is currently in the beginning stages of construction, will be a building complex on 23 acres within the Presidio's Letterman District. The LDAC designated Recycled Water Use Area will be operated and maintained by Letterman Digital Arts Ltd., or a successor entity related to the LDAC, pursuant to a user agreement consistent with this Order and entered into with the Trust. The intended uses of recycled water at LDAC are anticipated to include landscape irrigation and impoundments (e.g., water features such as constructed pools, fountains, and waterfalls).

Crissy Field north of Mason Street is under the jurisdiction of the NPS. The Crissy Field designated Recycled Water Use Area will be operated and maintained by NPS pursuant to a user agreement consistent with this Order and entered into between the Trust and NPS.

WASTEWATER TREATMENT FACILITY

6. The new state-of-the-art wastewater treatment system will produce disinfected tertiary recycled water suitable for 'unrestricted' irrigation reuse in accordance with current State of California Water Recycling Criteria (Title 22 regulations and criteria for wastewater reclamation). Recycled water produced by the tertiary treatment facility will be used for on-site irrigation of landscape features (utilizing spray, drip, and subsurface applications) and decorative water features (fountains, etc). All wastewater generated will be primarily of domestic origin (residences and offices), several small restaurants, light industrial uses such as an equipment wash pad (equipped with an oil/water separator), general storage and warehouse uses, and possibly a small commercial laundry. The nature of wastewater from non-office uses that connect to the system will be reviewed for consistency with the Trust's recycled water permit, and appropriate pretreatment measures will be instituted as needed to meet the requirements of this Order.

The new recycled water treatment system will consist primarily of a fine screen for clarification, submerged membrane bio-reactor (MBR) for activated sludge biological treatment and filtration, and ultraviolet light (UV) irradiation for primary disinfection. Sodium hypochlorite storage and dosing facilities will be installed to provide disinfection residual. In addition, sodium hypochlorite will be used for periodic odor suppression, for filamentous organism suppression, and for bio-slime prevention in recycled water pipelines and irrigation systems. Other ancillary systems include odor control scrubbers, air blowers with sound attenuation devices housed in a separate room, pumping systems, mechanical piping, electrical and control systems, fire sprinkling systems, and HVAC systems. The process schematic is shown in Figure 3, Attachment 3.

The Recycled Water Treatment Plant (RWTP) will be located in the Letterman District of Area B inside Presidio Building 1063 after the building is upgraded to meet applicable seismic criteria and modified to create space for the required equipment.

Wastewater will continue to be collected in the existing sewer system from throughout the Presidio and will flow by gravity to an equalization/emergency storage facility at the RWTP. After screening, the influent will flow to the microfiltration membrane bioreactor (MBR). The MBR system will have a configuration that has been approved by the California Department of Health Services (DHS) for production of tertiary recycled water. The MBR process train will consist of an aeration basin, an anoxic basin, recirculation/sludge wasting pump, immersed microfiltration membranes, and permeate pumps. Dissolved BOD will be converted into filterable solid material in the aeration basin by an aerobic suspended growth process. In addition, nitrification will occur in the aeration basin. Nitrified effluent will be re-circulated to the anoxic basin and blended with raw wastewater for denitrification. Several "cassettes" with microfiltration membranes will be immersed at one end of the aeration basin. An automated programmable controller will control the backwashing of the bio-filter membranes. Sodium hypochlorite will also be injected into the back pulse flow to remove biological growth in the membrane filters. Waste activated sludge will be periodically pumped from the bottom of the aeration basin and will be pumped into the CCSF's wastewater collection system for treatment. A flushing system will be designed to facilitate transfer of the solids to the CCSF system.

RECYCLED WATER STORAGE TANK

7. The recycled water will be pumped through the UV disinfection system and into a 500,000 gallon recycled water storage tank, which is equivalent to the one-day treatment capacity for Phase 2. This will provide operational storage to meet peak demands and maintain service during minor treatment plant upsets or during maintenance. The tank will be a buried rectangular reinforced concrete structure equipped with low and high level float switches and level alarms, overflow pipe to the Gorgas Gate manhole (CCSF sewer system), and distribution pumps.

To prevent inadequately treated wastewater from entering the storage tank, the RWTP will be equipped with a shut off valve and a diversion tee after the turbidity meter. When closed, the shutoff valve will prevent water from exiting the RWTP towards the UV system and the storage tank. The water would then be conveyed into the CCSF's collection system for treatment. Whenever there is a diversion to the CCSF's system, the sewage lift pumps will automatically stop pumping wastewater to the RWTP, instead pumping the flow to the CCSF system.

WATER RECYCLING TREATMENT PLANT STAFFING

8. The RWTP will not be staffed full-time. However, the plant will have automatic monitoring and alarm systems. A certified operator from the Presidio's Lobos Creek Water Treatment Plant (LCWTP) or designated backup personnel will periodically, but no less than three times per week, visit the RWTP to collect samples and check on the treatment operations. The operator will be on call at all times, unless a backup operator is designated by the Trust. The Trust may also contract with an outside certified wastewater treatment operator to provide assistance as needed.

WINTERTIME DISCHARGES TO RECEIVING WATERS

9. During wintertime rainy periods, soils may be saturated, requiring the curtailment of the use of recycled water for irrigation purposes. During these periods, wastewater would either be discharged to the CCSF's collection system for treatment at the SESWPCP or discharged to waters of the State and United States under a separate Permit from this Regional Board that has not been applied for at this time..

