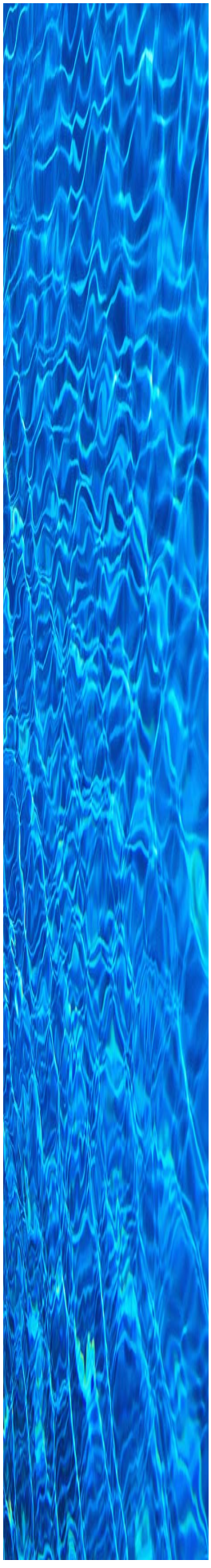


DELTA DIABLO SANITATION DISTRICT

Recycled Water Program Manual

and

Notice of Intent

for compliance with
San Francisco Bay Regional Water Quality Control Board
General Water Reuse Order
Board Order 96-011

and

State Water Resources Control Board
Order 2009-0006 DWQ
General Waste Discharge Requirements for Landscape Irrigation Uses of Recycled Water

October 2009

Delta Diablo Sanitation District

OFFICE AND TREATMENT PLANT: 2500 PITTSBURG-ANTIOCH HIGHWAY, ANTIOCH, CA 94509-1373
TELEPHONE: (925) 778-4040 ADMIN. FAX: (925) 778-8513 ENG. FAX: (925) 706-7156 MAINT. FAX: (925) 778-8565

April 26, 2000

Mr. Richard Condit
Water Reuse Program Manager
Calif. Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 95612

Mr. Peter Zhou
Associate Sanitary Engineer
State of California Dept. of Health Services
Drinking Water Field Operations Branch
2151 Berkeley Way, Room 458
Berkeley, CA 94704-1102

SUBJECT: NOTICE OF INTENT, DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM, PROJECT NO. 5010

Dear Messrs. Condit and Zhou:

The Delta Diablo Sanitation District (District) is pleased to submit this Notice of Intent (NOI), as required under California Regional Water Quality Control Board, San Francisco Bay Region Order 96-011. The District desires to produce, distribute, and permit the use of recycled water under a *General Water Reuse Order.*

This Notice of Intent includes the following information:

Introduction	Cross-references of the NOI contents to the requirements of Order 96-011
Chapter 1	Administrative Procedures for Recycled Water Program Staff
Chapter 2	Guidelines for Recycled Water Users
Chapter 3	Cross – Connection Control and Prevention Program
Chapter 4	Recycled Water Facilities Operations Plan
Appendices A through G	Permits, Forms, and Procedures for administration of the Recycled Program
Appendix H	Engineer's Report for Title 22 Compliance (note that the Title 22 information has been previously submitted to the Department of Health Services and to the Regional Water Quality Control Board. It is included in this NOI for convenience)

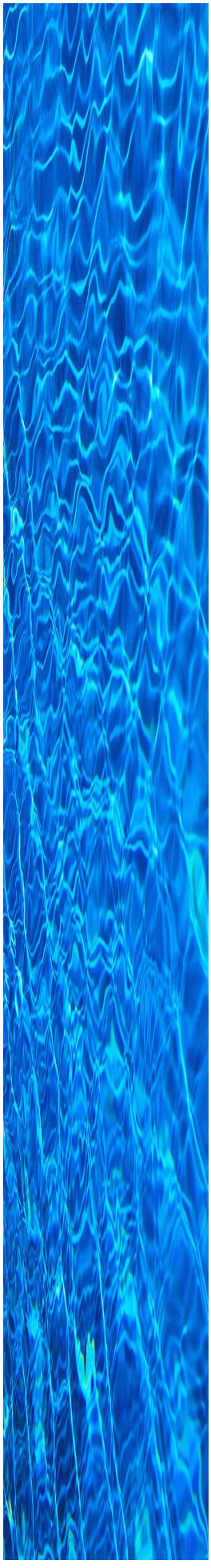
The District appreciates any input and feedback on the structure and organization of the Recycled Water Program and looks forward to further developing this Program with the Regional Board.

Sincerely,

Gregory G. Baatrup
Technical Services Manager

GGB:dcj

Attachments



Delta Diablo Sanitation District Recycled Water Program Manual

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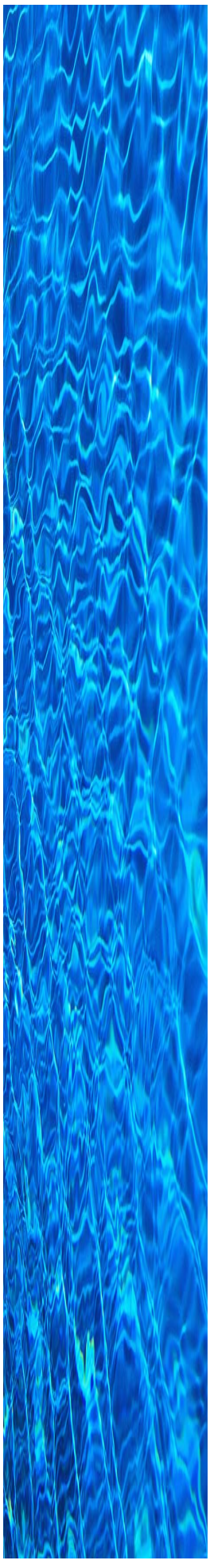


Introduction

Introduction

Water Reuse Program Manual

The Delta Diablo Sanitation District has prepared this Manual for implementation and administration of the Recycled Water Program (Program). The Manual contains four chapters describing the duties and responsibilities of the District as Producer and Distributor of the recycled water and the User of the recycled water. The chapters are as follows:

Chapter 1 Administrative Program Procedures for Staff
Chapter 2 Guidelines for Recycled Water Users
Chapter 3 Cross-Connection Control and Prevention Program
Chapter 4 Recycled Water Facility Operations Plan

The various permits, forms and procedures for administration of the Program are contained in Appendices A through J. In addition to serving as the working document for the Program, this Manual support the Notice of Intent to apply for coverage under both *the San Francisco Bay Regional Water Quality Control Board's General Water Reuse Order 96-011(RWQCB Order 96-011)* and the *State Water Resources Control Board's Order 2009-006 Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water (SWRCB Order 2009-006).*

These two orders have similar but not identical program requirements. Table I-1 outlines the requirements of RWQCB Order 96-011 and the location of where the required information appears in the Manual. Table I-2 lists the eighteen provisions of SWRCB Order 2009-0006 and indicates where the required information can be found.

Table I-1 Notice of Intent for San Francisco Bay Regional Water Quality Control Board Order 96-011	
Required Information	**Location in Application Package**
Section I – Facility/Waste Treatment Information. Description of proposed treatment, storage and transmission facilities	Chapter 4 generally describes the recycled water facilities, their control philosophy, reliability features and staffing requirements. The Title 22 Engineer's Report in Appendix I contains detailed descriptions of the treatment and storage facilities.
Section II - Reuse Applications. Description of the types of applications recycled water will be used for.	The Title 22 Engineer's Report in Appendix I describes each User of recycled water in the San Francisco Bay Region. Appendix J contains detail on the Antioch Service Area which is covered under State Water Board Order 2009-006. Appendix A contains the user Permit and Application Forms. When the Users have completed permit applications, they will be submitted in accordance with both the Order 96-011 and Order 2009-006.
Section III – Description of Water Reuse Permit Program. Description of the responsibilities of the Producer, Distributor and User of recycled water.	Chapter 1 describes the administrative responsibilities of the District. Chapter 2 describes the requirements for the recycled water User. Chapter 3 describes the requirements for the Cross-Connection Control and Prevention Program for both the District and the User. Appendices A through J contain the forms, permits, and procedures for the Program for both the District and the User.
Section IV – Additional Site Specific Conditions. Description if existing Orders have additional site specific conditions and/or restrictions not covered in the General Order, if any.	None Identified
Section V – Reuse Program Administration. Description of organization and responsibilities of pertinent people involved in the water reuse program.	Chapter 1 describes the Program administration and organization.

Table I-2 Notice of Intent for State Water Board Order 2009-006		
	Required Information	**Location in Application Package**
1	Signature of Duly Authorized Representative of the District.	NOI Application signature submitted with Program Manual
1a	Producer shall be responsible for ensuring recycled water meets quality standards of the Permit (Title 22 and Basin Water Quality Objectives) and associated WDR orders.	Chapter 4 of the Program Manual and Appendix I (the Title 22 Engineering Report) outline the design, operation and reporting strategies that ensure recycled water meets water quality standards.
1b	Distributors shall be responsible for O&M of transport facilities and appurtenances that convey and distribute recycled water from production to use with all Title 22 requirements.	Chapter 1 of the Program Manual outlines the District's operational structure and roles and responsibilities. Appendix F provides design criteria for distribution systems to assure that recycled water is managed properly.
1c	Producer shall be responsible for application and use of recycled water, including minimum land application acreage and impoundment capacity in Use Areas, and is responsible for all O&M in accordance with all Title 22 requirements and the General Permit.	Chapter 1 of the Program Manual outlines the District's permitting process. Appendices A, B, C and D contain the forms the district uses to review site design and assure compliance with permit requirements on user sites.
2	Administrator shall comply with the MRP 2009-0006-DWR.	Chapter 4 acknowledges the monitoring and reporting requirements and schedule.
3	CDPH may apply conditions of approval for the proposed projects for the Notice of Applicability	Acknowledged. The District has coordinated with CDPH during the preparation of the Program Manual and operates a compliant recycled water utility under SFRWQCB Permit 96-011.
4	Recycled Water Use Supervisor for each Use Area	City of Antioch Recycled Water Use Area Supervisor Scott Buenting, Associate Engineer (925) 779-6129
5a	Operations Plan for Use Areas	Chapter 2 Contains a detailed operations plan for use areas and describes the District's program for permitting and training its users. Form A-5 in Appendix A, the Recycled Water Use Permit, incorporates the operations plan within its Terms & Conditions.

		Forms D-1 and D-1 in Appendix D include the detailed site inspection reporting forms used by both the District and its users to assure compliance with the operations plan.
5b	Irrigation Management Plan for Users	Chapter 2 of the Program Manual includes an Irrigation Management Plan describing soil and climate characteristics, recycled water characteristics and major plant species irrigated. The Irrigation Management Plan includes calculations of agronomic irrigation rates and nutrient application rates which are used to train users and assess the compliance with the Irrigation Management Plan. Neither the District nor the users operate impoundments so there are no provisions for impoundment management.
5c	Copy of Title 22 Engineering Report	Appendix I includes the Title Engineering 22 Report and its amendments
5d	Copy of Producer's or Distributor's Rules and Regulations as approved by CDPH for design and construction of facilities in accordance with Title 22 Regulations and the General Permit.	Form A-5 in Appendix A, the Recycled Water Use Permit, includes the District's Terms & Conditions, which have been approved by CDPH for use in the San Francisco Bay Region. These terms and conditions function as the Program's Rules and Regulations.
5e	Copy of Signed agreement between Producers, Distributors and Users	The Memorandum of Understanding Between the District and the City of Antioch (User) is included at the end of this Introduction. A Recycled Water Use Permit (Form A-5) will be executed between the District and City as construction of the system nears completion and retrofits are completed.
5f	Recycled Water Use Supervisor Responsibilities and Training Documentation	Chapter 2 of the Program Manual includes a duty statement for Recycled Water Use Supervisors. Appendix H includes the District's training materials and a sign-in sheet for recent training. Because the Antioch Recycled Water Project will not go on line until mid-2010, the District anticipates conducting additional training as the

		time for conversions draws closer.
6	Assurance of Compliance with O&M Plan by District	As described in Chapter 2 of the Program Manual, the Program makes annual inspections of each use area site to review irrigation management and cross-connection control practices. Form D-1, located in Appendix D, is used to assure compliance with permit and plan requirements and with Title 22.
7	Amendments to Title 22 Engineering Report and Approval Letters from CDPH	Appendix I contains the Title 22 Engineering Report and its amendments
8	Assurance of Compliance with O&M Plan by Users	As described in Chapter 2 of the Program Manual, the Program utilizes self-monitoring by the users to assure compliance with permit conditions. Form D-2, located in Appendix D, is used for the self-monitoring program. The User Training information developed by the Program, and included in Appendix H, provides the users with information on recycled water management. The Irrigation Management Plan, described in Chapter 2 of the Program Manual calculates the salt and nutrient contribution provided annually through recycled water on a per acre basis. This information is used to assist in training users in proper site management and fertilizer use.
9	Periodic Inspections of Use Areas by Administrator	As described in Chapter 2 of the Program Manual, the Program makes annual inspections of each use area site to review irrigation management and cross-connection control practices. Form D-1, located in Appendix D, is used for the annual inspections.
10	Location of O&M Plan, General Permit and Monitoring and Reporting Program	The Program Manual, which includes the O&M Plan, General Permit and Monitoring and Reporting Program is kept at the District's offices, 2500 Antioch Highway, Antioch California. Chapter 1 of the Program Manual describes the

		organizational structure that assures District staff performs their responsibilities under the permit. Chapter 2 of the Program Manual describes the training for Use Area Supervisors and Appendix H includes the training information.
11	Producer and Distributor shall properly operate and maintain all facilities, system and controls to comply with conditions of the General Permit.	Chapter 4 provides a summary description of the recycled water operation and control scheme that assures compliance with Title 22 and Water Board requirements.
12	All technical reports must contain a statement of the qualifications of the responsible registered professional.	The Title 22 Engineering Report and its amendments have all been prepared and stamped by a Professional Engineer.
13	Compliance with Municipal Separate Storm Sewer System Permits.	The Antioch Service Area is covered under Order No. 5-00-120, NDPES CA 0083313 covering the cities of Antioch, Brentwood, Oakley, Contra Costa County and Contra Costa County Flood Control and Water Conservation District. The City of Antioch administers compliance within its limits under the authority of Title 6, Chapter 9 of its Municipal Code.
14	Responsibility for securing other appropriate permits.	Acknowledged. The District has documented its Antioch Recycled Water Project consistent with the requirements of the California Environmental Quality Act and has coordinated with responsible agencies.
15	Non Transferable coverage of General Permit.	Acknowledged
16	Requirement for Users to notify the District in writing changes to site supervisor.	Chapter 2 of the Program Manual describes this requirement and it is included in the Program Rules and Regulations which accompany the Recycled Water Use Permit issued by the District.
17	Other waste discharge requirements.	RWQCB 96-011 will be maintained for the Treatment Facility and pre-existing user sites.

18	Periodic review will be completed by the State Board and can change requirements as appropriate. General Permit could be modified, rescinded and reissued to protect the beneficial uses of waters to the State.	Acknowledged

COPY GGB

JOINT POWERS AGREEMENT BETWEEN
DELTA DIABLO SANITATION DISTRICT AND THE CITY OF ANTIOCH

RECYCLED WATER PURVEYORSHIP

This Agreement is made and executed this 18th day of November 2003, by and between the DELTA DIABLO SANITATION DISTRICT ("DDSD"), a county sanitation district formed pursuant to California Health and Safety Code Section 4700 et seq., and the CITY OF ANTIOCH ("City"), a municipal corporation incorporated under the laws of the State of California.

WHEREAS, City currently provides potable water treatment and distribution pursuant to State Department of Health Services requirements and wastewater collection services throughout the City; and

WHEREAS, DDSD provides wastewater conveyance, secondary treatment and effluent disposal and pretreatment services to the Cities of Antioch and Pittsburg and to certain unincorporated areas known as Bay Point pursuant to a National Pollution Discharge Elimination System permit from the California Regional Water Quality Control Board; and

WHEREAS, there currently exists multiple sources and types of water available in the service areas of both agencies, those being raw water from the Contra Costa Water District and river water from City's intake on the San Joaquin River, potable treated water from each City, recycled wastewater from Delta Diablo, ground water from City wells and rights to San Joaquin and Sacramento River water by industrial and municipal users; and

WHEREAS, under each agency's enabling legislation, they each have the power to purchase, treat, distribute, sell and administer all forms of water within their service areas; and

WHEREAS, The City of Pittsburg has previously granted full purveyorship authority to DDSD for the Recycled Water Program within it's corporate boundaries as they now exist or will exist in the future; and

WHEREAS, DDSD is providing certain services to two merchant power plants within the City of Pittsburg that generate electrical power and provide commercial steam to certain industrial customers in the DDSD service area; and

WHEREAS, both merchant power plants require large quantities of water for cooling, operating system make-up and landscape uses surrounding the facilities; and

WHEREAS, California Water Code Sections 13550, 13551, 13552.6 and 13552.8 authorize the use of recycled water for cooling towers and make-up water when it is readily available in lieu of treated potable water such as that produced and sold by City; and

WHEREAS, DDSD has available at its publicly owned treatment works sufficient quantities of secondary treated effluent that could be reasonably and economically treated to levels that will allow most non-potable customers to use this water source; and

WHEREAS, City has determined that they do not wish to provide recycled water service within the City due to the cost and regulatory requirements to operate the utility; and

WHEREAS, DDSD is prepared to develop a comprehensive program involving the treatment of recycled water for sale and distribution to and use by other customers ("Recycled Water Program") beyond

those agreements with the current power plants as an opportunity to enhance recycling in the State and the service area which may also assist DDSD in meeting it's regulatory disposal requirements in the future; and

WHEREAS, both agencies believe that it is in the best economic and water supply interests of the rate payers of the DDSD service area, the citizens of City and the industrial users of the area to utilize this water resource before its disposal in the San Joaquin River; and

WHEREAS, it has been determined by the Contra Costa Water District (CCWD) during its master planning activities (East County Water Management Plan, Phase II and its Future Water Supply Study) that CCWD may not have sufficient quantities of raw water to meet all demands at build out in both its raw water and treated water service areas; and

WHEREAS, DDSD recycled water can substantially reduce potential supply shortfalls in the service area utilizing its recycled water which will allow existing sources of potable water to be available for potable municipal and industrial uses in the future; and

WHEREAS, it is in the best interest of the parties to clarify that DDSD will be responsible for its Recycled Water Program within its service area boundaries as those boundaries exist now or in the future, including within the boundaries of City; and

WHEREAS, the Agreement further provides for the development of appropriate reimbursements to DDSD for their financial and non-financial investments associated with the Recycled Water Program to the date of termination should either Party invoke termination of the Agreement.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL COVENANTS AND PROMISES CONTAINED HEREIN, THE PARTIES DO HEREBY AGREE AS FOLLOWS:

A. General Provisions

1 Purpose. This agreement is entered, in part, pursuant to Government Code section 6500 et seq. It provides for DDSD's exclusive right to purvey recycled water and operate a Recycled Water Program within the territorial boundaries of the City of Antioch, as further detailed herein, pursuant to DDSD's authority to purvey recycled water under Health and Safety Code section 4700 et seq.

2. Delegation. City delegates to DDSD, and DDSD accepts from City, the exclusive right to purvey recycled water within City, as City's limits now exist or as they will exist in the future, including the responsibility for all administration, regulatory, operational and maintenance requirements to completely and fully operate a Recycled Water Program within City.

3. DDSD is authorized to design, construct, operate and regulate all facilities and permit and regulate all customers, as necessary to make a Recycled Water Program fully operational based upon the needs and demands within DDSD's service area.

4. DDSD shall have sole discretion over all aspects of the Recycled Water Program, including planning for current and future uses, and determining the most economical and efficient use of recycled water in the service area.

5. DDSD shall have sole responsibility for establishing rates and charges to recover the necessary revenue to construct, operate, maintain, replace equipment and expand the Recycled Water Program pursuant to good utility rate making practices. The DDSD Board shall have final authority to set the rates and

charges and to resolve all issues related to payment for sale of recycled water and services under this Agreement.

B. Indemnification and Hold Harmless

DDSD shall indemnify and hold harmless City, its officers, agents and employees from and against any and all claims, costs and liability for any damage, injury or death of or to any person or the property of any person, including attorneys' fees, caused by the negligent acts, errors or omissions or willful misconduct of DDSD, its officers or employees and arising out of DDSD's treatment, conveyance, delivery and sale of recycled water pursuant to this Agreement and will defend City from any third party challenges to the validity of this Agreement, save and except for claims, costs, liability, or damage arising out of or relating to the active negligence or willful misconduct of City, provided, however, that under no circumstance shall DDSD have any liability to any third party or entity for consequential or special damages, or for any damages based on loss of use, revenue, profits or business opportunities arising from or in any way relating to DDSD's treatment, conveyance, delivery and sale of recycled water or other actions under this Agreement

C. Effective Date of Agreement

This Agreement shall become effective upon approval and execution by City and DDSD.

D. Termination

Either Party may terminate this Agreement upon two years' written Notice of Termination to the other Party. Upon issuance of the written Notice of Termination, the Parties shall immediately convene a Transition Task Force and shall initiate a joint Recycled Water System Valuation and Partition Study. The purpose of this study will be to determine the fair market value of the assets associated with the Recycled Water Program within the City of Antioch and to determine the means and methods necessary to separate the existing facilities from the remainder of the DDSD's Recycled Water Program and to establish an appropriate reimbursement to DDSD ratepayers for their investment in the Recycled Water Program within Antioch. This Transition Task Force shall be composed of two representatives from the District and two representatives from the City.

The Task Force shall produce a recommendation on separation of existing facilities and appropriate reimbursement for DDSD ratepayers from the findings of the Recycled Water System Valuation and Partition Study that shall be presented to the DDSD and Antioch governing boards. Thereafter, the agencies shall enter a Recycled Water Program Termination Memorandum of Understanding that shall govern the termination of the current Agreement, including separation of existing facilities and reimbursement to DDSD ratepayers. If the agencies are not able to reach agreement on a Recycled Water Termination Memorandum of Understanding before the end of the two year notice period, then the agencies shall jointly hire either a third party civil engineer or a mediator knowledgeable in water infrastructure issues and valuations who shall resolve the matter for the Parties.

E. Notices Pursuant to Agreement

Any notice or demand required to be given herein shall be made by certified mail or registered letter, return receipt requested, or reliable overnight courier to the address of the respective Parties set forth below:

City	DDSD
City Manager City of Antioch P. O. Box 5007 Antioch, CA 94531-5007	General Manager Delta Diablo Sanitation District 2500 Antioch-Antioch Highway Antioch, CA 94509-1373

Either Party may, from time to time, designate any other address for purposes of written notice to the other Party. The new address shall take effect five (5) calendar days following receipt of proper notice of change under this section of this Agreement. All notices hereunder shall be considered received upon actual date of receipt of the notice.

F. Miscellaneous Provisions

1. This Agreement constitutes the entire agreement and understanding between the Parties, and supersedes all offers, negotiations and other agreements concerning the subject matter contained herein. Any amendments of this Agreement must be in writing and duly authorized and executed by both Parties.

2. If any provision of this Agreement is found to be invalid or unenforceable, the remainder of this Agreement shall not be affected and each provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

3. This Agreement shall be binding upon and inure to the benefit of the successors of the respective Parties.

4. The laws of the State of California shall govern this Agreement. The venue for any legal action pertaining to this Agreement shall be Contra Costa County.

5. In any case where the approval of the other Party hereto is required, requested or otherwise to be given under this Agreement, such Party shall not unreasonably delay or withhold approval or consent.

EXECUTED AND APPROVED ON BEHALF OF EACH AGENCY AS SIGNIFIED BY THE SIGNATURES BELOW:

City

NOV. 18, 2003

Mayor Date

Attest:

Form Approved:

William R. Galston

William Galston, City Attorney

Delta Diablo Sanitation District

12-10-2003

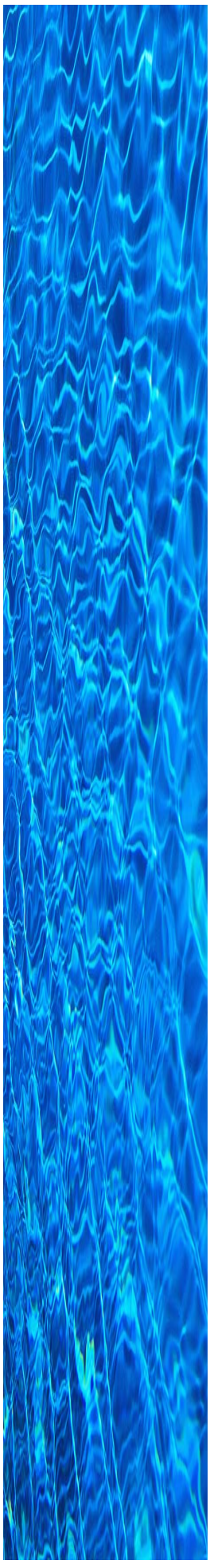
Chair, Board of Directors Date

Attest:

Form Approved: Silvano B. Marchesi
County Counsel

Mary Ann Mason

Mary Ann Mason, Deputy County Counsel



Program Manual

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List of Tables and Figures

Abbreviations

BOD	Biochemical Oxygen Demand
CDPH	California Department of Public Health
DDSD	Delta Diablo Sanitation District
DEC	Delta Energy Center
LMEC	Los Medanos Energy Center
MCC	Motor Control Center
NTU	Nephelometric Turbidity Unit
OSHA	Occupational Safety and Health Administration
PLC	Programmable Logic Controller
RWF	Recycled Water Facility
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SWRCB	State Water Resources Control Board
TSS	Total Suspended Solids
WWTP	Wastewater Treatment Plant

Chapter 1 Administrative Procedures for Program Staff

Introduction

This chapter serves as a guidance document for the Delta Diablo Sanitation District Recycled Water Program (Program). The Program issues permits to users of recycled water produced at the Delta Diablo Sanitation District's Recycled Water Facility (RWF). The Program monitors user compliance with all governing regulations for recycled water use.

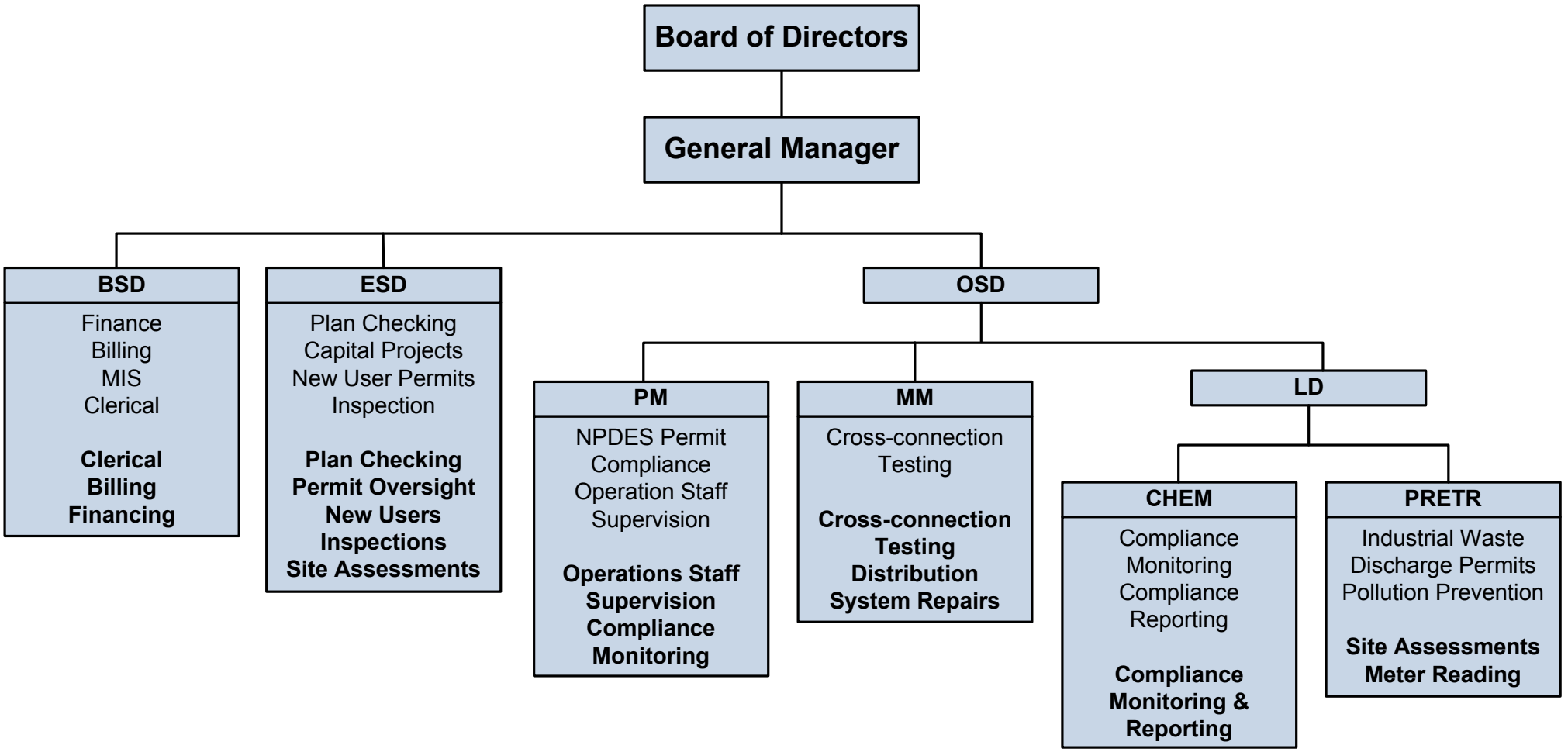
The Delta Diablo Sanitation District (District) manages the recycled water distribution system and complies with regulatory requirements by issuing, reviewing and enforcing Recycled Water Use Permits. The Permit process ensures that recycled water is used in accordance with the Guidelines for Recycled Water Use, the San Francisco Bay Regional Water Quality Control Board General Water Reuse Permit (RWQCB Order 96-011), the State Water Quality Control Board Order 2009-006 Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water (SWRCB Order 2009-006) and the State of California Water Reclamation Criteria (Title 22), which is administered by the California Department of Public Health (CDPH). Throughout this document, the State Water Resources Control Board and the San Francisco Bay Regional Water Quality Control Board will be referred to as “the Water Boards”.

