



Prepared for

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Water Resources Availability Study Non-Groundwater Sources Sunrise Powerlink Environmentally Superior Southern Route



engineers | scientists | innovators

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EXECUTIVE SUMMARY

Project construction is expected to require an estimated average of 300,000 gallons of water per day for construction, which is less than the estimated average daily water use of a typical golf course in the southwestern United States. Indeed, as the FEIR/EIS for the Sunrise Powerlink similarly observed: *“Water use during project construction would be a comparatively small fraction of the total water supply for the jurisdictions affected by the project, and would not change the ability of the water suppliers to serve the project area demands...Therefore, the water demand for construction of the proposed project would not be a significant impact on the regional water supply, and no mitigation measure is recommended. Although impacts to the regional water supply would not be significant and no mitigation measure is required, to further reduce adverse effects of the cumulative volume of water from all of the individual links, Mitigation Measure S-3b (use reclaimed water) would be recommended for implementation to reduce water usage for construction.”*

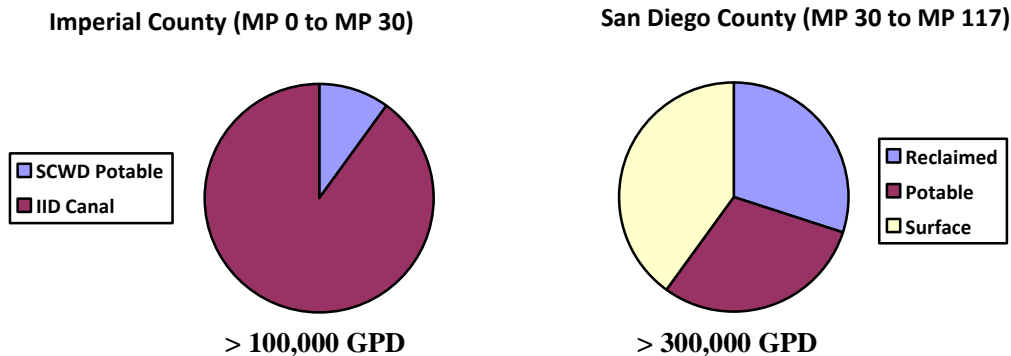
Geosyntec performed a Water Resources Availability Study for the construction of the Sunrise Powerlink Final Environmentally Superior Southern Route (FESSR) as depicted on Figure 1 of this report. A summary of the feasible water sources by area is presented in Table ES-1.

Geosyntec contacted known sources of reclaimed water, potable water, and surface water providers within reasonable distances from the Sunrise Powerlink FESSR. Based on the findings of this Water Resources Availability Study, sufficient supplies of surface water, reclaimed water, and potable water are available to construct the Sunrise Powerlink.

The following non-groundwater sources can each provide greater than 300,000 gallons of water per day for construction:

- City of San Diego reclaimed, potable, and raw surface water;
- Padre Dam Municipal Water District reclaimed and potable water;
- Lakeside Water District potable water;
- Imperial Irrigation District (IID) raw surface water; and
- Seeley County Water District (SCWD) potable water

A conceptual graphical summary of water availability for construction of the Sunrise Powerlink FESSR is presented below:



During this evaluation, Geosyntec assumed an approximate average daily demand of 300,000 gallons per day for construction water for a period of approximately 18 to 24 months. Several sources were identified as each being feasible contributors of more than 300,000 gallons per day; however, it should be noted that no single source would be utilized for the entire project demands for construction water thereby further reducing individual source-specific water demands.

The estimated total water usage for the construction of the Sunrise Powerlink (assuming an average of 300,000 gallons per day, six days per week, for 24 months), is approximately 575 acre-feet. In a 2005 study by the University of Riverside, the average annual irrigation water use for three southern California 18-hole golf courses was 585 acre-feet per year [Green, 2005]. Therefore, the total estimated water use for the temporary two-year construction of the Sunrise Powerlink appears to be similar to the recurring annual irrigation water use at many individual southern California golf courses.

Based on the findings of the evaluation, Geosyntec concurs with the statement provided in the FEIR/EIS for the Sunrise Powerlink, “*Water use during project construction would be a comparatively small fraction of the total water supply for the jurisdictions affected by the project, and would not change the ability of the water suppliers to serve the project area demands...Therefore, the water demand for construction of the proposed project would not be a significant impact on the regional water supply...*”

**Table ES-1
Summary of Feasible Water Resources
San Diego Gas Electric
Sunrise Powerlink Project**

Mile Post	Reclaimed Water		Surface Water					Potable Water					Recommendations	
	City of San Diego	PDMWD	San Vicente Reservoir	El Capitan Reservoir	Barrett Lake	Lake Morena	IID	City of San Diego	PDMWD	Helix WD ¹	Lakeside WD	City of Poway ¹		SCWD
Reported Source Gross Availability	30 MGD treatment capacity	Currently treats 21 MGD	Contains ~32,000 AF	Contains ~66,000 AF	Contains ~36,000 AF	Contains ~6,700 AF	Receives ~8,500 AF/day	Distributes up to ~200 MGD	Distributes up to ~36 MGD	Distributes up to ~24 MGD	Distributes up to ~4.2 MGD	Distributes up to ~2.7 MGD	Surplus of ~0.5 MGD	
MP-0 to MP-30							X						X	IID canal water appears to be the most feasible source
MP-30 to MP-94	X	X	X	X	X	X		X						Reclaimed and raw water appear to be feasible sources
Suncrest Substation	X	X	X	X	X	X		X						Reclaimed and raw water appear to be feasible sources
MP-94 to MP-99		X	X	X	X	X			X					Several sources are feasible; however, PDMWD potable water appears to be the most feasible
MP-99 to MP-107	X	X	X	X	X	X		X						Several sources are feasible; however, raw water from El Capitan appears to be the most feasible
MP-107 to MP-109	X	X	X	X	X	X					X			Reclaimed, raw, and Lakeside potable water appear to be feasible sources
MP-109 to MP-114	X	X	X	X	X	X		X						Several sources are feasible; however, reclaimed and raw water from City of SD appears to be the most feasible
MP-114 to MP-117.2	X		X	X	X	X		X						Several sources are feasible; however, reclaimed and raw water from City of SD appears to be the most feasible

Notes:

During construction days, the estimated average water usage is 100,000 gallons per day (0.3 acre feet per day) for construction of the transmission line.

During construction days, the estimated average water usage is 200,000 gallons per day (0.6 acre feet per day) for construction of the Suncrest Substation.

During construction days, the total estimated average water usage is 300,000 gallons per day (0.9 acre feet per day) for construction of the transmission line and Suncrest Substation.

AF - Acre Feet (325,851 gallons)

MGD - Million Gallons Per Day

MP - Mile Post

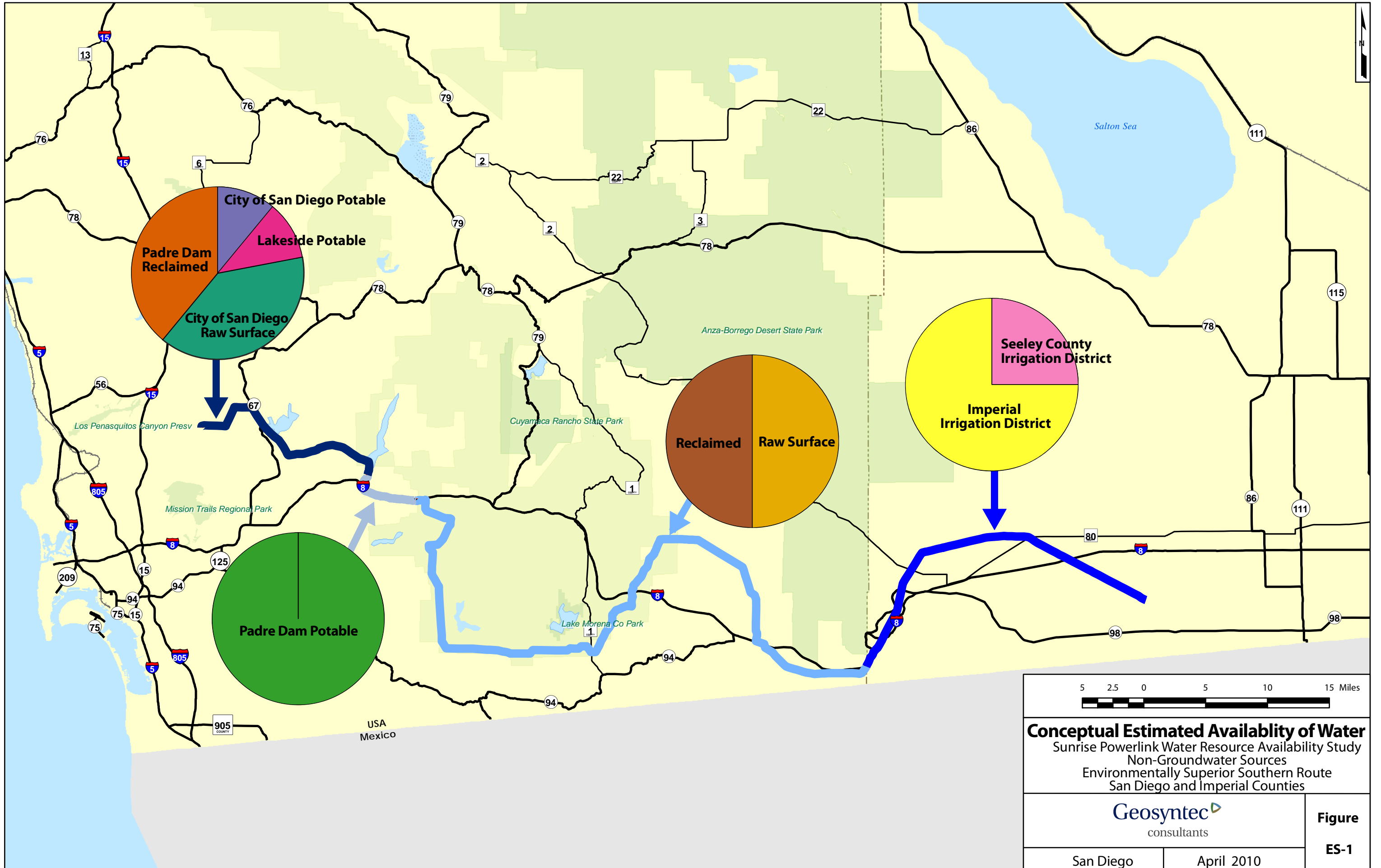
PDMWD - Padre Dam Municipal Water District

IID - Imperial Irrigation District

WD - Water District

SCWD - Seeley County Water District

1 - Although no towers are proposed within the service area, water resources for constructing access roads and/or fly yards may be available.