BASIS FOR WASTEWATER TREATMENT DESIGN

10. The design criteria for the RWTP are presented in Table 1, Attachment 4.
11. Water Conservation

Consistent with the Presidio Trust's Management Plan (PTMP), the Trust in cooperation with its tenants and residents will continue to implement Best Management Practices that encourage water conservation, including, wherever practical, installation of low-flow toilets, shower fixtures, and faucet aerators as part of building rehabilitation projects. A grease trap will collect grease from restaurant kitchens prior to flow into the wastewater treatment system.

RECYCLED WATER IRRIGATION DEMAND

12. Wastewater Reuse Through Landscape Irrigation:

A water balance was prepared to estimate irrigation demands. The data is presented in Table 2 (Attachment 5). Applied irrigation demands were estimated by subtracting monthly precipitation from monthly evapotranspiration, assuming 80 percent efficiency for rainfall irrigation and 90 percent efficiency for applied irrigation. The estimated annual rainfall for a 10-year wet season occurrence interval is 20.4 inches. The total estimated irrigation demand by designated Recycled Water Use Areas at the Presidio is 105 acre-feet per year (AFY) in Phase 1 and 257 AFY at the end of Phase 2.

GROUNDWATER ISSUES

13. Nitrate loading from on-site wastewater disposal systems can potentially degrade ground water supplies. The groundwater at the Presidio associated with the designated Recycled Water Use Areas specified in this Order is not currently used as a drinking water supply (see Finding 15). The tertiary treatment unit is expected to produce less than 10 mg/l of nitrate-N in the effluent. Near complete nitrification and significant denitrification is expected. Nitrification is achieved in the aerobic reactor, which is highly aerated. Denitrification occurs in the anoxic reactor, by recirculating the nitrified effluent from the aerobic reactor and blending it with the influent wastewater. The proposed lined storage tank will prevent wastewater from infiltrating to groundwater and the subsurface irrigation system is designed to maximize nitrogen uptake and minimize nitrates from reaching groundwater. The combination of these factors is expected to significantly reduce any risk of nitrate contamination of the underlying groundwaters.

BASIN PLAN AND BENEFICIAL USES

14. The Board on June 21, 1995, adopted, in accordance with Section 13240 et. seq. of the California Water Code (CWC), a revised Water Quality Control Plan, San Francisco Bay Basin (Basin Plan). This updated and revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20 and November 13, 1995, respectively. A summary of revisions to regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of State, including surface waters and groundwaters. This Order is in compliance with the Basin Plan.
15. The Basin Plan defines beneficial uses and water quality objectives for waters of the State within the San Francisco Bay Region, including surface and ground waters. None of the limited water bodies on the Presidio property are specifically identified in the Basin Plan. Lobos Creek, however, is a source of and used for Presidio drinking water, and the Trust's Domestic Water Supply Permit specifically prohibits the use of recycled water in the Lobos Creek watershed. The Basin Plan designates the groundwater beneath the Presidio's groundwater as a potential source of drinking water.
16. The proposed recycled water projects authorized under this Order do not pose any significant threat to water quality in the surface freshwater bodies identified in Finding 4, the Pacific Ocean, San Francisco Bay or to groundwater. The diversion of the Trust's wastewater from San Francisco's SEWPCP to land irrigation of highly treated (tertiary) recycled water not only reduces direct loading of pollutants to San Francisco Bay, but also provides additional environmental benefits as identified in Finding 2.

REGULATORY ISSUES AND APPLICATIONS

17. The proposed recycled water project is consistent with the PTMP, the Trust's Management Plan for Area B of the Presidio, approved August 2002. The project is also consistent with the General Management Plan Amendment (GMPA), approved by the NPS in 1994 and applicable to Area A of the Presidio. The Trust prepared an *Environmental Assessment (EA)* for *The Presidio Recycling Project (2002)*, and issued a Finding of No Significant Impact in accordance with the requirements of the National Environmental Policy Act (NEPA).
18. Section 13523 of the California Water Code provides that a regional board, after consultation with and receipt of recommendations from the State Department of Health Services (DHS), shall prescribe water reclamation requirements for water that is used as recycled water. These water reuse requirements are in conformance with the recently adopted statewide water reclamation criteria. The Trust's, *Engineering Report for the Production, Distribution and Use of Recycled Water*, prepared by Kennedy/Jenks Consultants, December 2002, was approved by DHS without conditions in February 2003.
19. The proposed uses of recycled water will maintain and enhance natural resources, and thus this Order is categorically exempt from the provisions of Chapter 3 (CEQA) Division 6, Title 14 of the California Administration Code pursuant to Section 15301 of that Chapter.
20. The project as regulated by this Order will not have a significant adverse impact on water quality.
21. The Board has notified the Trust and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with the opportunity for a public hearing and opportunity to submit their written views and recommendations.
22. The Board, in a properly noticed public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Presidio Trust, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The treatment, storage, distribution, or reuse of waste shall not create a nuisance or pollution as defined in the California Water Code.
2. The Treatment by the RWTP of waste other than domestic waste and waste from limited light industrial uses such as an equipment wash pad (equipped with an oil/water separator), a small commercial laundry, and general storage and warehouse uses is prohibited, unless appropriate pretreatment measures satisfactory to the Executive Officer are implemented to meet the requirements of this Order.
3. Discharges of any wastes including overflow, bypass, over-spray and runoff from treatment, transport, or disposal systems to adjacent drainage ways or adjacent properties not controlled by this Order is prohibited.
4. There shall be no bypass or overflow of untreated or partially treated wastewater to waters of the State from the Trust's collection, treatment, storage or disposal facilities.