Program Organization and Staffing

The Program is integrated into the overall organization of the District’s Wastewater Treatment Plan (WWTP). Figure 1-1 indicates the District staff positions and responsibilities relating to the normal WWTP activities and also the Program activities. The responsibilities for administering the Program are as follows:

- The General Manager has overall responsibility for both the WWTP and the Recycled Water Program.
- The Business Services Department (BSD) performs clerical, billing, and financing functions.
- The Engineering Services Department (ESD) is responsible for plan checking and user permitting, and assists with new user inspections, and site assessments.
- The Operational Services Department (OSD) is responsible for overall operations and maintenance of both the treatment and distribution of recycled water. OSD’s responsibilities include:
    - OSD’s Plant Manager is responsible for operating the treatment facilities to meet Title 22 requirements, meter reading, and assists with new user inspections, and site assessments
    - OSD’s Maintenance Manager supervises cross-connection testing and distribution system repairs
    - OSD’s Lab Director supervises compliance monitoring and reporting through the chemists in the lab

Figure 1-1
Delta Diablo Sanitation District
Recycled Water Program Organization Chart



Legend

Bold print indicates Recycled Water Program responsibilities.
Non-bold print indicated partial list of duties related to WWTP operation. Shows responsibilities and commonality with Recycled Water responsibilities.

BSD = Business Services Department
PM = Plant Manager
CHEM = Chemist
ESD = Engineering Services Department
MM = Maintenance Manager
PRETR = Pretreatment Group
OSD = Operations Services Department
LD = Lab Director

Recycled Water Production

The RWF is designed to treat up to 12.8 MGD of secondary effluent from the District's Wastewater Treatment Plant (WWTP). Secondary effluent is diverted upstream of WWTP disinfection, and undergoes flocculation, clarification, sedimentation, filtration and disinfection before being distributed to recycled water users. Effluent quality meets or exceeds the Title 22 water quality requirements for unrestricted recycled water use. Chapter 4 contains further information on treatment and production of recycled water.

Recycled Water Distribution

Recycled water is distributed to users through a District owned and operated distribution system. The system serves large industrial customers as well as irrigation users. Pumping and storage facilities are located at the RWF site. Chapter 4 contains further information on storage and distribution of recycled water.

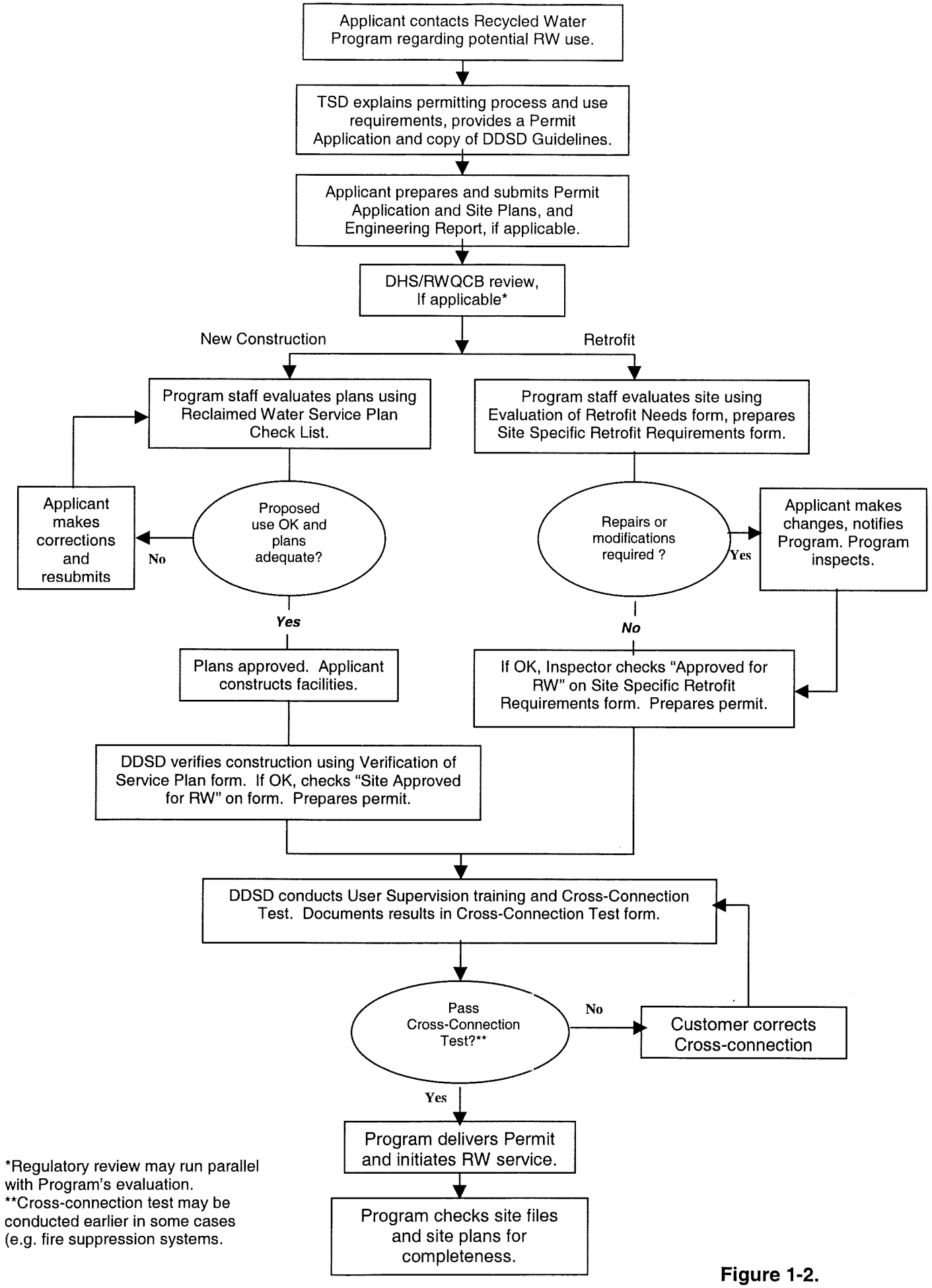
Permitting Process for Recycled Water Customers

The District's permit process for recycled water use ensures that all regulatory requirements are met and properly documented. The Permit also provides the enforcement mechanism for the District. The District has the authority to terminate recycled water service to users who do not comply with its Rules and Regulations. The ESD is responsible for administering the Permit process for all Users. Table 1-1 lists the forms and procedures used for permitting. The forms are included in Appendices A through G. Figure 1-2 illustrates the permitting process.

New Construction Permit Application

The ESD will provide an Application for a Permit to Use Recycled Water (Form A-1) and the Guidelines for Recycled Water Use to the Applicant. The ESD will be available to answer questions related to design, recycled water use, and permitting. For sites that include dual plumbing or other "in-building" uses of recycled water, an Engineering Report for Dual Plumbed Systems is also required (Form A-4). The Dual Plumbed Systems Report will be submitted to the Program for review as part of the permitting process, and then forwarded to regulatory agencies by the Applicant. For sites not requiring a Dual Plumbed Systems Report, the Permit application will provide the information required for coverage under the District's Water Reuse Permit.

The permit application contains information about the site, a site map, and the designation of the Recycled Water User Supervisor (User Supervisor) for the User. The application is tracked by the Program staff, which is responsible for maintaining Recycled Water User Site and Permit files. When an applicant files for a Permit, a set of construction plans for the site must be submitted to the Program, which conducts a plan check for recycled water use. The form Recycled Water Service Plan Check List (Form A-2) provides guidance to Program staff conducting the plan check. Program comments and changes will be sent back to the Applicant. The plans must be approved by the Program before a Recycled Water Use Permit will be issued. The Program may choose to perform inspections during construction to verify that the work is in accordance with the approved plans, and the Program Guidelines. The Program staff performs a post construction inspection using the Field Verification of Recycled Water Service Plan (Form A-3).



*Regulatory review may run parallel with Program's evaluation.
**Cross-connection test may be conducted earlier in some cases (e.g. fire suppression systems.

Figure 1-2.
Permitting Process Flowchart

Table 1-1 List of Permit-Related Forms and Procedures		
Form No.	**Document Name**	**Comment**
Customer Permitting Forms		
A-1	Application for a Permit to Use Recycled Water	Contains required site information. Becomes part of RW Permit.
A-2	Recycled Water Service Plan Check List	Checklist to be used by Program during plan checking to confirm adequacy of site plans.
A-3	Field Verification of Site Plan	Checklist to be used by Program for post-construction field verification of RW requirements.
A-4	Requirements for Engineering Reports for Dual Plumbed System	Guidelines for preparing Engineering Reports for Dual Plumbed Systems
A-5	Permit to Use Recycled Water	Issued to customer. Space for additional terms and conditions.
Retrofit Site Forms		
B-1	Evaluation of Retrofit Needs	Checklist/documentation used by Program staff during site retrofit evaluation.
B-2	Site-Specific Retrofit Requirements	To be completed by Program staff after retrofit evaluations. List correction actions needed and block for final Program approval.
B-3	Instructions for Completing Site-Specific Retrofit Requirements Form	Guidance to Program staff for completing the Site Specific Retrofit Requirements Form.
Cross-Connection Testing Forms		
C-1	Cross-connection Test and Discovery Procedures for Landscape Irrigation Systems Using Recycled Water	General procedures for most irrigation sites. Includes preliminary test procedure and what to do if cross-connection is discovered.
C-2	Cross-connection Test and Report	Checklist/documentation for test.
C-3	Procedure if Cross-connection Is Discovered	Guidance and documentation for Program staff.
Monitoring Forms		
D-1	District Inspector's Monitoring Report	Form for Program's use when inspecting sites.
D-2	Customer's Self-Monitoring Report	Form for customer's use if self-monitoring is specified. Attaches to permit.
Construction Water Forms		
G-1	Construction Water Permit	Permit for construction water issued to customer by Program.
G-2	Construction Water Release Form	Documentation of volume of recycled water received by water truck for construction water
G-3	Construction Water Inspection Checklist	Form for Program's use when inspecting trucks or construction water sites

Retrofits: Onsite Evaluations and Identification of Retrofit Requirements

For sites involving retrofit of existing facilities for recycled water use, the Program will conduct a site visit to evaluate site repairs and retrofit requirements, and identify potential cross-connections between the potable and proposed recycled water systems. Forms to assist in the evaluation of site retrofits are found in Appendix B. The Evaluation of Retrofit Needs checklist (Form B-1) is used by Program staff to facilitate and document field evaluation. On the basis of this evaluation, Program staff completes the Site Specific Retrofit Requirements form (Form B-2), which lists specific actions that must be completed in order to establish a recycled water service. The latter form is sent to the user.

Retrofit sites also must submit an Application for a Permit to Use Recycled Water (Form A-1). Repairs and retrofit of on-site facilities as specified in the Site Specific Retrofit Requirements Form (Form B-2) must be completed and approved by Program staff prior to issuance of a Permit to Use Recycled Water. A Program staff person inspects the repairs and retrofit, and if correctly completed, approves the site for recycled water use. Program staff will also make sure that any "as-built" changes are recorded on-site maps or drawings.

Permit to Use Recycled Water

If field verification of new construction or retrofit work shows that requirements have been met, Program staff generates a Recycled Water Use Permit (Form A-5). The Permit has space for any additional site-specific requirements, and includes the Recycled Water User's Self-Monitoring Report form (Form D-2). The signed Application for a Permit to Use Recycled Water is part of and attached to the Permit. Initiation of recycled water service will not occur until the final cross-connection test is completed.

Recycled Water Service Initiation

District staff will conduct the final cross-connection test, as described in Chapter 3, Cross-Connection Control and Prevention Program. The Cross-Connection Test Report (Form C-2) documents the result of the test. If the test is successful, the Permit to Use Recycled Water is delivered to the user, and recycled water service is activated.

Documentation

The Program maintains a file for each user including all permitting forms, site drawings, cross-connection tests, field notes, and customer correspondence. Future site inspections and cross-connection reports, field notes, and correspondences will be maintained in the site file. Program files are maintained at the District’s office, 2500 Pittsburg-Antioch Highway, Antioch, CA 94509.

Monitoring

In-plant Water Quality Monitoring

Monitoring of RWF effluent quality is conducted by the District Lab staff as part of the District's self-monitoring program. Monitoring criteria and frequency are described in Chapter 4 Plant Operations Plan.

Recycled Water Use Area Monitoring

The Recycled Water Use Permit specifies the monitoring program for individual Recycled Water User sites. The monitoring program will be consistent with the Water Boards' requirements. Annual inspections will be done by the Program. The Program may also require the Recycled Water User to conduct self-monitoring at a frequency specified in the Recycled Water Use Permit. The Inspector's Monitoring Report (Form D-1) is a checklist used to document the Program's inspections. In the event that self-monitoring is specified, the Recycled Water User's Self-Monitoring Report (Form D-2) will be attached to the Permit for use by the User. Inspections will look for the following:

- Excessive runoff and/or overspray
- Ponding
- Odor of wastewater origin at or near the site
- Evidence of leaks or breakage in the irrigation system
- Broken or defective sprinklers or emitters
- Improperly posted warning signs, tags and/or labels
- Any overflow or leaks from storage facilities or impoundments

In addition, inspections will review general permit compliance, backflow and cross-connection testing compliance, and a review of User Supervisor and employee training needs. The Program will maintain a calendar for scheduling site monitoring, inspections and cross-connection tests. For self-monitoring sites, a notice will be sent to remind customers of self-monitoring requirements.

Compliance Violation Procedures

Noncompliance with provisions set forth in the users Recycled Water Use Permit results in immediate action by the Program. Minor infractions, such as improper signage or excess runoff, are handled informally through site visits or phone calls, with the appropriate follow-up by Program staff. More serious infractions, or minor infractions that are not corrected in a timely manner, result in a formal Non-Compliance Notice, followed, if necessary, by more stringent enforcement actions. Serious violations of the reuse criteria that impact or threaten to impact public health or water quality will be reported by the District to the Water Boards by phone within 72hours, followed by a written report within 5 days describing the corrective actions taken. Recycled Water Users are required by Chapter 2, Guidelines for Recycled Water Users (Guidelines) to immediately report any emergencies or serious violations of the reuse criteria to the District. Twenty-four hour notification numbers are listed in the telephone directory and in the Guidelines.

Enforcement will be handled by the Program staff. A record of all actions, whether formal or informal, will be maintained in the Recycled Water User file. The District will terminate recycled water service of users who fail to correct non-compliant conditions.

Reporting

The Program will report violations of CDPH reuse criteria that impact or threaten to impact public health or water quality to the Water Boards as soon as practicable, but not later than 72 hours after violation notification, followed by a written report within 5 days describing corrective actions taken.

The Program submits annual Producer and User Monitoring reports to the Water Boards. The report includes:

- A tabulation of recycled water quality results
- A tabulation of recycled water use by each customer by billing period
- A list of new authorized recycled water customers, including name, application, source and projected annual flow to be delivered
- A summary of total monthly recycled water delivered
- A tabulation of total acres irrigated (Antioch Service Area only)
- A tabulation of the monthly nitrogen application rate in pounds per acre (Antioch Service Area only)
- A tabulation of the monthly salinity application rate in pounds per acre (Antioch Service Area only)
- A summary of effluent violations related to recycled water use, violations found during inspections of user sites, corrective actions taken, and any changes to, or revoking of Recycled Water Use Permits.
- An update regarding current and future development of the Recycled Water Program, including planning, design and construction of facilities, preparation of required reports and technical documents and progress toward regulatory approvals
- Progress and evaluation of any special studies or projects being undertaken related to the Program

Chapter 2 Guidelines for Recycled Water Users

Introduction

This chapter serves as a guidance document for potential users of recycled water. Recycled water distributed by the District is treated to comply with current regulations including the requirements California's Health and Safety Code , California Code of Regulations Title 17 (cross-connections) and Title 22 (uniform water recycling criteria) and Section 13500 of California's Water Code. In order to comply with the requirements of SWRCB Order 2009-06, this chapter includes of the following information:

- General Recycled Water Service Requirements
- Summary of Program Rules and Regulations
- Use Area Operations Plan
- Use Area Irrigation Management Plan
- Summary of Title 22 Compliance
- Summary of User Agreements
- Summary of Recycled Water Site Supervisor Training and Responsibilities

Detailed information on cross-connection control requirements and practices and compliance with Title 22 treatment and monitoring requirements is found in Chapters 3 and 4. The Appendices to this Program Manual provide supporting information that augments the summaries included in this chapter.

The Program Rules and Regulations are specifically designed to protect potable, recycled and environmental water quality and comply with SWRCB Order 2009-006 which contains mandatory best management practices designed to further clarify use area irrigation management practices. These are:

- Implementation of operations and management plan that provides for detection of leaks, and correction either within 72 hours of learning of a leak, or prior to the release of 1,000 gallons.
- Proper design and operation of sprinkler heads.
- Refraining from application during precipitation events.
- Management of any impoundment such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater.

General Recycled Water Service Requirements

Suitable Uses of Recycled Water

CDPH has designated suitable uses of recycled water based upon the level of treatment received prior to use. These "suitable uses of recycled water" are shown in Table 2-1 for three different treatment levels. The level of treatment provided by the RWF corresponds to "tertiary recycled water", which has the greatest number of allowable uses, but is not suitable for drinking or for use in food preparation.

Table 2-1 Suitable Uses of Recycled Water			
Use of Recycled Water	**Treatment Level**		
	Tertiary Recycled Water	Secondary -2.2 Recycled Water	Secondary -23 Recycled Water
Irrigation of:			
Food crops-contact with edible portion of crop	Allowed	Not Allowed	
Parks and playgrounds	Allowed	Not Allowed	Not Allowed
School yards	Allowed	Not Allowed	Not Allowed
Residential landscaping	Allowed	Not Allowed	
Unrestricted access golf courses	Allowed	Not Allowed	Not Allowed
Any other irrigation uses not prohibited by other provisions. of CCR	Allowed	Not Allowed.	Not Allowed
Food crops-edible portion above ground not in contact with recycled water	Allowed	Allowed	Not Allowed
Cemeteries	Allowed	Allowed	Allowed
Freeway landscaping	Allowed	Allowed	Allowed
Restricted access golf courses	Allowed	Allowed	Allowed
Ornamental nursery stock and sod farms	Allowed	Allowed	Allowed
Pasture for milk animals	Allowed	Allowed	Allowed
Any non-edible vegetation with access control to prevent use as if it were a park, playground or schoolyard.	Allowed	Allowed	Allowed
Orchards with no contact between edible portion and recycled water.	Allowed	Allowed	Allowed
Vineyards with no contact between edible portion and recycled water	Allowed	Allowed	Allowed
Non food-bearing trees not irrigated <14 days of harvest	Allowed	Allowed	Allowed
Fodder crops (e.g. alfalfa) and fiber crops (e.g. cotton)	Allowed	Allowed	Allowed
Seed crops not eaten by humans	Allowed	Allowed	Allowed
Food crops that undergo commercial pathogen-destroying processing before human consumption (e.g. sugar beets)	Allowed	Allowed	Allowed
Supply for impoundments:			
Non-restricted rec. impound., with supply monitored for pathogenic organisms	Allowed	Not Allowed	Not Allowed
Restricted recreational impoundment and fish hatcheries	Allowed	Allowed	Not Allowed
Landscape impoundments with decorative fountains	Allowed	Allowed	Allowed
Supply for cooling or air conditioning			
Industrial or commercial. cooling or air conditioning with cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Not Allowed	Not Allowed
Industrial or commercial. cooling or air conditioning with out cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed
Other uses			
Flushing toilets and urinals	Allowed	Not Allowed	Not Allowed
Priming drain traps	Allowed	Not Allowed	Not Allowed
Industrial process water that may contact workers	Allowed	Not Allowed	Not Allowed
Structural fire fighting	Allowed	Not Allowed	Not Allowed
Decorative fountains	Allowed	Not Allowed	Not Allowed
Commercial laundries	Allowed	Not Mowed	Not Allowed
Consolidation of backfill material around potable water ı pipelines	Allowed	Not Allowed	Not Allowed
Artificial snow making for commercial outdoor uses	Allowed	Not Allowed	Not Allowed
Industrial boiler feed	Allowed	Allowed	Allowed
Nonstructural fire fighting	Allowed	Allowed	Allowed
Backfill consolidation around non-potable pipelines	Allowed	Allowed	Allowed
Soil compaction	Allowed	Allowed	Allowed
Mixing concrete	Allowed	Allowed	Allowed
Dust control on roads and streets	Allowed	Allowed	Allowed
Cleaning roads, sidewalks and outdoor work areas	Allowed	Allowed	Allowed
Flushing sanitary sewers	Allowed	Allowed	Allowed

Service Areas

Recycled water may be provided to all customers within the boundaries of all approved service areas for recycled water. The use of recycled water shall only be allowed in accordance with all Federal, state and local regulations. The service area approved for coverage under RWQCB Order 96-011 (Pittsburg and Bay Point Service Area) is described in the Engineer's Title 22 Report and Amendments included in Appendix I. The service area approved for coverage under SWRCB Order 2009-006 is described in Appendix J (Antioch Service Area).

Conditions of Service

Recycled water service is predicated upon compliance with User Agreements and the District's Standard Terms and Conditions. Service to recycled water customers may be terminated or interrupted due to the following:

- The quality of the recycled water does not comply with the requirements of the Regulatory Agencies.
- The customers' use of the recycled water does not conform to all applicable regulations.

Summary of Program Rules and Regulations

The District's Program has been designed to assure compliance with both RWQCB Order 96-011 and SWRCB Order 2009-006. The District holds both permits and uses its own permitting and enforcement process to assure that user activities are compliant with its permit conditions. This section summarizes the Program's procedures, rules and regulations

Recycled Water Use Permit Application

Prospective recycled water customers must submit an Application for a Recycled Water Use Permit (Form A-1 in Appendix A). An application is designed to capture information critical for assuring compliance with CDPH and Water Board regulations. Specifically the permit application includes:

- Site address, assessor's parcel number(s), or property metes and bounds,
- Applicant's name and address, owner's name and address (if different), applicant's relationship to the subject property as legal owner, tenant, or lessee
- Designation of user's Recycled Water User Supervisor, including address and 24-hr contact number(s)
- Description of planned recycled water use on the property
- Estimated annual volume and peak flow rate at the point of connection
- If applicable, total irrigated area, expressed in appropriate units
- Signature of the designated Recycled Water User Supervisor, certifying that he or she will comply with permit conditions
- Signature of owner or duly authorized representative, certifying that information contained in the permit application is true and correct
- Drawing(s) of the property, which show:
    - All buildings on the site
    - Recycled water use areas
    - Location, size, and materials of construction for potable and recycled water piping

- Location of all service connections, meters, and backflow devices relative to buildings, property lines, or intersections.
- Location of outdoor drinking fountains, hose bibs, quick couplers and other points of ready access to recycled or potable water systems
- Location of recycled water signs
- Location of outdoor eating areas
- Locations of irrigation controller(s) and irrigation schedule, if applicable
- Direction of drainage from irrigated areas, if applicable
- Locations of wells, ponds, storage tanks or other impoundments

Generally, the site's construction drawings can be used to meet the above "drawing" requirements, although it may be necessary to annotate the drawings to clearly show all information listed. For retrofit sites, if construction drawings are not available, a site drawing with the above information must be prepared.

For sites where recycled water is to be used inside a building, a more formal Engineering Report must be filed. Requirements for preparing an Engineering Report are included in Appendix A (Form A-4).

The Application for a Recycled Water Use Permit should be filed concurrently with the application for a building permit. Upon receipt of the permit application, the Program will conduct a plan check to verify that all design conditions are met. If not, the District may require re-submittal of the missing information and/or drawings. For retrofit sites, the District will conduct a site inspection, and notify the customer of any repairs or modifications required.

Within the jurisdiction of the San Francisco Regional Water Quality Control Board (Pittsburg and Bay Point Service Area), recycled water may be used for construction purposes (soil compaction, dust control, roadway landscaping, etc). A different type of permit from that issued for permanent uses is required, and these forms are found in Appendix G (Forms G-1 through G-3). If authorized by the permit, trucks may be filled with recycled water from designated hydrants. Filling operation shall be monitored at all times. Recycled water shall be used only for purposes designated in the permit, and water shall be transported in a manner that prevents spillage. Drivers shall be apprised of procedures for safe handling of recycled water, as describe in the "Training of Personnel" provisions of these Guidelines. Trucks must have signs clearly identifying the water as either recycled water or non-potable and stating "Do Not Drink".

Recycled Water Site Design Requirements

During its plan review process the District confirms that the proposed use areas include proper design and labeling features. Site design requirements are outlined below.

Proper Design of the Irrigation System

Irrigation systems shall be designed in accordance with manufacturers' recommendations and to contain the recycled water onsite with minimum overspray. Sprinkler heads shall be of the appropriate type, size, spacing and orientation to deliver recycled water to the use area.

Posting of Use Areas

Recycled water use areas shall have one or more signs posted to inform the public that recycled water is used at that location. Signs shall be measured no less than 8" x 8" with “Recycled Water – Do Not Drink” imprinted in white type against a purple background. Signs shall also display the universal “Do Not Drink” symbol. An example of a use area sign is included in Appendix E.

Signs at Points of Access

In addition to use area signs, individual fixtures and points of access to the recycled water system, such as fire hydrants, quick connects, blow-off points, inspection ports, etc. shall have signs with "Recycled Water - Do Not Drink" superimposed over the universal "Do Not Drink" symbol.

In cases where there is potential for an improper interconnection to the recycled water system, the sign shall also include the wording "Recycled Water - Do Not Interconnect". Examples of suitable signs are included in Appendix E.

Color Coding

Recycled water facilities shall be color coded as follows:

- Fire Hydrants - All recycled water fire hydrants shall be colored purple. Each fire hydrant shall also be posted as required in the section on signage.

- Pipe Material - All new pipe material used for the distribution of recycled water shall be purple. For PVC pipe, this requirement is met through the use of commercially available purple pipe. For other types of piping, and for valves and other appurtenances, this requirement shall be met using purple paint or purple adhesive tape wrap.

- Valve Lids - All recycled water valve lids will be colored purple and marked "Recycled Water" in the center of the lid. Valve lids for fire hydrants using recycled water shall be purple.

- Water Meters - All recycled water meters shall be painted purple.

- Marking Tape - All marking tape for recycled water facilities shall be purple, with white lettering stating "Caution: Recycled Water -Do Not Drink".

- Adhesive Tape - All adhesive tape for wrapping recycled water piping shall be purple, with white lettering stating "Caution: Recycled Water - Do Not Drink".

- Irrigation controllers shall be posted with a purple recycled water sticker. The message on the sticker will be printed in both English and Spanish. An example of an irrigation controller sticker is included in Appendix E.

- Other components of the recycled water system shall be identified by purple paint, adhesive wrap, or means of identification approved by the Recycled Water Program.

Separation of Potable and Recycled Water Systems

The separation of potable and recycled water piping shall be in accordance with Chapter 3 Cross-Connection Control and Prevention Program and Appendix F which details pipeline construction standards.

Hose Bibs

Hose bibs on the recycled water system are prohibited. Quick couplers may be used for recycled water, but must be different from those used on the potable water system. Quick couplers on the recycled water system shall be labeled with "Recycled Water - Do Not Drink" as described elsewhere in these Guidelines.

System Pressure

If the pressure of the recycled water is higher than the customer needs, it is the responsibility of the customer to provide a pressure-reducing valve downstream of the service meter. Maintaining proper onsite system pressure is an important part of the user's responsibility to assure that recycled water is contained on the use area.

Recycled Water Use Permit Contents and Process for Issuance

Upon completion of construction (or site modifications), the Program will conduct a final inspection to verify that all design requirements have been met, and a cross-connection test to verify that there are no interconnections between the potable and recycled water systems. All final conditions must be recorded on the site drawings.

Final approval for service shall be indicated by the Program issuing a Recycled Water Use Permit. The permit is the binding agreement between the District and the user.

The Permit includes the customer's signed application, the Recycled Water Use Permit Terms and Conditions, which serve as a Use Area Operations Plan, and a listing of any additional site-specific requirements.

Use Area Operations Plan

The Use Area Operations Plan is intended to provide for protection of public health and water resources.

Potable Water System Protection: On premises using both recycled water and potable water, the potable water supply must be protected against any accidental cross-connections by the use of methods described in Chapter 3 Cross-Connection Control and Prevention Plan. All assemblies must be on the District's "Approved Backflow Device List". The testing requirements for backflow devices will be specified by the District, and may be quarterly, semi-annual, or annually depending on the site's degree of hazard. Some recycled water customer sites may have separate dedicated fire protection systems that use potable water. Those systems shall also be protected from cross-connection backflow with reduced pressure (RP) assemblies at their point of connection.

Recycled Water System Protection: The District must ensure that the recycled water system is not compromised by any customer. Therefore, in some cases the District may require "Approved Backflow Devices" (see above) on the customer's recycled water system. An example of where such protection might be required would be when chemicals may be injected into a recycled water line by the customer. Backflow devices must be properly inspected, maintained, and tested as mentioned above. Backflow devices on the recycled water system shall be marked and color-coded as noted elsewhere in these Guidelines. Backflow device testing equipment used in the recycled water system must not be used in the potable water system.

Environmental Water Quality Protection: In accordance with Title 22, the District prohibits the irrigation with recycled water within 50 feet of any potable water reservoir or well. Impoundment of recycled water within 100 feet of any domestic well shall require the approval of the appropriate health agency. The Use Area Operations Plan is intended to assure compliance with the mandatory Best Management Practices included in SWRCB Order 2009-006 for protection of environmental water quality. These include:

- Implementation of operations and management plan that provides for detection of leaks, and correction either within 72 hours of learning of a leak, or prior to the release of 1,000 gallons.
- Proper design and operation of sprinkler heads.
- Refraining from application during precipitation events.
- Management of any impoundment such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater.

The Use Area Operations Plan is designed to comply with the first three mandatory Best Management Practices (the District does not deliver recycled water to impoundments). The Use Area Operations Plan is incorporated in each Users' permit through the Program's Recycled Water Use Permit Terms and Conditions, which are appended to the permit.