1. INTRODUCTION

Geosyntec Consultants Inc. (Geosyntec) is pleased to present San Diego Gas & Electric Company (SDG&E) this Water Resources Availability Study of non-groundwater sources for the Sunrise Powerlink. The Sunrise Powerlink is a new electric transmission line project which extends along an approximately 120-mile route between the existing Imperial Valley and Sycamore Canyon substations, and includes a new substation (Suncrest Substation), and other system modifications for line operations. The Sunrise Powerlink alignment evaluated during this study is presented as Figure 1. The final Environmental Impact Statement/Environmental Impact Report (FEIR/EIS) has been adopted by the California Public Utilities Commission (CPUC) for the Sunrise Powerlink [CPUC, 2008]. As a key component of the Sunrise Powerlink Project, Final Environmentally Superior Southern Route (FESSR), SDG&E required a water resources availability study to be performed to identify the sources and availability of water required during project construction. Construction is currently anticipated to commence as early as June 2010, and will require an estimated average of approximately 300,000 gallons of water per day for soil compaction, localized dust control, and other project-related uses for an estimated period of 18 to 24 months.

Water utilized during construction activities for dust control may be applied as needed to unpaved access roads, to temporarily uncovered storage piles, and prior to, during, and following earthmoving. Water utilized for soil compaction purposes will be applied at an appropriate rate to facilitate optimum moisture content for design purposes.

1.1 Objectives

The objective of the water study was to identify feasible sources of reclaimed water, surface water, and water from other available non-groundwater sources to support planned construction activities during the estimated 18 to 24-month construction phase of the Sunrise Powerlink FESSR. Sources of water considered feasible are those sources with sufficient availability, adequate supply, and acceptable proximity to the construction areas. The feasibility evaluation additionally considered the project schedule, and regulatory review and approval processes.

1.2 Water Sources Evaluated

As part of this evaluation, Geosyntec investigated the availability of the following water source types:

- ***Reclaimed Water (Section 2)***
- ***Potable Water (Section 3)***
- ***Surface Water (Section 4)***
- ***Infiltrated Water from Rock-Fill Construction (Section 5)***

Due to the logistical complexity of the project, evaluation of additional sources to achieve greater project efficiencies and to supplement the sources presented herein is ongoing. The potential availability of various groundwater sources is being evaluated independently of the alternative water sources presented herein, and may be presented in a separate report at a later date.

2. RECLAIMED WATER

According to CPUC Mitigation Measure S3-b, *“To the extent feasible, SDG&E shall coordinate with local water districts in advance in order to efficiently obtain reclaimed or potable water for delivery to the construction sites and to meet any restrictions imposed by them. The Applicant shall provide a letter describing the availability of reclaimed water and efforts to obtain it for use during construction to the CPUC and BLM a minimum of 60 days prior to the start of construction.”* This report has been prepared and is being submitted to meet this Mitigation Measure.

Geosyntec contacted numerous reclaimed water purveyors nearby the construction areas for the Sunrise Powerlink to identify available resources, locations of distribution points, suitability of use for soil compaction and dust control, regulatory process, and experience on similar projects. During correspondence with the various agencies, Geosyntec requested an average volume of approximately 300,000 gallons of reclaimed water per day for dust control and soil compaction during the approximately 18 to 24-month construction phase of the project. Based on discussions with representatives of the various agencies contacted, it was indicated that reclaimed water obtained from San Diego County Water Agencies may be utilized in the construction areas in the region between the San Diego/Imperial County line and the City of San Diego, pending approval from applicable water agencies where the water will be used.

The following reclaimed water providers were contacted to assess their potential to contribute reclaimed water to SDG&E for construction of the Sunrise Powerlink FESSR:

- The City of San Diego
- Padre Dam Municipal Water District (PDMWD)
- Native American Tribes
- The City of Poway
- Helix Water District
- Seeley County Water District
- Imperial Irrigation District (IID)
- Otay Water District

Additionally, Geosyntec contacted the San Diego County, Department of Environmental Health (DEH) and the California Regional Water Quality Control Boards (RWQCB) (Regions 7 and 9) which may require consultation or permits for the use of reclaimed water in the construction areas.

Summaries of the information obtained from the applicable regulatory agencies and individual water providers are provided in the following subsections. Tabulated information summarizing the findings of the reclaimed sources evaluated is presented in Table 1. Applicable water source locations and district boundaries are depicted on Figures 2 and 3.

2.1 Regulatory Compliance for Use of Reclaimed Water

During communication with various reclaimed water purveyors, it was indicated that the DEH and the RWQCBs may require authorization prior to the application of reclaimed water to land. Therefore, Geosyntec contacted the applicable RWQCBs and the DEH to discuss the details of the compliance requirements as described in the following subsections.

2.1.1 Regional Water Quality Control Board – Region 9 – San Diego Basin

Based on discussions with representatives of the San Diego Regional Water Quality Control Board (RWQCB-Region 9), the use of reclaimed water within the jurisdiction of RWQCB-Region 9, which spans from the Tecate Divide (Mile Post 52) westward throughout San Diego County, is required to submit a completed Report of Waste Discharge (ROWD) Form 200, unless General Conditional Waiver No. 7 is filed and approved. A copy of the application for General Conditional Waiver No. 7 is attached to this report as Appendix A.

Discharges to land from short-term reclaimed water projects (without permanent reclaimed water delivery and/or distribution systems, not to exceed 365 days) are permitted without the submission of a formal ROWD Form 200, provided coverage is obtained under RWQCB-Region 9's General Conditional Waiver No. 7.

According to Section 7.II.A of Conditional Waiver No. 7, the operator of a short-term project proposing to discharge reclaimed water must file a Notice of Intent (NOI) containing information about the operator, location of the project, source of the reclaimed water, planned period of, and frequency of discharge of reclaimed water, and the management measures, Best Management Practices (BMPs), or other measures that will be taken to eliminate or minimize the discharge of pollutants that might affect surface water and groundwater quality. The NOI must be filed a minimum of 30 days before the discharge begins.

The NOI must include a letter from the permitted reclaimed water agency supplying the reclaimed water stating that the project will comply with reclaimed water regulations in California Code of Regulations (CCR), Title 22, Sections 60301-60355. This letter shall also specify any monitoring and/or reporting required by the reclaimed water agency to demonstrate compliance with CCR, Title 22, Sections 60302-60320. Sufficient information demonstrating

that the operator will comply with waiver conditions and applicable reclaimed water regulations must be submitted before the discharge may begin.

During discussions with representatives of the RWQCB-Region 9, in addition to the NOI requirements detailed above, documentation would be required from the San Diego County DEH and from individual water districts where construction will occur, approving the proposed uses of the reclaimed water.

After obtaining waiver coverage, if a reclaimed water project will unexpectedly exceed the 365-day limit, new waiver coverage must be sought 60 days prior to the expiration of the original 365-day period.

2.1.2 Regional Water Quality Control Board – Region 7 – Colorado River Basin

Geosyntec spoke with a representative of the Colorado River Basin RWQCB (RWQCB-Region 7) to clarify current regulations regarding reclaimed water use in the areas regulated under RWQCB-Region 7 jurisdiction, which spans from the Tecate Divide (Mile Post 52) eastward throughout Imperial County. The representative indicated that the RWQCB-Region 7 supports utilizing reclaimed water resources when available but does not currently have formal regulations in place regarding the use of reclaimed water for construction purposes. It was indicated that SDG&E shall provide a letter to the Region 7 RWQCB documenting the project specifics, proposed uses and quantities of reclaimed water, hydrologic areas where it will be used, reclaimed water quality, and the RWQCB-Region 9 regulations that will be followed. Subsequent to receipt and approval of the letter provided by SDG&E, the RWQCB-Region 7 will provide a written response to document their approval of this discharge. It was noted that the RWQCB-Region 7 retains the jurisdiction to implement additional regulatory requirements if and when specific reclaimed water guidelines are adopted. .

2.1.3 San Diego County, Department of Environmental Health

According to the Recycled Water section of DEH’s website, DEH regulates the use of reclaimed water through a delegation agreement with the State Department of Public Health [DEH, 2001]. The purpose of the delegation is to protect the public from health risks associated with cross-connections of reclaimed water and drinking water supplies, as well as to prevent health risks from body contact with reclaimed water. Geosyntec contacted a representative of DEH to discuss the proposed uses of reclaimed water. The representative indicated that the primary concern is the potential for cross-connection between reclaimed water sources and drinking water sources from irrigation. Additionally, DEH indicated that if the reclaimed water uses are

exclusively for dust control or soil compaction, where no surface water runoff or infiltration occurs, then DEH would not be involved from a regulatory standpoint.

Geosyntec understands that a small component of the overall demand for construction water for the Sunrise Powerlink includes temporary landscape irrigation at the Suncrest Substation. As outlined in DEH's Recycled Water Design Manual, to obtain DEH approval for use of reclaimed water for irrigation, SDG&E will need to submit an Irrigation System Plan to the DEH for review and DEH will perform a site inspection [DEH, 2001].

2.2 City of San Diego – Water Department

The City of San Diego currently operates the North City and South Bay Water Reclamation Facilities, which provide the City of San Diego and nearby areas with reclaimed water. The North City Water Reclamation Facility provides reclaimed water through an existing distribution line from Highway 52 north to Camino Del Norte in San Diego, and the South Bay Water Reclamation Facility's distribution system is smaller and primarily provides reclaimed water directly into the Otay Water District distribution system which extends throughout the eastern portion of the City of Chula Vista. Currently, the City of San Diego reclaimed water treatment capacity is up to 30 MGD. When compared to project demands, the approximate average daily water usage for the Sunrise Powerlink is only about 1% of the City of San Diego daily reclaimed water supply. Furthermore, only a fraction of the total project construction water supply would be provided by City of San Diego reclaimed water. Based on the ample supply, reasonable proximity of the source to the construction areas, using reclaimed water from the City of San Diego is a feasible source of water for construction of the Sunrise Powerlink.

2.2.1 Availability

According to the City of San Diego's Recycled Water Program Manager, the City of San Diego has access to tie into the northern distribution system and the South Bay distribution system up to 5 miles upstream of the treatment plant. Additionally, each distribution system has a commercial fill station under development within close proximity to the plants. The northern fill station is located off of Meanley Drive in Scripps Ranch, and the southern location is located off of Monument Road in Chula Vista. However, the City of San Diego's Water Trucking Program is currently in development and is anticipated to be functional by mid 2010. It should be noted that this would be a publicly available resource and delays associated with filling at such locations should be anticipated. Reclaimed water from the City of San Diego is presently available with no volume restrictions.