5. The discharge of wastewater or use of recycled water shall not cause the degradation of groundwater or cause any change in a water quality parameter that would make the groundwater unsuitable for potential drinking water use.
6. Recycled water shall not be used as a domestic or animal water supply. There shall be no cross-connection between the potable water supply and piping containing reclaimed water. Supplementing recycled water with water used for domestic supply shall not be allowed except through an air-gap separation. Double check valve assemblies will be installed for backflow prevention on all potable water pipes serving buildings in which recycled water will be used for fire protection. These assemblies shall be tested at least once per year by the Trust in accordance with requirements of Section 7602(a) and 7603(a) of Title 17, CCR.
7. Recycled water shall not be applied to irrigation sites when soils are saturated, when conditions are such that runoff or excessive ponding is likely to occur, during rainfall, or when rainfall is expected to occur within 24 hours.
8. The peak daily flow to the wastewater treatment system shall not exceed 200,000 gpd in Phase 1 and 500,000 gpd in Phase 2.

B. Recycled Water Quality Specifications

1. The Trust shall assure that the recycled water discharged to the storage tank is at all times an adequately oxidized, disinfected tertiary treated wastewater that meets the following quality limits.

- a. The effluent discharged to the storage tank shall not exceed the following limits:

<u>Constituent</u>	<u>Unit</u>	<u>Daily Maximum</u>
1) BOD ₅	mg/l	10
2) TSS	mg/l	10
3) Oil & Grease	mg/l	10
4) Nitrate Nitrogen as N	mg/l	10

- b. Turbidity: Turbidity is to not exceed 0.2 NTU more than 5% of the time within a 24-hour period and not exceed 0.5 NTU at any time.
- c. pH: The pH of the discharge shall not exceed 9.0 nor be less than 6.5
- d. Total Coliform Bacteria:

The treated wastewater shall meet the following limits of bacteriological quality:

The moving median value for the most Probable Number (MPN) of total coliform bacteria in any five consecutive samples shall not exceed 2.2 MPN/100 ml; and any single sample shall not exceed 23 MPN/100 ml when verified by a repeat sample taken within 48 hours.

2. Following the recycled water storage tank sodium hypochlorite will be used to provide a disinfection residual to control the growth of filamentous organisms and formation of bio-slime in the recycled water pipelines and irrigation systems.

3. The Trust shall discontinue the pumping of recycled water to the storage tank during any period when there is reason to believe that the limits specified in B.1. above are not being met. The pumping of recycled water shall not be resumed until all conditions that caused the limits specified in B.1. to be violated have been corrected.
4. The Trust shall provide the Board documentation that it has:
 - a. A qualified wastewater treatment “Operator” at the Presidio or on-call to oversee the wastewater treatment and disposal system(s). The Operator must be adequately trained to oversee daily operation of a tertiary recycled wastewater treatment facility; and
 - b. A ‘contingency’ contract, if needed, with an outside certified wastewater treatment operator that can respond promptly, at the request of the Trust, to any emergency or operating problem at the wastewater treatment facility.

C. Recycled Water Use Specifications

1. Recycled water will not be provided to any unit intended for human habitation unless the Trust obtains DHS approval for installation of dual plumbing systems in accordance with CCR Titles’ 22 and 17.
2. Designated Recycled Water Use Areas and recycled water irrigation will be managed and maintained in accordance with sound irrigation practices such that:
 - a. Irrigation practices will minimize any reasonable avoidable loss of recycled water from the irrigated areas. Recycled water will not be allowed to escape from the Recycled Water Use Areas by airborne spray or subsurface flow except in minor amounts such as are associated with sound irrigation practices.
 - b. Spray, mist or runoff will not enter dwellings, designated outdoor eating areas, or food handling facilities.
 - c. Drinking water fountains will be protected against contact with recycled water spray, mist or runoff.
3. The Trust shall adequately post signs informing the public that recycled water is being used for landscape irrigation in the designated Recycled Water Use Areas. Signs will be posted in areas where the recycled water is accessible to workers and the public, such as decorative fountains and where spray irrigation is conducted. These signs will be at least four inches high by eight inches wide, and include the following wording at a minimum: “RECYCLED WATER – DO NOT DRINK”. Each sign shall display an international “Do Not Drink” symbol. Placement of signage is site specific but must provide adequate means of notification to inform workers and the public that recycled water is being used. At a minimum signs are to be placed at public access points to an irrigated site and near other uses (i.e. decorative fountains, etc.).
4. Where possible, recycled water pipes will be installed at least ten feet horizontally from and one foot lower than the potable water pipes. Where a ten-foot horizontal separation cannot be achieved, a minimum horizontal separation of four feet will be maintained. At locations where this horizontal separation is between four feet and ten feet, special pipe will be used, as defined in the DHS *Criteria for the Separation of Water Mains from Sanitary Sewers and Pipes Carrying Reclaimed Water*. In addition, at locations where the horizontal separation is between four feet and ten feet, recycled water pipes will be

at least one foot below potable water pipes, and trench tape will be used in the potable water system trenches. Where recycled water pipes and potable water pipes cross, recycled water pipes will be installed at least one foot below potable water pipes. The Trust will own all water, sewer, recycled water and storm drain utilities. The Trust is responsible for managing its facilities, and no alterations by tenants to utilities, building plumbing, or irrigation systems will be allowed without specific Trust approval. Operations and maintenance personnel involved with utilities, plumbing, and irrigation systems will be educated on the importance of keeping the recycled and potable water systems strictly separated. The recycled pipelines shall be colored purple in accordance with Title 22 requirements.