Summary of Program Terms and Conditions

Customer use of recycled water shall at all times conform to the following prohibitions and requirements:

- Unapproved Uses - Use of recycled water for any purpose other than those explicitly allowed under the customer's Recycled Water Use Permit is strictly prohibited.
- Prevention of Cross-Connections - A cross-connection is defined as an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and the recycled water system (or any other unapproved water source or substance). Cross-connections between the recycled water system and the potable water system are strictly prohibited. There shall never be a physical connection between the recycled water system and the potable water system anywhere on the customer's premises.
- Equipment Maintenance - All equipment shall be kept in good working condition.
- Irrigation System Inspection – The irrigation system shall be regularly inspected and adjusted to assure proper performance. User shall
    - Routinely adjust sprinkler heads to achieve 80% head to head coverage
    - Routinely inspect for and remove obstructions that would interfere with free rotation and smooth operation of any sprinkler

  - Routinely test system pressure and adjust valves or pressure regulators as appropriate
  - When used, routinely test the accuracy of time clocks and recalibrate as necessary
  - When used, routinely check and clean backflow devices, pumps, screens and backwash filters.
- Irrigation System Repair - Broken or faulty irrigation component shall be repaired promptly and no later than 72 hours after discovery.
- Maintenance of Signage and Labeling - All signs, equipment identification devices, and color-coding shall be maintained.
- Application at Agronomic Rates – Recycled water shall be applied at the agronomic rate calculated in the Irrigation Management Plan, below, or in accordance with a landscape water budget developed by the local water conservation program.
- Nutrient Application – Fertilizer application shall be adjusted to take into account the nutrient value provided by recycled water and calculated in the Irrigation Management Plan, below.
- Runoff - All systems shall be designed, constructed, and operated to minimize to the fullest extent the runoff of recycled water outside of the approved use area. Periodic field observations shall be completed and documented in monthly reports to prevent runoff outside of the approved use area.
- Windblown Spray - All systems shall be designed, constructed, and operated to minimize to the fullest extent the possibility of recycled water spray being carried outside the approved use area. Inspect sprinkler heads routinely to ensure spray direction does not spray outside of the use areas.
- Overspray - Recycled Water shall not be sprayed on people, food handling facilities, drinking fountains, or eating areas. Recycled water shall not enter dwellings and drinking water fountains shall be protected against contact with spray, mist or runoff.
- Ponding - All systems shall be designed, constructed, and operated to minimize to the fullest extent the ponding of recycled water both inside and outside the approved use area. Irrigation water must infiltrate completely within a 48-hour period.
- Ditches – Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation.
- Low-pressure and unpressurized pipelines and ditches that may be accessible to mosquitoes shall not be used to store recycled water.
- Hours of Operations - The use of recycled water for irrigation shall be limited to the hours of least use of the area by the public. This is usually between hours of 10 p.m. and 6 a.m. The operation of the system at other times may be requested and considered on a case-by-case basis. Consideration shall be given to allow a maximum dry out period, before the area is used by the public. The recycled water shall not be used for periods of time that are greater than that needed to satisfy the watering requirements of the landscaping.
- Main Shutoff Valve - The main shutoff valve of the recycled water meter shall be maintained with a tag with a recycled water warning sign. The valve shall be equipped with an appropriate locking device to prevent unauthorized operations of the valve.
- Recycled water shall be managed to minimize contact with workers and the User Supervisor shall provide worker training in appropriate working procedures and hygiene.

- In some cases, the Program may require customers to conduct self-monitoring of recycled water use sites. If so the customer's Recycled Water Use Permit will designate the monitoring frequency and reporting requirements, and will include a form for the Customer's use.

District Monitoring and Inspections

The District will inspect customer's recycled water systems annually, or on a more frequent basis if warranted by the size and complexity of the site or other considerations. The inspections will include (at a minimum) a visual inspection of all backflow prevention assemblies, exposed piping, valves, pressure reducing valves, sprinklers, controllers, signs, labels, tags, and all points of connection. The inspection will also check for proper use (minimization of runoff, overspray, ponding, etc). The User Supervisor's records will be inspected to review maintenance records and training documents. The District inspector will complete an inspection form, and transmit any deficiencies observed to the User Supervisor for correction.

Notification of Repairs or Modifications

Customers shall notify the Program in writing of any significant proposed repairs and of all proposed modifications to the on-site recycled water system. Notification shall include a sketch or drawing clearly delineating all changes. Repairs and modification must be reviewed and approved by the District prior to implementation. Customers shall record all changes on the site's record drawings.

Emergency Procedures

In the event of an emergency involving the recycled water system, the user shall immediately notify the District by calling (925) 756-1900. Emergencies include, but are not limited to:

- Line breaks in the distribution system
- Cross-connections between the user's potable and recycled water systems.

In the event of a cross-connection on the user's site, the user shall immediately stop using potable water at the site, and shall isolate the on-site potable water system from the public supply at the point of connection. Before potable water service can be resumed, the cross-connection must be removed, and the site inspected and approved by the District. If it is determined that recycled water has entered the user's potable water system, the system must also be disinfected and tested before service can be resumed. The District may, at its discretion, perform such disinfection and testing and charge the User, or may provide instructions to a qualified contractor retained by the user.

In the case of a major earthquake, the User Supervisor should inspect the recycled water and potable water systems. If either of the systems is damaged, both the potable water system and the recycled water system should be shut off at their respective points of connection. The User Supervisor should then notify the District for further instructions. Emergency modifications or repairs may be made by the customer to their system without the prior approval of the District when this action will prevent contamination, other damage to the systems, or prevent a public health hazard. The customer shall notify the District of the modifications as soon as possible, but not later than 72 hours following the completion of the modification or repair.

Violations and Enforcement

Violations of the customer's Recycled Water Use Permit include, but are not limited to, the following:

- Failure to maintain equipment and identification devices (signs, coatings, etc) in good working condition
- Use of recycled water which results in excessive run-off, overspray, or ponding
- Failure to report changes to recycled water system to Program, including a change in the site's User Supervisor
- Use of recycled water for purposes other than specified in customer's permit
- Use of hose bibs on the recycled water system
- Creating an interconnection between the potable and recycled water systems

The District enforces violations of its permit system by stopping delivery of recycled water.

Use Area Irrigation Management Plan

The Use Area Irrigation Management Plan is intended to provide information on appropriate irrigation and nutrient application rates for sites using recycled water. The Use Area Irrigation Management Plan is required by SWRCB Order 2009-006 and applies to irrigation service in the District’s Antioch Service Area.

Soil Characteristics

The Antioch Service Area is generally located at the foot of Mt. Diablo and adjacent to the San Joaquin River. The soils underlying the service area are clay and clay loams and tend to be well drained. The service area includes some exposed bedrock, especially in the southern reaches. One of the major recycled water users, Lone Tree Golf Course has installed an under-drain system and amended soils to allow for better irrigation management. Table 2-2 outlines the major soil types and characteristics found in the use area.

Table 2-2 Soil Characteristics			
	Drainage Class	**Capacity of Most Limiting Layer to Transmit Water (Ksat)**	**Depth to Water Table**
Diablo Clay	Well Drained	Very Low to Moderately High (0.00-0.20in/hr)	More than 80 inches
Lodo Clay Loam	Somewhat Excessively Drained	Very Low to Moderately High (0.00-0.20in/hr)	More than 80 inches
Pescadero Clay Loam	Poorly Drained	Very Low to Moderately Low (0.00 to 0.06 in/hr)	60-72 inches
Rincon Clay Loam	Well Drained	Moderately Low to Moderately High (0.60 to 0.20in/hr)	More than 80 inches

Source: United States Department of Agriculture Natural Resources Conservation

Recycled Water Characteristics

The District regularly samples its recycled water for a variety of parameters. The past three years of monitoring data are summarized in Table 2-3 below.

Table 2-3 Recycled Water Characteristics						
	Limit	February	May	August	November	**Average**
2007 Quarterly Results						
TDS mg/l	**1200**	1000	1000	830	1000	956
Total Hardness mg/l as CaCO3	**275**	240	230	220	230	230
Alkalinity mg as Ca CO3	**250**	220	230	250	226	232
Chloride mg/l	**230**	260	300	210	450	305
Sulfate mg/l	**200**	280	260	200	240	245
Silica mg/l s SiO2	**30**	23	21	21	23	22
2008 Quarterly Results						
TDS mg/l	**1200**	940	1000	1000	900	960
Total Hardness mg/l as CaCO3	**275**	272	260	230	242	251
Alkalinity mg as Ca CO3	**250**	220	230	240	260	238
Chloride mg/l	**230**	200	300	300	220	255
Sulfate mg/l	**200**	280	270	200	200	238
Silica mg/l s SiO2	**30**	25	21	25	21	23
2009 Quarterly Results						
TDS mg/l	**1200**	880	982	871		911
Total Hardness mg/l as CaCO3	**275**	250	230	190		223
Alkalinity mg as Ca CO3	**250**	250	220	260		246
Chloride mg/l	**230**	210	270	180		220
Sulfate mg/l	**200**	200	230	140		190
Silica mg/l s SiO2	**30**	26	21	21		23

General Requirements for Major Plant Species

Within its Antioch Service Area, the District irrigates primarily turf grass in parks, median strips and at the Lone Tree Golf Course. The Lone Tree Golf Course is the single largest user in the Antioch Service Area and its site includes a mixture of cool season turf including creeping bentgrass (Agrostis palustris), Annual bluegrass (Poa annua), Perennial ryegrass and Common bermudagrass. Similar cool season turf grasses are found in parks and median strips.

Trees are integral part of the golf course and mature trees are situated on the property and irrigated nightly through the overhead sprinkler system. Virtually all of the trees on the course are exposed to irrigation water that contacts foliage. Trees present on the golf course include

Pine	Douglas Fir
Pepper	Chinese Tallow
Eucalyptus	Elm
Cedar	Mulberry
Redwood	Fan Palm
Ornamental Pear	Coast Live Oak
Red Oak	Valley Oak
Scarlet Oak	Raywood Ash

The types of plant species irrigated in the Antioch Service Area typically tolerate the higher TDS in recycled water. The Golf Course anticipates that it may need to make modifications to its irrigation system to protect tree foliage from overspray.

Climatic Conditions

The City of Antioch's Urban Water Management Plan indicates that Antioch's average monthly temperature ranges from 45 to 74 degrees Fahrenheit but the extreme low and high temperatures have been 18 and 117 degrees Fahrenheit, respectively. The historical annual average precipitation is approximately 13 inches. The rainy season begins in November and ends in March. Average monthly precipitation during the winter months is about 2 to 3 inches, but records show that the monthly precipitation has been as high as 9 inches and as low as 0 inches. Winter water demands are relatively low. Low humidity usually occurs in the summer months, from May to September. The combination of hot and dry weather during the summer results in high water demands. Climate conditions affecting irrigation management in Antioch are outlined in Table 2-4 below.

Table 2-4 Climate Conditions			
	Standard Average ETo (in)	Average Rainfall (in)	Average Temperature (F)
Month			
January	0.95	2.74	45.3
February	1.75	2.41	50.5
March	3.48	1.91	54.3
April	5.37	0.88	58.8
May	6.88	0.38	64.9
June	7.79	0.10	71.0
July	8.29	0.02	74.1
August	7.24	0.05	73.3
September	5.33	0.21	70.7
October	3.63	0.70	63.8
November	1.76	1.66	53.5
December	1.01	2.12	46.0
Annual Totals	53.48	13.18	60.5

Sources: Western Regional Climate Center website, period of record 1955-2004, (http://www.wrcc.dri.edu/COMPARATIVE.html) and California Irrigation Management Information System (CIMIS) website (http://www.cimis.water.ca.gov/cimis/data.jsp)

Agronomic Application Rate and Loadings Added by Recycled Water

The United States Environmental Protection Agency's, (USEPA's) Water Sense Water Budget Tool approach was used to estimate the agronomic application rate for the Antioch Service Area. This tool uses the following formula to estimate agronomic application rates:

$$LWR_h = RTM \times ((ETo \times K_L) - R_e)) \times A/C_U$$

Where:

LWR_h = Landscape Water Requirement	K_L = 0.8
RTM = Runtime Multiplier = 1/ Irrigation Efficiency	R_e = 50% of Rainfall
Irrigation Efficiency = 0.80	A = Area
ETo = ETo in the Antioch Service Area	C_U = 1.6043 to convert to gallons

Based on this formula, the agronomic application rate for turf grass in the Antioch Service Area, by month is outlined in Table 2-5.

Table 2-5 Agronomic Rate Requirements						
	RTM	KL	Standard Average ETo	Average Rainfall	Landscape Water Requirement	Landscape Water Requirement
			(in)	(in)	(gallons/acre)	(AF/acre)
Month						
January	1.25	0.8	0.95	2.74	-20,703.42	-0.06
February	1.25	0.8	1.75	2.41	6,618.31	0.02
March	1.25	0.8	3.48	1.91	62,076.33	0.19
April	1.25	0.8	5.37	0.88	130,872.78	0.40
May	1.25	0.8	6.88	0.38	180,357.35	0.55
June	1.25	0.8	7.79	0.1	209,817.30	0.64
July	1.25	0.8	8.29	0.02	224,750.92	0.69
August	1.25	0.8	7.24	0.05	195,732.19	0.60
September	1.25	0.8	5.33	0.21	141,156.61	0.43
October	1.25	0.8	3.63	0.7	86,682.85	0.27
November	1.25	0.8	1.76	1.66	19,617.34	0.06
December	1.25	0.8	1.01	2.12	-8,552.89	-0.03
Annual Totals			53.48	13.18	1,228,425.67	3.80

Based on the District' annual average recycled water TDS of loading 958 mg/l the total TDS loading from recycled water is approximately 10,000 lbs/acre.

Based on the District' annual average recycled water Nitrate loading 0.77 mg/l the total nitrogen loading from recycled water is 7.7 lbs/acre.

Summary of Title 22 Compliance

The District's Engineering Report on the Production, Distribution and Use of Recycled Water, together with its amendments, outlines the District's Title 22 Compliance. This information is found in Appendix I.

Summary of Recycled Water Site Supervisor Training and Responsibilities

A User Supervisor must be designated by the Recycled Water User and approved by the District for every site where recycled water is used. The District's approval will be based on the individual's familiarity with the recycled water system, authority, and reliability. The District will provide training for the User Supervisor as described below. Although the District retains ultimate responsibility for use of recycled water at all sites, the User Supervisor is the primary means for ensuring safe use of recycled water at a given site.

Training

The Program will provide training for the User Supervisor. A copy of the Program's training material is found in Appendix H. Training covers the District's Recycled Water Use Permit Terms and Conditions, and covers the following major topical areas:

- Safe and efficient operation and maintenance of recycled water use facilities
- Prevention of runoff from Recycled Water Use Areas
- Good irrigation management practices including matching water requirements of the landscape and avoiding irrigation when it is raining or when the soil is saturated
- Means for ensuring recycled water and other supplemental nutrients (including fertilizers) are used pursuant to the Irrigation Management Plan
- Prevention of cross-connections with the potable water systems
- Emergency Reporting Procedures
- Violations and penalties

In addition to Site Supervisor Training, the District will participate or assist in any additional training, as necessary, for the users' employees. During the District's annual inspection of the facility, the District will discuss the customer's method of informing their employees about recycled water use on site.

Recycled Water Use Supervisor Duty Statement

The User Supervisor is responsible for assuring that the Program's rules and regulations are followed at the use area and that workers at each use area are properly trained. Specific duties required of the Use Supervisor are described below.

Control of On-Site Uses of Recycled Water

The User Supervisor is required to be familiar with the entire on-site recycled water system, and of all applicable conditions governing recycled water use at the site. The User Supervisor shall ensure that recycled water use complies with those conditions. The User Supervisor shall also be responsible for proper operation and maintenance of the recycled water system on the site and of all backflow prevention devices.

Training

The User Supervisor is responsible for attending District-provided training and ensuring that on-site operations personnel (i.e. those who use or maintain the recycled water system) are familiar with the proper use of recycled water. The User Supervisor shall make sure that operations personnel are aware that:

- There is never to be a direct connection between the recycled water system and any other water system;
- Recycled water, though highly treated, is non-potable. Recycled water is never to be used for human consumption;
- Working with recycled water is safe if the appropriate regulations are followed. Personnel should exercise good hygiene when working around recycled water, e.g. wash hands before eating or drinking;
- The operation and maintenance of the recycled water system must conform to requirements described in this program manual; and
- The User Supervisor should be contacted in the event of any system break, cross-connection or other unusual event, so that appropriate reporting actions can be taken

The User Supervisor should review these requirements with operating personnel prior to working with recycled water.

Contact Information and Notification of Changes

The User Supervisor shall provide the District with an address and phone number(s) where he or she can be contacted at all times. The User Supervisor shall notify the District of any change in the individual designated to be User Supervisor, or of any planned modifications or planned additions to the recycled water system. These shall be reviewed and approved by the District before any modifications are made.

Monitoring

The User Supervisor shall be responsible for any monitoring specified in the customer's Recycled Water Use Permit, and may participate in monitoring the use of recycled water on-site.

Failures and Violations

The User Supervisor (or their designated emergency contact) is responsible for notifying the District of any failure of the on-site recycled water system, of any cross-connection between the recycled and potable water systems, or of any inappropriate uses that may occur. For any condition which has the potential to endanger public health, such as a cross-connection, the User Supervisor shall notify the District's Lead Operator at (925) 382-6960 immediately.

Chapter 3 Cross-Connection Control and Prevention Program

Purpose

This section describes the District's Cross- Connection Control and Prevention Program (CCCPP) as it applies to the delivery and use of recycled water from the Recycled Water Facility (RWF). The section outlines the role of the District, the Recycled Water Users (Users) and the regulatory agencies involved with the protection of potable water supplies from contamination by cross-connection with recycled water system pipelines. The installation, maintenance, and testing of approved backflow prevention devices is described, as well as the required monitoring, testing, and reporting procedures.

Background

This document was prepared in accordance with the CDPH Guidance Manual for Cross-Connection Control Programs. The Program is in accordance with the California Code of Regulations Title 17 requirements for backflow prevention.

Program Authority

The Cross-Connection Control and Prevention Program will be maintained by the District. The District responsibility for the recycled water system begins at the RWF and ends at the User connection as defined in each User's Permit issued by the District. The User has the primary responsibility for protecting the potable water system. This responsibility begins at the User connection and includes all of the water distribution piping on the User premises. A User Supervisor will be designated by the User to monitor and enforce compliance with the CCCPP. The District's staff will be responsible for training of the User Supervisor.

CDPH has the responsibility for promulgating and enforcing the laws, rules, regulations, and policies to be followed in controlling cross-connections. In addition, the local health agency has the authority to ensure that adequate protection is provided within a User's premises. The District will administer the entire CCCPP, including cross-connection testing and backflow prevention assembly testing on the recycled water system. CCCPP costs will be recovered by the District through charges to the affected user for the costs of testing as part of their recycled water bill.

User Supervisor

A User Supervisor must be designated by the User and approved by the District for every site where recycled water is used. The District's approval will be based on the individual's familiarity with the recycled water system, authority, and reliability. The District will provide training for the User Supervisor as described below. Although the District retains ultimate responsibility for use of recycled water at all sites, the User Supervisor is the primary means for ensuring safe use of recycled water at a given site. User Supervisor responsibilities are described in Chapter 2, Guidelines for Recycled Water Users, and are summarized as follows:

- Knowledge of the entire on-site recycled water system;
- Knowledge of applicable conditions governing recycled water use at the site;
- Assurance that recycled water use complies with the conditions governing use at the site;

- Proper operation and maintenance of the recycled water system and of all backflow prevention devices;
- Assurance that cross-connections are not made during the installation, operation, and maintenance of the User's piping and equipment; and
- Knowledge of the practices and regulations regarding cross-connection control and plumbing.

Contact Information and Notification of Changes

The User Supervisor shall provide the District with the address and phone number(s) where he or she can be contacted at all times. The User Supervisor shall notify the District of any change in the individual designated to be User Supervisor, or of any planned modifications or planned additions to the recycled water system. These shall be reviewed and approved by the District before any modifications are made.

Failures and Violations

The User Supervisor is responsible for notifying the District of any failure of the on-site recycled water system, of any cross-connection between the recycled and potable water systems, or of any inappropriate uses that may occur. For any condition that has the potential to endanger public health, such as a cross-connection, the User Supervisor shall notify the District immediately.

Monitoring

The User Supervisor shall be responsible for any monitoring specified in the User's Recycled Water Use Permit issued by the District.

Training of Personnel

The Program will provide training for the User Supervisor. The User Supervisor is responsible for ensuring that on-site operations personnel (i.e. those who use or maintain the recycled water system) are familiar with the proper use of recycled water. The User's operations personnel need to be aware of the following:

- There is never to be a direct connection between the recycled water system and the potable water system;
- Recycled water, though highly treated, is non-potable, and is never to be used for human consumption;
- Working with recycled water is safe if both common sense is used and the appropriate regulations are followed;
- Personnel should exercise good hygiene when working around recycled water, e.g. wash hands before eating or drinking; and
- The operation and maintenance of the recycled water system must conform to all requirements set forth by the District.

The User Supervisor should review these requirements with operating personnel prior to working with recycled water.

The User Supervisor is responsible for attending District-provided training and ensuring that on-site operations personnel (i.e. those who use or maintain the recycled water system) are familiar

with the proper use of recycled water. The User Supervisor shall make sure that operations personnel are aware that:

- There is never to be a direct connection between the recycled water system and any other water system;
- Recycled water, though highly treated, is non-potable. Recycled water is never to be used for human consumption;
- Working with recycled water is safe if the appropriate regulations are followed. Personnel should exercise good hygiene when working around recycled water, e.g. wash hands before eating or drinking;
- The operation and maintenance of the recycled water system must conform to requirements described in this program manual; and
- The User Supervisor should be contacted in the event of any system break, cross-connection or other unusual event, so that appropriate reporting actions can be taken

Cross-Connection Prevention

A cross-connection is defined as an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and the recycled water system. Cross-connections between the recycled water system and the potable water system are strictly prohibited by California Code of Regulations Title 17. There shall never be a physical connection between the recycled water system and the potable water system anywhere on the User's premises.

Separation of Potable and Recycled Water Systems

The separation of potable and recycled water piping shall be in accordance with CDPH guidelines, and shall be maintained to the greatest extent possible in both new construction and retrofit applications. The minimum separation standards are as follows:

- The horizontal distance between pressurized potable water and recycled water lines shall be at least four feet. Potable and recycled lines should not be installed in a common trench. Potable water lines shall be at least one foot above recycled water lines where these lines cross.
- Where it is not possible to meet the minimum separation requirements, alternative construction criteria may be applied. These alternative separation criteria for construction of mains are illustrated in Appendix F. Exceptions to the alternative criteria will be evaluated by the Program staff on a case-by-case basis, and only when it has been demonstrated that neither the basic nor the alternative criteria can be met.

System Cross-Connection Testing

At sites where both recycled water and potable water systems are present, a cross-connection test shall be performed before final approval is given to energize the two systems. This test is to ensure that there is absolute separation between the two systems. During the test, one system (e.g. the potable) is pressurized, while the other (e.g. the recycled) is depressurized. All outlets are then checked for presence or absence of flow. The test is then reversed, (i.e. recycled system is pressurized, and the potable system is depressurized), and all outlets are again checked for the presence or absence of flow.

The cross-connection test is coordinated by the Program, in the presence of the User Supervisor. Representatives of the regulatory agencies may also be present. The cross-connection test shall be conducted or observed by the District's Cross-Connection Control Specialist (Specialist) by the methods specified in the UPC, Appendix J 8 (2) and J (8) 3.

The Cross-Connection Test Report (Form C-2 in Appendix A) prepared by Program staff documents the results of the test. Cross-connection tests must be conducted prior to approving operation of the recycled water and potable water systems, and periodically thereafter, at a minimum frequency of every four years. The Program may specify more frequent tests for large or complex sites, after modifications to the User's potable or recycled water systems, or when there is any concern regarding a possible cross-connection at the site.

Backflow Prevention Assemblies

On premises using both recycled water and potable water, the potable water supply must be protected against any accidental cross-connections by the use of an approved backflow prevention assembly. A backflow prevention device is required at all potable water connections to the local potable water distribution system at the meter on a site where recycled water is present. The CDPH regulations allow two types of assemblies for abatement of cross-connection hazards at a User's service connection. Approved types of back flow prevention assemblies for recycled water use areas include the following listed below.

Air-Gap Separation

An air gap must be at least double the diameter of the supply pipe measured vertically above the top rim of the receiving vessel, and in no case less than one-inch. An air gap must be located as close as practical to the User's connection, and all piping between the User's connection and receiving tank must be entirely visible unless otherwise approved in writing by the District and CDPH.

Reduced Pressure Principle Backflow Prevention Assembly (RP)

The regulations require that all RPs conform to AWWA Standard C506-78(R83). An RP must be located as close as practical to the User's connection. This type of assembly must be installed at least twelve inches and not more than thirty-six inches above grade (measured from the lowest point of the assembly), and must have adequate side and top clearance to allow access for testing and maintenance. A minimum side and top clearance of twelve inches should be allowed.

Backflow Device Testing

All backflow assemblies must be on the District's "Approved Backflow Device List." The regulations require that assemblies be tested immediately after they are installed, relocated, or repaired, and not be placed in service unless they are functioning as required. The testing requirements for backflow devices will be specified by the District, at a frequency that may be quarterly, semi-annual, or annually depending on the site's degree of hazard.

The regulations require that backflow assemblies are tested at least annually by an AWWA certified backflow prevention tester. Program staff will conduct or observe all backflow prevention tests on the recycled water system including at the recycled water User sites. Backflow device testing equipment used in the recycled water system must not be used in the

potable water system. Repair or replacement of the backflow prevention assembly is the responsibility of the recycled water User.

Monitoring & Inspection

User Site Surveys

The District will inspect the User's recycled water system at least annually, as a requirement of the User's Recycled Water Use Permit. The inspections will include a visual inspection of all backflow prevention assemblies, exposed piping, valves, pressure reducing valves, sprinklers, controllers, signs, labels, tags, and all points of connections. The User Supervisor's records will be inspected to review the maintenance and education done since the last inspection. The District's inspector will complete an inspection form, and transmit any deficiencies observed to the User Supervisor for correction. The District inspector's report will include the following:

- The service location and identification
- The backflow prevention assembly or assemblies required for minimum protection
- A list of backflow prevention assemblies that are acceptable to the utility and the health agency
- The requirements for installing the backflow prevention assembly or assemblies
- The requirements for testing backflow prevention assemblies
- The date by which corrective action must be completed
- The authority under which the backflow protection requirement is made
- The contact person at the District, including address and phone number
- The consequences of failure to install, test, or maintain backflow prevention assemblies.

The District, the local health agency, and the Water Boards reserve the right to make unannounced inspections of the User's site and recycled water system.

User Self Monitoring

The User may be required under their Recycled Water Use Permit to submit a Self-Monitoring Report to the District. If so, the permit will specify the monitoring frequency and reporting requirements. In this report, the User will document the condition of the on-site recycled water system and all backflow prevention devices.

System Not In Compliance

If at any time the recycled water system is found to be out of compliance, the District shall issue a Notice of Non-Compliance to the User specifying the corrections required to bring the system into compliance. A site inspection shall be scheduled after a reasonable period of time to ensure compliance. Failure to comply Notice of Non-Compliance within the period of time specified will result in the District terminating delivery of recycled water to the User.

Emergency Procedures

Emergencies include, but are not limited to, line breaks in the distribution system and cross-connections between the User's potable and recycled water systems.

Notification

It is the responsibility of the User Supervisor to notify the District of any failure or cross-connection in the recycled water or potable water system, whether or not the User Supervisor believes a violation has occurred. It is also the responsibility of the User Supervisor to notify the District of any violation that might occur because of any action the User personnel might take during the operation of the recycled water or potable water systems. If there are any doubts whether a violation has occurred, it is the responsibility of the User Supervisor to report each occurrence to the District so a decision can be made.

Response

In case of a major earthquake, flood, fire, tornado, structural failure, or other incident that could likely damage the recycled or potable water systems, the User Supervisor should inspect the domestic and recycled water systems for damage as soon as it is safe to do so. If either system appears damaged, both the domestic and recycled water systems should be shut off at their points of connection. If the User Supervisor cannot inspect the site and damage is expected, then both water systems should be shut off at their points of connection. The User Supervisor should immediately contact the District and implement the Emergency Cross-Connection Response Plan described below.

Emergency Cross-Connection Response Plan

In the event that a backflow incident or cross-connection is suspected or occurs, the following procedures shall be implemented immediately.

1. Notify the District and the CDPH by phone. This notification is to be followed by a written notice within 24 hours. The written notice is to include an explanation of the nature of the cross-connection, date and time discovered, and the steps taken to mitigate the cross-connection(s).
2. Keep the potable water system pressurized and post "Do Not Drink" signs at all potable water fixtures and outlets.
3. Immediately shut down the recycled water supply to the facility at the meter.
4. Provide bottled water for employees until the potable water system is deemed safe to drink.
5. Collect water samples from the potable water system and perform a 24-hour bacteriological analysis. Water samples should be collected from the closest acceptable point to the cross-connection. The District may supply the appropriate sample bottles, obtain the samples, and arrange for laboratory analysis. See the District's Terms and Conditions for additional information.
6. Identify the cause and location of back flow and eliminate the cross-connection(s).
7. Conduct a cross-connection test to verify that all cross-connections were eliminated.
8. Obtain approval from the District and the CDPH before bringing the recycled water system back into service.
9. If the bacteriological analysis conducted in Step 5 is positive, chlorinate the potable water system maintaining a chlorine residual of at least 50 mg/I for 24 hours. Otherwise proceed to Step 11.
10. Flush the potable water system after 24 hours and perform standard bacteriological analysis.

11. If the results from Step 10 are acceptable, proceed to Step 12. Otherwise, repeat Steps 9-10.
12. Obtain final approval from the District and CDPH before removing signs.

Emergency Modifications

Emergency modifications or repairs can be made by the User to said system without the prior approval of the District to prevent contamination, damage, or a public health hazard. As soon as possible after the modification, but no more than 48 hours after the modification, the User shall notify the District of the emergency modifications and file a written description of action taken.