In addition to the areas directly serviced by the City of San Diego’s distribution system, RWQCB Order No. 97-03, “Waste Discharge and Recycling Requirements for the Production and Purveyance of Recycled Water for the City of San Diego, North City Treatment Plant,” delineates the City of San Diego’s service area for reclaimed water to include the following Hydrologic Areas (HA): Miramar Reservoir HA (906.1); Western Poway HA (906.2); Scripps HA (906.3); Miramar HA (906.4); Tecolote HA (906.5); Solana Beach HA (906.10); and Mission San Diego HA (907.11) (Figure 4). The majority of the construction areas lie outside of the City of San Diego’s service area for reclaimed water; however, as discussed previously, RWQCB-Region 9s Conditional Waiver No. 7 allows the temporary discharge of reclaimed water to land outside of the defined service areas.

Discussions with representatives of the City of San Diego Water Department indicate that to establish reclaimed water service, SDG&E should purchase or lease a property within the City of San Diego service area near an existing distribution pipeline and have a connection installed. A detailed breakdown of this process prepared by the City of San Diego is provided in Appendix B, attached hereto.

According to City of San Diego Water Department, the process (from plan submittal to service installation) would take approximately 3 months. However, it was noted that the time to prepare the estimate for installation could be expedited if SDG&E secured subcontractors to complete all work with the exception of tapping into the distribution main and setting the service meter. Conversely, it was indicated that certain applications for reclaimed water use outside of the service area may require San Diego City Council review, which could result in an additional delay of up to 6 months.

2.2.2 Usage Restrictions

The City of San Diego requires reclaimed water users follow the rules and regulations for reclaimed water use and distribution [City of San Diego, 2008] (attached hereto as Appendix C). Additionally, the City of San Diego requires reclaimed water-use site supervisors to attend a certification training presented by the City of San Diego. The certification training information is attached hereto as Appendix D. In addition to the restrictions associated with the regulatory approval process with the RWQCB, the use of reclaimed water will involve trucking of water on local roads and highways. However, pending completion of the regulatory approval process with the RWQCBs, application of reclaimed water for construction purposes for the Sunrise Powerlink appears unrestricted when applied as intended.

2.3 Padre Dam Municipal Water District (PDMWD)

The PDMWD currently operates a treatment facility located in Santee, California which provides reclaimed water to the Santee Lakes Recreation Area, Sycamore Canyon Landfill, and numerous other commercial connections. Currently, the PDMWD is producing 21 MGD of reclaimed water; when compared to total project demands, the approximate average daily water usage for the Sunrise Powerlink is 1.4% of the PDMWD daily recycled water supply. Nonetheless, only a fraction of the total project construction water supply would be provided by PDMWD reclaimed water. Based on the ample supply, reasonable proximity of the source to the construction areas, using reclaimed water from PDMWD is a feasible source of water for construction of the Sunrise Powerlink.

2.3.1 Availability

Based on RWQCB Order Number 97-49, “Waste Discharge and Recycling Requirements for the Production and Purveyance of Recycled Water for Padre Dam Municipal Water District,” the PDMWD service area includes the Santee HSA (907.12) and El Cajon HSA (907.13) (Figures 3 and 4). The majority of the construction areas lie outside the PDMWD service area. As previously discussed, use of reclaimed water outside the PDMWD service area would typically require SDG&E to submit a NOI to the RWQCB under Waiver No. 7 for discharges of reclaimed water to land. However, according to PDMWDs Engineering Manager, Caltrans previously pursued the waiver process for similar reclaimed water uses. The RWQCB provided PDMWD with a letter recommending PDMWD instead establish Caltrans as a regular customer and provide service as normal without pursuing the waiver option. Hence, coverage under General Waiver No. 7 may not be necessary. Should this water source be relied upon, SDG&E will consult with RWQCB-Region 9 for further guidance on the appropriate means for SDG&E to obtain authorization to use this water. In any event, such authorization should not be an obstacle to use of this water.

Based on the RWQCB letter and PDMWDs’ understanding of the current regulations regarding its reclaimed water use, PDMWD would not anticipate regulatory issues with providing reclaimed water for construction use outside of their service area. However, it should be noted that PDMWD cannot guarantee reclaimed water availability, if a large in-network reclaimed water customer comes online, in-network customers have priority over out of network services.

Due to the project demands for water and the amount of trucks associated with delivery, PDMWD recommended SDG&E purchase or lease a property near the existing distribution system where a service connection can be installed. Three areas in Santee/El Cajon suggested by PDMWD due to their proximity to freeways and distribution lines were near the intersections of

Magnolia Avenue and Prospect Avenue (near Highway 67, commercial use), Cuyamaca Street and Prospect Avenue (between 125 Freeway and Highway 67, commercial), and Big Rock Road and Mission Gorge Road (near Highway 52 and 125 Freeway, mixed residential) (Figure 2). Flow rates for specific areas of the distribution system are not available, but can be calculated upon request. Currently Geosyntec is seeking to obtain from PDMWD a GIS layer of the distribution system to assist in identifying potential properties for filling operations. Once a property is located and the estimate for service connection received and paid, service may be connected to the property within 12 to 16 weeks. Expedited installation may be arranged at an additional cost and pending approval of worker overtime by PDMWD.

2.3.2 Usage Restrictions

PDMWD requested that tank filling be performed primarily during daylight hours when the reclaimed water use is lowest and that a large tank at the point of service be filled constantly to reduce head loss and increase the life of the service meters.

Prior to setting up service PDWMD requested SDG&E provide the location and number of construction sites, water districts and hydrologic areas where reclaimed water will be used for construction. Additionally, before service can be established, site supervisors must be identified and trained by PDMWD to ensure that all trucking and water use is performed in accordance with the “Rules and Regulations” section of RWQCB Order No. 97-49 which is attached hereto as Appendix E.

2.4 Infeasible Reclaimed Water Providers Contacted

2.4.1 Tribal Water Treatment Systems

To evaluate the availability of reclaimed water available from Native American Reservations located proximal to the Sunrise Powerlink construction areas, Geosyntec contacted the following Tribes regarding their supply of reclaimed water and interest in participating as a water supplier to the Sunrise Powerlink:

- Campo Band of the Kumeyaay Nation
- Manzanita Band of the Kumeyaay Nation
- Viejas Band of the Kumeyaay Nation

Based on our research and individual correspondence with tribal representatives, the Campo and Viejas Tribes have reclaimed water systems which produce small quantities of reclaimed water. The representatives from the Viejas Tribe contacted during the evaluation indicated that they are

unable to supply reclaimed water for the project due to their limited resources. Representatives from the Campo Tribe expressed an interest in selling approximately 11,000 gallons of reclaimed water per day but would require the construction of a secondary treatment system prior to distribution. The Campo water systems could provide a minor source of reclaimed water for the construction of the Sunrise Powerlink but would require infrastructure upgrades prior to distribution, which upgrades are believed to be cost prohibitive. Therefore, based on the limited supply and costs to upgrade the existing treatment system, the use of reclaimed water from Tribes nearby the construction areas appears infeasible.

2.4.2 City of Poway

The City of Poway currently receives its reclaimed water from the City of San Diego's North City Water Reclamation Plant. The City of Poway's reclaimed water services are connected to the easternmost limit of the City of San Diego's distribution system, which terminates west of the intersection of Pomerado Road and Scripps Poway Parkway. The distribution system progresses east along Kirkham Way where it provides reclaimed water to the Poway's Southern Business district. According to the City of Poway's Water Utilities Supervisor, the City of Poway limits reclaimed water use to the Southern Business District and only allows use for irrigation purposes. Therefore, based on the regulatory restrictions, reclaimed water from the City of Poway appears infeasible for use as construction water for the Sunrise Powerlink. However, SDG&E is planning to use a staging yard located on Kirkham Way, which could be serviced by a potable construction meter, potable water resources are detailed in Section 3.2.

2.4.3 Helix Water District

The Helix Water District customer service department was contacted to discuss the availability of reclaimed water in their district. During this communication Geosyntec was informed that the Helix Water District currently has no reclaimed water resources to distribute.

2.4.4 Seeley County Water District

The Seeley County Water District (SCWD) was contacted to evaluate their potential to contribute reclaimed water for SDG&E construction uses. Due to jurisdictional boundaries, these waters are likely restricted for use within Seeley's service area and/or Imperial County. According to online resources, SCWD is currently in the process of constructing a water treatment facility to service up to 200,000 gallons of reclaimed water for the Tessera Solar Panel plant development facility. This was confirmed with SCWD's Engineering Consultant, who anticipated that the treatment facility will be online by the end of 2010. SCWD indicated that all reclaimed water produced by SCWD is anticipated to be dedicated to the Tessera Solar facility.

Therefore, based on an insufficient supply, reclaimed water from the SCWD appears infeasible for use as construction water for the Sunrise Powerlink.

2.4.5 City of El Centro

The City of El Centro Water Department was contacted to evaluate their potential to contribute reclaimed water for SDG&E construction uses. Reportedly, City of El Centro reclaimed water is only processed with secondary treatment; therefore, does not meet California Code of Regulations Title 22 requirements, and cannot be used for construction purposes. However, the representative indicated that the City of El Centro may be soliciting bids for upgrades to their existing water treatment facility in exchange for water rights. Therefore, it appears that the timeline for planning and construction of the upgraded facility would present unacceptable delays and would appear to not be a feasible source of water for construction of the Sunrise Powerlink FESSR at this time. However, depending upon when their facility upgrades are completed, the use of City of El Centro reclaimed water for project construction may be feasible at a later date.

2.4.6 Imperial Irrigation District

The Imperial Irrigation District (IID) was contacted to discuss the availability of reclaimed water for construction purposes. During our conversations with the Assistant Manager for IID's Resource, Planning, and Management Section, IID confirmed that they currently do not have any reclaimed water resources to distribute. However, IID does have raw surface water from the Imperial Valley canal network to distribute for construction purposes. Details pertaining to the surface water resources available from IID are provided in Section 4.1

2.4.7 Otay Water District

Otay Water District currently operates the Ralph W. Chapman Water Recycling Facility located near the community of Jamacha, which currently does not provide sufficient reclaimed water to meet the demands of the project. To supplement their reclaimed water resources, the Otay Water District imports reclaimed water from the City of San Diego's South Bay Water Reclamation Plant located in San Ysidro, California. According to sources at the City of San Diego, during times of peak demand, the Otay Water District currently exceeds their approved volume of reclaimed water provided by the South Bay Plant. Therefore, because additional usage would cause further exceedences, they are not capable of supplying reclaimed water for SDG&E's construction needs.