5. The landscape irrigation programs shall be managed to prevent surface ponding of water or other conditions, which would provide a breeding area for mosquitoes, or other vectors of health significance, and to prevent the creation of odors, slimes, or unsightly deposits.
6. **Recycled Water Irrigation Manual.**

The Trust shall submit, acceptable to the Executive Officer, a **Recycled Water Irrigation Manual** to the Regional Board 60 days prior to distribution of recycled water to Designated Recycled Water Reuse Areas in Phase I. The Manual shall be updated as additional water reuse sites are brought online under Phase II. The Manual shall describe the landscape irrigation system, type of landscaping/flora to be maintained by the irrigation system, and operation and maintenance of the entire water reuse system.

D. Provisions

1. The Trust shall comply with all sections of this Order immediately upon commencement of discharge.
2. The Trust shall maintain a copy of this Order at the RWTP so that it will be available at all times to personnel operating and maintaining waste treatment and reuse facilities. A copy will also be provided to users supplied by and governed by a separate user agreement with the Trust.
3. The Trust shall maintain in good working order and operate as efficiently as possible any treatment, disposal, and monitoring facility or control system installed by the Trust to achieve compliance with these waste discharge requirements.
4. The Trust shall comply with the attached self-monitoring program (SMP) (Attachment 6) as adopted by the Board and as may be amended by the Executive Officer. The Trust will require its users to submit on-site observation reports, use data, and evidence of violations to the Trust, and the information submitted will be incorporated by the Trust into the reports filed under the SMP. The Trust will be responsible for submitting all the necessary SMP reports to the Regional Board.
5. The Trust shall designate a "Recycled Water Supervisor" to be responsible for managing the RWTP Operator specified in Provision B.4.a and designate backup personnel in the event the Operator is unavailable or cannot respond. Both the Operator and designated backup personnel shall be capable of repairing, maintaining, and operating the recycled water system according to the conditions in this Order, in order to prevent potential public health hazards and shall have sufficient training in wastewater treatment to oversee the daily operation of the recycled water system and to handle minor emergencies. However, if major problems occur and cannot be corrected by the Trust within a reasonable time, the Trust will be responsible for contacting a certified "Operator" for system corrections (see Provision: B.4.b).

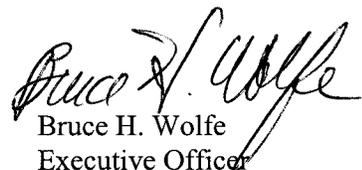
6. The Trust shall be responsible for authorizing users, pursuant to separate user agreements with the Trust, to operate, repair and maintain recycled water irrigation systems supplied by the project according to the conditions in this Order, in order to prevent potential public health hazards.
7. Inspection, supervision, and employee training shall be provided by the Trust to assure proper operation of the RWTP collection, treatment and distribution system and related user facilities and to provide proper worker protection. A complete Record of inspections and training shall be maintained by the Trust.
8. The Trust shall implement a program to regularly review and evaluate its wastewater collection, treatment and disposal facilities in order to ensure that all facilities are adequately staffed, supervised, operated, maintained, and repaired as necessary, in order to provide adequate and reliable treatment, and disposal of all wastewater. A **Treatment Facilities Evaluation Program** report discussing the status of this evaluation program, including any recommended or planned actions, shall be submitted to the Board by **April 30** of each year.
9. The Trust shall submit, acceptable to the Executive Officer, to the Board an **Operational and Maintenance Manual** for the entire wastewater treatment and disposal facilities 60 days prior to startup of the RWTP. All personnel responsible for operation and maintenance of the wastewater treatment and reusel facilities shall be provided with a copy of the accepted Operation and Maintenance Manual.
10. In the event the Trust is unable to comply with any of the conditions of the Order due to:
 - a. Breakdown of wastewater treatment/transport equipment;
 - b. Accidents caused by human error or negligence; or
 - c. Other causes such as acts of nature;

the Trust shall notify the Board by telephone as soon as the Trust or its agents have knowledge of the incident. Written confirmation of this notification shall be submitted within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the non-compliance and shall indicate what steps were taken to correct the problem and the dates thereof, and what steps are being taken to prevent the problem from recurring.

11. The Trust shall permit the Regional Board or its authorized representative in accordance with California Water Code Section 13267(c):
 - a. Entry upon premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Access to and copy of, at reasonable times, any records required to be kept under the terms and conditions of this Order;
 - c. Inspection, at reasonable times, of any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; or
 - d. To photograph, sample or monitor, at reasonable times, for the purpose of assuring compliance with this Order.