Service Termination

The District and the local health agency reserve the right to take any action necessary with respect to the operation of the User's recycled water system to safeguard the public health. If at any time during construction or operation of the recycled water system, real or potential hazards are evidenced, the District reserves the right and has the authority to terminate immediately, without notice, recycled water service in the interest of protecting the public health. These hazards could include situations such as cross-connections with the potable system, improper tagging, signing, or marking, or unapproved/prohibited uses.

Chapter 4 Recycled Water Facility Operations and Maintenance Plan

Introduction

The District's RWF produces recycled water meeting the State of California Title 22 requirements for unrestricted bodily contact. The RWF includes the following treatment processes:

- Coagulation/Flocculation;
- Sedimentation;
- Filtration; and
- Disinfection.

This Operations Plan includes an overview of each unit process; the overall instrumentation and control philosophy; reliability features; and monitoring, general staffing and maintenance requirements. The RWF Operations and Maintenance Manual for detailed operating and maintenance requirements more fully details each process.

Reference is made throughout this Operations Plan to four significant recycled water users, the Delta Energy Center (DEC), the Los Medanos Energy Center (LMEC), the City of Pittsburg, and the City of Antioch. LMEC and DEC are power plants located in the City of Pittsburg which use recycled water produced by the District for cooling water; the City of Pittsburg uses recycled water for landscape irrigation at a golf course and several city parks and public areas, sewer flushing, and dust control; and the City of Antioch is scheduled to begin using recycled water for four parks and a golf course.

Unit Process Description

Diversion Structure

Secondary effluent is diverted upstream of the District Wastewater Treatment Plant (WWTP) chlorine contact mixers from the secondary effluent junction box and routed to the RWF influent pumping station.

Influent Pumps

The influent pump station boosts secondary effluent from the diversion structure to the flocculating clarifier process units. The influent pumps are adjustable speed vertical turbine pumps, all of the same capacity. Influent Pump Station pumps are controlled primarily to match the total flow measured at the DEC flow meter and the Recycled Water Pump Station flow meter. The pump station flow is trimmed based on the level in the chlorine contact basin (CCB) effluent channel such that as the channel level rises, the influent pump station flow rate decreases. Similarly, as the tank level drops, flow will increase. A second trim of flow is based on the influent pump station wet well level. At decreasing water levels in the wet well, flow from the influent pump station decreases until the level stabilizes. The pump configuration consists of three duty pumps and a standby. Pump station flow will be limited to the corresponding flow equal to 5 gpm/sf times the number of operating filter cells, as indicated by the FILTER ON status from LP-CIA through C4A.

Influent Meter

An electromagnetic flow meter is installed at the discharge of the influent pump station to control chemical addition. Manually operated isolation and guard valves will allow removal of them meter for maintenance and repairs. When the meter is removed from service, a spool piece of pipe will be installed in its place in order to continue normal operation. During servicing, chemical addition will be set manually.

Chemical Feed System

Coagulant is fed to the flocculating clarifiers influent pipeline using chemical metering pumps. Two metering pumps (one duty and one standby) are provided, with both sized to deliver the maximum required coagulant dosage at the maximum production rate. Coagulant metering pumps are variable speed controlled. Chemical feed of coagulant is controlled primarily to maintain a constant dosage that will be flow paced based on a signal from the influent meter at the influent pump station. The metering pumps can also be set to deliver coagulant at a constant flow rate.

Coagulant is stored in two permanent storage tanks in a containment area that is separate from the metering pumps.

Flocculant is diluted and fed to the flocculating clarifier using polymer metering and blending units. There is one dedicated polymer blending unit for each flocculating clarifier. The third unit serves as a standby and can also be used to feed cationic polymer to the filter. When both clarifiers are in service, the dosage is split evenly between both polymer blending units. Each blending unit is sized to deliver the estimated maximum required polymer dosage to each flocculating clarifier at the maximum production rate. Cross-connecting piping and valving is provided for operational flexibility. Polymer blending units are variable speed control with local manual stroke adjustment. The total polymer dosage is controlled primarily to maintain a constant dosage that will be flow paced based on a signal from the influent meter at the influent pump station.

The total dosage for the clarifiers is split between the two polymer blending units based on an ON/OFF signal from the clarifiers to indicate that the train is in operation. When only one clarifier is in service, the total dosage will come from the polymer blending unit dedicated to that clarifier. Flocculant is delivered by the supplier in "tote bins" which are lowered into place in the containment area and connected to the blending units.

Flocculating Clarifiers

The flocculating clarifiers are a sand-ballasted flocculation and sedimentation process used to reduce TSS and turbidity. This process is normally operated automatically through the Programmable Logic Controller (PLC). Startup and shutdown of each process train is normally an automatic sequence initiated by the operator. The flocculating clarifier process consists of mixers, scrapers, and pumps. Each process train operates independently of the other. The shutdown sequence may also be initiated automatically due to certain alarm conditions.

The flocculating clarifiers produce a sidestream of tertiary sludge combined with a small portion of the micro-sand used for ballasting. The tertiary sludge is pumped through a drain to the main influent manhole at the WWTP where it is re-settled in the primary clarifiers and conveyed to the digesters. Two tertiary sludge pumps are provided (one duty and one standby). The flocculating clarifiers also have three recirculation pumps per train, each sized for 50% of the maximum recirculation flow (two duty and one standby). Flocculating clarifier effluent is collected in a common effluent channel.

A sodium hypochlorite feed is provided at the influent pump station to provide the ability to shock-chlorinate the flocculating clarifier units and remove biological growth. Control of this system is manual and is not part of the normal operating procedure.

Filters

The clarified effluent flows to a common filter influent channel where flow is evenly split among the operating filter cells. Flow is distributed among the modules in each cell by distribution piping. Within each module, influent water travels to the bottom of the bed through internal piping and is driven upward through the bed by the influent head. Filtered water collects above the filter beds and exits the filter over weirs.

Continuous backwashing of the filter beds is performed automatically. Compressed air is delivered to the bottom of each filter bed by air tubing. The air is released at the bottom and moves upward. At the top, the backwash enters a weir box where sand is separated from the backwash water and moves back to the top of the filter bed. The backwash water leaves the filter over a weir. Backwash water is conveyed back to the RWF influent pump station.

Filter effluent turbidity is measured by drawing a sample from the pipe between the filter effluent channel and the chlorine contact mixing structure. If effluent turbidity exceeds the maximum allowable, a recycled water bypass will be automatically initiated.

Sodium hypochlorite feed is provided at the filter influent channel to provide the ability to shock-chlorinate the filters and remove biological growth. Control of this system is manual and is not part of the normal operating procedure.

Disinfection System

Disinfection of the filter effluent is done by injecting sodium hypochlorite and providing detention time for the flow in the contact basins. The contact basins have baffles that will create serpentine flow, prevent short-circuiting, and provide the required contact time under all conditions. Hypochlorite is injected in the mixing box upstream of the serpentine channels, where two mechanical mixers mix the hypochlorite with the filtered effluent. Weirs are installed to direct the flow along the axis of each mixer.

There are two contact basins, each sized to deliver one half of the flow at maximum demand. Effluent weirs maintain the minimum volume within the basins needed to meet the contact time requirements. There are target baffles at the entrance to each basin to evenly distribute the influent flow, as well as redwood baffles in each channel to maintain even flow distribution

across the water column. The basins are sized assuming a 75% baffling efficiency in the contact basins.

Manual sluice gates at the entrance of each contact basin provide isolation. Basin dewatering for maintenance and cleaning is performed by opening mud valves located at the downstream end of the contact channels. The mud valves drain the basins to the plant drain system.

The WWTP hypochlorite facility includes three identical positive displacement diaphragm-type metering pumps, each capable of delivering between 4.5 and 168 gallons per hour. One pump feeds the secondary effluent disinfection needs at the WWTP. Another pump feeds the R WF disinfection system. The third pump is a standby pump for either purpose, and also provides chlorination capability to control biogrowth in the flocculating clarifiers and the filters. Hypochlorite dosage is controlled automatically based on recycled water chlorine residual and recycled water production flow rate. The required dosage is set to maintain a chlorine residual contact time of 450 mg-min/L. Assuming a modal contact time of 90 minutes, the initial chlorine residual setpoint is 5 mg/L. The dosage is automatically adjusted via algorithms programmed into the RWF control system to maintain a minimum chlorine residual of 5 mg/L at the chlorine effluent channel. Chlorine residual is monitored continuously using chlorine residual analyzers at the chlorine contact basin influent and effluent channels.

Recycled Water Distribution and Pumping

The Distribution Pump Station delivers Title 22 quality recycled water from the chlorine contact basins to the recycled water distribution system which serves the LMEC power plant and irrigation customers. Three duty units and one standby unit are provided. Each pump is a barrel-type installation including a pump, electric motor, discharge air valve, and discharge check valve, and a discharge manual isolation valve. All pumps will have adjustable speed drives located in the Electrical Building. The Recycled Water Pump Station control will maintain a pressure operating range in the discharge header. The control scheme needs to allow for two scenarios: irrigation period (high pressure) delivery and non-irrigation (low pressure) delivery. During times when irrigation demand is being served (operator selected), the pumps would have to deliver water at a higher pressure, therefore operating at a higher speed. When only the LMEC power plant customer is being served, the pumps would operate at lower speeds with a lower delivery pressure. Each delivery scenario would have an operating band of pressure that would be maintained by the Recycled Water Pump Station.

DEC Pump Station and Storage

The DEC pumps deliver Title 22 quality recycled water from the chlorine contact basins to the DEC power plant. Normally the DEC pumps discharge to the Recycled Water Storage Tank. The Storage Tank feeds the DEC plant by gravity.

There are three duty units and one standby unit mounted in a concrete wet well structure. Each pump will include a pump, electric motor, discharge air valve, discharge check valve, and a manual discharge isolation valve. All pumps are constant speed.

The DEC Pump Station pumps are controlled based on level in the wet well chlorine contact basin effluent channel. The effluent pumps will operate to maintain level within the operating

band. Secondary control will be based on the Recycled Water Storage Tank level. A constant speed pump will be started and will operate for two minutes (adjustable time delay). If the wet well level is above the operating band, the next pump will start and the sequence will continue until the operating level is within the operating band. Similarly with decreasing wet well water levels below the operating band, an operating pump will be shut off and the system allowed to stabilize for 2 minutes (adjustable). If the wet well level remains below the operating band, the next pump will be shut off, and the sequence will continue until the wet well level is within the operating band.

The 2.1 million gallon recycled water storage tank allows the DEC plant to vary their demand using the operational storage in the tank. The LMEC plant has a 600,000 gallon storage tank on the power plant site. The tank also provides a maximum of 4 hours of emergency storage for the power plants in the event that the RWF goes off-line. The emergency storage provides time for the power plants to activate their standby cooling water supplies if the RWF outage is expected to be long.

Recycled Water Bypass

Upon detection of water that does not meet the minimum quality requirements for turbidity or chlorine residual measured at the contact basin effluent channel, the control system will initiate an emergency shutdown of the effluent pump station. This will cause the chlorine contact basin effluent to overflow a weir at the pump station and flow back to the influent pump station via the recycled water bypass line. From there, the bypass water can be returned to the RWF for additional treatment, or returned to the WWTP for disinfection and discharge through the outfall.

LMEC and DEC Blowdown Return Metering

Return flows (blowdown) from the two power plants are metered prior to discharging into the WWTP chlorine mixing structure. The blowdown metering station consists of parallel, above ground meter runs for the two return streams. The blowdown meters are electromagnetic meters with isolation and guard valves located upstream and downstream of the meter.

Supplemental Water

Supplemental water from the Contra Costa Canal is available to supply water to the recycled water customers under two conditions:

- Case 1: If there is a process upset within the DDSD secondary plant and the secondary effluent is not usable as a feed water to the RWF, canal water is introduced through an air gap into the RWF influent pump station. The canal water is treated through the RWF treatment process and be discharged through the distribution system.
- Case 2: If the RWF treatment facilities are out of service, supplemental canal water can be introduced through an air gap into the distribution system downstream of the treatment facilities.
- In either case, an approved air gap is provided to separate the canal water from the RWF facilities.

Instrumentation and Controls

Facility Alarms

The major RWF alarms, action, and setpoint criteria are shown in the table below. All alarms are annunciated through the SCADA system to the WWTP control center and at operator control· terminals located throughout the plant.

Table 4-1, located at the end of this section, summarizes the key alarms and interlocks for the RWF.

Control Overview

The control system consists of distributed local automatic control with centralized SCADA. The local control shares data for process control, but is not dependent on operation of any central SCADA computer. Manual control is available at all electrical equipment.

Manual Control at Equipment

Local processes are manually controllable from operating stations near each piece of equipment. These controls include ON/OFF/ENABLE selection. When manual control is desired, ON or OFF is selected and the equipment operates independently of other controls. When operating in manual control, automatic controls are disabled.

When manual control is used, PLC-generated interlocking will not interfere with equipment operation. This mode of control serves as the lowest level of manual control, which is available when all other upstream systems have failed or are unavailable. This manual mode of control requires staff to physically operate the push-buttons and selector switches on the electrical equipment.

Automatic Control

Supervisory control of RWF equipment uses a PLC and a distributed system of networked computers running SCADA software. The RWF supervisory control is integrated with the SCADA system at the WWTP. A PLC with remote I/O is installed in the Electrical Room at the RWF. When in automatic mode, control of the RWF process is done through automatic programmed controls residing within the PLC. The PLC has a graphical operator interface to allow for process monitoring and control.

Reliability Features

Reliability and redundancy features of the RWF include the following:

Recycled Water Bypass Line: The recycled water bypass automatically overflows in the event that the plant produces water that does not meet Department of Health Services (DOHS) Title 22 standards. The recycled water is sent back to the RWF influent pump station. From there, the bypass water can be returned to the R WF for additional treatment, or returned to the WWTP for disinfection and discharge through the outfall. An alarm will indicate the initiation of an emergency bypass at the WWTP operations center.

Redundant Equipment: The influent pumps, recycled water delivery pumps, chemical metering pumps, clarifier recirculation pumps, clarifier blowdown pumps, and hypochlorite feed pumps have standby units in case of pump failure or if a pump needs to be taken off line for maintenance.

Regulatory Monitoring and Compliance

Performance Monitoring Program

The monitoring program complies with all CDPH and Water Board requirements for water reuse. Grab and composite samplers are located on site for regulatory monitoring.

Annual Report to CDPH/Regional Water Board

The Monitoring Criteria and Frequency for RWQCB Order 96-011 are outlined in Table 4-2 below. Any violations of CDPH criteria that impact or threaten public health or water quality shall be reported to the Regional Board by phone within 24 hours, followed by a written report within 5 days describing the corrective actions taken.

An annual report will be submitted to the Regional Board by March 15 of each year. The report will include a tabulation of the recycled water analyses listed below. A summary of effluent violations and subsequent corrective actions will be reported as well.

Table 4-2 Monitoring Criteria and Frequency under RWQCB Order 96-011

Constituent	Location	Limit	Type	Frequency
Total Coliform	Recycled Water	2.2 MPN/100 ml (median)	Grab	1/day
Turbidity	Recycled Water	Note 1	Continuous	
Total Chlorine	Recycled Water	5 mg/l min	Continuous	
Dissolved Oxygen	Recycled Water	1.0 mg/l min	Grab	3/week
Dissolved Sulfide	Recycled Water	0.1 mg/l max	Grab	3/week
Priority Pollutants	Blowdown Streams		Composite	Same as WWTP
BODs	Blowdown Streams		Composite	Same as WWTP
TSS	Blowdown Streams		Composite	Same as WWTP

Note1: Turbidity shall not exceed the following limits:

- 2 NTU daily average
- 5 NTU 5% of any 24-hour period
- 10 NTU anytime

Annual Report to the State Water Board

The Monitoring Criteria and Frequency for SWRCB Order 2009-0006 are outlined in Table 4-3 below For monitoring for the, the following table lists the requirements for water quality management for water being used on each User Area.

Table 4-3 Monitoring Criteria and Frequency under SWRCB Order 2009-0006				
Parameter	Units	Sample Type	Monitoring Frequency	
Volume of recycled Water	Acre-feet	Varies	Sampling	Reporting
Total number of Use Areas/Basin	#	Observation	Annual	Annual
Total area of application	Acres	Observation	Monthly	Annual
Nitrogen Application rate	Lbs/acre/month	Calculated	Monthly	Annual
Salinity application rate	Lbs/acre/month	Varies	Monthly	Annual

For any spills over 50,000, the Producer shall immediately report orally or electronically if available, information of the noncompliance as soon as (1) the District has knowledge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures to the Regional Board.

Spills of 1,000 gallons or more shall be reported as soon as possible, but not later than 72 hours after becoming aware of the unauthorized discharge.

An annual report will also be submitted to the State Board by April 15th of each year. This report will include a tabulation of the recycled water analyses listed in Table 4-3. A summary and discussion of the compliance record, of effluent violations and of subsequent corrective actions taken and planned to bring the discharge into full compliance with the General Permit. It will also include a description of the measures the District employed to conduct periodic inspections of the Use Areas. It will include any indications of unauthorized cross-connections and all actions taken or planned for correcting violations, such as operation or facility modifications. The report will also contain any new amendments to the Title 22 Engineering Report and approval letters prepared by CDPH, if any.

Monitoring Device Calibration

Monitoring device calibration is done once monthly for turbidimeters and chlorine analyzers. Verification of instrument readings is done bi-weekly by taking a grab sample. Table 4-4 below lists the monitoring equipment calibration criteria.

Table 4-4 Monitoring Equipment Calibration and Frequency			
Constituent	Location	Type	Monitoring Frequency
Turbidity	Secondary Effluent	Grab	Once every 2 weeks
Turbidity	Recycled Water	Grab	Once every 2 weeks
Total Chlorine	Recycled Water	Grab	Once every 2 weeks
Total Chlorine	Blowdown streams	Grab	Once every 2 weeks

Treatment Plant Operations and Staffing

The RWF is staffed 24 hours per day by certified operators. All RWF alarms are annunciated at the WWTP central control room and at operator control terminals located throughout the plant. The WWTP central control room is manned 24 hours per day. Operators on all shifts are trained in emergency and alarm responses.

Maintenance

Detailed operations and maintenance manuals are kept for all major equipment. All equipment will be maintained in accordance with the manufacturer's specifications. Maintenance data for all equipment will be tracked in the District's Computerized Maintenance Management System to keep record of history and schedule maintenance activities.

Table 4-1 Summary of Alarms and Interlocks

INFLUENT PUMPING

Item	Tag Number	Condition	Action
Pump Station Wet Well Level	LE A1	HIGH	Alarm
		LOW	Alarm
		LOW LOW	Alarm, trip all pumps
Pump Discharge Pressure	PSL A3	LOW (with 15 seconds time delay, adjustable)	Alarm, shutdown all pumps using Controlled Shutdown Sequence procedure.
	PSH A2-1,2,3,4	HIGH (with 15 seconds time delay, adjustable)	Alarm, trip individual pump
Motor Start		FAIL	Alarm
Motor Temperature	TSH	HIGH	Alarm, trip individual pump
Influent Pump Station Flow Rate	FE A5	Setpoint Discrepancy (influent P.S. fails to meet objective flow rate within 95% after 5 minutes, adjustable time delay)	Alarm
Seal Water Flow	FSL A2-1,2,3,4	LOW	Alarm, trip individual pump
Recycled Water Bypass Level	LSH A1	HIGH	Alarm
Secondary Effluent Turbidity	AIT A4	HIGH	Alarm at 5 ntu
Chlorine Contact Basin/Effluent Channel Wet Well Level	LE E1	HIGH HIGH	Alarm, shutdown all Influent pumps using Controlled Shutdown Sequence procedure.
Filter Effluent Turbidity	AIT D3	HIGH HIGH	Alarm, shutdown all pumps at 10 ntu using Controlled Shutdown Sequence procedure.
Recycled Water Chlorine Residual	AIT D4-1,2	LOW LOW	Alarm, shutdown all pumps using Controlled Shutdown Sequence procedure.

FLOCCULATING CLARIFIER

Item	Tag Number	Condition	Action
Coagulated pH Meter	AIT A6	HIGH	Alarm
		LOW	Alarm
Coagulation Tank Mixer Motor Start	MX12201, 2	FAIL	Alarm
Injection Tank Mixer Motor Start	MX12211, 2	FAIL	Alarm
Maturation Tank Mixer Motor Start	MX12221, 2	FAIL	Alarm
Sludge Scraper Motor Start	DU12201, 2	FAIL	Alarm
Sludge Scraper Torque	DU12201, 2	HIGH	Alarm
Clarifier Effluent Turbidity	AIT B8-1, 2	HIGH	Alarm

Table 4-1 Summary of Alarms and Interlocks			
Microsand Recirculation Pump Seal Water Flow	FSL B2-1, 2, 3 FSL B4-1, 2, 3	LOW	Alarm, Trip Pump
Microsand Recirculation System	P12201 – P12206 (alarm generated by PLC logic – see Control Strategy)	FAIL	Alarm, Initiate auto-shutdown sequence for affected process train
Microsand Recirculation Pump Discharge Pressure	PSH / PSL B2-1, 2, 3 PSH / PSL B4-1, 2, 3	HIGH	Alarm, Stop Pump, Start next pump in sequence
		LOW	Alarm, Stop Pump, Start next pump in sequence
Sludge Storage Basin Level	LSHH B5	HIGH HIGH	Alarm. START standby pump. After adjustable delay, if condition persists, sounds second alarm and initiate auto shutdown sequence for both process trains.
	LSLL B5	LOW LOW	Alarm. Trip all pumps.
FILTRATION			
Item	**Tag Number**	**Condition**	**Action**
Filter Air Compressors	CP12301, 2	TROUBLE	Alarm
Refrigerated Dryer	ADRY12301	TROUBLE	Alarm
Filter Effluent Turbidity	AIT D3	HIGH	Alarm
		HIGH HIGH at 10 ntu	Alarm and initiate Controlled Shutdown Sequence of Influent Pumps, DEC pumps, and Recycled Water Delivery Pumps
DISINFECTION			
Item	**Tag Number**	**Condition**	**Action**
Influent Chlorine Residual	AIT D2	LOW	Alarm and Increase Dosage Rate of Hypochlorite Pump
		LOW LOW	Shutdown Influent and Effluent Pumps
		HIGH	Alarm and Decrease Dosage Rate of Hypochlorite Pump
Effluent Chlorine Residual	AIT D4-1,2	LOW	Alarm
		LOW LOW	Alarm and initiate Controlled Sequence Shutdown of Influent, DEC, and Recycled Water Delivery pump stations
		HIGH	Alarm
Mixer Motor Start		FAIL	Alarm
Filter Effluent Turbidity	AIT D3	HIGH	Alarm (initial setpoint is 5 ntu)

Table 4-1 Summary of Alarms and Interlocks

		HIGH HIGH	Alarm and initiate Controlled Sequence Shutdown of Influent, DEC, and Recycled Water Delivery pump stations

DEC PUMP STATION AND STORAGE

Item	Tag Number	Condition	Action
Chlorine Contact Basin/Effluent Channel Wet Well Level	LE E1	HIGH	Alarm
		LOW	Alarm
	LSL E1	LOW LOW	Alarm, trip all pumps
Pump Discharge Pressure	PSH E2-1,2,3,4	HIGH (with 15 seconds time delay, adjustable)	Alarm, trip individual pump
Motor Start		FAIL	Alarm
Storage Tank Level	LE E3	HIGH	Alarm
		HIGH HIGH	Alarm, trip all DEC pumps
		LOW	Alarm
		LOW LOW	Alarm

RECYCLED WATER DELIVERY

Item	Tag Number	Condition	Action
Pump Barrel Level	LSL F3-1,2,3,4	LOW LOW	Alarm, trip pump
Pump Discharge Pressure	PIT F1	LOW (with adjustable time delay)	Alarm, shutdown all pumps using Controlled Shutdown Sequence procedure.
	PIT F1	HIGH in common discharge pipe	Alarm, shutdown all pumps using Controlled Shutdown Sequence procedure.
	PSH F3-1,2,3,4	HIGH (with adjustable time delay)	Alarm, trip individual pump
Motor Start		FAIL	Alarm
Motor Temperature	TSH	HIGH	Alarm, trip individual pump

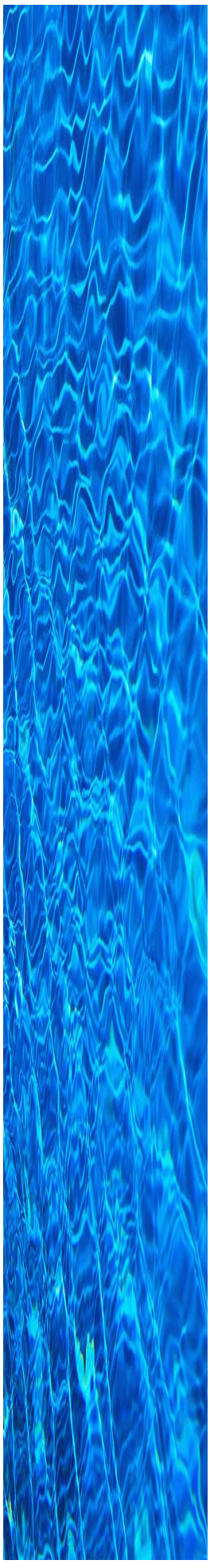
CHEMICAL FEED (COAGULANT)

Item	Tag Number	Condition	Action
Storage Tank Level	LE G2-1,2	HIGH	Alarm
		LOW	Alarm
		LOW LOW	Alarm, trip all pumps
Pump Discharge Pressure	PSH G3-1,2	HIGH (with adjustable time delay)	Alarm, trip individual pump
Motor Start		FAIL	Alarm
Eyewash Station Activation	FSH G7-1,2,3,4	Flow Detection	Alarm
Containment Sump Level	LSH G1	HIGH	Alarm

CHEMICAL FEED (POLYMER)

Item	Tag Number	Condition	Action

Table 4-1 Summary of Alarms and Interlocks			
Motor Start		FAIL	Alarm
Containment Sump Level	LSH G4	HIGH	Alarm
CHEMICAL FEED (HYPOCHLORITE)			
Item	**Tag Number**	**Condition**	**Action**
Hypochlorite Vault Level	LSH G8	HIGH	Alarm, trip both pumps
Hypochlorite Storage Tank Level		LOW LOW	Alarm, trip both pumps



Appendix A
Customer Permitting Forms

A-1 Application for a Permit to Use Recycled Water

A-2 Recycled Water Service Plan Check List

A-3 Field Verification of Service Plan

A-4 Requirements for Engineering Reports for Dual Plumbed Systems

A-5 Permit to Use Recycled Water

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

APPLICATION FOR A PERMIT TO USE RECYCLED WATER

SITE WHERE USE IS PROPOSED	(Program Use Only)
Name or Description of Site:	Date Received / /
	Date Distributed / /
Location or Address:	Date of Determination / /
	❑ Accepted ❑ Returned ❑ Rejected
	Customer Number:
	Notes:

APPLICANT INFORMATION

Applicant is ❑ Owner ❑ Lessee ❑ Other (describe)		
Applicant's Name		Title
Address		Telephone No.
City	State	Zip
Owner's Name (if different)		
Contact Person		Telephone No.
Address		
City	State	Zip

CUSTOMER'S DESIGNATED RECYCLED WATER SUPERVISOR (See Note 1)

Relationship to Applicant: ❑ Same ❑ Partner ❑ Employee ❑ Other:		
Name		Title
Business Address		
City	State	Zip

The Customer's Recycled Water Supervisor must be reachable at all times in case of emergency.

All numbers are for District use only.

Telephone number during regular business hours:

EMERGENCY NUMBERS:

❑ Evening: ❑ Message:

❑ Beeper: ❑ Cellular:

PROPOSED RECYCLED WATER USES

❑ Landscape Irrigation: Approx. area _____	❑ Ornamental Pond ❑ Recreational ❑ Industrial
❑ Agriculture: Approx. area _____	❑ Fire Suppression ❑ Construction ❑ Other

Briefly describe the proposed use checked above. Include types of plants to be irrigated, industrial process served, etc.

RECYCLED WATER DEMAND ESTIMATES	FIRE SUPPRESSION
Name or Description of Site:	Peak Design Flow GPM
Estimated Annual Use ❑ CCF ❑ Gallons	Service Line Size in inches
Peak Use in Gallons/Minute (GPM)	
Hours of Use	
Days of Use	
❑ Dry Season Only ❑ Year-round	

ATTACHMENTS

❑ Site Drawing (all projects)

❑ Impoundment O&M Plan (if serving a reservoir or pond)

❑ Other:

IS RECYCLED WATER TO BE PIPED OR USED WITHIN AN OCCUPIED BUILDING? ❑ Yes ❑ No

(If yes, a Building Permit is required, and Engineering Report must be submitted.)

RECYCLED WATER USER SUPERVISOR	APPLICANT
I have read and understand the *DDSD Recycled Water Use Permit Terms and Conditions.* I will operate the recycled water system in compliance with all conditions of the Permit to Use Recycled Water.	I designate the named person as the Recycled Water User Supervisor in accordance with the *DDSD Guidelines for Recycled Water Users.* I am a principal owner of this site or a duly authorized representative and certify that the information contained in this application is true and correct to the best of my knowledge.
Print _____	Print _____
Signature _____	Signature _____
Date _____	Date _____

Note 1: Recycled Water User Supervisor – It is the responsibility of the User to provide surveillance and supervision of the recycled water system in a way that assures compliance at all times with current regulations. In order to accomplish this, the User shall designate, with the approval of the District, a Recycled Water User Supervisor (User Supervisor) to provide a liaison with the Program. This person may represent the owner, tenant, or property manager as appropriate; however, he/she must be responsible for the recycled water system at the site and be available at all times, with authority to carry out any requirements of the Recycled Water Program.

Refer to the *Recycled Water Use Permit Terms and Conditions* for a more comprehensive description of the responsibilities of the Recycled Water User Supervisor.

Copies: _____ Field Inspector
_____ Applicant
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

RECYCLED WATER SERVICE PLAN CHECK LIST

(To be completed by District)

SITE WHERE USE IS PROPOSED	REVIEW STATUS
Name or Description of Site:	
Location or Address:	Date Received / /
	Date Reviewed / /
	Reviewed by:
Contact Person Name and Telephone:	❑ Approved ❑ Returned ❑ Rejected
	Site Number:

THIS IS ❑ New Construction ❑ Existing Facility Converting to Recycled Water Use

THE SITE AND PIPING PLANS ARE ❑ Separate ❑ Combined Number of Sheets _____

A. ADEQUACY OF SITE PLAN

ARE THE FOLLOWING SHOWN ON THE SITE PLAN?

