California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3348

October 25, 2002

STAFF REPORT

ITEM: **11**

SUBJECT: Water Reclamation Requirements for Orange County Water District (OCWD), Primary Producer and User of Recycled Water, Green Acres Project (GAP), Orange County, Order No. R8-2002-0077

DISCUSSION:

The Green Acres Project (GAP) is currently regulated under Water Reclamation Requirements Order No. 91-46, which was adopted by the Regional Board on June 7, 1991. On May 24, 2002, OCWD filed a complete Report of Waste Discharge for renewal of requirements for GAP for the production, use and distribution of recycled water.

Project Location

The Green Acres wastewater treatment plant site is located at 10500 Ellis Avenue, Fountain Valley, Orange County (Attachment 1). The facility is owned and operated by OCWD and is adjacent to Water Factory 21, which is also owned and operated by the District (recycled water produced at Water Factory 21 is used to prevent seawater intrusion). The GAP treatment plant is designed to provide tertiary treatment of 7.5 million gallons per day (mgd) of secondary treated, non-disinfected municipal wastewater from the Orange County Sanitation District's (OCSD) Reclamation Plant No. 1 in Fountain Valley. The tertiary treated recycled water is currently delivered to 42 users for landscape irrigation, landscape impoundments, and various industrial and other uses.

Project Description

The GAP wastewater treatment process consists of chemical flocculation with rapid mixing, dual-media filtration with 7.5-million gallons per day (mgd) design capacity, and disinfection in a 12.67-mgd chlorine contact chamber. The GAP plant is operated in the dry season only (See Attachment 2 for the plant treatment schematic). Based on a July 17, 1996 agreement between OCWD, Irvine Ranch Water District (IRWD), and the City of Newport Beach, IRWD provides tertiary treated waste water from its Michelson Water Reclamation Plant to users of GAP during winter months, typically December through April. The average monthly supply during that period is about 5.2 mgd. The use of recycled water produced by IRWD is governed under waste discharge requirements for IRWD's Michelson plant (Order No. 01-95, NPDES No. CA8000326).

When recycled water demand exceeds GAP treatment capacity, various sources can be used to supplement the supply. About 4 mgd of advanced tertiary treated wastewater from Water Factory 21 and 6 mgd of well water can be used to blend with the GAP water. The blended water is then delivered to users. In addition, another 1 mgd of microfiltered wastewater can be diverted from the OCWD treatment test center to the GAP plant for disinfection and blending. OCWD is scheduled to complete construction of the Groundwater Replenishment System (GWRS), a 71,000 acre-foot per year reclamation facility at Fountain Valley, by the end of 2006. Up to 6.7 mgd of microfiltered water from GWRS will be diverted to GAP on an as-needed basis during the summer months to help meet summer peak demands.

OCWD wholesales the GAP water to the cities of Fountain Valley, Huntington Beach, Newport Beach, and Santa Ana, and to the Mesa Consolidated Water District. The water agencies retail GAP water to their users. The retailers own and operate the water metering facilities at each user site. In addition, OCWD sells directly to the following two user sites: OCSD's Plant No. 1 in Fountain Valley and Plant No. 2 in Huntington Beach. The GAP recycled water users are located within the cities of Costa Mesa, Santa Ana, Fountain Valley, Huntington Beach, and Newport Beach. Present and potential uses of the GAP water include:

1. landscape and turf irrigation, including, but not limited to, parks, playgrounds, schoolyards, and golf courses;
2. landscape impoundment;
3. food crop irrigation;
4. dual-plumbed recycled water system in OCWD's office building, and
5. uses in various industrial processes, including, but not limited to, wastewater treatment processes, carpet dyeing, and cooling systems.

Receiving Waters/Beneficial Uses

The recycled water use areas overlie the Santa Ana Pressure and Irvine Pressure groundwater subbasins, the beneficial uses of which include municipal and domestic supply, agricultural supply, industrial process and industrial service supply.

The total dissolved solid objectives (TDS) for the Santa Ana Pressure and the Irvine Pressure groundwater basins are 500 mg/l and 720 mg/l, respectively. The semi-perched groundwater subbasin, which overlies the confined subbasins, is generally of poor quality, with average TDS concentration of approximately 2,000 mg/l. The recycled water used in this area, with TDS values between 440 mg/l to 1130 mg/l, is not expected to impact these deeper confined groundwater subbasins. The water quality of the semi-perched aquifer could be enhanced by the usage of recycled water in the area.

OCWD installed specially designed monitoring wells throughout the recycled water use area to study the impact of recycled water on the semi-perched zone (for locations of monitoring wells see Attachment 3).

Regulatory Basis for Requirements

Section 13523 of the California Water Code provides that a regional board, after consulting with and receiving the recommendations of the State Department of Health Services (DHS) and any party who has requested in writing to be consulted, and after any necessary hearing, shall prescribe water reclamation requirements if, in the judgement of the board, such regulation is necessary to protect the public health, safety, or welfare. Section 13523 further provides that such requirements shall include, or be in conformance with, the statewide uniform reclamation criteria established by the State DHS pursuant to the California Water Code Section 13521.

The use of recycled water for irrigation in parks, golf courses, schoolyards, and other landscape or agricultural areas could affect the health, safety, and welfare of the public. Therefore, water reclamation requirements are necessary.

The proposed order requires OCWD to comply with the reclamation criteria specified by DHS in Title 22 of the California Code of Regulations. The limitations contained in the proposed order are intended to maintain groundwater quality in the area and protect public health and the beneficial uses of the groundwater subbasins. This Order serves as a master producer and user reclamation permit for the GAP project.

These requirements should be adequate to protect the beneficial uses of the receiving waters of the area.