12. In the event of any change in control or ownership of the land or the waste discharge facilities presently owned or controlled by the Trust, the Trust shall notify the succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to the Board.
13. This Board will review this Order periodically and may revise the requirements as necessary to comply with changing State and Federal laws, regulations, policies, or guidelines; changes in this Board's Basin Plan; or changes in the discharge characteristics.
14. After notice and opportunity for a hearing, this Order may be terminated or modified for cause including, but not limited to:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all-relevant facts;
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized reuse; or
 - d. Endangerment to public health or environment that can only be regulated to acceptable levels by Order modifications or termination.

I, Bruce H. Wolfe, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on January 21, 2004.


Bruce H. Wolfe
Executive Officer

Attachments:

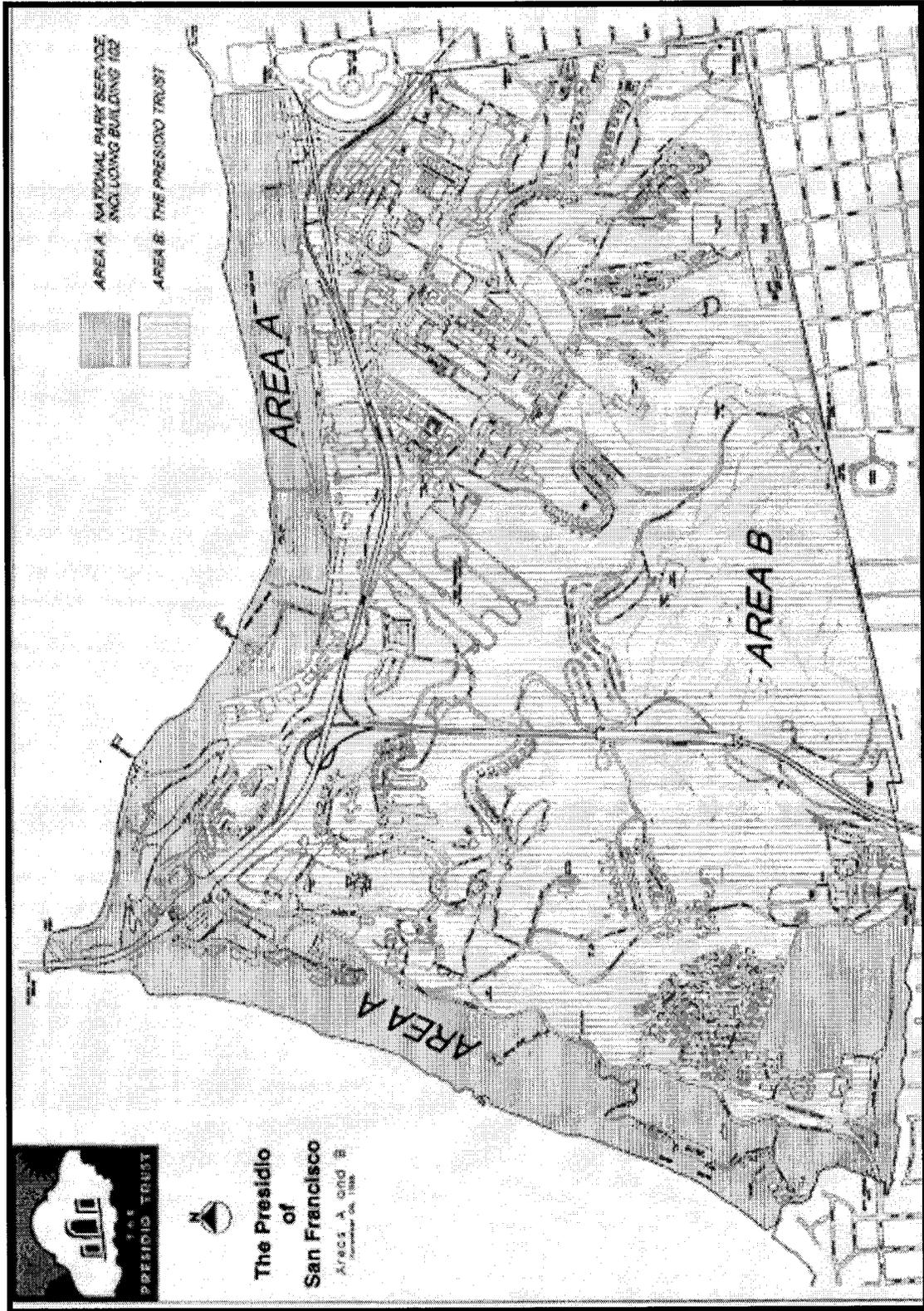
1. Location Map, Figure 1
2. Recycled Water Use Areas, Figure 2
3. Wastewater Treatment Flow Schematic, Figure 3
4. RWTP Design Criteria, Table 1
5. Site Water Balance Data, Table 2
6. Self-Monitoring Program