Yes	No	N/A	General	Yes	No	N/A	
❑	❑	❑	All Buildings on the Site	❑	❑	❑	Adjacent Streets
❑	❑	❑	The Boundaries of the Intended Use Area	❑	❑	❑	Locations of All Major Improvements on the Site

Yes	No	N/A	Public Facilities Supplied with Recycled Water or Potable Water Source	PLANS INDICATE NONE ❑			
❑	❑	❑	Drinking Fountains	❑	❑	❑	Swimming and Wading Pools
❑	❑	❑	Restrooms	❑	❑	❑	Decorative Fountains
❑	❑	❑	Outdoor Eating Areas	❑	❑	❑	Showers
❑	❑	❑	Snack Bars	❑	❑	❑	Other: _____

Yes	No	N/A	Water Features Within 100 feet of Site Plan (may be off property)				
❑	❑	❑	Wells	❑	❑	❑	Reservoirs
❑	❑	❑	Lakes	❑	❑	❑	Storage Tanks
❑	❑	❑	Ponds	❑	❑	❑	Other: _____

B. ADEQUACY OF PIPING PLANS

ARE THE FOLLOWING SHOWN ON THE PIPING PLANS?

Yes	No	N/A		Yes	No	N/A	
❑	❑	❑	Potable Water Service Connection(s)	❑	❑	❑	Fire Service Connection(s)
❑	❑	❑	Recycled Water Service Connection(s)	❑	❑	❑	Other: _____
❑	❑	❑	The complete recycled water system(s)				
❑	❑	❑	The potable system in the vicinity of the recycled water connection				
❑	❑	❑	All sources of recycled water and potable water				
❑	❑	❑	The location and type of all existing and new backflow prevention devices				
❑	❑	❑	The location and type of all existing and new water meters				
❑	❑	❑	The location of outdoor hose bibs, quick couplers and other points of ready access to recycled or potable water systems				
❑	❑	❑	The location of irrigation controllers, valves, and fixtures (sprinklers, etc.)				
❑	❑	❑	Other relevant items: _____				

C. PLAN ADEQUACY DETERMINATION

Yes No N/A

❑ ❑ ❑ Plans are adequate for determining compliance

❑ ❑ ❑ Plans are incomplete; in order to continue the recycled water application process, please make the following changes to the site plan or piping plans:

D. COMPLIANCE REQUIREMENTS

Yes No N/A GENERAL

❑ ❑ ❑ Are the proposed uses of recycled water and use areas approved under Title 22?

Yes No N/A **SEPARATION OF RECYCLED AND POTABLE PIPING**

Note: Review separation of recycled water and potable water piping relative to DHS guidelines:

❑ ❑ ❑ Are "basic separation" standards met (10' horizontal, 1' vertical, potable above recycled)

❑ ❑ ❑ If No, are "alternative construction criteria" met (see IRWD Standard Drawing W.14, or MMWD Fig. 3)

❑ ❑ ❑ If No, describe deviations and require applicant to justify why standards or alternative criteria cannot be met.

Yes No N/A **BACKFLOW PREVENTION DEVICES**

Note: All premises served by <u>both</u> potable water and recycled water shall have an air gap or reduced pressure principal backflow prevention device (RP) on the potable water supply.

❑ ❑ ❑ Are the potable water and recycled water systems completely separated, with no cross-connections?

❑ ❑ ❑ Are the proper backflow prevention devices shown in the proper locations for protection of the public potable water distribution system, per Title 17 requirements? (Reduced pressure principal backflow prevention devices should be located as close as possible to all potable water meters and at least 12 inches above grade).

❑ ❑ ❑ Do conditions of use dictate that the recycled water distribution system be protected by a backflow prevention device? (Such protection would be indicated in cases such as: recycled water system feeds an industrial process that involves chemicals; the recycled water irrigation system has chemical fertilizer injection; recycled water connects to an irrigation water storage pond without air gap).

❑ ❑ ❑ Are the proper backflow prevention devices shown in the proper locations for protection of <u>on-site</u> potable water supply per applicable UPC requirements? (Though not specifically related to recycled water, these devices should be shown on the plans. Backflow prevention devices are required at non air-gap points of connection to ponds, wading pools, swimming pools, fountains, etc., where the impoundment is supplied by the potable water on-site piping. Usually atmospheric vacuum breakers located near the point of connection are adequate, unless there is valving downstream of the protection device, in which case pressure vacuum breakers are required).

Comments: _____

D. COMPLIANCE REQUIREMENTS (continued)

WELLS

Yes	No	N/A	
❑	❑	❑	If there are wells located on-site or near the use site, are the wells separated from all recycled water irrigation use areas by at least 50 feet and from all recycled water impoundments by at least 100 feet? Comments: _____

CONSTRUCTION DETAILS

Yes	No	N/A	
❑	❑	❑	If plans are used for construction, do the plans show all necessary details to properly construct the system?
❑	❑	❑	Do plans Identify the appropriate materials for recycled water use? (e.g. purple pipe or wrap)
❑	❑	❑	Are the appropriate types and locations of signs and other identification devices indicated?
❑	❑	❑	If the design calls for an air gap, is a suitable detail provided?
❑	❑	❑	Are there any hose bibs shown on the recycled water system? (Hose bibs are permitted on the recycled system)
❑	❑	❑	If quick connects are used on the recycled system, are they of a different type than on the potable system?

Comments: _____

E. COMPLIANCE DETERMINATION

❑ Approved. The recycled water system shown on this service plan complies with the *Guidelines for Recycled Water Users* and other applicable criteria.

❑ **Not Approved.** The following corrections must be made before site plan is approved:

Date _____ Signed _____

Copies: _____ Field Inspector
_____ Applicant
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM
FIELD VERIFICATION OF RECYCLED WATER SERVICE PLAN
(To be completed by District)

SITE WHERE USE IS PROPOSED	REVIEW STATUS
Name or Description of Site:	Data of Site Inspection:
Location or Address:	Inspected By: ❑ Approved ❑ Not Approved (see Section D)
Contact Person Name and Telephone:	

THIS IS ❑ New Construction ❑ Existing Facility Converting to Recycled Water Use

THE SITE AND PIPING PLANS ARE ❑ Separate ❑ Combined Number of Sheets _____

A. FIELD VERIFICATION OF SITE PLAN

ARE THE FOLLOWING ACCURATELY SHOWN ON THE "AS-BUILT" SITE PLAN?

Yes	No	N/A	General	Yes	No	N/A	
❑	❑	❑	All Buildings on the Site	❑	❑	❑	Adjacent Streets
❑	❑	❑	The Boundaries of the Intended Use Area	❑	❑	❑	Locations of All Major Improvements on the Site

Yes	No	N/A	Public Facilities Supplied with Recycled Water or Potable Water Source	PLANS INDICATE NONE ❑			
❑	❑	❑	Drinking Fountains	❑	❑	❑	Swimming and Wading Pools
❑	❑	❑	Restrooms	❑	❑	❑	Decorative Fountains
❑	❑	❑	Outdoor Eating Areas	❑	❑	❑	Showers
❑	❑	❑	Snack Bars	❑	❑	❑	Other: _____

Yes	No	N/A	Water Features Within 100 feet of Site Plan (may be off property)				
❑	❑	❑	Wells	❑	❑	❑	Reservoirs
❑	❑	❑	Lakes	❑	❑	❑	Storage Tanks
❑	❑	❑	Ponds	❑	❑	❑	Other: _____

B. FIELD VERIFICATION OF PIPING PLANS

ARE THE FOLLOWING ACCURATELY SHOWN ON THE "AS-BUILT" PLANS?

Yes	No	N/A		Yes	No	N/A	
❑	❑	❑	Potable Water Service Connection(s)	❑	❑	❑	Fire Service Connection(s)
❑	❑	❑	Recycled Water Service Connection(s)	❑	❑	❑	Other: _____
❑	❑	❑	The complete recycled water system(s)				
❑	❑	❑	The potable system in the vicinity of the recycled water connection				
❑	❑	❑	All sources of recycled water and potable water				
❑	❑	❑	The location and type of all existing and new backflow prevention devices				
❑	❑	❑	The location and type of all existing and new water meters				
❑	❑	❑	The location of outdoor hose bibs, quick couplers and other points of ready access to recycled or potable water systems				
❑	❑	❑	The location of irrigation controllers, valves, and fixtures (sprinklers, etc.)				
❑	❑	❑	Other relevant items: _____				

C. VERIFICATION OF COMPLIANCE REQUIREMENTS

Yes No N/A **BACKFLOW PREVENTION DEVICES**
Note: All premises served by both potable water and recycled water shall have an air gap or reduced pressure principle backflow prevention device (RP) on the potable water supply.

❑ ❑ ❑ Are the potable water and recycled water systems completely separated, with no cross connections?

❑ ❑ ❑ Are the proper backflow prevention devices installed in the proper locations for protection of the public potable water distribution system, per Title 17 requirements? (Reduced pressure principal backflow prevention devices should be located as close as possible to all potable water meters and at least 12 inches above grade).

❑ ❑ ❑ If a backflow device on the recycled water system was required, was it properly installed?

❑ ❑ ❑ If additional backflow devices were required to protect the on-site potable water system, were the devices properly installed?
Comments: _____

Yes No N/A **WELLS**
❑ ❑ ❑ Are irrigated use areas separated by at least 50 feet from any domestic water supply well or water supply reservoir?

❑ ❑ ❑ If there are wells located on-site or near the use site, are the wells separated from all recycled water irrigation use areas by at least 50 feet and from all recycled water impoundments by at least 100 feet?
Comments: _____

Yes No N/A **CONSTRUCTION DETAILS**
❑ ❑ ❑ Was purple pipe or wrap used for recycled water piping?

❑ ❑ ❑ Are the appropriate types and locations of signs and other identification devices in place?

❑ ❑ ❑ Are there any hose bibs shown on the recycled water system? (Hose bibs are not permitted on the recycled system)

❑ ❑ ❑ If quick connects are used on the recycled system, are they of a different type than on the potable system?
Comments: _____

D. FIELD VERIFICATION - SUMMARY

Yes No N/A
❑ ❑ ❑ "As-built" Plans are representative of recycled water use area

❑ ❑ ❑ Site meets compliance requirements for use of recycled water
If "no" is checked on either of the above two lines, the as-built plans or on-site systems must be corrected as follows before recycled water service can be initiated (return copy of form to customer):

If yes - is checked for both of the above, and the site is otherwise cleared for use of recycled water, inspector shall complete the following:

❑ Site approved for recycled water service upon successful completion of cross-connection test.

Inspector Signature: _____ Date: _____

Copies: _____ Field Inspector
_____ Applicant
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

REQUIREMENTS FOR ENGINEERING REPORTS FOR DUAL PLUMBED SYSTEMS

Facilities where both recycled water and potable water are present inside a building are referred to as "dual plumbed systems". Examples would include facilities that use recycled water for toilet flushing, fire suppression, or in industrial processes[1]. California Regulations require that a special report be submitted to the California Regional Water Quality Control Board for facilities with dual plumbed systems. The District's Recycled Water Program places responsibility for preparing this report on the recycled water user. The report must include:

1) A detailed discussion of the facility including the following:[2]
   - The location and type of facility proposing to use a dual plumbed system.
   - The average number of persons estimated to be served by the facility on a daily basis.
   - The specific boundaries of the facility. This is best delineated using a site map.
   - The person(s) responsible for operation of the dual plumbed system. A facility must have a designated Recycled Water User Supervisor, who is familiar with and responsible for the proper use of recycled water. Requirements for proper use are described in the Recycled Water Program's *Guidelines for the Use of Recycled Water*
   - The specific use of recycled water at the facility.

2) Plans and specification which describe the following:
   - Proposed recycled water piping system(s) to be used.
   - Pipe locations for both the recycled and potable water systems.
   - Type and locations of the outlets and plumbing fixtures that will be accessible to the public.
   - Methods and devices to be used to prevent back flow of recycled water into the public (potable) system.

   If construction plans and specifications are used to meet this requirement, only the relevant plan sheets and specification sections should be included in the report. Drawings should be "as-built" versions. The recycled and potable water systems should be clearly delineated (and differentiated from each other) using highlighters or other suitable means. Show points-of-connection to District mains, meters, and backflow devices.

3) The methods to be used to assure that the installation and operation of the dual plumbed system will not result in cross-connections between the recycled water system and the potable water system. This would typically include a description of "in-house" controls and procedures to prevent cross-connection, and a description of procedures for initial and periodic cross-connection testing. For the latter, recycled water users may use the procedure specified in the Uniform Plumbing Code (1994) Appendix J. Cross-connection testing must be done by an AWWA-certified Cross-Connection Control Specialist, and shall be performed at a minimum of every four years, or more frequently if required by the District.

NOTES:

1 Fire suppression and certain industrial uses may not technically constitute dual plumbed systems according to the most recent draft (March 1997) draft Title 22 revision. However, the District requires submission of an engineering report for all in-building" uses of recycled water.

2 From Article 5, section 60314 of the draft (March 1997) Title 22 revisions. If the recycled water use area includes more than one facility with a dual plumbed system, provide the required information for each facility.

RECYCLED WATER PROGRAM
PERMIT TO USE RECYCLED WATER

PERMIT NO:

ISSUED TO:

FOR USE AT:

EFFECTIVE DATE:

EXPIRATION DATE:

The above named applicant is hereby authorized to use recycled water subject to compliance with the Delta Diablo Sanitation District's Recycled Water Users Term and Conditions attached to this permit applicable and all state and local regulations related to the use of recycled water.

The applicant shall report any changes (permanent or temporary) to the premises or operation that significantly change the volume or uses of recycled water, or any change in ownership of the facility.

This permit may be revoked prior to the expiration date if found to have been obtained through submittal of false information or if there is unapproved deviation from the terms and conditions under which it has been granted. This permit is issued solely to the facility named above for the operation and ownership in effect at the time of the application and is not transferable.

_____

for the Delta Diablo Sanitation District
Recycled Water Program
Phone 925-756-1900

Delta Diablo Sanitation District
Recycled Water Program
Telephone: 925-756-1900

PERMIT TO USE RECYCLED WATER
ADDITIONAL TERMS AND CONDITIONS

Permit No:

Issued to:

Effective Date:

Monitoring Requirements:

☐ Self-monitoring form attached Frequency _____

☐ District Monitoring Frequency _____

Training of Customer's Recycled Water User Supervisor:

☐ Received overview of Recycled Water Program
☐ Received Recycled Water Training

Initial Permit Conditions:

1.

On-going Permit Conditions:

1.
2.

RECYCLED WATER USE PERMIT

Terms and Conditions

Rev. 10/09

RECYCLED WATER USE PERMIT
Terms and Conditions

Contents

Section 1 - Guidelines for Recycled Water Users

1.1 Introduction

1.1.1 Purpose

This document serves as a guidance document for the Delta Diablo Sanitation District Recycled Water Program (Program). The Program issues permits to users of recycled water produced at the Delta Diablo Sanitation District's Recycled Water Facility (RWF). The Program monitors user compliance with all governing regulations for recycled water use.

The Delta Diablo Sanitation District (District) manages the recycled water distribution system and complies with regulatory requirements by issuing, reviewing and enforcing Recycled Water Use Permits. The Permit process ensures that recycled water is used in accordance with the Guidelines for Recycled Water Use, the General Water Reuse Permit (RWQCB Order 96-011), the State Water Resources Control Board (SWRCB) Order 2009-0006 DWQ General Waste Discharge Requirements for Landscape Irrigation Uses of Recycled Water, and the State of California Water Reclamation Criteria (Title 22).

The Program was approved by the Regional Water Quality Control Board on June 19, 2000.

1.1.2 Suitable Uses of Recycled Water

The California Department of Health Services (CDPH) has designated suitable uses of recycled water based upon the level of treatment received prior to use. These "suitable uses of recycled water" are shown in Table 1-1 for three different treatment levels. The level of treatment provided by the RWF corresponds to "tertiary recycled water", which is the highest level of treatment prescribed by Title 22 and has the greatest number of allowable uses. Tertiary Recycled Water **is not** suitable for drinking or for use in food preparation.

1.2 Service Requirements

1.2.1 Service Areas

Recycled water may be provided to all customers within the boundaries of all approved service areas for recycled water. The use of recycled water shall only be allowed in accordance with all Federal, State and local regulations.

1.2.2 Conditions of Service

Service to recycled water customers may be terminated or interrupted due to the following:

- The quality of the recycled water does not comply with the requirements of the Regulatory Agencies.
- The customer's use of the recycled water does not conform to all applicable regulations, including this permit.
- If the pressure of the recycled water is higher than the customer needs, it is the responsibility of the customer to provide a pressure-reducing valve downstream of the service meter.

Table 1-1

Recycled Water Uses	Treatment Level Required		
	Tertiary	Secondary – 2.2	Secondary – 23
Irrigation of:			
Food crops—contact with edible portion of crop	Allowed	Not Allowed	Not Allowed
Parks and playgrounds	Allowed	Not Allowed	Not Allowed
School yards	Allowed	Not Allowed	Not Allowed
Residential landscaping	Allowed	Not Allowed	Not Allowed
Unrestricted access golf courses	Allowed	Not Allowed	Not Allowed
Any other irrigation uses not prohibited by other provisions. of CCR	Allowed	Not Allowed.	Not Allowed
Food crops—edible portion above ground/not in contact with recycled water	Allowed	Allowed	Not Allowed
Cemeteries	Allowed	Allowed	Allowed
Freeway landscaping	Allowed	Allowed	Allowed
Restricted access golf courses	Allowed	Allowed	Allowed
Ornamental nursery stock and sod farms	Allowed	Allowed	Allowed
Pasture for milk animals	Allowed	Allowed	Allowed
Any non-edible vegetation with access control to prevent use as if it were a park, playground or schoolyard.	Allowed	Allowed	Allowed
Orchards w/ no contact between edible portion and recycled water.	Allowed	Allowed	Allowed
Vineyards w/ no contact between edible portion and recycled water	Allowed	Allowed	Allowed
Non food-bearing trees not irrigated <14 days of harvest	Allowed	Allowed	Allowed
Fodder crops (e.g. alfalfa) and fiber crops (e.g. cotton)	Allowed	Allowed	Allowed
Seed crops not eaten by humans	Allowed	Allowed	Allowed
Food crops that undergo commercial pathogen-destroying processing before human consumption (e.g. sugar beets)	Allowed	Allowed	Allowed
Supply for impoundments:			
Non-restricted rec. impound., w/ supply monitored for pathogenic organisms	Allowed	Not Allowed	Not Allowed
Restricted recreational impoundment and fish hatcheries	Allowed	Allowed	Not Allowed
Landscape impoundments *w/o* decorative fountains	Allowed	Allowed	Allowed
Supply for cooling or air conditioning			
Industrial or commercial. cooling or air conditioning with cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Not Allowed	Not Allowed
Industrial or commercial. cooling or air conditioning w/o cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed
Other uses:	-		
Flushing toilets and urinals	Allowed	Not Allowed	Not Allowed
Priming drain traps	Allowed	Not Allowed	Not Allowed
Industrial process water that may contact workers	Allowed	Not Allowed	Not Allowed
Structural fire fighting	Allowed	Not Allowed	Not Allowed
Decorative fountains	Allowed	Not Allowed	Not Allowed
Commercial laundries	Allowed	Not Mowed	Not Allowed
Consolidation of backfill material around potable water pipelines	Allowed	Not Allowed	Not Allowed
Artificial snow making for commercial outdoor uses	Allowed	Not Allowed	Not Allowed
Industrial boiler feed	Allowed	Allowed	Allowed
Nonstructural fire fighting	Allowed	Allowed	Allowed
Backfill consolidation around non-potable pipelines	Allowed	Allowed	Allowed
Soil compaction	Allowed	Allowed	Allowed
Mixing concrete	Allowed	Allowed	Allowed
Dust control on roads and streets	Allowed	Allowed	Allowed
Cleaning roads, sidewalks and outdoor work areas	Allowed	Allowed	Allowed
Flushing sanitary sewers	Allowed	Allowed	Allowed

1.2.3 Recycled Water Use Permit

Prospective recycled water customers must submit to the District an Application for a Permit to Use Recycled Water (Form A-1). A copy of the User's application form for each location is included in the corresponding appendix.

The permit application shall include:

- Site address, assessor's block and lot numbers, or property metes and bounds;
- Applicant's name and address, owner's name and address (if different), applicant's relationship to the subject property as legal owner, tenant, or lessee;
- Designation of user's Recycled Water Supervisor, including address and 24-hr contact number(s);
- Description of planned recycled water use on the property;
- Estimated annual volume and peak flow rate at the point of connection;
- If applicable, total irrigated area, expressed in appropriate units;
- Signature of the designated Recycled Water User Supervisor, certifying that he or she will comply with permit conditions;
- Signature of owner or duly authorized representative, certifying that information contained in the permit application is true and correct;
- Drawing(s) of the property, which show:
    - All buildings on the site;
    - Recycled water use areas;
    - Location, size, and materials of construction for potable and recycled water piping;
    - Location of all service connections, meters, and backflow devices relative to buildings, property lines, or intersections;
    - Location of outdoor drinking fountains, hose bibs, quick couplers and other points of ready access to recycled or potable water systems;
    - Location of recycled water signs;
    - Location of outdoor eating areas;
    - Locations of irrigation controller(s) and irrigation schedule, if applicable;
    - Direction of drainage from irrigated areas, if applicable;
    - Locations of wells, ponds, storage tanks or other impoundments.

Generally, the site's construction drawings can be used to meet the above "drawing" requirements, although it may be necessary to annotate the drawings to clearly show all information listed. For retrofit sites, if construction drawings are not available, a site drawing with the above information must be prepared.

For sites where recycled water is to be used inside a building, a more formal Engineering Report must be filed. Requirements for preparing an Engineering Report shall be obtained from the District.

The Application for a Recycled Water Use Permit should be filed concurrently with the application for a building permit. Upon receipt of the permit application, the District will conduct a plan check to verify that all design conditions are met. If not, the District may require re-submittal of the missing information and/or drawings. For retrofit sites, the District will conduct a site inspection, and notify the customer of any repairs or modifications required.

Upon completion of construction (or site modifications), the District will conduct a final inspection to verify that all design requirements have been met, and a cross-connection test to verify that there are no interconnections between the potable and recycled water systems. All final conditions must be recorded on the site drawings. Final approval for service shall be indicated by the District issuing a Recycled Water Use Permit. The Permit includes the customer's signed permit application, along with a listing of site-specific requirements, if any. The permit shall be the binding agreement between the District and the User.

1.3 Protection of Water Resources

1.3.1 Potable Water System Protection

On premises using both recycled water and potable water, the potable water supply must be protected against any accidental cross-connections by the use of methods described in Section 2 – Cross-Connection Control and Prevention Program. All assemblies must be on the District's "Approved Backflow Device List". The District will specify the testing requirements for backflow devices. The frequency of testing may be quarterly, semi-annual, or annually depending on the site's degree of hazard.

Some recycled water customer sites may have separate dedicated fire protection systems that use potable water. Those systems shall also be protected from cross-connection/backflow with reduced pressure (RP) assemblies at their point of connection.

1.3.2 Groundwater Protection

No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless specific CDPH requirements are met. No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well. No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.

1.3.3 Recycled Water System Protection

The District must ensure that the recycled water system is not compromised by any customer. Therefore, in some cases the District may require "Approved Backflow Devices" (see above) on the customer's recycled water system. An example of where such protection might be required would be when chemicals may be injected into a recycled water line by the customer. Backflow devices must be properly inspected, maintained, and tested as mentioned above. Backflow devices on the recycled water system shall be marked and color-coded as noted elsewhere in these guidelines. Backflow device testing equipment used in the recycled water system must not be used in the potable water system.

1.4 Recycled Water User Supervisor

A User Supervisor must be designated by the Recycled Water User and approved by the District for every site where recycled water is used. The District's approval will be based on the individual's familiarity with the recycled water system, authority, and reliability. The District will provide training for the User Supervisor as described below. Although the District retains ultimate responsibility for use of recycled water at all sites, the User Supervisor is the primary means for ensuring safe use of recycled water at a given site. The following are the responsibilities of the User Supervisor:

1.4.1 Control of On-Site Uses of Recycled Water

The User Supervisor is required to be familiar with the entire on-site recycled water system, and of all applicable conditions governing recycled water use at the site. The User Supervisor shall ensure that recycled water use complies with those conditions. The User Supervisor shall also be responsible for proper operation and maintenance of the recycled water system and of all backflow prevention devices.

1.4.2 Training

The District will provide training to the User Supervisor. Training will cover the District's Guidelines for Recycled Water Use, and the District will participate or assist in any additional training, as necessary, for employee training. During the District's bi-annual inspection of the facility, the District will discuss the customer's method of informing their employees about recycled water use on site.

1.4.3 Contact Information and Notification of Changes

The User Supervisor shall provide the District with an address and phone number(s) where he or she can be contacted at all times. The User Supervisor shall notify the District of any change in the individual designated to be User Supervisor, or of any planned modifications or planned additions to the recycled water system. These shall be reviewed and approved by the District before any modifications are made.

1.4.4 Failures and Violations

The User Supervisor (or their designated emergency contact) is responsible for notifying the District of any failure of the on-site recycled water system, of any cross-connection between the recycled and potable water systems, or of any inappropriate uses that may occur. For any condition which has the potential to endanger public health, such as a cross-connection, the User Supervisor shall notify the District at 925-756-1900 immediately.

1.4.5 Monitoring

The User Supervisor shall be responsible for any monitoring specified in the customer's Recycled Water Use Permit, and may participate in monitoring the use of recycled water on-site.

1.4.6 Training of Personnel

The District will provide training for the User Supervisor. The User Supervisor is responsible for ensuring that on-site operations personnel (i.e. those who use or maintain the recycled water system) are familiar with the proper use of recycled water. Operations personnel need to be aware of the following:

- There is never to be a direct connection between the recycled water system and any other water system.
- Recycled water, though highly treated, is non-potable. Recycled water is never to be used for human consumption.
- Working with recycled water is safe if the appropriate regulations are followed. Personnel should exercise good hygiene when working around recycled water, e.g. wash hands before eating or drinking.
- The operation and maintenance of the recycled water system must conform to requirements describe elsewhere in these Guidelines.

The User Supervisor should review these requirements with operating personnel prior to working with recycled water.

1.5 Operation and Maintenance Requirements

Customer use of recycled water shall at all times conform to the following prohibitions and requirements:

1.5.1 Prevention of Cross-Connections

A cross-connection is defined as an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and the recycled water system (or any other unapproved water source or substance). Cross-connections between the recycled water system and the potable water system are strictly prohibited by Title 17, California Code of Regulations. There shall never be a physical connection between the recycled water system and the potable water system anywhere on the customer's premises.

1.5.2 Unapproved Uses

Use of recycled water for any purpose other than those explicitly allowed under the customer's Recycled Water Use Permit is strictly prohibited.

1.5.3 Equipment Maintenance

All equipment shall be kept in good working condition. Broken or faulty irrigation component shall be promptly repaired. All signs, equipment identification devices, and color-coding shall be maintained.

1.5.4 Runoff

All systems shall be designed, constructed, and operated to minimize to the fullest extent the runoff of recycled water outside of the approved use area.

1.5.5 Ponding

All systems shall be designed, constructed, and operated to minimize to the fullest extent the ponding of recycled water both inside and outside the approved use area.

1.5.6 Windblown Spray

All systems shall be designed, constructed, and operated to minimize to the fullest extent the possibility of recycled water spray being carried outside the approved use area.

1.5.7 Overspray

Recycled water shall not be sprayed on people, food handling facilities, drinking fountains, or eating areas.

1.5.8 Hours of Operations

The use of recycled water for irrigation shall be limited to the hours of least use of the area by the public. This is usually between hours of 10 p.m. and 6 a.m. The operation of the system at other times may be requested and considered on a case-by-case basis. Consideration shall be given to allow a maximum dry out period, before the area is used by the public. The recycled water shall not be used for periods of time that are greater than that needed to satisfy the watering requirements of the landscaping.

1.6 Monitoring and Inspections

The District will inspect customer's recycled water systems bi-annually, or on a more frequent basis if warranted by the size and complexity of the site or other considerations. The inspections will include (at a minimum) a visual inspection of all backflow prevention assemblies, exposed piping, valves, pressure reducing valves, sprinklers, controllers, signs, labels, tags, and all points of connection. The inspection will also check for proper use (minimization of runoff, overspray, ponding, etc). The User Supervisor's records will be inspected to review the maintenance and education done since the last inspection. The District inspector will complete an inspection form, and transmit any deficiencies observed to the User Supervisor for correction. In some cases, the District may require customers to conduct self-monitoring of recycled water use sites. If so the customer's Recycled Water Use Permit will designate the monitoring frequency and reporting requirements, and will include a form for the Customer's use.

1.7 Notification of Repairs or Modifications

Customers shall notify the District in writing of any significant proposed repairs and of all proposed modifications to the on-site recycled water system. Notification shall include a sketch or drawing clearly delineating all changes. Repairs and modification must be reviewed and approved by the District prior to implementation. Customers shall record all changes on the site's record drawings.

1.8 Violations

Violations of the customer's Recycled Water Use Permit include, but are not limited to, the following:

- Failure to maintain equipment and identification devices (signs, coatings, etc) in good working condition;
- Use of recycled water which results in excessive run-off, overspray, or ponding;
- Failure to report changes to recycled water system to District, including a change in the site's User Supervisor;
- Use of recycled water for purposes other than specified in customer's permit;
- Use of hose bibs on the recycled water system; or
- Creating an interconnection between the potable and recycled water systems.

1.9 Emergency Procedures

In the event of an emergency involving the recycled water system, the user shall immediately notify the District by calling 925-756-1900. Emergencies include, but are not limited to, line breaks in the distribution system and cross-connections between the user's potable and recycled water systems.

In the event of a cross-connection on the user's site, the user shall immediately stop using potable water at the site, and shall isolate the on-site potable water system from the public supply at the point of connection. Before potable water service can be resumed, the cross-connection must be removed, and the site inspected and approved by the District. If it is determined that recycled water has entered the user's potable water system, the system must also be disinfected and tested before service can be resumed. The District may, at its discretion, perform such disinfection and testing and charge the user, or may provide instructions to a qualified contractor retained by the user.