RECOMMENDATION:

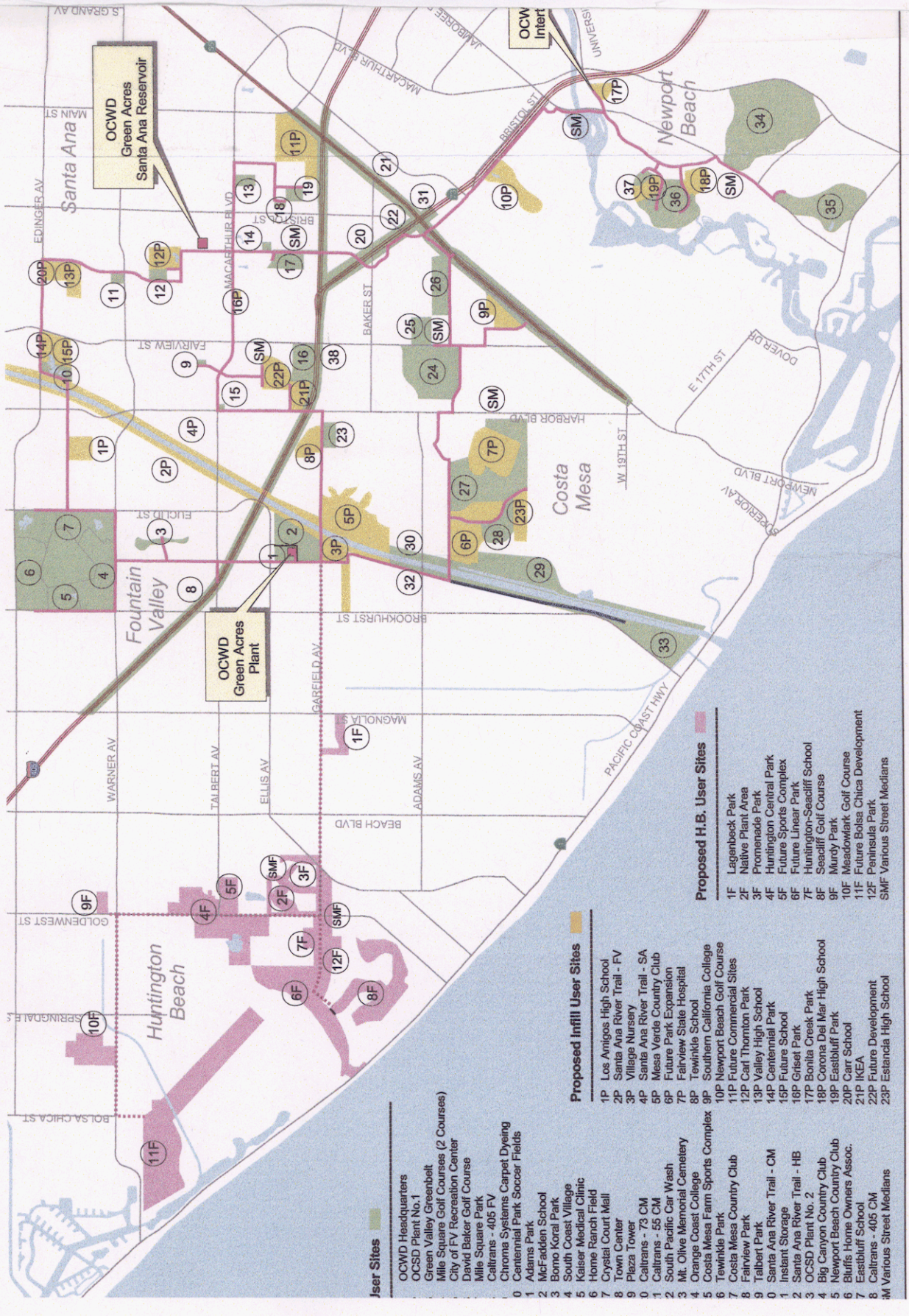
Adopt Order No. R8-2002-0077, as presented.

COMMENTS SOLICITED:

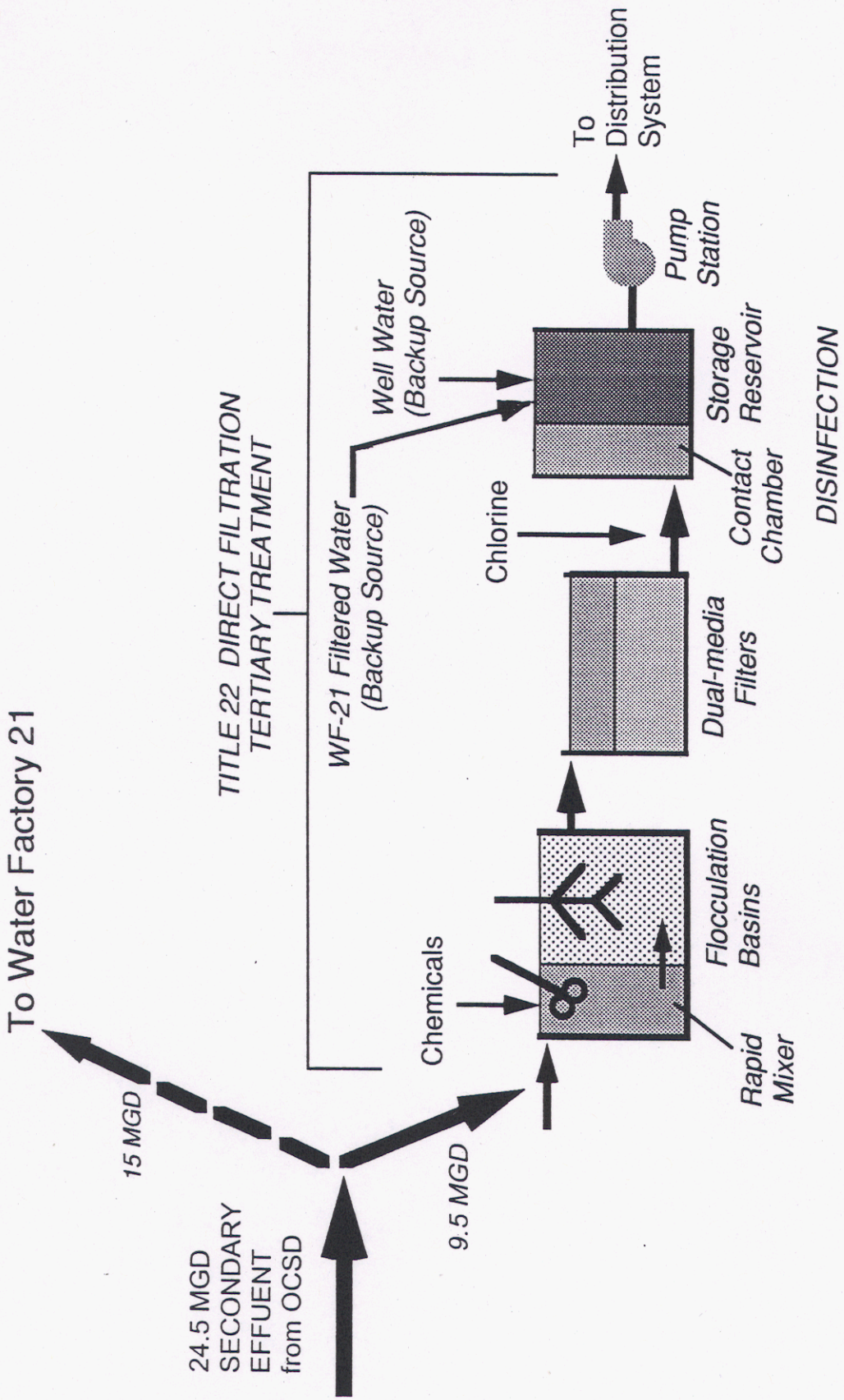
Comments were solicited from the following persons and agencies:

State Water Resources Control Board, Office of the Chief Counsel - Jorge Leon
State Water Resources Control Board, Division of Water Quality- James Maughan
State Water Resources Control Board, Division of Clean Water Programs – Diana Robles
State Department of Health Services, Carpenteria - John Curphey
State Department of Health Services, Carpenteria - Jeff Stone
State Department of Health Services, Santa Ana - Frank Hamamura
State Department of Water Resources - Glendale
State Department of Fish and Game - Long Beach
Orange County Sanitation District - Robert P. Ghirelli
Southern California Association of Governments - Mark A. Pisano
South Coast Air Quality Management District - James Lents
Orange County Public Facilities and Resources Department, Harbors, Beaches and Parks
Orange County Health Care Agency
City of Fountain Valley - City Manager

Location Map



GREEN ACRES PROJECT TREATMENT SCHEMATIC



LEGEND

⊕ - **MONITORING WELL**

California Regional Water Quality Control Board
Santa Ana Region

ORDER NO. R8-2002-0077

Water Reclamation Requirements

for the

Orange County Water District
Green Acres Project
Orange County

California Regional Water Quality Control Board
Santa Ana Region

ORDER No. R8-2002-0077

TABLE OF CONTENTS

PAGE

FINDINGS:.....1-4

A. Recycled Water Quality Specifications 5-7

B. Compliance Determination 7-8

C. Use of Recycled Water 8

D. Use Area Requirements 9-10

E. Requirements for Dual-Plumbed System.....10-11

F. General Requirements for Recycled Water Use 12

G. Provisions for Recycled Water Use 13-15

H. Required Notices and Reports: 15-16

I. Standard Provisions 16-19

California Regional Water Quality Control Board
Santa Ana Region

Order No. R8-2002-0077
Water Reclamation Requirements
for
Orange County Water District, Green Acres Project
Orange County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. Orange County Water District (hereinafter OCWD or the producer) owns and operates the Green Acres Project (GAP) reclamation plant located at 10500 Ellis Avenue in the Fountain Valley area of Orange County. Tertiary treated recycled water produced at the plant is distributed to GAP users for landscape irrigation, landscape impoundments and various industrial and other purposes.

2. On June 7, 1991, the Regional Board adopted Order No. 91-46 for the GAP reclamation project. On May 24, 2002, OCWD filed a complete Report of Waste Discharge for renewal of its water reclamation requirements for the production, use and distribution of recycled water for the GAP.

3. Orange County Sanitation District (OCSD) Plant No. 1, located adjacent to the GAP treatment plant, provides non-disinfected, secondary treated wastewater to the GAP plant for tertiary treatment and reclamation in accordance with Department of Health Services' requirements specified in Title 22, California Code of Regulations.

4. The GAP treatment process consists of chemical flocculation with rapid mixing, dual-media filtration with nominal design capacity of 7.5 million gallons per day (mgd), and disinfection in a 12.67-mgd chlorine contact chamber. The GAP treatment plant is operated in the dry season only.

5. The daily demand for recycled water by the GAP users varies from a maximum of approximately 11 mgd in the summer to a minimum of 5 mgd during wet weather. During wet winter months, typically December through April, the tertiary treated recycled water is provided to GAP users by the Irvine Ranch Water District (IRWD) pursuant to an agreement among OCWD, IRWD, and the City of Newport Beach.

6. Normally, the GAP treatment plant can provide tertiary treated water at 7.5 mgd, and up to 9.5 mgd during peak times. However, in the event that demand exceeds the treatment capability of the GAP plant, backup sources for the GAP are available. These include about 4 mgd of tertiary treated wastewater from OCWD's Water Factory 21 and 6 mgd of well water, which can be blended with the GAP water and delivered to users. In addition, about 1 mgd of microfiltered wastewater can be diverted from the Test Center of OCWD to the GAP plant for disinfection and subsequent blending/distribution.

7. OCWD is scheduled to complete construction of the Groundwater Replenishment System (GWRS), a 71,000 acre-foot per year reclamation facility at Fountain Valley, by the end of 2006. Up to 6.7 mgd of non-disinfected, microfiltered water from GWRS is to be diverted on an as-needed basis during the summer months to GAP to help meet summer peak demands. The existing GAP chlorine contact chamber has design capacity of 12.67 mgd, and is able to accommodate the GWRS water. Should an emergency cause or require shut down of the GAP plant, GWRS is expected to be able to meet GAP user demands.

8. The actual delivery of recycled water to end-users is subject to approval of the State Department of Health Services (DHS).

9. OCWD is responsible for the production and distribution of tertiary treated GAP water to its various users. OCWD wholesales the GAP water to the cities of Fountain Valley, Huntington Beach, Newport Beach, and Santa Ana and to the Mesa Consolidated Water District. The water agencies retail the GAP water to their users. The retailers own and operate the water metering facilities at each user site. In addition, OCWD sells directly to the following two user sites: OCSD's Plant No. 1 in Fountain Valley and Plant No. 2 in Huntington Beach.

10. The GAP recycled water users are located within the cities of Costa Mesa, Santa Ana, Fountain Valley, Huntington Beach, and Newport Beach. Present and potential uses of the GAP water include:

    a. landscape and turf irrigation, including, but not limited to, parks, playgrounds, schoolyards, and golf courses;
    b. landscape impoundment;
    c. food crop irrigation;
    d. dual-plumbed recycled water system in OCWD's office building; and
    e. uses in various industrial processes, including, but not limited to, wastewater treatment processes, carpet dyeing, and cooling systems.