File No. 2169.6056

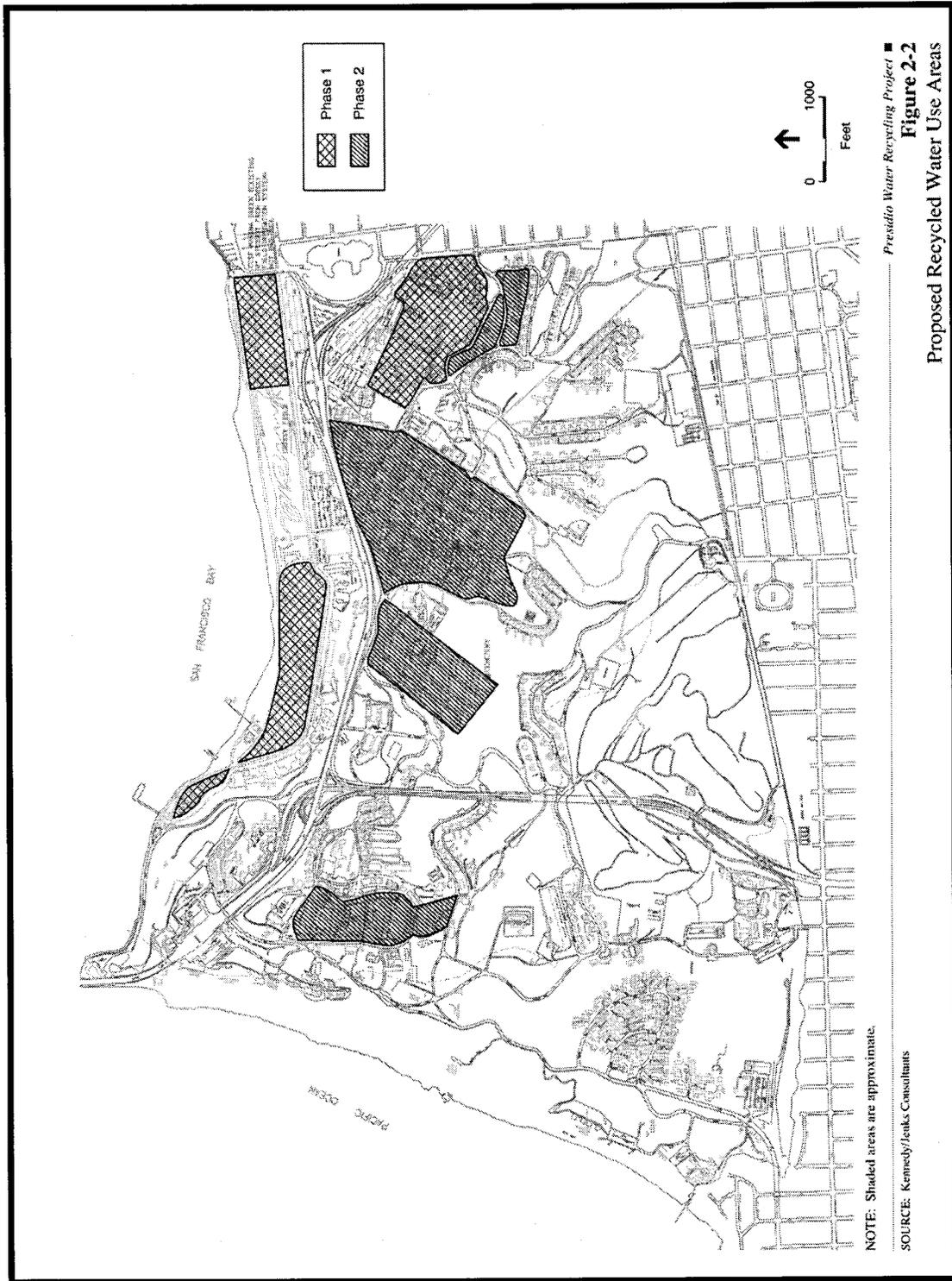
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ATTACHEMENT 1

Figure 1 – Location Map



ATTACHMENT 2
Figure 2 - Recycled Water Reuse Areas



Presidio Water Recycling Project
Figure 2-2
Proposed Recycled Water Use Areas

The designation of Phase I and Phase II Use Areas is not intended to be restrictive; a Use Area may become part of a different project phase, provided that the alternate Use Area is supplied and managed in accordance with the terms of this Order.

ATTACHMENT 4

Table 1 – Presidio Recycled Water Treatment Plant Design Criteria

Item	Units	Phase 1	Phase 2
1. RAW WATER			
A. Plant Flow Rate			
Average Day – Summer	GPD	200,000	500,000
Average Day – Winter	GPD	0 – 30,000	0 – 30,000
Peaking Factor	–	1.5	1.2
Peak 8-Hour Flow Rate	GPD	300,000	600,000
B. Water Quality Parameters			
BOD₅			
Influent	mg/L	220	260
Effluent	mg/L	10	10
TSS			
Influent	mg/L	490	490
Effluent	mg/L	10	10
Nitrogen			
Influent	mg/L	70	70
Effluent	mg/L	<10	<10
Phosphorus			
Influent	mg/L	9	9
Effluent	mg/L	< 10 ¹	<10
2. ROTARY FINE SCREEN			
Number	number	1	2
Maximum Flow Rate (Total)	gpd	300,000	600,000
Opening Size ²	mm	2	2
3. ANOXIC-AEROBIC TANKS			
Tanks ²	number	2	3
Compartments per Tanks ²	number	2	2
Total Volume ²	gallons	143,000	214,500
Hydraulic Retention Time @ 200,000 gpd Phase 1/500,000 gpd Phase 2 ²	hours	17.9	10.7
Sludge Retention Time (SRT) ²	days	38	23
Design MLSS ²	mg/l	10,000	10,000
4. ULTRAFILTER MEMBRANES			
Pore Size ²	micron	0.1 to 0.4	0.1 to 0.4
Flux Rate (max) ²	gfd	20	20
6. UV DISINFECTION			
UV Transmittance	%	65	65
Design Dose	mJ/cm ²	80	80
Number of Trains	number ²	2	4
Number of Reactors per Train	number ²	2	2
Operation	–	Parallel	Parallel
Flow per Reactor at Design Flow	MGD	0.3	0.6
Redundancy	percent	100	100
7. SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEMS			
Typical Dosage – Avg./Max. ³	Mg/L	3.5/5	3.5/5
Maximum Dosage – Avg./Max. ³	Mg/L	5/20	5/20
Typical Use – Avg./Max.	ppd	7.8/18.7	19.5/37.3
Feed Pump	number	2	3
Capacity (each)	gallons/hour	0.03 – 1.3	0.2 – 1.3
Storage	gallons	350	700
Supply at Avg. Dose/ Avg. Flow ⁴	days	42	34
Supply at Avg. Dose/ Max. Flow ⁴	days	21	17