Additionally, according to the Otay Water Districts' Water Services Manager, their current waste discharge permit prevents them from providing reclaimed water for use outside of the service area. The service area is defined in RWQCB Order Number 92-25 (including addenda) by the following areas: Lower Sweetwater HA (9.10); Otay Valley HA (10.20); La Nacion Hydrologic Subarea (HSA) (9.12); Telegraph Canyon HAS (9.11); and in the Eastlake I Development Project (between Proctor Valley and Telegraph Canyon Road). Therefore, based on an insufficient supply and perceived regulatory restrictions, reclaimed water from the Otay Water District appears infeasible for use as construction water for the Sunrise Powerlink.

3. POTABLE WATER

To supplement the use and availability of reclaimed water, and raw/untreated water, Geosyntec also evaluated the feasibility of obtaining potable municipal water from the following agencies:

- The City of San Diego
- The City of Poway
- Helix Water District
- Imperial Irrigation District (IID)
- Lakeside Water District
- Otay Water District
- Padre Dam Municipal Water District (PDMWD)
- Seeley County Water District
- City of El Centro
- Non-CWA-member Small Water Systems

The following is a summary of the information obtained during communication with the above agencies. Table 2 provides additional tabulated information related to potable water sources

3.1 City of San Diego – Water Department

To evaluate the potential for potable water use via a construction meter from the City of San Diego, Geosyntec contacted the personnel at the City of San Diego Fire Hydrant Meter Program, as well as the City of San Diego Meter Shop. Currently, the City of San Diego is distributing up to 200 MGD of potable water; when compared to project demands, the approximate average daily water usage for the Sunrise Powerlink is 0.1% of the City of San Diego daily supply. Furthermore, only a fraction of the total project construction water supply would be provided by City of San Diego potable water. Based on the ample supply, reasonable proximity of the source to construction areas, using potable water from the City of San Diego is a feasible source of water for construction of the Sunrise Powerlink.

3.1.1 Availability

Potable water for construction use is available from the City of San Diego. Representatives of the City of San Diego indicated that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. It was indicated that flow rates through a standard 2-inch construction meter are approximately 350 gallons per minute (GPM). To establish service, SDG&E must submit a completed construction meter application to the City of San Diego.

3.1.2 Usage Restrictions

According to a representative of the City of San Diego Water Department, Conservation Program, the use of potable water for construction purposes outside of the City of San Diego's service area is not specifically addressed in the San Diego Municipal Code (*see, e.g.*, sections 67.3801-67.3811 (Emergency Water Regulations) or the recent ordinance (O-2010-24) which amends sections 67.3802, 67.3805, 67.3806, and 67.3810, relating to emergency water regulations. Geosyntec reviewed the City of San Diego Municipal Code section 67.0101, *et seq.* and applicable amendments for information regarding the use of potable water for construction purposes outside of the City of San Diego's service area, and found no mention of restrictions with the exception of drought contingencies. The City of San Diego is currently in Level 2 Drought Alert, if drought conditions advance to Level 3 or 4 Drought Alerts, additional restrictions may apply.

3.2 City of Poway

To evaluate the potential for potable water use via a construction meter from the City of Poway, Geosyntec contacted the City of Poway Water Utilities Supervisor and the water department customer service line. Based on the regulatory restrictions, using potable water from the City of Poway is not likely a feasible source of water for construction of the Sunrise Powerlink, with the exception of one planned construction yard located within the City of Poway service area.

3.2.1 Availability

Potable water for construction use is available from the City of Poway. Representatives of the City of Poway indicated that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. It was indicated that flow rates from the City of Poway's distribution system can flow up to 750 GPM. To establish service, SDG&E must submit a completed construction meter application to the City of Poway. Once approved, the meter can be installed within 24 hours.

3.2.2 Usage Restrictions

Potable construction water can only be obtained from a hydrant located in a public right-of-way and used for that portion of the FESSR within the City of Poway service area (Figure 2).

3.3 Helix Water District

To evaluate the potential for potable water use via a construction meter from the Helix Water District, Geosyntec contacted Helix Water District's customer service department. Based on the regulatory restrictions, using potable water from the Helix Water District is not likely a feasible source of water for construction of the Sunrise Powerlink.

3.3.1 Availability

Potable water for construction use is available from the Helix Water District. Representatives of the Helix Water District indicated that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. Flow rates from hydrants are variable, but can be determined once a specific hydrant of interest is located. To establish service, SDG&E must submit a completed construction meter application to the Helix Water District. Once approved, the meter can be installed within 48 hours.

3.3.2 Usage Restrictions

Potable construction water can only be obtained from a hydrant located in a public right of way and used for that portion of the FESSR within the Helix Water District service area (Figure 2).

3.4 Imperial Irrigation District

The IID was contacted to discuss the availability of potable water for construction purposes. Based on a lack of supply, using potable water from the IID is not likely a feasible source of water for construction of the Sunrise Powerlink.

3.4.1 Availability

During our conversations with the Assistant Manager for IID's Resource, Planning, and Management Section, IID confirmed that they currently do not have potable water resources to distribute. However, IID does have raw surface water from the Imperial Valley canal network to distribute for construction purposes. Details pertaining to the surface water resources available from IID are provided in Section 4.1.

3.5 Padre Dam Municipal Water District

To evaluate the potential for potable water use via a construction meter from the PDMWD, Geosyntec contacted PDMWD engineering technician and the water department customer

service line. Currently, the PDMWD is distributing up to 36 MGD of potable water; when compared to project demands, the approximate average daily water usage for the Sunrise Powerlink is 0.8% of the PDMWD daily supply. Furthermore, only a fraction of the total project construction water supply would be provided by the PDMWD. Based on the ample supply, reasonable proximity of the source to the construction areas, using potable water from the PDMWD is a feasible source of water for construction of the Sunrise Powerlink.

3.5.1 Availability

Potable water for construction use is available from the PDMWD. Representatives of the PDMWD indicated that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. It was indicated that flow rates from the PDMWD distribution system are variable based on hydrant location and meter size. However, information is commonly available when a specific hydrant is identified. In order to establish service, SDG&E must submit a completed construction meter application to the PDMWD. Once approved, the meter can be installed within 48 hours.

3.5.2 Usage Restrictions

Potable construction water can only be obtained from a hydrant located in a public right of way and used for that portion of the FESSR within the PDMWD service area, which includes the Alpine area (Figure 2).

3.6 Lakeside Water District

The Lakeside Water District was contacted to discuss the availability of potable construction in their service area. Currently, the Lakeside Water District is distributing up to 4.2 MGD of potable water; when compared to estimated daily average project demands, the approximate average daily water usage for the entire Sunrise Powerlink is 7.1% of the Lakeside Water District supply. Furthermore, only a fraction of the total project construction water supply would be provided by the Lakeside Water District. Based on the ample supply, and reasonable proximity of the source to the construction areas, using potable water from the Lakeside Water District is a feasible source of water for construction of the Sunrise Powerlink.

3.6.1 Availability

During the communication with the Lakeside Water District's Assistant to General Manager, and the customer service personnel, it was indicated that the Lakeside Water District currently has potable construction water available. Representatives of the Lakeside Water District indicated

that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. Additionally it was indicated that flow rates throughout the distribution system are variable. However, information is available when a specific hydrant is identified. To establish service, SDG&E must submit a completed construction meter application to the Lakeside Water District (in person or via phone). Once approved, the meter will be installed within 48 hours. It was noted that construction water meter service may be halted during level 3 drought conditions.

3.6.2 Usage Restrictions

Potable construction water can only be obtained from a hydrant located in a public right of way and used for that portion of the FESSR within the Lakeside Water District service area. Approximately two miles of the alignment lies within the Lakeside Water District service area (Figure 2).

3.7 Otay Water District

To evaluate the potential for potable water use via a construction meter from the Otay Water District, Geosyntec contacted the Otay Water District Permit Technician, as well as the customer service line. Based on the regulatory restrictions, using potable water from the Otay Water District is not likely a feasible source of water for construction of the Sunrise Powerlink.

3.7.1 Availability

Potable water for construction use is available from the Otay Water District. Representatives of the Otay Water District indicated that the requested amount of 300,000 gallons per day is available, although no total volume limit is known. It was indicated that flow rates throughout the distribution system are variable and dependent on the meter size. However, information is commonly available when a specific hydrant is identified. To establish service, SDG&E must submit a completed construction meter application to the Otay Water District. Permits through the Otay Water District expire in 365 days from the issue date.

3.7.2 Usage Restrictions

Potable construction water can only be obtained from a hydrant located in a public right of way and used for that portion of the FESSR within the Otay Water District service area (Figure 2).

3.8 Seeley County Water District

To evaluate the potential for potable water use via a construction meter from the SCWD, which provides treated canal water purchased from IID, Geosyntec contacted the SCWD's lead technician, as well as SCWD's engineering consultant. Currently, the SCWD has a surplus of approximately 0.5 MGD of potable water; when compared to project demands, the approximate average daily water usage for the Sunrise Powerlink is 0.008% of the PDMWD supply. Furthermore, only a fraction of the total project construction water supply would be provided by the SCWD. Based on the ample supply, and reasonable proximity of the source to the construction areas, using potable water from the SCWD is a feasible source of water for construction of the Sunrise Powerlink.

3.8.1 Availability

Potable water for construction use is available from the SCWD and currently has a surplus capacity of 500,000 gallons at their treatment facility, which can provide water from an onsite hydrant. Additionally it was indicated that the flow rate from the SCWD distribution system is 800 GPM at 59 psi. In order to establish service, SDG&E must provide SCWD with their billing information and the sizes of trucks being used. They indicated that they would be receptive to setting up a drop tank (if necessary). At the end of each day they would need to know how many trucks were used to calculate volume, and billing would be conducted monthly.

3.8.2 Usage Restrictions

Potable construction water can only be used for that portion of the FESSR within Imperial County and may be further restricted to the SCWD service boundary, pending final authorization from the SCWD (Figure 3).

3.9 City of El Centro

According to a representative of the City of El Centro Water Department, the use of potable water for construction is limited to within the El Centro city limits. Therefore, City of El Centro potable water is not a feasible source of water for construction of the Sunrise Powerlink.