11. The recycled water for distribution to users had the following quality[1]:

Constituents	***Concentration (mg/l)***
Total Dissolved Solids	438-1130
Total Hardness	158-263
Sodium	136-223
Chloride	140-243
Boron	0.1-0.61
Chemical Oxygen Demand	16-43

[1] *Based on 1999-2001 monitoring data.*

12. The total dissolved solids objectives for Santa Ana Pressure and Irvine Pressure Groundwater Subbasins are 500 mg/l and 720 mg/l, respectively. Generally, poor quality, semi-perched, water overlies these deeper subbasins. This semi-perched water has an average TDS concentration above 2000 mg/l, as observed in the special monitoring wells installed within the project area. The water quality of these subbasins (Santa Ana Pressure and Irvine Pressure) is not expected to be degraded by the use of the recycled water.

13. Review of the groundwater monitoring well data within the GAP service area, indicates that water quality in the semi-perched zone, the shallowest aquifer, has not changed significantly over the period in which recycled water has been used. Some parameters have shown small increases over the past few years. However, similar water quality trends were found in monitoring wells located outside of the recycled water service area. This trend may be a result of lower rainfall over the last 5 years[2].

14. The requirements contained in this Order are in conformance with the goals and objectives of the Basin Plan and implement the requirements of the California Water Code and Department of Health Service Water Recycling Criteria.

15. This Order includes requirements that implement the Water Quality Plan (Basin Plan), which was adopted by the Regional Board on March 11, 1994 and became effective on January 24, 1995. This Plan specifies water quality objectives and beneficial uses for groundwater within the Santa Ana Pressure and Irvine Pressure groundwater Subbasins.

16. The areas of recycled water application overlie the Santa Ana Pressure and Irvine Pressure Groundwater Subbasins, the beneficial uses of which include:

    a. Municipal and domestic supply,
    b. Agriculture supply,
    c. Industrial service supply, and
    d. Industrial process supply.

17. Section 13523 of the California Water Code provides that a regional board, after consulting with and receiving the recommendations of the State Department of Health Services (DHS) and any party who has requested in writing to be consulted, and after any necessary hearing, shall prescribe water reclamation requirements for water which is used or proposed to be used as recycled water, if, in the judgement of the board, such requirements are necessary to protect the public health, safety, or welfare. Section 13523 further provides that such requirements shall include, or be in conformance with, the statewide uniform water recycling criteria established by the State DHS pursuant to the California Water Code Section 13521.

---

[2] *The semi-perched zone is recharged in part by precipitation.*

18. The use of recycled water for irrigation in parks, golf courses, freeway landscaped, school yards, cemeteries, and other landscape or agricultural areas could affect the health, safety, and welfare of the public; therefore, reclamation requirements are necessary.

19. The State DHS adopted revised Water Recycling Criteria (Title 22, California Code of Regulations) that became effective on December 2, 2000. This Order implements the revised Criteria.

20. Pursuant to Section 402(p) of Clean Water Act and Title 40 of the Code of Federal Regulations (CFR) Part 122, 123, and 124, the State Water Resources Control Board adopted general NPDES permits to regulate storm water discharges associated with industrial activity (State Board Order No. 97-03-DWQ adopted on April 17, 1997). Storm water discharge from the GAP plant is subject to requirements under this general permit. The OCWD has submitted notice of intent to be covered under this general permit and has developed and implemented Storm Water Pollution Prevention Plans to comply with the general NPDES permit.

21. This project involves the continued operation of an existing facility and, as such, is exempt from the California Environmental Quality Act (Public Resources Code, Section 21100 et. seq.) in accordance with Section 15301, Chapter 3, Title 14, California Code of Regulations

22. This Order is a master reclamation permit issued to the OCWD pursuant to California Water Code Section 13523.1. OCWD is responsible for the production and distribution of recycled water in accordance with the requirements prescribed in this Order. OCWD is also responsible for its retailers in processing individual end-users' applications, inspecting point of use facilities, and ensuring end-users' compliance with the water recycling requirements contained in this Order.

23. The Regional Board has notified the producer and other interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written views and recommendations.

24. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that OCWD, in order to meet the provisions contained in Division 7 of the California Water Code, shall comply with the following:

A. RECYCLED WATER QUALITY SPECIFICATIONS

The use of recycled water shall comply with the following. Specifications A.2 through A.5 apply to both recycled water and to recycled water blended with well water:

1. Recycled water shall be limited to disinfected tertiary recycled water only. Disinfected tertiary recycled water[3] is wastewater that has been filtered and subsequently disinfected and meets the following criteria:

    a. A filtered wastewater means an oxidized wastewater that meet the criteria in i) or ii):

        i. Has been coagulated and passed through natural undisturbed soil or a bed of filter media under the following conditions:

            (1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in a traveling bridge automatic backwash filter; based on peak dry weather design flow; and,

            (2) The turbidity of the filtered wastewater does not exceed any of the following:

                (a) An average of 2 NTU[4] within a 24-hour period;
                (b) 5 NTU more than 5 percent of the time within a 24-hour period; and
                (c) 10 NTU at any time.

---

3 *Tertiary recycled wastewater must be oxidized and coagulated. An oxidized wastewater shall be wastewater in which the organic matter has been stabilized, is non-putrescible, and contains dissolved oxygen. A coagulated wastewater shall be an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.*

4 *NTU (Nephelometric Turbidity Unit) is a turbidity measurement determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by Method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th Edition; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association, Washington, D.C., 1998; p2-8.*

ii. Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and
(2) 0.5 NTU at any time.

b. The filtered wastewater has been disinfected by either:

i. A chlorine disinfection process following filtration that provides a concentration-time (CT) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow. The modal contact time is the amount of time that elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance of the chlorination chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber. The peak dry weather design flow is the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

ii. A disinfection process that, when combined with the filtration process, has been demonstrated[5] to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS-2[6], or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

c. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

---

5 *Meeting the limits in A. 1.c. shall constitute the demonstration required by this sub-paragraph.*

6 *F-specific bacteriophage MS-2 means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli (ATCC 15597).*

2. Neither the recycled water nor recycled water blended with well water that is applied for reclamation shall contain constituent concentration in excess of the following limit:

Constituent	Units	12-Month Average Maximum Concentration
Total dissolved solids	mg/l	1050

3. The pH of the recycled water, or recycled water blended with well water, shall at all times be within the range of 6 to 9 pH units.