In the case of a major earthquake, the User Supervisor should inspect the recycled water and potable water systems. If either of the systems is damaged, both the potable water system and the recycled water system should be shut off at their respective points of connection. The User Supervisor should then notify the District for further instructions.

Emergency modifications or repairs may be made by the customer to their system without the prior approval of the District when this action will prevent contamination, other damage to the systems, or prevent a public health hazard. The customer shall notify the District of the modifications as soon as possible, but not later than 48 hours following the completion of the modification or repair.

1.10 Technical Requirements and Facilities Design

1.10.1 Recycled Water Signage

Posting of Use Areas

Recycled water use areas shall have one or more signs posted to inform the public that recycled water is used at that location. Signs shall be measured no less than 8" x 8" with white type against a purple background. An example of a use area sign is included in Appendix C.

Signs at Points of Access

In addition to use area signs, individual fixtures and points of access to the recycled water system, such as fire hydrants, quick connects, blow-off points, inspection ports, etc. shall have signs with **"Recycled Water – Do Not Drink"** superimposed over the universal **"Do Not Drink"** symbol.

In cases where there is potential for an improper interconnection to the recycled water system, the sign shall also include the wording **"Recycled Water – Do Not Interconnect"**. Examples of suitable signs are included in Appendix C.

1.10.2 Color Coding

Recycled water facilities shall be color coded as follows:

Fire Hydrants – All recycled water fire hydrants shall be colored purple. Each fire hydrant shall also be posted as required in the section on signage.

Pipe Material – All pipe material used for the distribution of recycled water shall be purple. For PVC pipe, this requirement is met through the use of commercially available purple pipe. For other types of piping, and for valves and other appurtenances, this requirement shall be met using purple paint or purple adhesive tape wrap.

Valve Lids – All recycled water valve lids will be colored purple and marked "**Recycled Water**" in the center of the lid. Valve lids for fire hydrants using recycled water shall be purple.

Water Meters – All recycled water meters shall be painted purple.

Marking Tape – All marking tape for recycled water facilities shall be purple, with white lettering stating "**Caution: Recycled Water – Do Not Drink**".

Adhesive Tape – All adhesive tape for wrapping recycled water piping shall be purple, with white lettering stating "**Caution: Recycled Water – Do Not Drink**".

Irrigation Controllers – Irrigation controllers shall be posted with a purple recycled water sticker. The message on the sticker will be printed in both English and Spanish. An example of an irrigation controller sticker is included in Appendix C.

Other Components – Other components of the recycled water system shall be identified by purple paint, adhesive wrap, or means of identification approved by the District.

1.10.3 Separation of Potable and Recycled Water Systems

The separation of potable and recycled water piping shall be in accordance with Section 2 – Cross-Connection Control and Prevention Program.

1.10.4 Hose Bibs

Hose bibs on the recycled water system are prohibited. Quick couplers may be used for recycled water, but must be different from those used on the potable water system. Quick couplers on the recycled water system shall be labeled with "**Recycled Water – Do Not Drink**" as described elsewhere in these Guidelines.

1.10.5 Construction Water

Recycled water may be used for construction purposes (soil compaction, dust control, roadway landscaping, etc). A different type of permit from that issued for permanent uses is required, and these forms shall be obtained from the District.

If authorized by the permit, trucks may be filled with recycled water from designated hydrants. Filling operation shall be monitored at all times. Recycled water shall be used only for purposes designated in the permit, and water shall be transported in a manner that prevents spillage. Drivers shall be apprised of procedures for safe handling of recycled water, as describe in the "Training of Personnel" provisions of these Guidelines. Trucks must have signs clearly identifying the water as either recycled water or non-potable and stating "**Do Not Drink**".

Section 2 – Cross-Connection Control and Prevention Program

2.1 Introduction

2.1.1 Purpose

The purpose of this section is to define the Delta Diablo Sanitation District's (District's) Cross-Connection Control and Prevention Program (Program) for the delivery and use of recycled water from the Recycled Water Facility (RWF). The document establishes the role of the District, the Recycled Water Users (Users) and the regulatory agencies involved with the protection of potable water supplies from contamination by cross-connection with recycled water system pipelines. The installation, maintenance, and testing of approved backflow prevention devices is described, as well as the required monitoring, testing, and reporting procedures.

2.1.2 Background

This document was prepared in accordance with the State of California Department of Health Services (CDPH) Guidance Manual for Cross-Connection Control Programs. The Program is in accordance with the California Code of Regulations Title 17 requirements for backflow prevention.

2.1.3 Program Authority

The Cross-Connection Control Program will be maintained by the District. The District's responsibility for the recycled water system begins at the RWF and ends at the User connection as defined in each User's Permit issued by the District. The User has the primary responsibility for protecting the potable water system. This responsibility begins at the User connection and includes all of the water distribution piping on the User premises. A User Supervisor will be designated by the User to monitor and enforce compliance with the Program. The District's Program staff will be responsible for training of the User Supervisor.

The California Department of Health Services (CDPH) has the responsibility for promulgating and enforcing the laws, rules, regulations, and policies to be followed in controlling cross-connections. In addition, the local health agency has the authority to ensure that adequate protection is provided within a User's premises. The District will administer the entire Program, including cross-connection testing and backflow prevention assembly testing. Program costs will be recovered by the District through charges to the affected user for the costs of testing as part of their recycled water bill.

2.1.4 User Supervisor

A User Supervisor must be designated by the User and approved by the District for every site where recycled water is used. The District's approval will be based on the individual's familiarity with the recycled water system, authority, and reliability. The District will provide training for the User Supervisor as described below. Although the District retains ultimate responsibility for use of recycled water at all sites, the User Supervisor is the primary means for ensuring safe use of recycled water at a given site. User Supervisor responsibilities are described in Section 1, Guidelines for Recycled Water Users, and are summarized as follows:

- Knowledge of the entire on-site recycled water system;
- Knowledge of applicable conditions governing recycled water use at the site;
- Assurance that recycled water use complies with the conditions governing use at the site;
- Proper operation and maintenance of the recycled water system and of all backflow prevention devices;
- Assurance that cross-connections are not made during the installation, operation, and maintenance of the User's piping and equipment; and
- Knowledge of the practices and regulations regarding cross-connection control and plumbing.

2.1.5 Contact Information and Notification of Changes

The User Supervisor shall provide the District with the address and phone number(s) where he or she can be contacted at all times. The User Supervisor shall notify the District of any change in the individual designated to be User Supervisor, or of any planned modifications or planned additions to the recycled water system. These shall be reviewed and approved by the District before any modifications are made.

2.1.6 Failures and Violations

The User Supervisor is responsible for notifying the District of any failure of the on-site recycled water system, of any cross-connection between the recycled and potable water systems, or of any inappropriate uses that may occur. For any condition that has the potential to endanger public health, such as a cross-connection, the User Supervisor shall notify the District immediately.

2.1.7 Monitoring

The User Supervisor shall be responsible for any monitoring specified in the User's *Recycled Water Use Permit* issued by the District.

2.2 Training of Personnel

The District will provide training for the User Supervisor. The User Supervisor is responsible for ensuring that on-site operations personnel (i.e. those who use or maintain the recycled water system) are familiar with the proper use of recycled water. The User's operations personnel need to be aware of the following:

- There is never to be a direct connection between the recycled water system and the potable water system;
- Recycled water, though highly treated, is non-potable, and is never to be used for human consumption;
- Working with recycled water is safe if both common sense is used and the appropriate regulations are followed;
- Personnel should exercise good hygiene when working around recycled water, e.g. wash hands before eating or drinking; and

- The operation and maintenance of the recycled water system must conform to all requirements set forth by the District.

The User Supervisor should review these requirements with operating personnel prior to working with recycled water.

2.3 Cross-Connection Prevention

A cross-connection is defined as an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and the recycled water system. Cross-connections between the recycled water system and the potable water system are strictly prohibited by California Code of Regulations Title 17. There shall never be a physical connection between the recycled water system and the potable water system anywhere on the User's premises.

2.3.1 Separation of Potable and Recycled Water Systems

The separation of potable and recycled water piping shall be in accordance with CDPH guidelines, and shall be maintained to the greatest extent possible in both new construction and retrofit applications. The minimum separation standards are as follows:

The horizontal distance between pressurized potable water and recycled water lines shall be at least ten feet. Potable and recycled lines should not be installed in a common trench. Potable water lines shall be at least one foot above recycled water lines where these lines cross.

Where it is not possible to meet the minimum separation requirements, alternative construction criteria may be applied. The District staff on a case-by-case basis, and only when it has been demonstrated that neither of the basic criteria can be met, will evaluate proposed exceptions.

2.3.2 System Cross-Connection Testing

At sites where both recycled water and potable water systems are present, a cross-connection test shall be performed before final approval is given to energize the two systems. This test is to ensure that there is absolute separation between the two systems. During the test, one system (e.g. the potable) is pressurized, while the other (e.g. the recycled) is depressurized. All outlets are then checked for presence or absence of flow. The test is then reversed, (i.e. recycled system is pressurized, and the potable system is depressurized), and all outlets are again checked for the presence or absence of flow.

The District, in the presence of the User Supervisor, coordinates the cross-connection test. The cross-connection test shall be conducted or observed by the District's Cross-Connection Control Specialist (Specialist) by the methods specified in the UPC, Appendix J 8 (2) and J (8) 3.

The *Cross-Connection Test Report* (Form C-2) prepared by the Specialist documents the results of the test (Appendix A). Cross-connection tests must be conducted prior to approving operation of the recycled water and potable water systems, and periodically thereafter, at a minimum frequency of once every four years. The District may specify more frequent tests for large or complex sites, after modifications to the User's potable or recycled water systems, or when there is any concern regarding a possible cross-connection at the site.

2.3.3 Backflow Prevention Assemblies

On premises using both recycled water and potable water, the potable water supply must be protected against any accidental cross-connections by the use of an approved backflow prevention assembly. A backflow prevention device is required at all potable water connections to the local potable water distribution system at the meter on a site where recycled water is present. The CDPH regulations allow two types of assemblies for abatement of cross-connection hazards at a User's service connection. Approved types of backflow prevention assemblies for recycled water use areas include the following listed in Sections 2.3.4 and 2.3.5 below.

2.3.4 Air-Gap Separation

An air gap must be at least double the diameter of the supply pipe measured vertically above the top rim of the receiving vessel, and in no case less than one-inch. An air gap must be located as close as practical to the User's connection, and all piping between the User's connection and receiving tank must be entirely visible unless otherwise approved in writing by the District and the health agency.

2.3.5 Reduced Pressure Principle Backflow Prevention Assembly (RP)

The regulations require that all RPs conform to AWWA Standard C506-78(R83). An RP must be located as close as practical to the User's connection. This type of assembly must be installed at least twelve inches and not more than thirty-six inches above grade (measured from the lowest point of the assembly), and must have adequate side and top clearance to allow access for testing and maintenance. A minimum side and top clearance of twelve inches should be allowed.

2.4 Backflow Device Testing

All assemblies must be on the District's "Approved Backflow Device List." The regulations require that assemblies be tested immediately after they are installed, relocated, or repaired, and not be placed in service unless they are functioning as required. The testing requirements for backflow devices will be specified by the District, at a frequency that may be quarterly, semi-annual, or annually depending on the site’s degree of hazard.

The regulations require that backflow assemblies are tested at least annually by an AWWA certified backflow prevention tester. The District Cross-Connection Control Specialist will conduct or observe all backflow prevention tests on the recycled water system including at the recycled water User sites. Backflow device testing equipment used in the recycled water system must not be used in the potable water system. Repair or replacement of the backflow prevention assembly is the responsibility of the recycled water User.

Section 3 - Monitoring & Inspection

3.1 User Site Surveys

The District will inspect the User's recycled water system bi-annually, as a requirement of the User's *Recycled Water Use Permit*. The inspections will include a visual inspection of all backflow prevention assemblies, exposed piping, valves, pressure reducing valves, sprinklers, controllers, signs, labels, tags, and all points of connections. The User Supervisor's records will be inspected to review the maintenance and education done since the last inspection. The District's inspector will complete an inspection form, and transmit any deficiencies observed to the User Supervisor for correction. The District inspector's report will include the following:

- The service location and identification;
- The backflow prevention assembly or assemblies required for minimum protection;
- A list of backflow prevention assemblies that are acceptable to the utility and the health agency;
- The requirements for installing the backflow prevention assembly or assemblies;
- The requirements for testing backflow prevention assemblies;
- The date by which corrective action must be completed;
- The authority under which the backflow protection requirement is made;
- The contact person at the District, including address and phone number;
- The consequence of failure to install, test, or maintain backflow prevention assemblies.

The District, the local health agency, and the RWQCB reserve the right to make unannounced inspections of the User's site and recycled water system.

3.2 User Self-Monitoring

The User may be required under their *Recycled Water Use Permit* to submit a Self-Monitoring Report to the District. If so, the permit will specify the monitoring frequency and reporting requirements. In this report, the User will document the condition of the on-site recycled water system and all backflow prevention devices. See Appendix A for a sample Self-Monitoring Report.

3.2.1 System Not In Compliance

If at any time the recycled water system is found to be out of compliance, the District shall issue an Order specifying the corrections required to bring the system into compliance. A site inspection shall be scheduled after a reasonable period of time to ensure compliance with the Order. Failure to comply with the Order within the period of time specified will result in the District terminating delivery of recycled water to the User.

Section 4 – Emergency Procedures

Emergencies include, but are not limited to, line breaks in the distribution system and cross-connections between the User's potable and recycled water systems.

4.1 Notification

It is the responsibility of the User Supervisor to notify the District of any failure or cross-connection in the recycled water or potable water system, whether or not the User Supervisor believes a violation has occurred. It is also the responsibility of the User Supervisor to notify the District of any violation that might occur because of any action the User personnel might take during the operation of the recycled water or potable water systems. If there are any doubts whether a violation has occurred, it is the responsibility of the User Supervisor to report each occurrence to the District so a decision can be made.

Any person who, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water with at least disinfected tertiary 2.2 treatment, or 1,000 gallons or more of recycled water with less than disinfected 2.2 treatment, in or on any waters of the state, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as

1. that person has knowledge of the discharge,
2. notification is possible, and
3. notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the appropriate Regional Board.

The User shall report any unauthorized discharge described above to the Regional Board by phone within 24 hours, followed by a written report within 30 days describing corrective actions taken.

4.2 Response

In case of a major earthquake, flood, fire, tornado, structural failure, or other incident that could likely damage the recycled or potable water systems, the User Supervisor should inspect the domestic and recycled water systems for damage as soon as it is safe to do so. If either system appears damaged, both the domestic and recycled water systems should be shut off at their points of connection. If the User Supervisor cannot inspect the site and damage is expected, then both water systems should be shut off at their points of connection. The User Supervisor should immediately contact the District and implement the *Emergency Cross-Connection Response Plan* described below.

4.3 Emergency Modifications

Emergency modifications or repairs can be made by the User to said system without the prior approval of the District to prevent contamination, damage, or a public health hazard. As soon as possible after the modification, but no more than 48 hours after the modification, the User shall notify the District of the emergency modifications and file a written description of action taken.

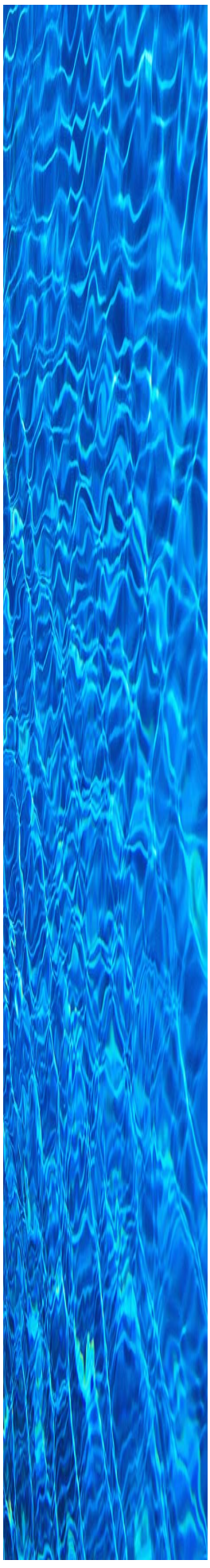
4.4 Emergency Cross-Connection Response Plan

In the event that a backflow incident or cross-connection is suspected or occurs, the following procedures shall be implemented immediately.

1. Notify the District and the State CDPH by phone. This notification is to be followed by a written notice within 24 hours. The written notice is to include an explanation of the nature of the cross-connection, date and time discovered, and the steps taken to mitigate the cross-connection(s).
2. Keep the potable water system pressurized and post "Do Not Drink" signs at all potable water fixtures and outlets.
3. Immediately shut down the recycled water supply to the facility at the meter.
4. Provide bottled water for employees until the potable water system is deemed safe to drink.
5. Collect water samples from the potable water system and perform a 24-hour bacteriological analysis. Water samples should be collected from the closest acceptable point to the cross-connection. The District may supply the appropriate sample bottles, obtain the samples, and arrange for laboratory analysis. See Form C-1, *Cross-Connection Testing and Discovery Procedures*, in Appendix A for more information.
6. Identify the cause and location of backflow and eliminate the cross-connection(s).
7. Conduct a cross-connection test to verify that all cross-connections were eliminated.
8. Obtain approval from the District and the State CDPH before bringing the recycled water system back into service.
9. If the bacteriological analysis conducted in Step 5 is positive, chlorinate the potable water system maintaining a chlorine residual of at least 50 mg/l for 24 hours. Otherwise proceed to Step 11.
10. Flush the potable water system after 24 hours and perform standard bacteriological analysis.
11. If the results from Step 10 are acceptable, proceed to Step 12. Otherwise, repeat Steps 9-10.
12. Obtain final approval from the District and the State CDPH before removing signs.

4.5 Service Termination

The District and the local health agency reserve the right to take any action necessary with respect to the operation of the User's recycled water system to safeguard the public health. If at any time during construction or operation of the recycled water system, real or potential hazards are evidenced, the District reserves the right and has the authority to terminate immediately, without notice, recycled water service in the interest of protecting the public health. These hazards could include situations such as cross-connections with the potable system, improper tagging, signing, or marking, or unapproved/prohibited uses.



Appendix B
Forms for Retrofit Sites

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM
EVALUATION OF RETROFIT NEEDS
(To be completed by District)

Site Name:	Date of Site Visit:
	Form Completed By:
Site Address:	Accompanying Site Representative:

Site Plan Attached? ❑ Yes ❑ No, why:

Instructions to Field Inspector: The checking of any shaded box indicates that action is required and will need to be described in the form entitled "Site Specific Retrofit Requirements."

A. SEPARATION OF RECYCLED AND POTABLE WATER SYSTEMS

1. Does the irrigation system have its own (separate) service from the main? ❑ No ❑ Yes
2. If yes, does irrigation system have multiple points of connection to the main? ❑ No ❑ Yes
3. Does the Customer have adequate as-built drawings of the irrigation system? ❑ No ❑ Yes
4. Is any portion of the irrigation system not designated for retrofit? ❑ No ❑ Yes

   If yes, locate on site plan and describe: _____

Notes regarding potential cross-connections, adequacy of information on piping systems, and any special considerations, such as multiple connection points: _____

B. IRRIGATION EQUIPMENT

1. What material is the irrigation system piping?

   ❑ PVC, schedule: _____ ❑ Other: _____
2. Does the irrigation equipment appear to be in disrepair and poor condition? ❑ No ❑ Yes
3. Approximate age of system? _____ years
4. Is irrigation system automatically controlled? ❑ No ❑ Yes

   If yes, make and model of controller: _____

   If no, how then? _____
5. Are there hose bibs on the site? ❑ No ❑ Yes
6. Are any hose bibs on the irrigation system? ❑ No ❑ Yes
7. After conversion, will there be hose bibs on the potable water system? ❑ No ❑ Yes

Notes/Special Repair Requirements: _____

C. RUNOFF AND OVERSPRAY

Turn on irrigation system and observe runoff patterns. Record locations of runoff on site map.

Identify Location

1. Does runoff go beyond RW use area? ❑ No ❑ Yes _____
2. Is runoff excessive? ❑ No ❑ Yes _____

Due to:

____ Slopes, berms, raised areas ____ Heavily compacted ____ Bare ground

3. Does spray, mist or runoff enter a:

dwelling ❑ No ❑ Yes _____
designated outdoor eating area ❑ No ❑ Yes _____
playground ❑ No ❑ Yes _____
pool ❑ No ❑ Yes _____
food handling facility/cooking area ❑ No ❑ Yes _____
adjacent property ❑ No ❑ Yes _____

4. Does spray, mist or runoff come in contact with drinking fountains? ❑ No ❑ Yes
5. Are there areas of overspray? ❑ No ❑ Yes

____ Narrow parking and planting strips
____ Oddly shaped areas
____ Other: _____

6. Does the site appear to have poor drainage? ❑ No ❑ Yes

Indicated by:

____ Standing water ____ Flooding ____ Soggy areas ____ Other: _____

Where?

Notes: _____

D. BACKFLOW PREVENTION

1. After conversion to RW, will the site continue to receive potable water?
   (i.e., is there a domestic demand in addition to irrigation?) ❑ No ❑ Yes
2. Is the Customer planning to use potable water as a backup to the RW supply? ❑ No ❑ Yes
3. Does the site have backflow prevention devices? ❑ No ❑ Yes
4. Does the site have any of the following backflow prevention devices?

Show location and number on the site plan.	*potable service*	*irrigation system*
4a. pressure vacuum breaker	❑	❑
4b. double check valve assembly (DC)	❑	❑
4c. reduced pressure principal backflow prevention (RP)	❑	❑
4d. air gap separation (AG)	❑	❑

Notes: _____

E. SIGNAGE

1. Are any of the RW use areas accessible to the public (i.e., non-employees)? ❑ No ❑ Yes

   If yes, show on site map.

2. Recommend possible location for signs or other forms of RW identification, note on site map.

   Typical locations:

   ____ area where public can enter RW use area ____ valves & valve boxes

   ____ quick couplers (former hose bibs) ____ auto. controls (tags, stickers, embossed covers)

   ____ meters

   Total number of signs: _____

3. What is the primary language of the landscape workers/gardeners?

   ❑ English ❑ Spanish ❑ Mandarin ❑ Cantonese

   ❑ Other; specify: _____

4. For the facility's maintenance workers (plumbers, mechanics), what is the primary language?

   ❑ English ❑ Spanish ❑ Mandarin ❑ Cantonese

   ❑ Other; specify: _____

Notes: _____

_____

_____

F. RECYCLED WATER STORAGE IMPOUNDMENTS

1. Does the Customer propose to store recycled water on site? ❑ No ❑ Yes

   If no, skip to Section G.

   If yes, locate impoundment on map and answer the rest of the questions.

2. What is the impoundment(s) used for? (mark all that apply)

   ❑ to store irrigation water, non-body contact

   ❑ decorative water feature, non-body contact

   ❑ decorative fountain, non-body contact

   ❑ non-body-contact recreation (boating, fishing)

   ❑ body-contact recreation

   ❑ other: _____

3. What does impoundment consist of?

   ❑ unlined earthen pond ❑ steel tank

   ❑ pond lined with _____ ❑ other: _____

4. Is impoundment covered? ❑ No ❑ Yes, with: _____

5. Impoundment dimensions: _____ feet deep Surface: _____ feet by _____ feet

6. Capacity of impoundment: _____ gallons

7. Does the impoundment have any mixing equipment? ❑ No ❑ Yes

8. To where would the impoundment overflow if overfilled?

❑ conveyed in a pipe to the storm sewer ❑ conveyed in a pipe to the sanitary sewer

❑ overflow to the surrounding ground ❑ other: _____

9. Discharge is by: ❑ gravity ❑ pumped ❑ none

9a. Disposal is to? ❑ storm ❑ sanitary ❑ surface

10. Other water sources serving this impoundment? _____

Notes: _____

G. WELLS

1. Is there a well(s) on site? ❑ No ❑ Yes, quantity: _____

If no, skip to Section 4.

If yes, locate well on map and answer the rest of the questions.

2. If yes, is it a domestic well? ❑ No ❑ Yes

2a. Is domestic well within 50 feet of the RW use area? ❑ No ❑ Yes

2b. Is domestic well within 100 feet of a RW impoundment? ❑ No ❑ Yes

3. Does the well provide water for irrigation? ❑ No ❑ Yes

3a. If yes, will that continue after conversion? ❑ No ❑ Yes

4. Does the well provide water for on-site domestic uses? ❑ No ❑ Yes

4a. If yes, will that continue after conversion? ❑ No ❑ Yes

H. NON-IRRIGATION RECYCLED WATER USE

1. Does the Customer intend to use recycled water within a building? ❑ No ❑ Yes

2. Does the Customer anticipate using RW for any use other than irrigation? ❑ No ❑ Yes

I. OTHER COMMENTS

Copies: _____ Field Inspector

_____ Applicant

_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM
SITE-SPECIFIC RETROFIT REQUIREMENTS

SITE WHERE USE IS PROPOSED	(Program Use Only)
Name or Description of Site:	FINAL APPROVAL BY DISTRICT Site Approved to Use Recycled Water: ❑ Yes ❑ No Date of Determination: / /
Location or Address:	Inspectors:
Account No:	
Prepared By: Title: Phone:	Signature:

Date of "Evaluation of Retrofit Needs" site visit:

Date Site-Specific Retrofit Requirements delivered:

The State of California regulates the uses of recycled water. DDSD Recycled Water Program staff surveyed your site. This document lists what changes, if any, need to be made before the site can be permitted for use of recycled water. The District may provide assistance in making the corrections. You are encouraged to contact Recycled Water Program staff to discuss such assistance.

A. SEPARATION OF RECYCLED WATER AND POTABLE WATER SYSTEMS

❑ 1. Drawings which show the current piping system must be prepared. These drawings must show points of connection to the potable system. As-built drawings preferred, if available.

❑ 2. Plans which show where and how the recycled water system will be separated from the potable water system need to be prepared.

❑ 3. Arrange a preliminary cross-connection test with Recycled Water Program staff by calling (925) 756-1900.

❑ 4. Other: _____

_____

_____

B. IRRIGATION EQUIPMENT

❑ 1. The following irrigation equipment requires repair:

_____

_____

_____

❑ 2. The irrigation system needs to be converted from manual to an automatic control. (The controller should be capable of limiting irrigation to the nighttime hours.)

❑ 3. Review the need for each hose bib. All unnecessary hose bibs need to be removed and capped. Remaining hose bibs on recycled water system must be replaced with District-approved quick couplers.

❑ 4. Other: _____

_____

_____

C. RUNOFF AND OVERSPRAY

❑ 1. Corrections (such as the installation of berms) need to be made to keep runoff in use area in the following location: _____

_____

❑ 2. Adjust or replace sprinklers heads to prevent spray from hitting non-landscaped ground in the following location: _____

_____

❑ 3. Adjust sprinkler or irrigation system to prevent spray, mist or runoff from entering the following specific locations:

- ❑ dwelling: _____
- ❑ designated outdoor eating area: _____
- ❑ food handling facility: _____
- ❑ adjacent property: _____

❑ 4. Drinking fountains in the following locations need to be covered or replaced with District approved protected fountains: _____

_____

_____

❑ 5. Sprinklers need to be modified in the following locations to reduce overspray:

- ❑ narrow parking planting strip: _____
- ❑ oddly shaped area: _____

❑ 6. Drainage needs to be improved in the following areas to minimize standing water, flooding: _____

_____

❑ 7. Other: _____

_____

_____

D. BACKFLOW PREVENTION

❑ 1. A Reduced Pressure Principal Backflow Prevention device (RP) needs to be on the water service, as close to the meter as practical.

❑ 2. An air gap separation between the potable water system and the recycled water system needs be installed or created.

❑ 3. Remove all backflow prevention from the irrigation system.

❑ 4. A reduced Pressure Principal Backflow Prevention Device needs to be installed on the well discharge line.

❑ 5. An air gap separation between the well discharge and the recycled water system needs to be installed or created

❑ 6. Other: _____

_____

_____

E. SIGNAGE

❑ 1. District-provided recycled water use signs need to be installed at the following locations. Obtain signs through the Recycled Water Program.
❑ Use areas accessible to the public: _____
❑ On all recycled water:
meters, number: _____ valve boxes, number: _____
valves, number: _____ automatic controls, number: _____
quick coupler, number: _____ other: _____

❑ 2. Hose bibs on the potable system should be identified as "potable".

❑ 3. Words on external equipment signs shall be in English and ❑ Spanish or ❑ Other: _____

❑ 4. Words on internal equipment signs shall be in English and ❑ Spanish or ❑ Other: _____

F. RECYCLED WATER STORAGE IMPOUNDMENTS

❑ 1. A detailed description of the on-site recycled water storage impoundment needs to be prepared. See Section 4 of DHS Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water.

❑ 2. Other: _____

G. WELLS

❑ 1. Recycled water cannot be used within 50 feet of a domestic well. You have the option of choosing one of the following actions. Notify the Recycled Water Program of which action you intend to take.
A. Modify the irrigation system so only potable water is used for Irrigation within 50 feet of the well, or
B. Change landscaping so there is no irrigation within 50 feet of the well, or
C. Properly abandon the well per applicable regulations, or
D. Prove that all of the following five conditions are 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.
e. The owner of the well approves of the elimination of the buffer zone requirement.

❑ 2. A recycled water impoundment must be beyond 100 feet of a domestic well. You have the following options:
A. Abandon impoundment or
B. Move impoundment beyond 100 ft from a domestic well, or
C. Properly abandon the well per applicable regulations.

❑ 3. The following type of backflow prevention device needs to be added to the well discharge line:

_____

H. NON-IRRIGATION RECYCLED WATER USE

❑ 1. Non-irrigation outdoor uses. A report that describes in detail the proposed non-irrigation outdoor uses of recycled water must be prepared. See Section 4 of DHS "Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water".

❑ 2. Indoor uses of recycled water. If use of recycled water within a building is proposed, a report, as outlined in the attached "Requirement for Engineering Reports for Dual Plumbed Systems", must be prepared.