4. SURFACE WATER

To evaluate the feasibility of obtaining surface water (raw, untreated water) from potentially viable sources in San Diego County and eastern Imperial County for use as construction water, Geosyntec contacted the following agencies:

- Imperial Irrigation District
- City of San Diego
- Sweetwater Authority
- Otay Water District

4.1 Imperial Irrigation District

Geosyntec contacted the IID regarding the use of raw water pumped from the West Side Canal located near the eastern extent of the construction area (Figure 2). Additionally, Geosyntec communicated with Development, Design, and Engineering, Inc. (DDE) who previously initiated correspondence with IID regarding use of canal water on behalf of SDG&E. Currently, the IID receives approximately 8,500 acre-feet/day of raw surface water; when compared to estimated daily average project demands, the approximate average daily water usage for the entire Sunrise Powerlink is 0.01% of the IID supply. Furthermore, only a fraction of the total project construction water supply would be provided by the IID. Based on the ample supply, and reasonable proximity of the source to the construction areas, using surface water from the IID is a feasible source of water for construction of the Sunrise Powerlink.

4.1.1 Availability

IID has indicated that the request by DDE, on behalf of SDG&E, for approximately 100,000 gallons per day to be extracted from the West Side Canal for use on the project is acceptable. An IID representative indicated to Geosyntec that total allowable volume to be extracted is not limited; however, the maximum allowable daily use is not known. A detailed description of the required setup process is provided in Table 3. Following issuance of an encroachment permit from Imperial County, a drop tank may be setup to facilitate the rapid filling of water trucks adjacent to the West Side Canal. Water use would be metered and billed per acre-foot with a variable rate for water used within the Service Area, and for water used outside the Service Area (Figure 3). The agreement assumes a minimum of five acre feet will be used per year.

4.1.2 Usage Restrictions

The use of IID canal water for construction purposes is unrestricted within the Service Area. However, the use of IID canal water outside the Service Area but within Imperial County will require approval from the San Diego County Water Authority (SDCWA) due to contractual water conservation and transfer agreements between Imperial County and the SDCWA. Geosyntec understands that negotiations between IID and the SDCWA are near completion to allow the use of IID canal water for construction purposes throughout Imperial County. However, the use of IID canal water in San Diego County is prohibited.

4.2 City of San Diego – Water Department Reservoirs

Geosyntec contacted the City of San Diego Water Department regarding the use of raw water from the following City of San Diego-owned reservoirs proximal to the construction areas:

- San Vicente Reservoir
- El Capitan Reservoir
- Barrett Lake
- Lake Morena

Based on a discussion with the Associate Engineer for the City of San Diego Water Department, Geosyntec understands that raw water from reservoirs can be used unrestricted for construction purposes. Details of contacts, rates, setup process, and other guidance for the use of surface water from City of San Diego reservoirs are presented in Table 3. Based on the ample supply and reasonable proximity of the sources to the construction areas, using raw surface water from the City of San Diego reservoirs is a feasible source of water for construction of the Sunrise Powerlink.

Based on the most recent available data from the San Diego County Water Authority [SDCWA, 2009], the City of San Diego uses approximately 89.87% of annual supply (225,639 acre-feet per year). An increase of approximately 276 acre-feet per year for the construction of Sunrise Powerlink would increase the estimated total use to 89.99% of annual supply, which is a negligible usage increase. Furthermore, the increased usage would be temporary, and the project's water needs could be accommodated by the City of San Diego's reservoir system without resulting in a significant impact to local water sources.

4.2.1 San Vicente Reservoir

The San Vicente Reservoir is located near Highway 67 and within close proximity to construction areas in the western portion of the alignment (Figure 2). A raw water distribution pipeline exists between the San Vicente Dam and the Alvarado Treatment Facility located in La Mesa. According to the City of San Diego Water Department, a temporary connection to the raw water pipeline can be plumbed to an existing valve nearby a SDG&E property to fill a tank for use during the construction period of the project. However, a permanent service connection via a lateral or other connection point would not be feasible. The City of San Diego Water Department indicated that a GIS file depicting the locations of valves along the pipeline will be provided to Geosyntec. Geosyntec understands that SDG&E plans to lease a property along Moreno Avenue for use as a temporary construction yard and appears to be a viable location to place a temporary water storage tank for use during construction. The City of San Diego Water Department indicated that SDG&E should conduct a site walk with City of San Diego personnel to identify specific valve locations for a connection. Based on location and configuration of the valve, the City of San Diego will evaluate the feasibility of establishing a connection to the property. If feasible, SDG&E should coordinate with the City of San Diego Water Department to install a meter and plumbing to property following completion of a construction meter application with City of San Diego Meter Shop.

4.2.2 El Capitan Reservoir

The El Capitan Reservoir is located near the eastern termination of El Monte Road in Lakeside, and within close proximity to construction areas in the western portion of the alignment (Figure 2). A raw water distribution pipeline exists beneath El Monte Road between the El Capitan Dam and the Alvarado Treatment Facility located in La Mesa. According to the City of San Diego Water Department, a temporary connection to the raw water pipeline can be temporarily tapped into a valve nearby a property to fill a tank for SDG&E use during the construction period of the project. However, a permanent service connection via a lateral or other connection point would not be feasible. The City of San Diego Water Department indicated that a GIS file depicting the locations of blow-off valves along the pipeline will be provided to Geosyntec. Geosyntec understands that SDG&E plans to lease a property along El Monte Road for use as a temporary construction fly yard and appears to be a viable location to place a temporary water storage tank for use during construction. The City of San Diego Water Department indicated that SDG&E should conduct a site walk with City of San Diego personnel to identify specific valve locations for a connection. Based on location and configuration of the valve, the City of San Diego will evaluate the feasibility of establishing a connection to the property. If feasible, SDG&E should coordinate with the City of San Diego Water Department to install a meter and plumbing to

property following completion of a construction meter application with City of San Diego Meter Shop.

4.2.3 Barrett Lake

Barrett Lake is located in a remote area east of Lyons Valley Road within close proximity to construction areas in the central portion of the alignment where water resource options for the project are most scarce (Figure 2). No raw water distribution system exists for Barrett Lake with the exception of an inaccessible flume. Geosyntec spoke with the City of San Diego Water Department, Watershed Manager, Mr. Jeff Pasek, who indicated that the purchase of raw water from Barrett Lake is complicated by the lack of a distribution system and mechanism to monitor and bill water usage. Therefore, Geosyntec submitted a letter to the City of San Diego Water Department Director of Engineering outlining a method to pump water from the lake to a temporary dump-tank staged near the boat launch, obtain a water meter to gauge the volume of water extracted, and submit payment to the City of San Diego Water Department without the need for the City of San Diego to develop a billing system for raw water from facilities without delivery systems. Geosyntec received a response from the City of San Diego indicating that the proposed extraction method appears acceptable and that official approval and negotiations are pending.

4.2.4 Lake Morena

Lake Morena is located west of Buckman Springs Road within close proximity to construction areas in the central portion of the alignment where water resource options for the project are most scarce (Figure 2). No raw water distribution system exists for Lake Morena. Geosyntec spoke with the City of San Diego Water Department, Watershed Manager, who indicated that the purchase of raw water from Lake Morena is complicated by the lack of a distribution system and mechanism to monitor and bill water usage. Therefore, Geosyntec submitted a letter to the City of San Diego Water Department Director of Engineering outlining a method to pump water from the lake to a temporary dump-tank staged near the currently un-used high-water boat launch parking lot, obtain a water meter to gauge the volume of water extracted, and submit payment to the City of San Diego Water Department without the need for the City of San Diego to develop a billing system for raw water from facilities without delivery systems. Geosyntec received a response from the City of San Diego indicating that the proposed extraction method appears acceptable and that official approval and negotiations are pending.

4.3 Sweetwater Authority

Geosyntec contacted the Sweetwater Authority regarding the use of raw water from the following reservoirs:

- Loveland Reservoir
- Sweetwater Reservoir

Based on an understanding of project objectives, Geosyntec did not pursue extraction of raw surface water from the Sweetwater Reservoir due to the distance and access to the construction areas. Details of contacts and other guidance for the use of surface water from Sweetwater Authority are presented in Table 3.

4.3.1 Loveland Reservoir

Loveland Reservoir lies southwest of Japatul Road within close proximity to construction areas in the central portion of the alignment where water resource options for the project are most scarce. According to Patrick Rasco of the Sweetwater Authority Engineering Department, they are not permitted by the State of California to sell untreated water. Therefore, since infrastructure to treat or distribute water from Loveland Reservoir does not exist, the use of water from the reservoir appears infeasible.

5. INFILTRATED WATER FROM ROCK-FILL

During preliminary discussions with SDG&E, it was indicated that compaction of rock-fill during construction of the Suncrest Substation would generate usable quantities of infiltrated water which would be collected and re-used onsite for compaction. However, Geosyntec contacted SDG&E to determine the expected quantity, quality, and reliability of water collected from rock-fill infiltration, and was informed that the use of the infiltrated water would be negligible in relation to the construction water demands of the Suncrest Substation. Therefore, Geosyntec does not consider infiltrated water from rock-fill compaction a significant or reliable source of construction for the product.

6. CONCLUSION

As stated in the FEIR/EIS for the Sunrise Powerlink, “Water use during project construction would be a comparatively small fraction of the total water supply for the jurisdictions affected by the project, and would not change the ability of the water suppliers to serve the project area demands...Therefore, the water demand for construction of the proposed project would not be a significant impact on the regional water supply, and no mitigation measure is recommended. Although impacts to the regional water supply would not be significant and no mitigation measure is required, to further reduce adverse effects of the cumulative volume of water from all of the individual links, Mitigation Measure s-3b (use reclaimed water) would be recommended for implementation to reduce water usage for construction.”

Geosyntec performed a Water Resources Availability Study for the construction of the FESSR as depicted on Figure 1 of this report. A summary of the findings for reclaimed, potable, and surface water sources are presented in Tables 1 through 3, respectively. A summary of the feasible water sources by area and available volumes is presented in Table ES-1. SDG&E is proceeding with applications with the various water agencies and proposes to utilize a mix of these water resources to meet the construction requirements for the project.

Based on the findings of this Water Resources Availability Study, sufficient supplies of surface water, reclaimed water, and potable water are available to construct FESSR. Furthermore, a spatial balance of various water sources is available to reduce potential environmental impacts associated with the distribution of water for construction.