4. Neither recycled water nor recycled water blended with well water that is applied for reclamation shall contain any substance in concentrations toxic to human, animal, or plant life.

5. Neither recycled water nor recycled water blended with well water that is applied for reclamation shall cause a measurable increase in organic chemical contaminants in the groundwater.

B. COMPLIANCE DETERMINATION

1. Compliance with the 12-month average limits under Recycled Water Quality Specifications A. 2. shall be determined by the arithmetic mean of the last twelve monthly averages.

2. Compliance determination shall be based on available analyses for the time interval associated with the effluent limitation. Where only one sample analysis is available in a specific time interval (e.g., weekly or monthly average), that sample shall serve to characterize the discharge for the entire interval.

3. For determination of compliance with the concentration-time (CT) requirement of 450 milligram-minutes per liter at all times, the Producer shall obtain the following information in a 24-hour period. The CT is the product of total chlorine residual and modal contact time measured at the same time.

   a. Modal contact time under highest flow and corresponding chlorine residual at that time.
   b. Lowest chlorine residual and corresponding modal contact time.
   c. Highest chlorine residual and corresponding modal contact time.
   d. Modal contact time under lowest flow and corresponding chlorine residual at that time.

CT values shall be calculated from these four sets of data and the lowest value shall be used to determine worst case CT for the period. For the purpose of this determination, modal contact time shall be derived from a predetermined plot correlating modal contact times to varying flow conditions (results of tracer studies required in Order No. R8-2002-0077, Section A.1.b.i. The daily lowest CT value and the daily lowest modal contact time shall be included in the monitoring reports.

Should the Producer use another method to determine CT compliance, the alternative method shall first be approved by the State DHS and the Regional Board.

C. USE OF RECYCLED WATER

The Producer shall oversee the end-users such that the following requirements are satisfied.

1. The disinfected tertiary recycled water may be used for the following:

   a. Surface irrigation in the following areas:

      1) landscape and turf, including, but not limited to, parks, playgrounds, schoolyards, and golf courses;

      2) Food crops*, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop;

   * For food crops and any other irrigation use not specified in this section, the Producer shall obtain approval from the State DHS and the Executive Officer of the Regional Board prior to delivery.

   b. landscape impoundments;

   c. dual-plumbed recycled water system; and

   d. various industrial processes, including, but not limited to, wastewater treatment processes, carpet dyeing, and cooling systems.

2. Recycled water shall not be used other than those specified in Section C.1 unless a revision to engineering report has been submitted to and approved by the State DHS for such other uses and/or requirements for these uses have been prescribed by this Regional Board, in accordance with Section 13523 of the California Water Code.

D. USE AREA REQUIREMENTS

Use area is an area of recycled water use with defined boundaries, which may contain one or more facilities where recycled water is used.

The Producer shall be responsible to ensure that all users of recycled water comply with the following:

1. No irrigation areas with disinfected tertiary recycled water shall be located within 50 feet of any domestic water supply well unless all of the following conditions have been met:

    a. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface;

    b. The well contains an annular seal that extends from the surface into the aquitard;

    c. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities;

    d. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well; and,

    e. The owner of the well approves of the elimination of the buffer zone requirement.

2. There shall be no storage or impoundment of disinfected tertiary recycled water within 100 feet of any domestic water supply well.

3. No irrigation shall take place within 50 feet of any reservoir or stream used as a source of domestic water.

4. Use of recycled water shall comply with the following:

    a. Recycled water shall be applied at such a rate and volume as not to exceed vegetative demand and soil moisture conditions. Special precautions must be taken to prevent clogging of spray nozzles, prevent over-watering, and minimize the production of run-off. Pipelines shall be maintained so as to prevent leakage;

    b. Any irrigation runoff shall be confined to the recycled water use area and shall not be allowed to escape as surface flow, unless the runoff does not pose a public health threat and is authorized under a National Pollutant Discharge Elimination System (NPDES) permit issued by this Regional Board. For the purpose of this requirement, however, minor amounts of irrigation return water from peripheral areas shall not be considered a violation of this Order;

c. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities, and shall not contact any drinking water fountain; and,

d. Recycled water shall not be used for irrigation during periods of rainfall and/or run-off.

5. All recycled water use areas that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK". An alternative signage and wording may be used provided they are approved by the State DHS.

6. No physical connection shall be made or allowed to exist between any recycled water piping and any piping conveying potable water, except as allowed under Section 7604 of Title 17, California Code of Regulations.

7. The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs (a faucet or similar device to which a common garden hose can be readily attached). Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

8. Recycled water use shall not result in earth movement in geologically unstable areas.

E. DUAL-PLUMBED RECYCLED WATER SYSTEMS

1. The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of Section 7602 (a) and 7603 (a) of Title 17, California Code of Regulations, and that such connection has been approved by the State DHS and/or its delegated local agency.

2. The Producer shall not deliver recycled water to a facility using a dual-plumbed system unless the report required pursuant to Section 13522.5 of the California Water Code, and which meets the requirements set forth in sections 3 and/or 4 of this requirements of this Order, has been submitted, and approved by, the State DHS and/or its delegated local agency. The Regional Board shall be furnished with a copy of the State DHS approval together with the aforementioned report within 30 days following the approval.

3. The report pursuant to Section 13522.5 of the California Water Code shall contain the following information for dual-plumbed systems, in addition to the information required by Section 60323 of Title 22, California Code of Regulations (Engineering Report):

a. A detailed description of the intended use site identifying the following:

1) The number, location, and type of facilities within the use area proposing to use dual-plumbed systems;
2) The average number of persons estimated to be served by each facility on a daily basis;
3) The specific boundaries of the proposed use site including a map showing the location of each facility to be served;
4) The person or persons responsible for operation of the dual-plumbed system at each facility; and
5) The specific use to be made of the recycled water at each facility.

b. Plans and specifications describing the following:

1) Proposed piping system to be used;
2) Pipe locations of both the recycled and potable systems;
3) Type and location of the outlets and plumbing fixtures that will be accessible to the public; and
4) The methods and devices to be used to prevent backflow of recycled water into the public water system.

c. The methods to be used by the Producer to assure that the installation and operation of the dual-plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. These shall include a description of pressure, dye or other test methods to be used to test the system every four years.

4. Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the dual-plumbed system within each facility and use site shall be inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in section E.3.c of this Order. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection and testing for the prior year shall be submitted to the State DHS within 30 days following completion of the inspection or testing.