I. OTHER REQUIREMENTS

Describe: _____

J. ATTACHMENTS

_____ Preliminary Cross-Control Test Procedure

_____ Guidelines for the Preparation of an Engineering Report for the Production, Distribution, and Use of Recycled Water

_____ Requirements for Engineering Reports for Dual Plumbed Systems

Copies: _____ Field Inspector
_____ Applicant
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

INSTRUCTIONS FOR COMPLETING SITE-SPECIFIC RETROFIT REQUIREMENTS FORM

PURPOSE

The District inspector uses the *Evaluation of Retrofit Needs* form (Form B-1) for guidance and documentation of the inspector's field evaluation of a prospective recycled water use site. The inspector then identifies those changes or improvements that need to be made at a Customer's site on the *Site-Specific Retrofit Requirements* form (Form B-2), which is given to the potential user. These instructions connect the two forms by explaining what needs to be done on *Site-Specific Retrofit Requirements* form when a shaded box on the *Evaluation of Retrofit Needs* form is checked.

These two forms, plus the permit application, are used for existing sites, which are converting (retrofitting) to recycled water. The forms are designed primarily for irrigation sites, but can be applied to other retrofit situations. For new construction, the *Use Area Service Plan Checklist* and corresponding *Field Verification of Recycled Water Use Area Service Plan* forms will generally be used instead, along with the permit application.

The two forms *(Evaluation of Retrofit Needs* and *Site-Specific Retrofit Requirements)* are divided into parts, which are paralleled in each form. A check in a shaded box on the *Evaluation of Retrofit Needs* form indicates that something at the Customer's site needs to be modified before receiving recycled water. The specific action is called out on the *Site-Specific Retrofit Requirements* form.

If this is checked on ***Evaluation of Retrofit Needs***	Do this on ***Site-Specific Retrofit Requirements***

Part A. Separation of Recycled Water and Potable Water Systems

#3 – No	Check boxes #1 and/or #2. If necessary, describe deficiencies in #4 (notes).
Notes: If there is any concern about potential cross-connections at the site	Check box #3, discuss in #4, add Preliminary Cross-Control Procedure" as Attachment

Part B. Irrigation Equipment

#2 – Yes	Check #1, list repairs noted, be specific
#4 – No	Check #2
#6 – Yes	Check #3
#7 – Yes	Under Part E Signage, Check #2
Notes	#4 List anything else which has to do with bringing the irrigation system into good working condition.

Part C. Runoff and Overspray

#1 – Yes	Check #*1* and fill in location
#2 – Yes	Check #2 and fill in location
#3 – Yes, for each subpart	Check #3 and the subpart box, fill in location
#4 – Yes	Check #4 and fill in location
#5 – Yes	Check #5 and fill in location
#6 – Yes	Check #6 and fill in location
Notes	#7, add any other changes to keep runoff and overspray in the use area.

Part D. Backflow Prevention

#1 – Yes	Check #1
#2 – Yes	Check #2
#4a, #4b, if either is checked under *potable service*	Check #6, add "replace with RP"
#4b, #4c, #4d, if checked under the *irrigation system*	Unless there will be chemical injection to the RW system, or some other potential hazard, these devices are not required on the RW service. Check #3

If this is checked on ***Evaluation of Retrofit Needs***	Do this on ***Site-Specific Retrofit Requirements***

Part E. Signage

#1 – Yes	Check #1, and first box. List use areas accessible to the public
#2, any markings	Under #1, indicate where and how may signs for the specific locations
#3, each language check	#3, mark same languages
#4, each language check	#4, mark same languages

Part F. Recycled Water Storage Impoundments

#1 – Yes	Check #1

Part G. Wells

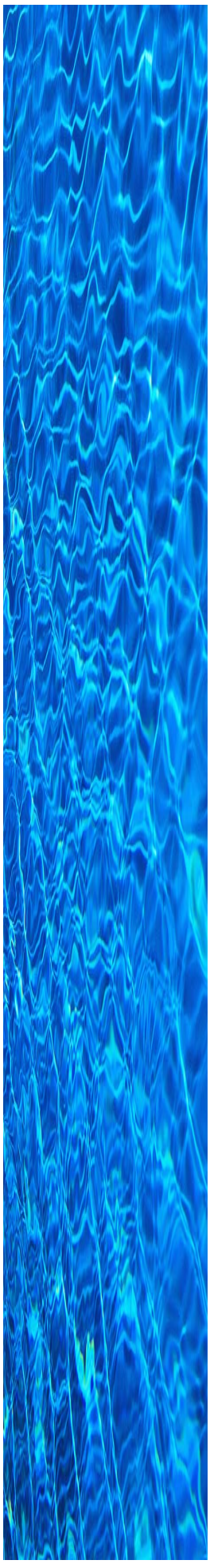
#2a – Yes	Check #1
#2b – Yes	Check #2
#3a – Yes	Check #3 and discuss site specific backflow prevention requirements with District's Water Section
#4a – Yes	Check #3 and discuss site specific backflow prevention requirements with District's Water Section

Part H. Non-Irrigation Recycled Water Use

#1 – Yes	Check #1, and add report outline as attachment
#2 – Yes	Check #2, and add report outline as attachment

Part J. Attachments

Check appropriate boxes



Appendix C
Cross-Connection Test Forms

C-1 Cross-Connection Test Procedures for Landscape Irrigation

C-2 Cross-Connection Test and Report

C-3 Procedures if Cross-Connection is Discovered

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

CROSS-CONNECTION TEST AND DISCOVERY PROCEDURES FOR LANDSCAPE IRRIGATION SYSTEMS USING RECYCLED WATER

Introduction

The following procedures are to verify the absence of cross-connections between the potable water and recycled water supplies at sites which are served by both. These procedures also describe what to do in case cross-connection is discovered.

These procedures are to be used by the DDSD Recycled Water Program, which will be the lead agency for conducting cross-connection testing. The procedures cover cross-connection testing only, and do not incorporate other requirements related to the use of recycled water, which are described elsewhere. The procedures are modeled after the Cross-Connection Test Procedures described in Uniform Plumbing Code Appendix J.[1]

Testing Frequency

The initial cross-connection test shall consist of the *Pre-Test Requirements and Visual Inspection* and the *Cross-Connection Control Test,* as described in the Cross-Connection Test and Report Form. This initial test shall be performed and passed at all sites converting to recycled water use prior to the site receiving approval to use recycled water. Thereafter, the procedures listed under *Pre-Test Requirements and Visual Inspection (Part I)* shall be performed annually, and the *Cross-Connection Control Testing* (Part II) shall be successfully performed a minimum of once every four years. The Program may require more frequent testing if conditions dictate.

Inspection Team

All inspections and testing will be conducted by an Inspection Team consisting of a certified AWWA Cross-Connection Control Specialist, a representative from the DDSD's Recycled Water Program, the Customer's designated Recycled Water User Supervisor, and other personnel as required.

Pre-Test Requirements and Visual Inspection

Prior to the cross connection testing, a visual inspection of the dual system shall be conducted by the Inspection Team. If possible, the visual inspection should be conducted prior to the date scheduled for cross-connection testing. The visual inspection should include the following elements:

1) The Customer shall provide the Inspection Team with drawings of the recycled and potable water systems. Team members shall review the drawings.

2) Discuss any changes to recycled and potable water systems since the last cross-connection test, and verify that all changes have been recorded on the appropriate record drawing(s). If possible, visually inspect changes to verify that no cross-connection has been created.

3) Verify that appropriate backflow prevention devices are installed and have been tested annually in accordance with California Title 17 Regulations. Devices are typically located on the potable water line, downstream of the meter.

4) Check meter locations of the recycled water and potable water lines to verify that no modifications have been made and no cross-connections are visible.

5) Discuss who has access to the recycled water system (e.g., gardeners, maintenance and facilities workers). Establish if they are employed by the Customer or a contractor, if they can read and speak English and what type of training they have had this past year on the use of recycled water.

6) Verify that required signs are in place and in good condition.

7) Verify that all portable recycled water fixtures (e.g., hose, quick connect valves) are permanently marked to indicate that they are only to be used on the recycled water system.

Cross-Connection Control Testing

The *Cross-Connection Test and Report Form* (Form C-2) should be completed in conjunction with the testing.

The basic concept employed in checking for cross-connections between the potable water and recycled water systems is to pressurize one system at a time, and to then check the other system for flow, which would indicate that a cross-connection exists.

The following procedure shall be used to determine if a cross-connection exists.

1) The potable water system shall be activated and pressurized. The recycled water system shall be shut down at the service connection only, depressurized, and where feasible, drained. Verify that all other valves on the recycled system, downstream of service connection, are open.
2) The potable water system shall remain pressurized for a minimum of one hour.
3) All outdoor potable water fixtures and all indoor drinking fountains shall be tested for flow. No flow from a potable water outlet would indicate that it could be connected to the recycled water system.
4) The recycled water system shall be tested for flow. This shall be done by opening all quick connect bibs, sprinkler heads, and any other outlets on the irrigation system. Flow from any recycled water outlet shall be an indication that a cross-connection exists.[2]
5) Any drain points or outlets, on the recycled water system shall be checked for flow during and at the end of the test period.
6) The potable water system shall then be shut down, and where feasible, drained. The recycled, water system shall then be re-activated and pressurized.
7) The recycled water system shall remain pressurized for a minimum of one hour. Recycled water fixtures shall be tested for flow to verify that the recycled water system is fully pressurized.

8) All outdoor potable water fixtures and all indoor drinking fountains shall be tested and inspected for flow. A representative number of other indoor potable water fixtures shall be tested. This should include one fixture in each rest room and at least 10 percent of the fixtures on each floor. The specific number will be determined by the Inspection Team based on the site's recycled and potable water systems drawings. Flow from any potable water outlet shall be an indication that a cross-connection exists.

9) If no flow is detected in any fixture, which would have indicated a cross-connection, the test is complete and the system may be re-pressurized.

Procedure if Cross-Connection is Discovered

The *Procedure if Cross-Connection is Discovered Form* (Form C-3) should be used to document the procedure if a cross-connection is discovered. The following procedure shall be activated immediately, in the presence of the DDSD's Cross-Connection Control Specialist.

1) Recycled water piping to the facility shall be shut down at the meter, and the recycled water system shall be depressurized and drained where feasible.

2) Potable water service shall be shut down at the meter.

3) The cross-connection shall be determined and disconnected.

4) The systems shall be tested again as described above (under *Cross-Connection Control Testing* form (Form C-2)).

5) The potable water system shall be chlorinated with 50 ppm chlorine for 24 hours, per methods described in AWWA Standard for Disinfecting Water Mains (ANSI/AWWA 065 1-92). A bacteriological test shall be performed. If test results are acceptable, the potable water system may be recharged. If not, repeat to step 5.

6) The retrofit plans must be revised to reflect any changes required to eliminate the cross-connection and the revised plans must be resubmitted to DDSD for review.

NOTES:

1 Appendix J of the 1994 UPC covers Recycled Water Systems for Non-Residential Buildings, and the cross-connection test described therein was developed specifically for dual plumbed systems inside buildings. Strict adherence to this procedure is not possible when applied to irrigation systems. Appendix J recognizes that alternative requirements may be appropriate for institutional buildings and for recycled water uses located outside of structures.

2 Because of difficulties in completely draining the irrigation system, drainage flow from the recycled water system could persist for some time. In this case, the duration of the test shall be extended as necessary.

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM
CROSS-CONNECTION TEST AND REPORT

Site Name:

Address:

Form Completed by: Test Date:

SITE CROSS-CONNECTION TESTING HISTORY

(To be completed by Recycled Water Program Coordinator prior to test)

Is this the site's first cross-connection test? ❑ Yes. Skip to Today's Scheduled Testing ❑ No, continue

Date of last Pre-Test and Visual Inspection? / / ❑ Passed ❑ Failed

Date of last complete testing (Parts I & II)? / / ❑ Passed ❑ Failed

If failed, attach a copy of the failed "Testing Report" form.

TODAY'S SCHEDULED TESTING

❑ Part I, Pre-Test and Visual Inspection, only ❑ Parts I and II

Note: Initial test shall consist of Parts I and II. Thereafter, Part I is required annually, Part II is required at least once every 4 years.

NAMES OF INSPECTION TEAM

Recycled Water Program Inspector: _____

DDSD Cross-Connection Control Specialist: _____

Customer's Recycled Water User Supervisor: _____

Others Present	Affiliation/Title
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____

PART 1: PRE-TEST AND VISUAL INSPECTION		
Note: Cross-connection testing shall be performed as described in the applicable "Cross-Connection Test Procedures"		
YES	NO	For any "No" response, an explanation must be given below under No. 8
		1a. User provided record drawings of recycled and potable water systems?
		1b. Inspection team reviewed drawings?
		2a. Discuss any changes made to recycled and potable systems since last test?
		2b. Have changes (from 2a) been recorded on record drawings?
		2c. Team visually inspected changes to verify absences of cross-connections?
		3a. Team accounted for all backflow prevention devices on site?
		3b. Have all backflow preventers been tested annually in accordance with California Title 17 regulations?
		4a. Team field checked location of recycled water meter and potable water meter?
		4b. Do all meters appear to be correctly installed?
		4c. Are water meters free of visible cross-connections?
		5a. Customer has provided a list of the individuals with access to use recycled water system?
		5b. Discussed training of Recycled Water User Supervisor and workers?
		6a. Are RW quick couplers and other recycled water access points easily identified as RW fixtures by signs or color coding?
		6b. Is a "Recycled Water - Do Not Drink" sign posted where the public enters a recycled water use area?
		6c. Are appropriate signs or other markers in place at recycled water meters, valve boxes, controllers?
		6d. Are all the signs in good condition, legible and visible?
		7. Are all portable fixtures and hoses used on the RW system (quick connect valves, hoses, etc) permanently labeled to indicate they are for use only on the RW system?
8. An explanation must be given for any "NO" response above (identify by number).		

PART 1: PRE-TEST AND VISUAL INSPECTION
RESULTS OF PRE-TEST AND VISUAL INSPECTION TEST
❑ **PASSED**. If scheduled, proceed with the Cross-Connection Control Test.
❑ **FAILED**. The following action must be completed by the Customer prior to re-testing and must be done by (date) _____. When the corrections are made, the Customer must call the Recycled Water Coordinator to reschedule a test.
By: _____ DDSD Cross-Control Specialist Received by: _____ Customer Representative Date: _____ Date: _____

PART II: CROSS-CONNECTION CONTROL TEST		
A. TEST OF POTABLE WATER SYSTEM	**Check When Complete**	✓
Step 1.	Turn off recycled water system at meter.	
Step 2.	Open all valves on the recycled water supply, downstream of the meter.	
Step 3.	Depressurize and drain (if possible) recycled water system. Record pressure in potable water system _____ psi	
Step 4.	Confirm potable system is activated and pressurize by operating a few potable fixtures. Record pressure in potable water system _____ psi	
Step 5.	Potable water system must remain pressurized after recycled water system has been depressurized, while Steps 6 through 10 are performed.	
Step 6.	Identify the location, and obtain access, to all the potable water fixtures to be tested in Steps 7 and 8.	
Step 7.	Open all (one at a time) outdoor potable water fixtures and note any fixtures that have no flow.	
Step 8.	Try all indoor drinking fountains, and note any that have no flow. List potable fixtures with no flow in Steps 7 and 8:	
Step 9.	Open (one at a time) all fixtures on the recycled water system. Note if water flows through any: Quick connects _____ Sprinkler heads _____ Other _____	

PART II: CROSS-CONNECTION CONTROL TEST		
Step 10.	Check to see if there is any flow from any fixture or drain point. Note location of flow.	
Step 11.	If no flow was found in Steps 9 and 10, proceed to Step 13. Otherwise a cross-connection has been indicated. Flow discovered in Steps 9 and 10 may be caused by an incomplete drainage of the recycled system. If inspection team suspects this is the case, the duration of the test shall be extended.	
Step 12.	If a valid cross-connection is discovered, continue with testing of recycled water system, then proceed with "Procedures if Cross- Connection is Discovered". Note locations of Cross-Connections:	
B. TEST OF RECYCLED WATER SYSTEM	**Check When Complete**	✓
Step 13.	Turn off potable water supply at meter.	
Step 14.	Drain and depressurize potable water supply by opening fixtures downstream of meter. Record pressure in potable water system: _____ psi.	
Step 15.	Turn on recycled water system and pressurize. Confirm recycled water system is pressurized by operating a few sprinklers. Record pressure in recycled water system (if available): _____ psi.	
Step 16.	Recycled water system must be pressurized while Steps 17- 20 are performed.	
Step 17.	Select the indoor potable water fixtures which will be tested in Steps 18 and 19. This should include all drinking fountains, one fixture in each restroom and at least 10 percent of the fixtures on each floor. (Note: In buildings with dual plumbing, all potable fixtures must be tested).	
Step 18.	Check to see if any flow comes out of any of the indoor fixtures identified in Step 16. Flow from any fixture indicates a cross-connection exists. Note location of cross connections:	
Step 19.	Turn on, one at a time, all outdoor potable water fixtures. Flow from any fixture indicates a cross-connection exists. Special attention shall be given to those fixtures listed in Steps 6 and 7. Note location of cross-connections.	
Step 20.	Record pressure in recycled water system (if available): _____ psi	

RESULTS OF CROSS-CONNECTION TESTING

❑ **PASSED**, turn on the potable water supply

❑ **FAILED**, immediately follow "Procedures if Cross-Connection is Discovered"

By: _____ Received by: _____
DDSD Cross-Control Specialist Customer Representative

Date: _____ Date: _____

Copies: _____ Field Inspector
_____ User
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

PROCEDURE IF CROSS-CONNECTION IS DISCOVERED

In the event that a cross-connection is discovered, the following procedure shall be activated immediately in the presence of the District's Cross-Connection Specialist.

Site Name:

Site Address:	Date of Procedure:

NAMES OF PEOPLE PRESENT DURING PROCEDURE

Recycled Water Program Inspector: _____

DDSD Cross-Connection Control Specialist: _____

Customer's Recycled Water User Supervisor: _____

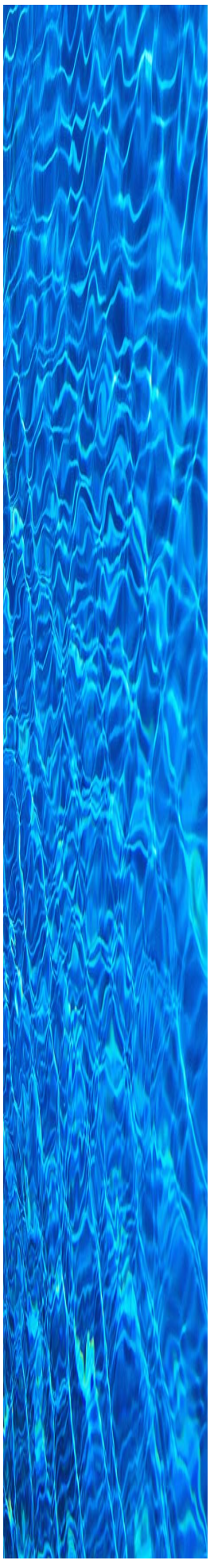
Others Present	Affiliation/Title
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____

PROCEDURE	**Check When Complete**	✓
Step 1.	Turn off the recycled water service at the meter.	
Step 2.	Depressurize the system by turning on a few sprinklers and drain the recycled water system, where feasible.	
Step 3.	Find the cross-connection and disconnect.	
Step 4.	Complete the 19 steps in Part II of the "Cross-Connect Testing and Report" and pass test.	
Step 5.	Disinfect the potable water system with 50 ppm chlorine for 24 hours per ANSI/AWWA C651-92.	
Step 6.	Flush the potable water system.	
Step 7.	Coordinate with the DDSD laboratory to arrange for sampling.	
Step 8.	Analyze the sample for coliform bacteria.	
Step 9.	Review the lab results. If the results are negative in the confirmed coliform tests, the potable water system may be recharged and put back into service. If the results are positive in a confirmed coliform test, repeat Steps 6 – 9.	
Step 10.	Customer to revise drawings of the recycled and potable water systems to reflect changes made in eliminating the cross-connection	
Step 11.	Customer to submit revisions to District for review within two weeks of correction by _____ (date).	

OVER

Describe nature and location of cross-connection and means of correction.	

Copies: _____ Field Inspector
_____ User
_____ File (Original)



Appendix D
Site Monitoring Forms

D-1 District Inspector's Monitoring Report

D-2 Customer's Self-Monitoring Report

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

DISTRICT INSPECTOR'S MONITORING REPORT

Name/Location of Site: Customer No.:

Date of Inspection: Name of Inspector:

❑ Scheduled ❑ Unannounced ❑ Customer representative present

GENERAL PERMIT COMPLIANCE		
1. Is recycled water used for any purposes not listed in the permit?	Yes* ❑	No ❑
2. Are use rates consistent with those listed in the permit?	Yes ❑	No* ❑
3. Is irrigation limited to areas shown in the original permit application?	Yes ❑	No* ❑
4. Have any alterations been made to the recycled water system since the permit was issued?	Yes* ❑	No ❑
5. Is the on-site recycled water supervisor the same person specified in the permit?	Yes ❑	No* ❑
6. Has the on-site staff been trained in the use of recycled water and measures to protect	Yes ❑	No* ❑
7. Has Customer been conducting self-monitoring and filing report in accordance with their permit?	Yes ❑	No* ❑
PROHIBITIONS		
8. Is recycled water escaping the use area through surface runoff or airborne spray? (If yes, note affected area and estimate volume) _____	Yes* ❑	No ❑
9. Are any odors associated with use of the recycled water? (Note source, characterization and travel distance below)	Yes* ❑	No ❑
10. Is there prolonged ponding of recycled water due to over-irrigation or evidence of mosquito breeding as a result of ponding?	Yes* ❑	No ❑
11. Are any notification signs and markings identifying recycled water missing, non-legible, or obstructed?	Yes* ❑	No ❑
12. Are there leaks or breaks in the irrigation system piping or evidence of plugged, broken, or otherwise faulty irrigation system components?	Yes* ❑	No ❑
13. Is recycled water being sprayed directly on people, dwellings, food-handling facilities, or drinking fountains?	Yes* ❑	No ❑
BACKFLOW/CROSS-CONNECTION TESTING		
14. Have backflow prevention devices been tested in last 12 months? Date: _____	Yes ❑	No* ❑

15. The most recent cross-connect testing conducted:		Passed	Failed*
Part I Pretest and Visual Inspection	Date: _____	❑	❑
Part II Cross-Connection Control Test	Date: _____	Passed	Failed*
		❑	❑
16. Is the site due for cross-connection testing?		Yes*	No
		❑	❑

IMPOUNDMENTS, IF APPLICABLE

17. Is there evidence of overflows, leaks, erosion of dikes, etc. of storage ponds or impoundments?	Yes* ❑	No ❑

REQUIRED ACTION

❑ None By District: _____ _____ _____ _____ _____	Compliance Date
By Customer: _____ _____ _____ _____ _____	Compliance Date

COMMENTS

All responses to a box with an asterisk **(*)** require an explanation. Comments should be identified by item number.

_____
_____
_____
_____
_____

SIGNATURE

Signature and date: _____

Copies: _____ Field Inspector
_____ User
_____ File (Original)

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

CUSTOMER'S SELF-MONITORING REPORT

Name/Location of Site:	Monitoring frequency specified in permit:	Customer's Designated RW User Supervisor:

MONITORING DATA

Observer's initials and date monitored →				
Is recycled water escaping the use area through surface runoff or airborne spray? (If yes, note affected area and estimate volume)	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑
Are any odors associated with use of the recycled water? (Note source, characterization and travel distance below.)	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑
Is there prolonged ponding of recycled water due to over-irrigation or evidence of mosquito breeding as a result of ponding?	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑
Are all warning signs labels and markings identifying recycled water in place, legible and visible?	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑
Are there leaks or breaks in the irrigation system piping or evidence of plugged, broken, or otherwise faulty irrigation system components?	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑
Is recycled water being sprayed directly on people, dwellings, food-handling facilities, or drinking fountains?	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑	Yes ❑ No ❑

Explain any "yes answers. Note date of comment and specific locations within site. Attach additional sheets if necessary.

NOTES

Note any recommended improvements or changes:

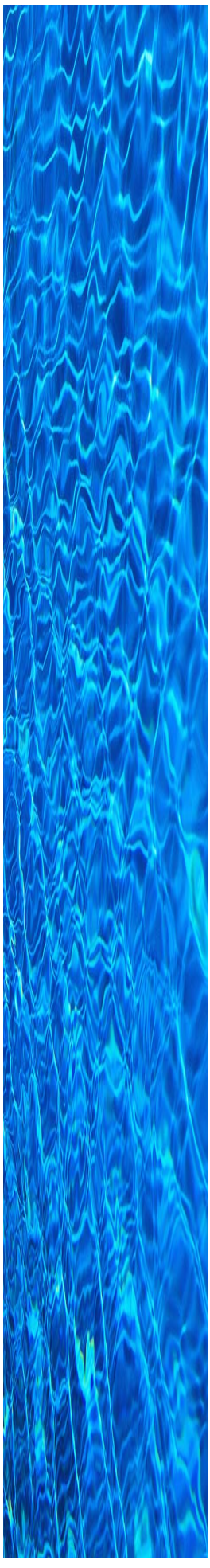
List any changes in recycled water piping system from previous monitoring report. Explain.

_____ Customer's Recycled Water Supervisor	_____ (date)	This report shall be submitted to the Recycled Water Program and maintained on-site.

Copies: _____ Field Inspector

_____ User

_____ File (Original)



Appendix E
Examples of Recycled Water Signs

RECYCLED WATER

DO NOT DRINK

Delta Diablo Sanitation District Recycled Water Program

2500 Pittsburg-Antioch Highway Antioch, California 94509

(925) 756-1900

Recycled Water

is used at this site for Landscape Irrigation

DO NOT DRINK

Delta Diablo Sanitation District Recycled Water Program

2500 Pittsburg-Antioch Highway Antioch, California 94509

(925) 756-1900

FIRE SYSTEM RISERS

These pipes contain RECYCLED WATER

Do Not Interconnect

with the potable water system.

Delta Diablo Sanitation District Recycled Water Program

2500 Pittsburg-Antioch Highway Antioch, California 94509

(925) 756-1900

CONTROLLER
OPERATES IRRIGATION
SYSTEM USING

RECLAIMED WATER

1. CONTROLLER OPERATION: 9:00 PM – 6:00 AM
2. OPERATE CONTROLLER TO MINIMIZE OVERSPRAY AND RUNOFF
3. MAINTAIN CONTROLLER SCHEDULE AND SYSTEM MAP LOCATED INSIDE
4. FAILURE TO COMPLY MAY RESULT IN LOSS OF SERVICE

ESTE CONTROLADOR OPERA
EL SISTEMA DE IRRIGACION
UTILIZANDO

AGUA RECICLADA

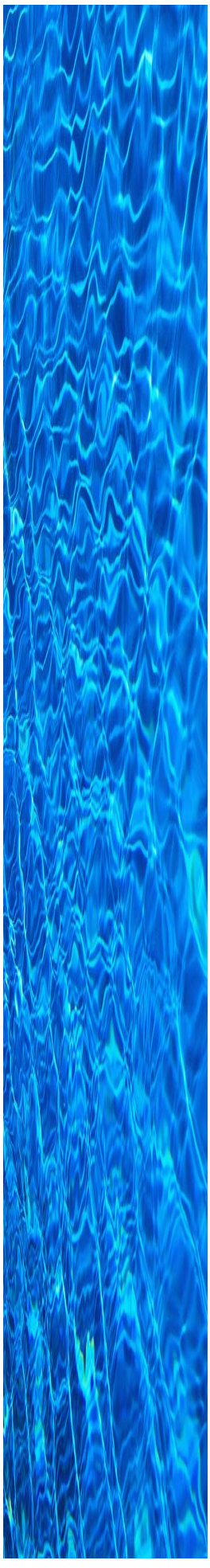
1. HORARIO DE OPERACION DEL CONTROLADOR: DE 9:00 PM – 6:00 AM
2. OPERE EL CONTROLADOR DE MODO DE MINIMIZAR UN ROCIO EXCESIVO Y DERRAMES.
3. CUMPLA CON EL PROGRAMA DEL CONTROLADOR Y CON EL MAPA DEL SISTEMA UBICADOS EN EL INTERIOR
4. ESTE SERVICIO PODRIA SER ANULADO EN CASO DE NO CUMPLIRSE CON ESTAS NORMAS

SE PROHIBE LA OPERACION NO

RECYCLED WATER

DO NOT DRINK

POTABLE
WATER



Appendix F
Alternative Separation Criteria for Recycled Water Piping

BASIC SEPARATION STANDARDS

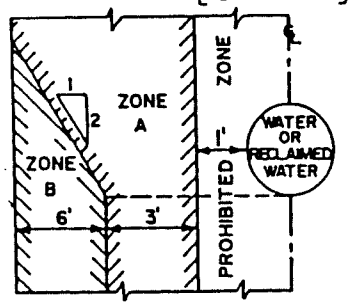
1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE DOMESTIC WATER AND RECLAIMED WATER MAINS AND SEWER LINES SHALL BE AT LEAST 10 FEET.
2. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST ONE FOOT ABOVE SANITARY SEWER AND RECLAIMED WATER LINES WHERE THESE LINES MUST CROSS.
3. SPECIAL PROVISIONS: ALTERNATIVE CONSTRUCTION CRITERIA WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN BELOW:

SPECIAL PROVISIONS GENERAL NOTES

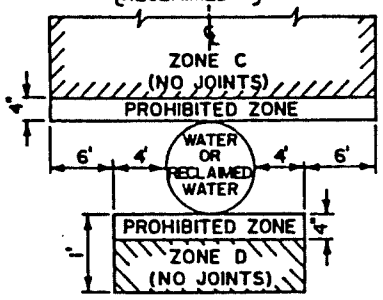
1. NO PIPE JOINTS SHALL BE PERMITTED WITHIN ZONES C AND D.
2. ALL D.I.P. MUST HAVE HOT DIP BITUMINOUS COATING AND ALL CLASS 200 P.V.C. MUST MEET DR-14 PER AWWA C900 OR EQUIVALENT.
3. SEWER FORCE MAINS SHALL NOT BE PERMITTED IN ZONES A THROUGH D.
4. THIS CRITERIA DOES NOT APPLY FOR A RECLAIMED WATER LINE CROSSING ANOTHER RECLAIMED WATER LINE.
5. THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE HOUSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

SITUATION:

LOCATION OF NEW [SEWER / RECLAIMED W.] LINES TO EXISTING [DOMESTIC W. / RECLAIMED W.] LINE



PARALLEL CONSTRUCTION



PERPENDICULAR CROSSING

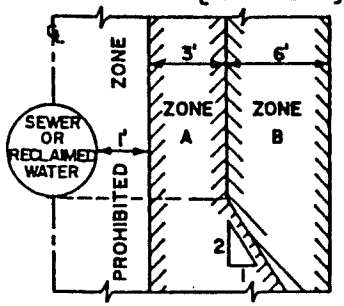
IF ANY SEWER OR RECLAIMED WATER PIPELINES ARE TO BE CONSTRUCTED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION SHALL BE REQUIRED AS DESCRIBED BELOW.