¹ Expected values with normal biotreatment.

² Criteria determined by MBR manufacturer, range given represents range of manufacturer valves.

³ Typical dosage for disinfection residual will be standard, maximum dosage will only be periodically used for odor suppression, filamentous organism suppression, and bioslime prevention. Backup pump(s) will be used to provide the maximum dosage.

⁴ Assumes 95 percent of tank volume is usable.

ATTACHMENT 5
Table 2 - Water Balance

Month	Monthly Irrigation Requirement ¹			Phase I			Phase II			
	Precipitation Inches	ETo Inches	ETc Inches	Estimated Cool-Season Irrigation Inches	Crissy Field (35 Acres) Acre-Feet	LDAC ² (13 Acres) Acre-Feet	Lombard Corridor (9 Acres) Acre-Feet	Main Post (20 Acres) Acre-Feet	National Cemetery (22 Acres) Acre-Feet	Fort Scott (15 Acres) Acre-Feet
January	4.37	1.14	0.912	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	3.07	1.68	1.344	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	3.05	2.6	2.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	1.39	3.72	2.976	2.0	5.9	1.7	1.4	3.3	3.7	2.4
May	0.33	4.67	3.736	4.3	12.6	3.6	3.1	7.2	7.9	5.3
June	0.13	5.28	4.23	5.1	15.1	4.3	3.7	8.7	9.5	6.3
July	0.03	5.53	4.43	5.5	16.2	4.6	3.9	9.3	10.2	6.8
August	0.07	5.2	4.16	5.2	15.4	4.4	3.7	8.8	9.6	6.4
September	0.27	4.36	3.488	4.0	11.9	3.4	2.9	6.8	7.5	5.0
October	1.14	2.98	2.384	1.6	4.6	1.3	1.1	2.6	2.9	1.9
November	2.88	1.66	1.328	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	3.62	0.98	0.784	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Annual	20.35	39.8	31.852	27.6	81.7	23.3	19.8	46.7	51.3	34.1

Summary

Phase I Demand: 105.0 AF/year

Phase II Demand: 151.9 AF/year

Project Total: 256.9 AF/year

Notes:

1. Monthly irrigation requirement for turf grass from Landscape and Irrigation Management Plan by Dames and Moore, 1996. Calculation based on U.C. Cooperative Extension Leaflet 21491 and assumes an 80% Irrigation Efficiency.
2. Irrigation demand based on developer projection.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

for

The Presidio Trust
Presidio of San Francisco
City and County of San Francisco, California

ORDER No. R2-2004-0001

January 21, 2004

I. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code.

The principal purposes of a monitoring program by a waste discharger, also referred to as a self-monitoring program, are:

1. To document compliance with wastewater requirements and prohibitions established by this Regional Board; and
2. To facilitate self-policing by the discharger in the prevention and abatement of pollution arising from wastewater treatment and disposal.

II. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to Code of Federal Regulations Title 40, Section 136 (40 CFR S136), or other methods approved and specified by the Executive Officer of this Regional Board.

Wastewater analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS), or a laboratory waived by the Executive Officer from obtaining a DHS certification for these analyses.

The director of the laboratory whose name appears on the certification, or his/her laboratory supervisor who is directly responsible for the analytical work performed shall supervise all analytical work including appropriate quality assurance/quality control procedures in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

III. DEFINITION OF TERMS

A. Recycled Water Production and Distribution Areas

Presidio Trust (Trust) is the producer of recycled water for use on designated Recycled Water Reuse Areas in the Presidio (Area B). Recycled water will also be distributed off-site by the Trust to Crissy Field (Area A). The Trust is responsible for the quality of the recycled water released for distribution to Areas A and B and for the oversight of operation and maintenance of the recycled water distribution facilities in Area B. The Trust shall require Users to submit self-monitoring data to the Trust to be incorporated into the Trust's SMP as required by the User agreement entered into between the User and Trust. The Trust is responsible for submittal of the required monitoring reports to the Regional Board.

B. SAMPLES

1. A grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples represent only conditions existing at the time of sample collection. Grab samples are used primarily in determining compliance with daily or instantaneous maximum limits.
2. A flow sample is the accurate measurement of the average flow volume over a given period of time, using a properly calibrated and maintained flow measuring device. Flows calculated from properly maintained pump useage records for accurately calibrated pumps are acceptable.