5. The Producer shall notify the State DHS of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of discovery of the incident.

6. Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with Section 7605 of Title 17, California Code of Regulations.

F. GENERAL REQUIREMENTS FOR RECYCLED WATER USE

1. Recycled water shall not be used for direct human consumption or for the processing of food or drink intended for human consumption.

2. Bypass, discharge, or delivery to the use area of inadequately treated wastewater, at any time, is prohibited.

3. The recycling facility shall be adequately protected from inundation and damage by storm flows and run-off.

4. Adequate freeboard and/or protection shall be maintained in the recycled water storage tanks and process tanks to ensure that direct rainfall will not cause overtopping.

5. The wastewater treatment and use of recycled water shall not result in problems caused by breeding of mosquitoes, gnats, midges, or other pests.

6. The use of recycled water shall not impart tastes, odors, color, foaming, or other objectionable characteristics to the receiving groundwater.

7. Odors of sewage origin shall not be perceivable any time outside the boundary of the treatment facility.

8. The Producer shall, at all times, properly operate and maintain all treatment facilities and control systems (and related appurtenances) which are installed or used by the Producer to achieve compliance with the conditions of this Order. Proper operation and maintenance includes: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance procedures).

9. A copy of these requirements shall be maintained at the water reclamation facility so as to be available at all times to operating personnel.

10. The Producer shall furnish each user of recycled water a copy of these requirements and ensure that the requirements are maintained at the user's facility so as to be available at all times to operating personnel.

G. PROVISIONS FOR RECYCLED WATER USE

1. Prior to the initial delivery of recycled water, the Producer shall submit to and obtain approval from the State DHS of the master plan for the recycled water distribution system from the GAP plant to use areas. The American Water Works Association Guidelines for the Distribution of Non-Potable Water shall be followed including installation of purple pipe, adequate signs, etc. The master plan shall show the final and as-built drawings and maps of the locations of the potable water, sewer, and recycled water pipelines. The drawings shall indicate adequate separation between the recycled and potable domestic water lines that shall be marked clearly or labeled using separate colors for identification. In addition, the master plan shall include, but not limited to, the following information:

   a. A description of each use area including, but not limited to, a description of what will be irrigated (e.g., landscape, specific food crop, etc.); method of irrigation (e.g., spray, flood, or drip); the location of domestic water supply facilities adjacent to the use areas; site containment measures; the party responsible for the distribution and use of the recycled water at the site; identification of other governmental entities which may have regulatory jurisdiction over the reuse site(s).

   b. A map showing specific areas of use, areas of public access, surrounding land uses, the location and construction details of wells in or near the use areas, location and type of signage, the degree of potential access by employee or the public, and any exclusionary measures (e.g. fencing).

   The Producer shall submit to the Regional Board a copy of the approved master plan and the State DHS approval within 30 days of approval.

2. For any extension or expansion of the recycled water system or use areas not covered by the master plan, the Producer shall submit a report detailing the extension or expansion plan for approval by the State DHS or its delegated local health agency. The plan shall include, but not limited to, the information specified in the Provisions for Recycled Water Use, sections 1.a. and b. above. Following construction, as-built drawings shall be submitted to the State DHS or its delegated local health agency for approval prior to delivery of recycled water.

   The Producer shall submit to the Regional Board a copy of the approved expansion plan and the State DHS approval within 30 days of approval.

3. If the recycled water system lateral pipelines are located along the property lines of homeowners, the Producer shall provide a buffer zone or other necessary measures between the recycled water lines and the homeowner's property lines to prevent any illegal connection to the recycled water lines. The Producer shall implement a public outreach program to homeowners to provide information on the use of recycled water.

4. Prior to the initial delivery of recycled water, the Producer shall submit to the State DHS for approval of the plans and specifications for that facility.

5. The Producer shall inspect the recycled water use areas on a yearly basis. A report of findings of the inspection shall be submitted to the State DHS, County Health Department, and the Regional Board within 30 days after the inspection.

6. Prior to the initial delivery of recycled water, the Producer shall submit to and obtain approval from the Regional Board and the State DHS an amended engineering report, describing the current treatment plant and the proposed Phase II treatment plant expansion, their impacts on the recycled water operation, and the operation and maintenance management plan, including a preventive (fail-safe) procedure and contingency plan for controlling accidental discharge and/or delivery to users of inadequately treated wastewater.

7. The Producer shall submit to the Regional Board, under penalty of perjury, technical self-monitoring reports according to the specifications contained in the Monitoring and Reporting Program as directed by the Executive Officer.

8. The Producer shall notify this Regional Board and the State DHS by telephone within 24 hours of any violations of recycled water use conditions or any adverse conditions as a result of the use of recycled water from this facility; written confirmation shall follow within 5 working days from date of notification.

9. The Producer shall notify this Regional Board and the State DHS, immediately by telephone, of any confirmed coliform counts that could cause a violation of the requirements. This information shall be confirmed in the next monitoring report. For any actual coliform limit violation that occurred, the report shall also include the cause(s) of the high coliform counts, the corrective measures undertaken (including dates thereof), and the preventive measures undertaken to prevent a recurrence.

10. In accordance with Section 13522.5 of the California Water Code, and Title 22, Division 4, Chapter 3, Article 7, Section 60323 of the California Code of Regulations, the Producer shall file an engineering report, prepared by a properly qualified engineer registered in California, of any material change or proposed change in character, location or volume of the recycled water or its uses to the Regional Board and to the State DHS.

11. This Order does not exempt the Producer from compliance with any other laws, regulations, or ordinances which may be applicable; they do not legalize the recycling and use facilities; and they leave unaffected any further constraint on the use of recycled water at certain site(s) that may be contained in other statutes or required by other agencies.

12. This Order does not alleviate the responsibility of the Producer to obtain other necessary local, state, and federal permits to construct facilities necessary for compliance with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency. Expansion of the recycling facility shall be contingent upon issuance of all necessary requirements and permits, including a conditional use permit.

13. After notice and opportunity for a hearing, this Order may be modified, revoked and reissued, or terminated for cause, that include, but is not limited to: failure to comply with any condition in this Order; endangerment of human health or environment resulting from the permitted activities in this Order; obtaining this Order by misrepresentation or failure to disclose all relevant facts; acquisition of new information which could have justified the application of different conditions if known at the time of Order adoption.