7. LIMITATIONS

This water resources evaluation was performed according to the agreed upon scope of work with SDG&E. The findings and conclusions presented in this report are the result of professional interpretation of the information collected at the time of this study. The findings of this report, to the best of our knowledge, are valid as of the date of this work. However, changes in applicable or appropriate regulations and standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

Specified information contained in this report has been obtained from publicly available sources and other secondary sources of information. Although care has been taken in compiling this information, Geosyntec disclaim any and all liability for any errors, omissions, or inaccuracies of the third parties in such information and data.

The work was performed using the degree of care and skill ordinarily exercised under similar circumstances by environmental consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as to the findings, opinions, conclusions, and recommendations included in this report.

8. REFERENCES

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- Greene, 2005. Trends in Golf Course Water Use and Regulation in California. Green, Robert L., Ph.D. University of California, Riverside, Revised August 2005.
- City of San Diego, 2008. Rules and Regulations for Recycled Water Use and Distribution within the City of San Diego. Prepared by the City of San Diego, Water Department, Recycled Water Program, September 2008.
- CPUC, 2008. Final Environmental Impact Report/Environmental Impact Statement and Draft Land Use Plan Amendment for San Diego Gas & Electric Company's Sunrise Powerlink Project. Prepared by Aspen Environmental Group, October 2008.
- SDCWA, 2009. Water Source and Use, Fiscal Year 2008-2009. San Diego County Water Authority website www.sdcwa.org/about/member-agencies.phtml. Accessed 31 March 2010.

Tables

**Table 1
Summary of Reclaimed Water Resources Evaluated
San Diego Gas Electric
Sunrise Powerlink Project**

Agency	Contacts	Contact Information	Flow Rate	Limits on Volume	Limits on Use	Delivery Options	Delivery Locations	Permits/Regulations	Water Acquisition Process	Feasible Source for Sunrise Powerlink Construction Water
Padre Dam Municipal Water District (PDMWD)	Daniel Black - Engineering Manager Courtney Mael - Engineering Technician Carl Mandernacht - Recycled Water Technician	619-596-3146 dblack@padre.org 619-258-4640 cmael@padre.org 619-258-4654 cmander@padre.org	200 gpm (2" meter) or 600 gpm (6" meter) ~ 605 psi. Flow rates for specific sections of distribution system supplied upon request.	No quantitative limits on volume known. Although PDMWD cannot guarantee service if large in network customer exhausts supply (in network customers have priority).	No limits on location of use known. PDMWD cites a RWQCB letter explaining how to avoid use of Waiver No. 7 by establishing water service for out of network construction use.	Locate property for purchase or lease. Set a up large tanker on constant fill to property. Have trucks remove water from tank to allow use of smaller meter and less overall impact to distribution system .	Locate property to establish recycled water service. Distribution system located in Santee, CA. Farthest east is intersection of Magnolia and Prospect (near Hwy 67, commercial), other optional areas with larger mains (up to 16") are near Cuyamaca and Prospect (between Hwy 125 and Hwy 67, commercial), and Big Rock Road and Mission Gorge Road (near Hwy 52/Hwy 125, residential).	Submit information to PDMWD to become a new customer once distribution site is located. Adhere to Rules and Regulations listed in RWQCB Order 97-49	<ul style="list-style-type: none"> Locate and purchase or lease a property in the service area where a connection can be installed. Three suggested areas: intersections of Magnolia Avenue and Prospect Avenue (near Hwy 67, commercial use), Cuyamaca Street and Prospect Avenue (between 125 Freeway and Hwy 67, commercial), and Big Rock Road and Mission Gorge Road (near Highway 52 and 125 Freeway, mixed residential). Flow rates for each specific area can be calculated upon request. Provide PDMWD with the location and number of construction sites, water districts, and hydrologic areas where construction may be taking place. Prepare site plan and receive estimate from PDMWD for connection fee Once paid service will be installed within 12 to 16 weeks. Expedited installation may be arranged at additional costs and pending approval of worker overtime Site supervisors must be identified and training by PDMWD must be completed to ensure that all trucking and water use is performed in accordance with the "Rules and Regulations" section of Order No. 97-49, prior to service connection PDMWD proposed pumping be performed primarily during daylight hours when the recycled water use is lowest and that a large tanker be filled constantly to reduce head loss and increase the life of the service meter. PDMWD will also inspect storage locations and trucks intermittently to ensure compliance. 	Yes
City of San Diego	Jennifer Casamassima - Recycled Water Program Manager Fabiola Amarillas - Recycled Water Program Rommel Arroyo - Recycled Water Program Thomas Deeds - Recycled Water Program	619-533-7402 jcasamassima@sandiego.gov 619-533-5437 619-533-4259 619-533-4195	Variable, dependent on pressure and size of distribution line (location specific).	None known.	Current WDR lists following Hydrologic Areas/Subareas for irrigation and construction use: Miramar Reservoir HA (906.1) Western Poway HA (906.2) Scripps HA (906.3) Miramar HA (906.4) Tecolote HA (906.5) Mission San Diego HA (907.11). RWQCB Waiver No. 7 allows use for temporary discharge of recycled water outside of service area.	Locate property for purchase or lease. Set a up large tanker on constant fill to property. Have trucks remove water from tank to allow use of smaller meter and less overall impact to distribution system .	Locate property to establish recycle water service and install downspout or hydrant onsite. The City can tie into a distribution line up to 5 miles from the South Bay Facility. Or use fill Stations in near the North City and South Bay Reclamation facilities (Meanley Drive, Monument Road, respectively). The City of San Diego water trucking program may be operational by June 2010.	Must be approved by City of San Diego, RWQCB (Waiver No. 7), water district where construction will be taking place, and possibly San Diego City Council. Distribution and use must be performed in accordance with RWQCB Order 97-03 and the September 2008 "Rules and Regulations for Recycled Water Use and Distribution within the City of San Diego" document.	<ul style="list-style-type: none"> Locate and purchase or lease property within City of San Diego Service Area. Schedule a site assessment with the City of San Diego. Prepare and submit site plans in accordance with the September 2008 "Rules and Regulations for Recycled Water Use and Distribution Within The City of San Diego." Review and Plan check and estimate generation quicker SDG&E secured subcontractors to complete all work with the exception of tapping into the distribution main and setting the service meter. Prepare an Engineering Report (if warranted by scope of work). Submit documents for review and plan check (\$2,400). Secure payment for service connection estimate (based on plans). Authorized SDG&E representative must attend the City of San Diego Recycled Water Site Supervisor Course (\$50 per person). Plan submittal to service installation can take up to 3 months. The City of San Diego to has requested SDG&E provide them with the location and number of construction sites, water districts, and hydrologic areas where construction may be taking place to further evaluate their capabilities to provide recycled water to all construction areas for the project and determine if City Council involvement is required (up to 6 month delay if required). 	Yes
City of Poway	Eric Njaa - Water Utilities Supervisor	858-668-4720	NA	NA	Only approved for irrigation in the South Poway Business District	Plumbed to a property.	Plumbed to a property.	NA	NA	No
Seeley County Water District	Customer Service Department David Dale - Dynamic Consulting Engineers Andy Munger - Lead Plant Operator	760-352-6612 760-960-8500 760-540-2070	NA	NA	NA	NA	NA	NA	Seeley is currently constructing a water treatment facility to provide up to 200,000 gallons per day of reclaimed water for the Tessera Solar Panel plant development facility. The system is expected to be online by the end of 2010. Tessera Solar has exclusive rights to treated water provided by Seeley.	No
Otay Water District	Gary Stalker - Water Systems Manager David Charles - Manager Public Services, Surveying, and Inspection Vu Tran - Permit Technician	619-670-2228 gstalker@otaywater.gov 619-670-2243 dcharles@otaywater.gov 619-670-2241	Dependent on pressure and size of distribution line (location specific).	Yes, Otay Water District's demand currently exceeds their approved supply	Current WDR lists following Hydrologic Areas/Subareas allowing mixed uses (irrigation, pond filling, construction) – Project Specific Lower Sweetwater HA (909.10) Otay Valley HA (10.20) La Nacion HSA (9.12) Telegraph HSA (9.11)	Only can be plumbed to property, no hydrants.	Only can be plumbed to property, no hydrants.	Complete and submit application to Otay Water District	For in network service, complete application, pay set up fee (\$2,046), 6 month or 1 year permits. Otay WD personnel indicated that their current WDR would not allow use of recycled water outside of their approved service areas. City of San Diego sources indicated that during peak demand Otay Water District exceeds approved volume of water purchased from the City of San Diego.	No
City of El Centro	Randy Hines Laboratory Director	760-337-4522	NA	NA	Currently the El Centro Wastewater treatment plant only provides secondary treated water which does not meet Title 22 requirements for construction use.	NA	NA	NA	The City of El Centro representative indicated that due to growing interest in treated water they may be issuing an RFP for upgrading their existing system in exchange for water rights.	No

Notes:
GPM - Gallons Per Minute
HA - Hydrologic Area
HSA - Hydrologic Sub-Area
NA - Not Available
psi - pounds per square inch
WDR - Waste Discharge Requirements
HCF - hundred cubic feet (748 gallons)