CONSTRUCTION REQUIREMENTS

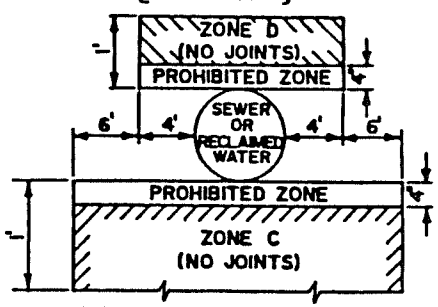
ZONE	SEWER	RECLAIMED WATER
A	DO NOT LOCATE ANY PARALLEL SEWER OR RECLAIMED WATER LINES IN THIS AREA WITHOUT STATE AND LOCAL HEALTH DEPARTMENT APPROVAL.	
B	USE V.C.P. OR D.I.P. WITH COMPRESSION JOINTS.	USE CLASS 200, TYPE II, A.C.P. OR D.I.P. OR CLASS 200 P.V.C.- AWWA C900
C	USE D.I.P. WITH MECHANICAL JOINTS OR CLASS 200 P.V.C. - AWWA C900	USE D.I.P. OR CLASS 200 P.V.C.- AWWA C900
D	USE D.I.P. OR CLASS 200 P.V.C. - AWWA C900	USE D.I.P. OR CLASS 200 P.V.C.- AWWA C900

SITUATION:

LOCATION OF NEW [DOMESTIC W. / RECLAIMED W.] LINES TO EXISTING [SEWER / RECLAIMED W.] LINE



PARALLEL CONSTRUCTION



PERPENDICULAR CROSSING

IF ANY WATER OR RECLAIMED WATER PIPELINES ARE TO BE CONSTRUCTED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION SHALL BE REQUIRED AS DESCRIBED BELOW.

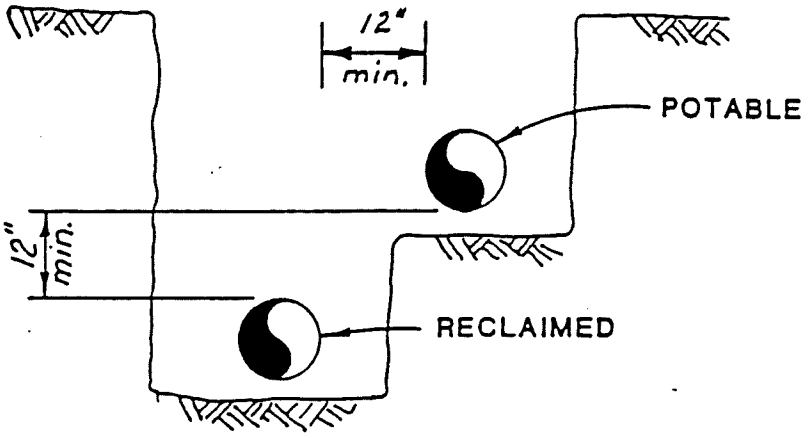
CONSTRUCTION REQUIREMENTS

ZONE	DOMESTIC WATER OR RECLAIMED WATER
A	DO NOT LOCATE ANY PARALLEL DOMESTIC WATER OR RECLAIMED WATER MAIN IN THIS AREA WITHOUT STATE AND LOCAL HEALTH DEPARTMENT APPROVAL.
B	USE CLASS 200, TYPE II, A.C.P., D.I.P. OR CLASS 200 P.V.C.- AWWA C900
C	USE D.I.P. OR CLASS 200 P.V.C.- AWWA C900
D	USE D.I.P. OR CLASS 200 P.V.C.- AWWA C900

REVISIONS NO	BY	DATE	APPROVED	DRAWN CD	REVIEWED BY STANDARD SPECIFICATIONS COMMITTEE		IRVINE RANCH WATER DISTRICT STANDARD DRAWING	
				CHECKED RWC	CHAIRMAN	JAN., 86 DATE	STATE HEALTH DEPT. EXCEPTIONS TO BASIC SEPARATION STANDARDS FOR D/W, R/W, & S/SEWER PIPELINES	W-14
				DATE JAN., 86	APPROVED BY ENGINEERING DEPT. DIRECTOR OF ENGINEERING	JAN., 86 DATE		SHEET 1 OF 1
				NO SCALE				

SYSTEM SEPARATION REQUIREMENTS

COMMON TRENCH

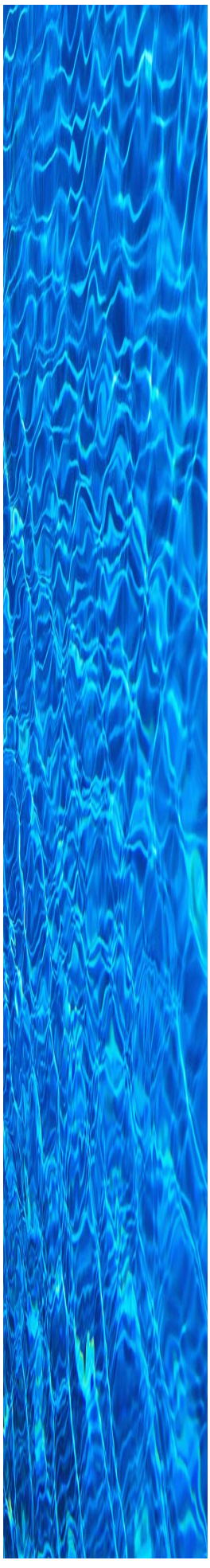


COMMON TRENCH

Reclaimed water and domestic water piping can be installed in a common trench if the basic separation cannot otherwise be reasonably met. The domestic water line shall be placed on a solid shelf excavated at one side of the common trench. The bottom of the water line shall be 12-inches above the top of the reclaimed water line. Additional corrosion protection should be considered on the domestic water line.

Figure 3

From Marin Municipal Water Water District
Reclaimed Water Manual and Onsite User Requirements



Appendix G
Hydrant Service Forms

G-1 Hydrant Service Application
G-2 Hydrant Service Log
G-3 Hydrant Service Inspection Checklist

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

CONSTRUCTION WATER PERMIT

USER INFORMATION

Name of User: _____ Address: _____

Phone: _____

DISTRIBUTOR INFORMATION

Distributor: _____ Address: _____

(if different from above)

Phone: _____

TYPE OF WATER USE

Application Method: ☐ Tank Truck ☐ Spray ☐ Wash Water ☐ Other _____

Use of the Water _____

Where Applied: County _____ City _____

CERTIFICATION

I HEREBY CERTIFY UNDER PENALTY OF PERJURY THAT THE INFORMATIONPROVIDED IN THIS APPLICATION AND IN ANY ATTACHMENT IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

Signature of Discharger _____ Title: _____ Date: _____

Signature of User _____ Title: _____ Date: _____

Signature of Distributor _____ Title: _____ Date: _____

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

CONSTRUCTION WATER RELEASE FORM

DISTRIBUTOR INFORMATION

Distributor: _____

(if different from above)

Phone: _____

Address: _____

_____

_____

DATE	VOLUME COLLECTED	TRUCK LICENSE	DISCHARGE SIGNATURE

COPIES OF THIS FORM SHALL BE KEPT AT PRODUCING FACILITY AND IN TRANSPORT VEHICLE

DELTA DIABLO SANITATION DISTRICT RECYCLED WATER PROGRAM

CONSTRUCTION WATER INSPECTION CHECK LIST

(To be completed by District)

Date and Time of Inspection: _____

Specific uses of Recycled Water _____

Owner/Operator Present: _____

Tank Truck License Number _____

Weather Conditions: _____

Check the appropriate items listed below:

Type of Application: ☐ tank truck ☐ spray ☐ wash water ☐ other _____

Standard Observations:	Yes	No	N/A
a) Recycled Water is used in non-designated areas:	☐	☐	☐
b) Odor Nuisance:	☐	☐	☐
c) Escape of recycled water to areas of potential public health hazards	☐	☐	☐
d) Saturated soils or ponding in the use areas:	☐	☐	☐
e) Vehicle hauling recycled water is leaking or is not properly labeled with warning signs	☐	☐	☐
f) Recycled water sprayed on eating areas or drinking fountains	☐	☐	☐
g) When required, warning signs are not properly posted in use area	☐	☐	☐
h) Buffer zones from sensitive areas not maintained	☐	☐	☐
i) Broken pipes or spray nozzles:	☐	☐	☐

If a "yes" is checked for any of the above, provide explanation below:

_____

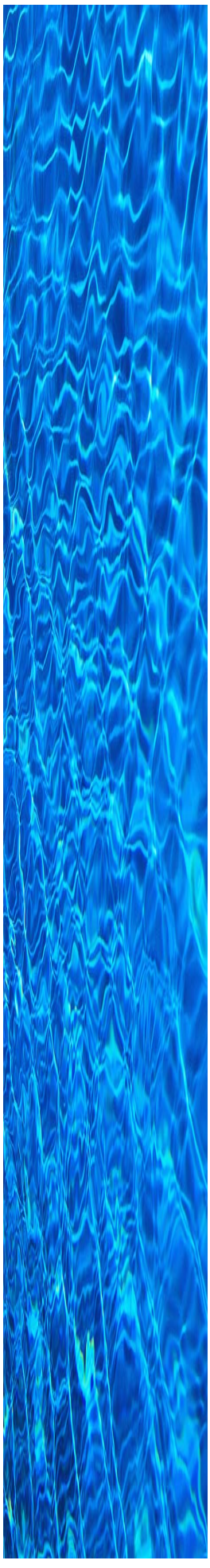
_____

_____

Additional Notes: _____

_____

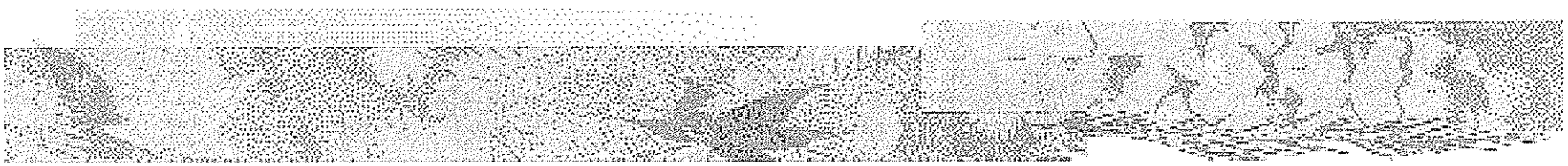
Signature of Inspector: _____ Date: _____



Appendix H
Training Program

COPY

CITY OF ANTIOCH
RECYCLED WATER
USER SUPERVISOR TRAINING



September 2008

RECYCLED WATER

- What is it?
- Why is it regulated?
- Who regulates it?
- Where can it be used?
- How can it be used?

RW USE PERMIT

- Specifies monitoring program.
- Specifies prohibitions.
- Specifies actions for use.
- Specifies actions for non compliance.

Recycled Water User Manual

- Provide general information related to RW use.
- User Supervisor should be very familiar with this book.
- Should be used for training personnel.
- ***Questions about the use of recycled water or the Manual should be directed to the DDSD.***

MONITORING

- User staff should conduct quarterly system self inspections and forward results to DDSD.
- User staff should report system problems to User Supervisor immediately for correction in a timely fashion.
- Regulators can conduct random spot checks of users and of purveyors.

Separate Plumbing Systems

- Both potable and recycled water systems on the same site.
- These systems must always be kept separate.
- Public should not be allowed access to any part of the Recycled Water system equipment.

PROHIBITIONS

- Drinking of recycled water is prohibited at all times.
- Overspray to food processing areas.
- Use of household type hoses on system.
- Modifications to system without written approval.
- Review permit and regulation for complete list of prohibitions.

Personnel Training

- All new employees must be trained in the proper use of recycled water.
- Supervisory personnel and the User Supervisor should be held accountable for proper use.
- User Supervisor is responsible for training all operations personnel so they are familiar with the use of recycled water.

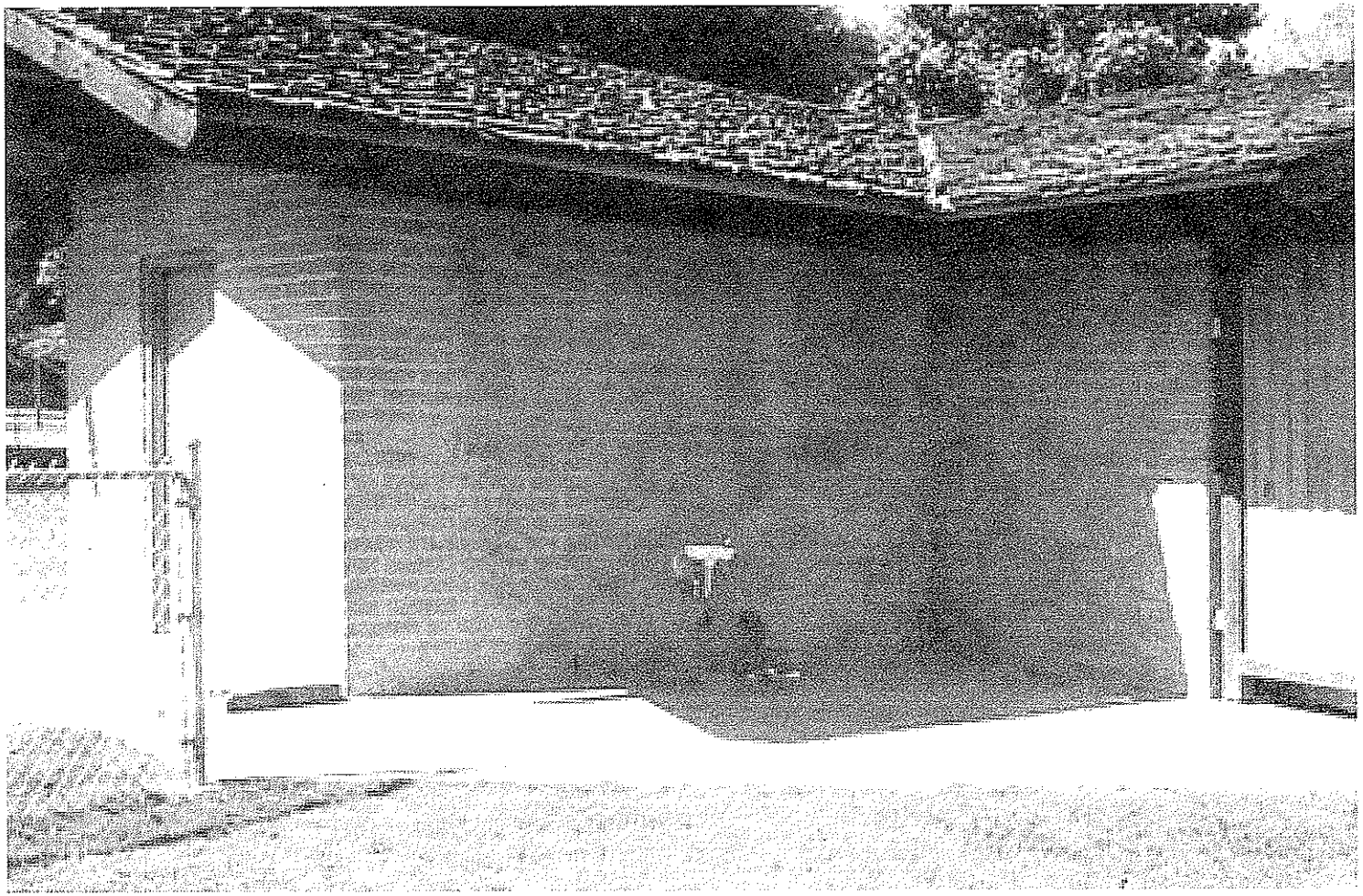
Personnel Training

Training program should include, but not be limited to, the following:

- **Recycled water may never be used for human consumption.**
- Working with recycled water is safe if common sense is used and appropriate regulations are followed.
- Ponding and runoff are not allowed.

Personnel Training

- Good personal hygiene must be followed.
- Operations personnel must understand that there is never to be a direct connection between the recycled water system and the potable water system.



The pattern on the walls indicates that this irrigation water. If recycled water is to be used, then the spray pattern must be altered or the drinking fountain somehow shielded.

Period of Use

- Usually between the hours of 10 p.m. and 6 a.m.

- Restricted public access areas can be irrigated at any time.

- Include dry-out time before the area is to be used by the public.

VIOLATIONS

- Failure to maintain equipment
- Run off, over spray, or ponding
- Failure to report changes
- Non specified uses
- Use of standard hose bibs
- Cross connecting to potable water system

NON COMPLIANCE

- Minor infractions
  - Notice of violation
- Serious violations
  - Report to RWQCB w/ in 24 hours
  - Follow up report w/ in 15 days

CONSEQUENCES

- Enforcement actions can include
  - More stringent monitoring requirements
  - Monetary penalties (by regulatory agency)
  - Termination of recycled water service
  - Imprisonment for criminal actions

Requirements if unauthorized discharge occurs

- See CWC Title 22, Chapter 7, Article 4, Section 13529.2

- Penalties See Section 13529.4

Section 13529.2 says…

- Any person who , without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water in or on any waters of the state , or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as
- (1) that person has knowledge of the discharge
- (2) notification is possible, and
- (3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the appropriate Regional Water Board.

Section 13529.4 says…

- 13529.4. (a) Any person refusing or failing to provide the notice required by Section 13529.2, or as required by a condition of waste discharge requirements requiring notification of unauthorized releases of recycled water as defined in Section 13529.2, may be subject to administrative civil liability in an amount not to exceed the following:
- (1) For the first violation, or a subsequent violation occurring more than 365 days from a previous violation, five thousand dollars ($5,000).
- (2) For a second violation occurring within 365 days of a previous violation, ten thousand dollars ($10,000).
- (3) For a third or subsequent violation occurring within 365 days of a previous violation, twenty-five thousand dollars ($25,000).
- The penalties in this section supplement, and shall not supplant, any other provisions of law.

EMERGENCIES

- Major breaks in distribution system.
- Discovery of cross connection to potable water system.

EMERGENCY PROCEDURES

- Notify District immediately by calling
- Lead Operator at 382-6960
- Front Desk during working hours at 756-1900
- Me at 382-4615
- In the event of a cross connection
  - Stop using potable water at the site immediately
  - Isolate potable water from City supply at point of connection.

EMERGENCY PROCEDURES

- Before potable water use can resume
  - Cross connection removed
  - Site inspected and approved by District
  - If RW has entered PW system, PW system MUST BE disinfected and tested before service can be resumed.

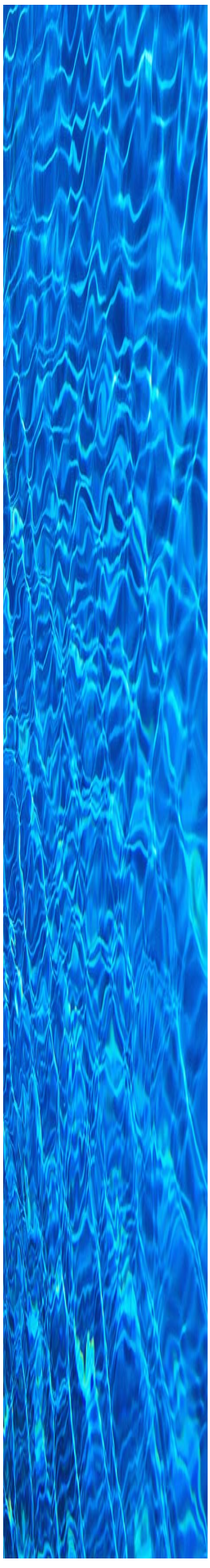
ADDITIONAL INFO

- Additional information is included in hand outs.
- Review periodically.
- Include info as part of orientation of new employees.
- RW user supervisors should review permit periodically and be familiar with all requirements of program.

INFO ON REGULATIONS

- http://ww2.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx
- http://ww2.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/RWregulations-01-2009.pdf
- http://www.waterboards.ca.gov/laws_regulations/

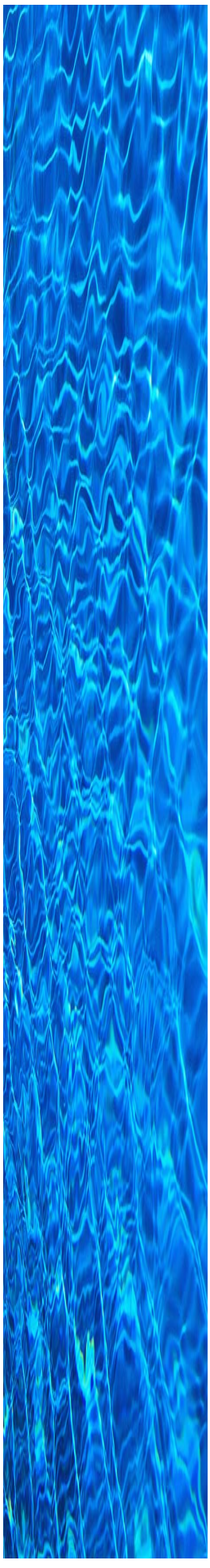
THANK YOU FOR YOUR TIME AND ATTENTION



Appendix I
Engineer's Title 22 Report

Title 22 Report

This document is transmitted as a separate file because of its size.



Appendix J
Antioch Recycled Water System

Antioch Recycled Water Project

The Antioch Recycled Water Project expands the service provided by DDSD in order to:

- **Reduce Dependence on Delta Supplies.** Delta supplies represent the bulk of water used within DDSD's service area. Expanded use of recycled water within this area would lessen the amount of Delta water diverted by the Contra Costa Water District and the City of Antioch, making water not used available for other purposes.

- **Improve Water Supply Reliability.** Since recycled water is not affected by hydrologic conditions, it provides additional dry-year reliability for irrigation customers and other users.

- **Preserve Potable Water Supplies.** Using recycled water to serve non-potable demands such as irrigation will preserve high-quality drinking water supplies for potable needs.

- **Reduce Wastewater Discharges**. DDSD currently discharges its wastewater effluent into the New York Slough. With the advent of Total Maximum Daily Load (TMDL) requirements for mercury and other constituents of concern, wastewater dischargers are facing increasingly stringent regulations. Increasing the production of recycled water will help DDSD to comply with these future regulations by reducing the amount of effluent discharged.

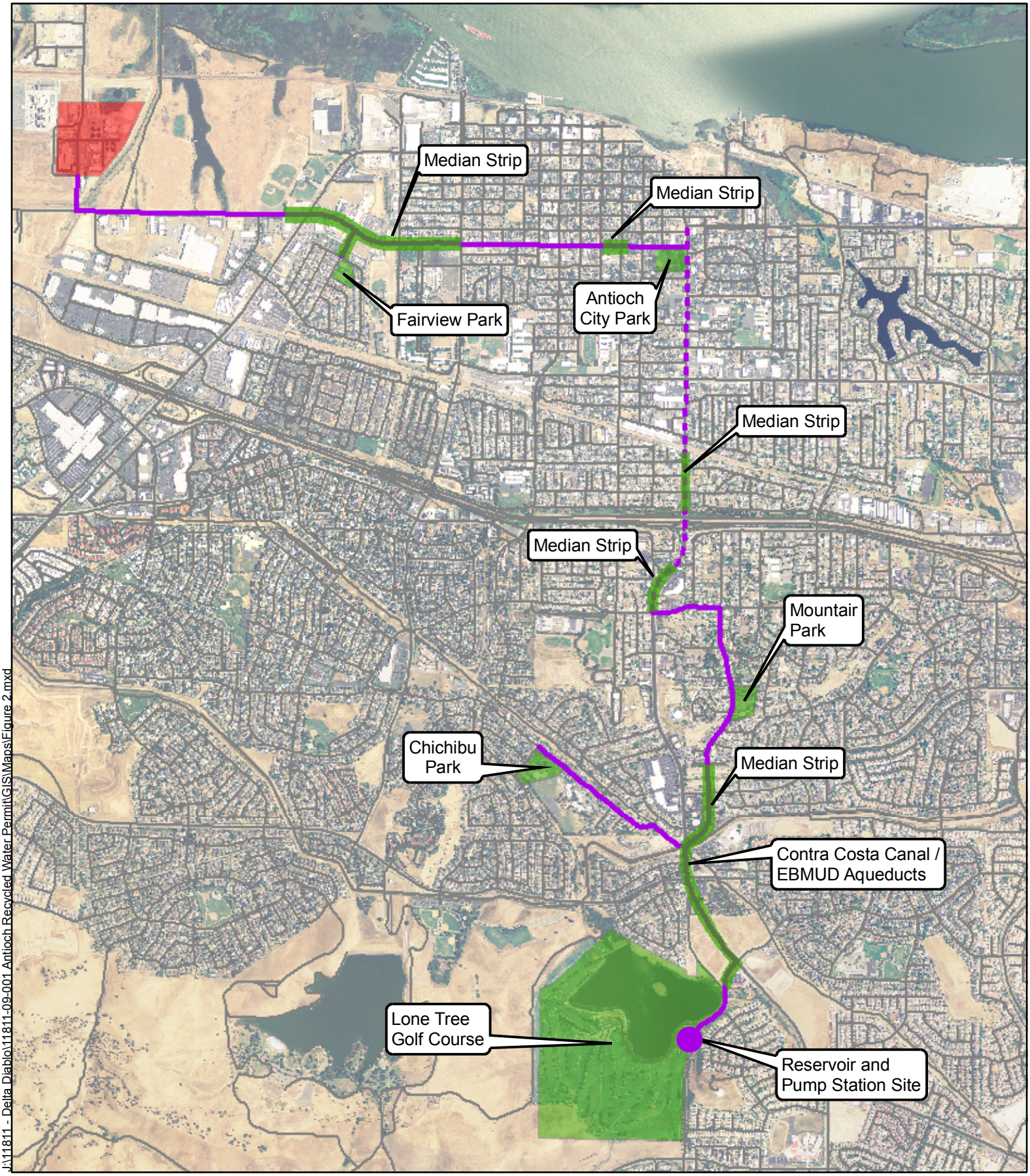
- **Better Utilize Existing Recycled Water Facilities.** Currently, DDSD's existing recycled water facilities are underutilized. Expanded recycled water use would make use of available capacity. Providing recycled water for irrigation will reduce the City's draw on the Delta, the current raw water source for the City. In addition to the environmental benefits associated with reducing intake of Delta waters, the City will also be able to increase its supply reliability for irrigation customers. Unlike current potable supplies, recycled water is unaffected by drought conditions.

The project includes construction of pipeline and connection of users as illustrated in Figure 2. The project includes a new recycled water pipeline that extends from the DDSD RWF along A Street to Lone Tree Way terminating at the Lone Tree Golf Course. Lateral pipelines are installed off the main pipeline to deliver water to specific user sites. A recycled water storage tank and pump station are located at the Lone Tree Golf Course. The project serves five major users and median strips along the pipeline route which are also illustrated on Figure 1. All water will be used for irrigation purposes. All the use areas are owned and maintained by the City of Antioch. Section 2 of the Program Manual provides detailed information on use area permitting and operating procedures. **Table 1** provides detailed information on the use area acreage, agronomic application rates, salt and nutrient loading from the potable water supply, salt and nutrient loading from the recycled water supply and the additive loading created by the conversion.

Table 1 Comparative Loading Calculations

		Water Application		***Potable Water Loading***				***Recycled Water Loading***				***Comparative Increase***	
				TDS		Nitrogen		TDS		Nitrogen		TDS	Nitrogen
User Name	Acreage	AF per acre	AF at site	LBS per acre	LBS at site	LBS per acre	LBS at site	LBS per acre	LBS at site	LBS per acre	LBS at site	LBS per acre	LBS at site
Lone Tree Golf Course	12.90	3.80	49.02	2,921.60	37,688.58	22.55	290.95	10,097.44	130,257.03	7.89	101.83	92,568.45	-189.12
Chichibu Park	14.50	3.80	55.10	2,921.60	42,363.13	22.55	327.03	10,097.44	146,412.94	7.89	114.45	104,049.80	-212.58
Mountaire Park	3.70	3.80	14.06	2,921.60	10,809.90	22.55	83.45	10,097.44	37,360.54	7.89	29.21	26,550.64	-54.24
Antioch City Park	3.80	3.80	14.44	2,921.60	11,102.06	22.55	85.70	10,097.44	38,370.29	7.89	30.00	27,268.22	-55.71
Fairview Park	1.90	3.80	7.22	2,921.60	5,551.03	22.55	42.85	10,097.44	19,185.14	7.89	15.00	13,634.11	-27.85
Medan Strips	2.03	3.80	7.71	2,921.60	5,930.84	22.55	45.78	10,097.44	20,497.81	7.89	16.02	14,566.97	-29.76
Project Totals	38.83		147.55		113,445.55		875.77		392,083.75		306.50	278,638.20	-569.27

TDS and Nitrogen Loading for Recycled Water from Chapter 2 of the Program Manual
TDS for Potable Water = 285 mg/l average from City of Antioch Annual Water Quality Report
Nitrogen as NO3 = 2.2 mg/l average from City of Antioch Annual Water Quality Report



J:\11811 - Delta Diablo\11811-09-001 Antioch Recycled Water Permit\GIS\Maps\Figure 2.mxd

Legend

- Recycled Water Pipeline Route
- Slipline Existing 18" Pipeline
- Recycled Water Use Areas
- DDSD RWF
- Streets

0 1,000 2,000 Feet

Recycled Water Program
New User Areas in Antioch

Delta Diablo Sanitation District
Contra Costa, CA
11811-09-001
October 2009

WINZLER & KELLY **Figure 2**