    The filing of a request by the Producer for modification, revocation and reissuance, or termination of the Order; or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

14. The Producer shall furnish, within a reasonable time, any information the Regional Board or the State DHS may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Producer shall also furnish the Regional Board, upon request, with copies of records required to be kept under this Order for at least three years.

15. In an enforcement action, it shall not be a defense for the Producer that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Producer shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost.

16. This Order includes the Section “Standard Provisions”. If there is any conflict between provisions stated elsewhere in this Order and said "Standard Provisions," those provisions stated elsewhere in this Order prevail.

17. This Order includes the Monitoring and Reporting Program. If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the Monitoring and Reporting Program prevail.

H. REQUIRED NOTICES AND REPORTS

1. Reporting Provisions:

    a. All reports, or information submitted to the Regional Board shall be signed by a responsible officer or duly authorized representative of the producer and shall be submitted under penalty of perjury.

b. The producer shall furnish, within a reasonable time, any information the Regional Board may request to determine compliance with this Order or whether cause exists for modifying, revoking and reissuing, or terminating this Order. The producer shall also furnish to the Regional Board, upon request, copies of records required to be kept by this Order.

c. All reports prepared in accordance with the terms of this Order shall be available for public inspection at the offices of the Regional Board. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 13387 of the California Water Code.

2. The producer shall provide adequate notice to the Regional Board of any change in the volume or character of pollutants being introduced by an existing or new source into the treatment facility that will cause or threaten to cause a violation of this Order.

3. The producer shall file with the Regional Board a Report of Waste Discharge at least 120 days before making any material change in the character, location, or volume of the discharge. A material change includes, but is not limited to, the following:

a. Significantly changing the method of treatment.

b. Increasing the discharge flow beyond that specified in this Order.

4. The producer shall report any condition related to the producer's treatment facility or distribution system that may endanger human health or the environment. All available information concerning the condition shall be provided to the Executive Officer or the Executive Officer's designee (909-782-4130) and the Office of Emergency Services (800-852-7550), as soon as the producer becomes aware of the circumstances. A written report shall be submitted within 5 days and shall contain a description of the condition and its cause; the duration of the condition, including exact dates and times, and, if the condition has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the condition, with a schedule for their implementation. The Executive Officer or the Executive Officer's designee may waive the above-required written report on a case by case basis.

I. STANDARD PROVISIONS

1. The producer shall comply with Monitoring and Reporting Program No. R8-2002-0077 as issued by the Executive Officer. Revision of this monitoring and reporting program by the Executive Officer may be necessary to confirm that the producer is in compliance with the requirements and provisions contained in this order. Revisions may be made at any time during the term of this Order, and may include a reduction or an increase in the number of parameters to be monitored, the frequency of monitoring or the number and size of samples collected.

2. Neither the treatment nor the discharge of wastes shall cause a nuisance or pollution as defined in Section 13050 of the California Water Code.

3. The producer shall maintain a copy of this Order at the site so that it is available to site operating personnel at all times. Key operating personnel shall be familiar with its content.

4. The producer shall promptly report to the Regional Board any proposed change in the character, location or method of disposal of the discharge, or any proposed change in ownership of the facility.

5. The producer shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.

6. The producer shall insure that all facilities and systems of treatment, distribution, and control (and related appurtenances) which are installed or used to achieve compliance with conditions of this order are at all times properly operated and maintained. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup and auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order.

7. The treatment plant and wastewater storage facilities shall be protected from a 100-year frequency flood.

8. The producer shall allow the Executive Officer, or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter upon premises where a regulated facility or activity is located or conducted, including recycled water treatment or discharge facilities, sludge use and disposal activities, or facilities where records must be kept under the requirements of this Order.

    b. Have access to and copy any records that must be kept under the conditions of this permit. Inspect, photograph, and sample or monitor, at reasonable times, any facilities equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including recycled water treatment, discharge, sludge use or disposal sites.

    c. To sample or monitor influent and effluent for the purposes of determining compliance with this permit.

9. The producer shall update as necessary, the "Operation and Maintenance Manual (O&M Manual)" which it has developed for the treatment facility to conform with latest plant changes and requirements. The O&M Manual shall be readily available to operating personnel onsite. The O&M Manual shall include the following:

    a. Description of the treatment plant table of organization showing the number of employees, duties and qualifications and plant attendance schedules (daily, weekends and holidays, part-time, etc.). The description should include documentation that the personnel are knowledgeable and qualified to operate the treatment facility so as to achieve the required level of treatment at all times.

    b. Detailed description of safe and effective operation and maintenance of treatment processes, process control instrumentation and equipment.

    c. Description of laboratory and quality assurance procedures.

    d. Process and equipment inspection and maintenance schedules.

    e. Description of safeguards to assure that, should there be reduction, loss, or failure of electric power, the producer will be able to comply with requirements of this Order.

    f. Description of preventive (fail-safe) and contingency (response and cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. These plans shall identify the possible sources (such as loading and storage areas, power outage, waste treatment unit failure, process equipment failure, tank and piping failure) of accidental discharges, untreated or partially treated waste bypass, and polluted drainage.

10. The producer's wastewater treatment plant shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Title 23, Division 3, Chapter 14 California Code of Regulations.

11. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

12. The producer shall file with the Board by April 1, 2003, a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges and for minimizing the effect of such events. The technical report shall:

    a. Identify the possible sources of accidental loss, untreated waste bypass, and contaminated drainage. Loading and storage areas, power outage, waste treatment outage, and failure of process equipment, tanks, and pipes should be considered.

b. Evaluate the effectiveness of present facilities and procedures and state when they become operational. Describe facilities and procedures needed for effective preventive and contingency plans.

c. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on October 25, 2002.

_____
Gerard J. Thibeault
Executive Officer

California Regional Water Quality Control Board
Santa Ana Region

MONITORING AND REPORTING PROGRAM
NO. R8-2002-0077

for the

Orange County Water District
Green Acres Project
Orange County

State of California
California Regional Water Quality Control Board
Santa Ana Region

MONITORING AND REPORTING PROGRAM
NO. R8-2002-0077

for

Orange County Water District
Green Acres Project
Orange County

The Producer shall implement this monitoring and reporting program on the effective date of this Order.