**Table 2
Summary of Potable Water Resources
San Diego Gas Electric
Sunrise Powerlink Project**

Agency	Contact Person	Contact Number	Flow Rate	Limits on Volume	Limits on Use	Delivery Options	Delivery Locations	Permits/Regulations	Water Acquisition Process	Feasible Source of Potable Water For Sunrise Powerlink Project
Padre Dam Municipal Water District	Courtney Mael Engineering Technician	619-258-4640	Dependent on location and meter size	None known	Can only be used within water district service area.	Metered hydrant(1200 Deposit)	Hydrant located in public right of way	Complete construction meter application	Submit application, provide billing info, pay deposit and \$20 new account fee, meter installed within 48 hrs.	Yes
	Customer Service	619-258-4600								
City of San Diego	JoEllen Jacobs Water Department	619-533-7548	2" meter flows at 350 gpm	None known	No service area use restrictions. Must not use water beyond normal construction activities. (consistent with San Diego Municipal Code Section 67.3803)	Metered hydrant (rate dependent on meter size)	Hydrant located in public right of way	Complete construction meter application	2" Meter: deposit (\$936), installation or removal (\$62), relocation (\$93), Monthly (\$58.83). Estimates for larger meters provided upon request. Meter installed within 48 hours.	Yes
	Dave Haney City of San Diego Meter Shop	619-527-7452								
	Customer Service Fire Hydrant Meter Program	619-515-3500								
City of Poway	Eric Njaa Water Utilities Supervisor	858-668-4720	Up to 750 gpm	None known	Can only be used within water district service area (one SDG&E staging yard planned off Kirkham in Poway)	Metered hydrant (\$700 Dep. \$247 bi monthly)	Hydrant located in public right of way	Complete construction meter application	Submit application at least 24 hrs prior to meter installation	Yes
	Customer Service	858-668-4401								
Seeley County Water District	Andy Munger Lead Operator	760-540-2070	800 gpm at 59 psi	Surplus Capacity of 500,000 gallons per dat.	Inside Imperial Irrigation Dist. Boundary	Metered hydrant located at treatment facility. SDG&E must provide meter and dump tank (if warranted).	Hydrant located on treatment facility property	No, SDG&E must provide Seeley with billing information.	Provide SCWD with billing information, and sizes of trucks to be used, provide daily count of loads taken, SDG&E billed monthly. SCWD needs written approval from IID to sell water outside of IID service area.	Yes
	David Dale Dynamic Consulting Engineers	760-960-8500								
	SCWD Customer Service Dept.	760- 352-6612								
Helix Water District	Debbie Customer Service ext. 215	619-466-0585	NA	None known	Within water district only	Metered hydrant (1684 Deposit)	Hydrant located in public right of way	Complete construction meter application	Submit application, pay fees, set up complete within 48 hours, billed monthly	Yes
Otay Water District	Vu Tran Permit Technician	619-670-2241	Meter Dependent	None known	Within water district only	Metered hydrant (rate dependent on meter size)	Hydrant located in public right of way	Complete construction meter application	365 day permit, Complete application pay set up fee \$2046	No
Lakeside Water District	Geni Swaringer Assistant to General Manager	619-443-3805	Variable by location (info avail for specific hydrants)	None known	Within water district only (limited construction will occur within service area)	Metered hydrant (\$700) \$60 dollar setup \$60 dollar monthly fee.	Hydrant located in public right of way	Complete construction meter application (in person or by phone)	Complete hydrant application, meter installed within 48 hours, billed monthly by units used. Meters pulled in level 3 drought.	Yes
Sweetwater Authority	Patrick Rasco Sweetwater Authority Engineering	619-420-1413	Specific to hydrant, available upon request (must know hydrant)	None known	No service area use restrictions. Hydrants must be located in portions of Bonita, portions of Chula Vista, or National City	Metered hydrant	Hydrants must be located in Bonita, Chula Vista, or National City	Application with SWA and city fire department where hydrant is located.	Complete application with SWA (\$34 setup/\$850 meter deposit) and city fire department (cost variable) where hydrant is located.	No
Small Water Systems	Jim Bennett, County of San Diego, DPLU	858-694-3820	NA	None known	Within water district only	NA	NA	A Major Use Permit from the San Diego County DPLU would be required.	NA	No
City of El Centro	Randy Hines Laboratory Director	760-337-4522	NA	NA	Within city limits only	NA	NA	Complete construction meter application	NA	No

Note:
GPM - Gallon Per Minute
NA - Not Available
PDMWD - Padre Dam Municipal Water District
psi - pressure per square inch
WD - Water District
HCF - hundred cubic feet (748 gallons)
SCWD - Seeley County Water District
SWA - Sweetwater Authority

**Table 3
Summary of Surface Water Resources
San Diego Gas Electric
Sunrise Powerlink Project**

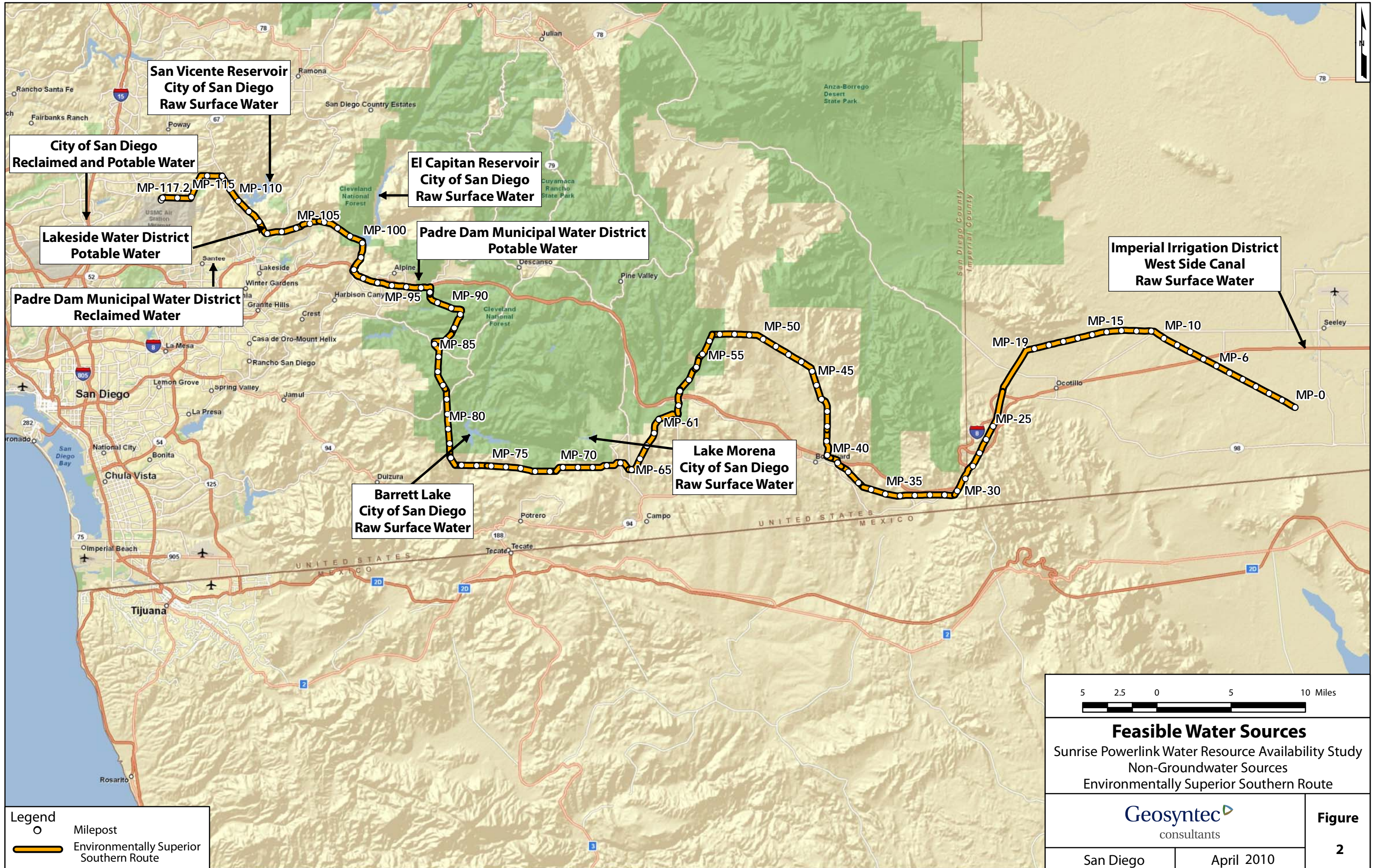
Agency	Contact Person	Contact Number	Flow rate	Limits on Volume	Limits on Use	Delivery Options	Delivery Locations	Permits/Regulations	Set Up Process / Comments	Feasible Source of Surface Water for Sunrise Powerlink Project
Imperial Irrigation District	Tina Shields Assist. Manager IID Resources Planning and Management Section	760-339-9751 tshields@IID.com	Only restricted by removal method.	SDG&E had requested an average of 100,000 gallons per day. No restrictions on water outside service area, unless set by SDCWA as a condition of their refusal waiver. IID personnel indicates no limits of volume.	Must have SDCWA waive first right of refusal to import water outside of IID service area. The SDCWA 'right of first refusal' is garnered under the IID/SDCWA 1998 Water Conservation and Transfer Agreement. IID has sent draft waiver letter to SDCWA, no response received.	Draw water directly from West Side Canal. Dump tank can be set up (encroachment permit needed)	Westside Main Canal	In service network permit must be completed. Outside service area must have agreement with SDCWA to use water outside of their service area (Draft letter submitted to SDCWA by IID)	Complete a water authorization form at the Water Department division office located at 2151 W. Adams Ave., El Centro, pay \$250 permit fee. Water meter is required. Meter is read monthly and an invoice for water used will be forwarded SDGE. The industrial water rate is \$85/af.; there are 326,000 gallons in one acre foot. For semi-permanent installations (i.e. dump tanks) SDGE must file for an encroachment permit with the Real Estate Section located in the Valley Plaza complex, 1653 W. Main St., also in El Centro. They will require you to: - Fill out an encroachment form - Charge a filing fee \$250 - Submit a simple hand drawn sketch of the installation - Use of IID water outside of service area must have approval from SDCWA. - IID water can only be used in Imperial County, pending SDCWA approval for use outside of IID service area.	Yes
	Carlos Z. Villalón Asst. Manager, Water Operations	760-339-9267 czvillalon@IID.com								
	Customer Service	760-339-9322								
	Tom Dubose Development Design Engineering Consultants	760-353-8110								
Helix WD Lake Jennings	Tristan Hayman Director of Field Operations and Distribution	619-596-1306	NA	NA	NA	NA	NA	NA	Indicated that there is no way to meter the water and the facilities are being used for recreational purposes. Therefore, Helix WD personnel do not believe this is a feasible water source.	No
Helix WD Lake Cuyamaca	Carlos Lugo Director of Engineering	619-667-6241	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
City of San Diego El Capitan Reservoir	Jesus Meda Senior Civil Engineer	619-527-3156	Can distribute up to 15 Mgd	None, can provide 300,000 gallons per day	None known	Connect to existing blow- off valve and plumb to tank.	Connect to piping downgradient of dam, piping diagrams pending.	Complete construction meter application with City of SD and meter shop for potable water. Work with City of San Diego to establish payment process. No approval from RWQCB or CWA required since raw water is being used.	Locate and purchase or lease a property near reservoir water distribution system. Conduct site walk with City of SD personnel to identify specific blow-off valve locations to tie into. Based on location and configuration of blow-off valve, provide City of SD with engineered drawings and details for specific water delivery system. Work with City to establish acceptable raw water rate, metering program, and payment process. Purchase meters from the city for distribution locations. SDGE responsible for paying for all installation and maintenance, as well as to mitigate any impacts from installation and operation. Complete construction meter application with City of San Diego Meter Shop.	Yes
City of San Diego San Vicente Reservoir			Can distribute up to 15 Mgd	None, can provide 300,000 gallons per day	None known					
City of San Diego Barrett Lake			Only restricted by removal method.	None, can provide 300,000 gallons per day	None known	Install temporary water delivery system onsite	TDB	Work with City of San Diego to establish metering program and payment process. No approval from RWQCB or CWA required since raw water is being used.	Prepare engineered drawings and details for specific water delivery system. Work with City to establish acceptable raw water rate, metering program, and payment process. Purchase meters from the city for distribution locations. SDGE responsible for paying for all installation and maintenance, as well as to mitigate any impacts from installation and operation.	YES
City of San Diego Lake Morena			Only restricted by removal method.	None, can provide 300,000 gallons per day	None known	Install temporary water delivery system onsite	TBD	Work with City of San Diego to establish metering program and payment process. No approval from RWQCB or CWA required since raw water is being used.	Prepare engineered drawings and details for specific water delivery system. Work with City to establish acceptable raw water rate, metering program, and payment process. Purchase meters from the city for distribution locations. Contact Lake Morena to ensure compliance with access requirements. SDGE responsible for paying for all installation and maintenance, as well as to mitigate any impacts from installation and operation.	YES
City of San Diego Lake Hodges	Rosalva Morales Associate Civil Engineer	619-527-3119	NA	NA	NA	NA	NA	NA	Too distant from alignment.	No
City of San Diego Lower Otay Reservoir			NA	NA	NA	NA	NA	NA		
City of San Diego Sutherland Reservoir			NA	NA	NA	NA	NA	NA		
Sweetwater Sweetwater Reservoir	Patrick Rasco Sweetwater Authority Engineering	619-420-1413	NA	NA	NA	NA	NA	NA	Water from the Sweetwater Authority reservoirs can only be sold if treated, they have no way of treating water at the lake. Selling of untreated reservoir water regulated would require state approval	No
Sweetwater Loveland Reservoir			NA	NA	NA	NA	NA	NA		