C. STANDARD OBSERVATIONS

Recycled Water Use Areas

1. Evidence of recycled water escaping the recycled water use area through airborne spray (show affected area on a sketch).
2. Nuisance odor from pond: If present, indicate apparent cause, characterization, direction of travel, and any public use area or off-site facility affected.
3. Evidence of prolonged ponding of recycled water, or of mosquitoes breeding within the use area due to ponding.
4. Observations recorded and reported along irrigation distribution system for broken or poorly adjusted spray equipment.

IV. DESCRIPTION OF SAMPLING AND OBSERVATIONS

NOTE: A sketch showing identification and locations of all stations described below shall accompany the first monitoring report, and subsequent reports when locations are added or changed, or a violation is reported.

(1) WASTEWATER TREATMENT SYSTEM (Presidio Trust)

STATION DESCRIPTION

- A-1 At a point prior to the wastewater treatment system.
- E-1 At a point in the wastewater system following the tertiary treatment system, following disinfection, and prior to the distribution system.
- E-2 At a point following the recycled water storage tank

(2) RECYCLED WATER USE AREA (Trust -T/Users-U)

STATION DESCRIPTION

T-1 thru T-'n' (Presidio Trust)	Located at about 300 foot intervals around the perimeter of the recycled water use areas (Obs. Intervals adjusted to area being irrigated).
U-1 thru U-'n' (NPS)	Located at about 300 foot intervals around the perimeter of the recycled water use area (Obs. Intervals adjusted to area being irrigated).

V. SCHEDULE OF SAMPLING, ANALYSES AND OBSERVATIONS

Sampling, analyses and observations shall be conducted according to the schedule given in Table 1 and Table 1 Footnotes (SMP Attachment A).

Interim System Monitoring

To document that the new wastewater treatment and distribution system is working effectively, the chemical and coliform sampling and analyses program (see Table 1) shall be performed on a more frequent basis as proposed by the Trust and as found satisfactory to the Executive Officer after initial start-up until a stable and consistent system performance is demonstrated.

VI. GENERAL OPERATION and MAINTENANCE (O&M)

The **O & M Manual** shall include scheduling of specific tasks to ensure the treatment and distribution systems will consistently and reliably perform according to the design criteria. All monitoring practices identified in the O&M Manual must be implemented.

VII. REPORTS TO BE FILED WITH THE REGIONAL BOARD

A. Self-Monitoring Reports (SMR)

The Trust shall submit written reports to the Regional Board for each calendar month. Reports shall be submitted to this Regional Board's office no later than the thirtieth day of the following month. Each SMR shall include the following:

1. Letter of Transmittal, including:
 - (a). Discharger's name, address, phone number & contact person;
 - (b). The monitoring period being reported, by month and year;
 - (c). The name of the responsible Regional Board staff member;
 - (d). Tabulations of the results from all required sampling, analyses and observations specified in Table 1 and its Footnotes (SMP Attachment A) by date, sample type and station.
 - (e). Discussion of violations found during the monitoring period, including causes and corrective actions taken or planned in order to prevent future violations;
 - (f). Discussion of any special events pertinent to maintaining compliance with water reuse requirements, such as equipment repair or replacement, or operational changes;

(g). Signatory statement by the Trust's Recycled Water Supervisor or designated agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete

2. Recycle Water User SMPs.

The Trust shall require Recycle Water Users submit recycled water distribution system SMPs (observations, problems, and corrections) to the Trust in accordance with the Trust-User Agreements. The reports will be incorporated into the Trust SMP. Any system failures or emergencies requiring immediate attention will be reported to the Trust pursuant to the User Agreement.

B. Report of Permit Violation

In the event the Trust violates, or threatens to violate the conditions of water reuse requirements due to:

- a. Maintenance work, power failure, or breakdown of wastewater treatment or transport equipment;
- b. Accidents caused by human error or negligence; or
- c. Other causes such as acts of nature;

The Trust shall:

- a. Notify the Regional Board office by telephone, as soon as the Trust, or agent, has knowledge of the event; and
- b. Submit a followup written report within two weeks of the event. The written report shall include pertinent information explaining reasons for the non-compliance, actions taken to correct the problem and dates thereof, and actions being taken to prevent the problems from recurring.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing Self-monitoring Program is effective on the date shown below and may be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Presidio Trust.


Bruce H. Wolfe
Executive Officer

Effective Date: January 21, 2004

Attachment A: Table 1

**PRESIDIO TRUST of SAN FRANCISCO
WATER REUSE REQUIREMENTS
Self-Monitoring Program, Attachment A**

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station		A-1	E-1	E-2	T/U	
Type of Sample Parameter,	Units	C	G	C/G	G	Ob
Flow Rate	(gpd)	X				
BOD ₅	(mgL/)		W	W		
Tot. Susp. Solids	(mg/L)		W	W		
Nitrate Nitrogen as N	(mg/l)		W	W		
Total Coliform	(MPN/100ml)			2/W		
Turbidity	(NTU)			X		
pH	(units)		X	X		
Chlorine Residual					2/W	
Standard Observations						2/W

LEGEND FOR TABLE 1:

Types of Samples

G = grab sample
C = Continuously Measured
Ob = Std. Observations

Frequency of Sampling

W = Once each week
2/W = Two days per week
X = Continuously Monitored

Type of Stations

A = Treatment Plant Influent
E-1 = Effluent from Treatment Plant
E-2 = Effluent from Recycled Water Storage Tank
T/U = Trust/Users Standard Observations when recycled water is being distributed to the irrigation sites