A. SUBMITTAL OF MONITORING AND ANNUAL REPORTS

1. Monitoring reports shall be submitted quarterly and received at the Regional Board by the 15th day of the second month following the end of the quarterly monitoring period. Monitoring reports shall be received at the Regional Board according to the table below:

Reporting Period	Report Due
January – March	May 15th
April – June	August 15th
July – September	November 15th
October – December	February 15th

2. By March 1 of each year, the Producer shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. The Producer shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the recycled water into full compliance with water recycling requirements.

   The annual report shall also include a list of the analytical methods employed for each test and associated laboratory quality assurance/quality control procedures. The report shall restate, for the record, the laboratories used by the Producer to monitor compliance with this Order and their status of certification. Upon request by Regional Board staff, the Producer shall also provide a summary of performance.

   The annual report shall address operator certification and provide a list of current operating personnel and their grade of certification. The report shall also include the date of the facility's Operation and Maintenance Management Plan, the date the plan was last reviewed, and whether the plan is complete and valid for the current facilities.

B. RECYCLED WATER MONITORING

1. The following sampling stations shall be established where representative samples of recycled water can be obtained. Should there be any change to a sampling station, the proposed station shall be approved by the Executive Officer prior to its use.

   a. For this recycling project, recycled water samples shall be obtained from the effluent channel downstream of the chlorine contact basin (CCBE), and

   b. The distributed recycled water samples shall be obtained from the GAP high pressure effluent pump station (HPEP).

2. Representative samples shall be collected at the specified sample stations and analyzed for the following parameters:

Monitoring Program for Title 22 Recycled Water				
Parameter	**Sample Station**	**Units**	**Type of Sample [1]**	**Minimum Frequency of Analysis**
Total recycled water flow	HPEP	mgd	Recording	continuous
Turbidity [2]	Footnote 2	NTU	"	continuous
Chlorine Residual[3]	CCBE	mg/l	"	continuous
CT	CCBE	mg-minutes/l	"	continuous
Total Coliform [4]	CCBE	MPN/100ml	grab	daily
pH	HPEP	pH units	grab	daily
Electrical Conductivity	HPEP	micromhos/cm	grab	daily
Total Organic Carbon	"	mg/l	grab	monthly
Total Dissolved Solids	"	mg/l	grab	monthly
Total Hardness	"	mg/l	grab	monthly
Chemical Oxygen Demand	"	mg/l	grab	monthly

---

1 *Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples shall be collected during normal peak loading conditions for the parameter of interest, which may or may not be during hydraulic peaks.*

2 *Turbidity shall be continuously monitored and recorded at a point after final filtration. The average value recorded each day, the amount of time that 5 NTU is exceeded, and the incident of exceeding 10 NTU, if any, shall be reported.*

3 *Chlorine residual concentration shall be continuously monitored and recorded at a point after the final chlorine contact basins. Both the minimum and maximum values shall be reported daily.*

4 *Samples shall be obtained immediately after the chlorination process.*

C. RECYCLED WATER USE REPORTS

The Producer shall submit a quarterly report, in a tabular form, on the list of users serviced during the quarter, the amount of recycled water delivered to each user, and the use of the recycled water. The quarterly report shall include any non-compliance events, which occurred at the individual use sites during the reporting period. A summary of these data shall be included in the annual report.

D. MONITORING OF GREEN ACRES MONITORING WELLS[5]

1. Each month, a grab sample of groundwater from each of the monitoring wells in the recycled water use area shall be obtained and analyzed for the following constituents:

   Total Coliform
   Total Dissolved Solids
   Total Hardness
   Boron
   Electrical Conductivity
   Total Organic Carbon

2. All of the above constituents shall be expressed in "mg/l" except for electrical conductivity, which shall be expressed in "micromhos/cm".

3. This monitoring shall be reported together with the quarterly monitoring reports.

E. MONITORING AND REPORTING REQUIREMENTS

1. Whenever possible, quarterly monitoring shall be performed during the months of February, May, August, and November; and annual monitoring shall be conducted during the third quarter of each calendar year. However, if the discharge of recycled water does not occur during that monitoring period, the Producer shall collect a sample during the next discharge event. Results of monthly, quarterly, and annual analyses shall be reported in the following quarterly monitoring report. If there is no discharge of recycled water during the reporting period, the report shall so state. Monitoring reports shall continue to be submitted to the Regional Board, regardless of whether or not there was a discharge of recycled water.

2. All chemical and bacteriological analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer. A copy of the laboratory certification shall be submitted with the annual summary report.

---

[5] *For location of Green Acres Monitoring Wells, see Attachment "3" of the Staff Report.*

3. Recycled water samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All QA/QC analyses must be run on the same dates when samples were actually analyzed. The Producer shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff. Proper chain of custody procedures must be followed and a copy of that documentation shall be furnished upon request by Regional Board staff.

4. The Producer shall summarize and arrange the monitoring data in tabular form to demonstrate compliance with requirements.

5. For every item where the requirements are not met, the Producer shall submit a statement of the actions undertaken or proposed which will bring the recycled water into full compliance with requirements at the earliest possible time, and submit a timetable for implementation of the corrective measures.

6. Monitoring reports shall be signed by either the principal Executive Officer or ranking elected official. A duly authorized representative of the aforementioned signatories may sign documents if:

   a. The authorization is made in writing by the signatory;
   b. The authorization specifies the representative as either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
   c. The written authorization is submitted to the Executive Officer of this Regional Board.

7. The monitoring report shall contain the following completed declaration:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments thereto; and that, based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

   Executed on the _____day of_____at _____
   _____Signature
   _____Title

8. The Producer shall retain records of all monitoring information, including all calibration and maintenance, monitoring instrumentation, and copies of all reports required by this Order, for a period of at least three (3) years from the date of sampling measurement, or report. This period may be extended by request of the Regional Board or the State DHS at any time and shall be extended during the course of any unresolved litigation regarding the regulated activity.

9. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling or measurements;
   c. The date(s) analyses were performed;
   d. The individual(s) who performed the analysis;
   e. The analytical techniques or methods used; and
   f. The results of such analyses.

10. The Producer shall submit to the Regional Board, together with the first monitoring report required by this Order, a list of all chemicals and proprietary additives which could affect the quality of the recycled water, including quantities of each. Any subsequent changes in types and/or quantities shall be reported promptly.

    An annual summary of the quantities of all chemicals, listed by both trade and chemical names, which are used in the treatment processes shall be included in the annual report.

Ordered by_____

Gerard J. Thibeault
Executive Officer

October 25, 2002