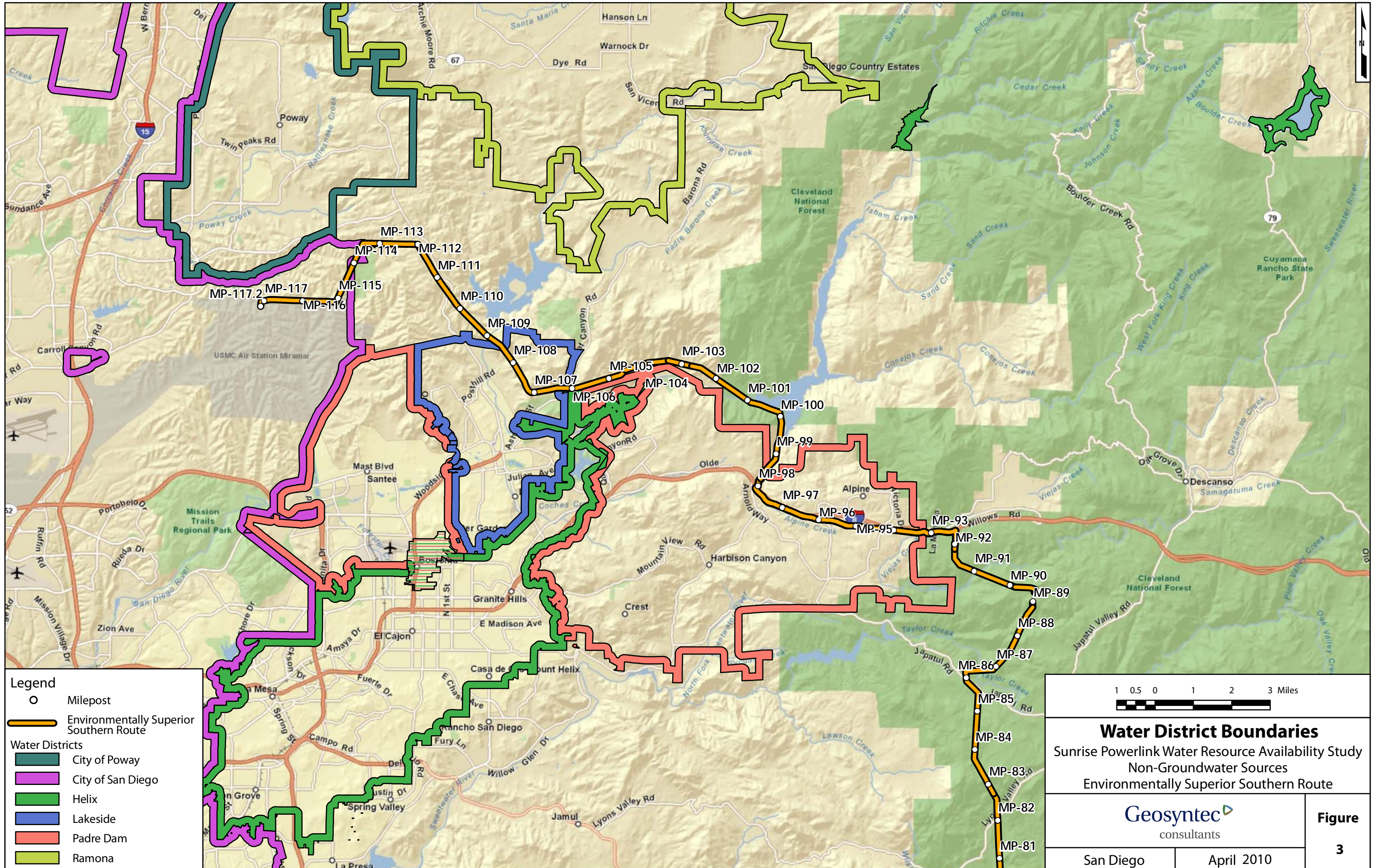
Notes:
Mgd - Million Gallons per Day
NA - Not Available
WD - Water District
SDCWA - San Diego County Water Authority
IID - Imperial Irrigation District
RFP - Request for Proposal
TBD - To Be Determined

Figures



<p>5 2.5 0 5 10 15 Miles</p>	
<p>Site Location Sunrise Powerlink Water Resource Availability Study Non-Groundwater Sources Environmentally Superior Southern Route San Diego and Imperial Counties</p>	
<p>Geosyntec consultants</p>	
San Diego	April 2010
<p>Figure 1</p>	





Legend

- Milepost
- Environmentally Superior Southern Route

Water Districts

- City of Poway
- City of San Diego
- Helix
- Lakeside
- Padre Dam
- Ramona

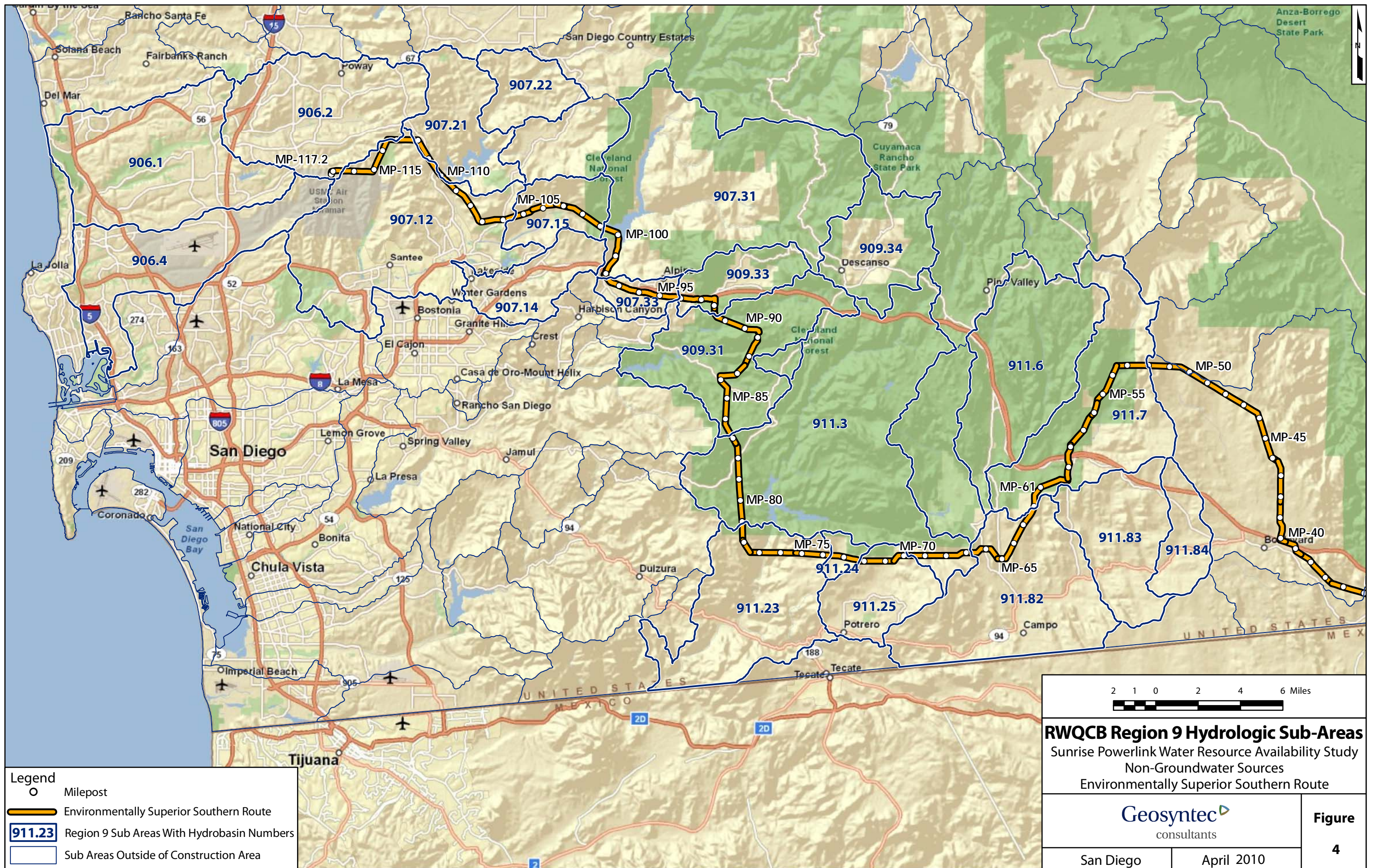
1 0.5 0 1 2 3 Miles

Water District Boundaries
 Sunrise Powerlink Water Resource Availability Study
 Non-Groundwater Sources
 Environmentally Superior Southern Route

Geosyntec
 consultants

San Diego April 2010

Figure
 3



Legend

- Milepost
- Environmentally Superior Southern Route
- 911.23 Region 9 Sub Areas With Hydrobasin Numbers
- Sub Areas Outside of Construction Area

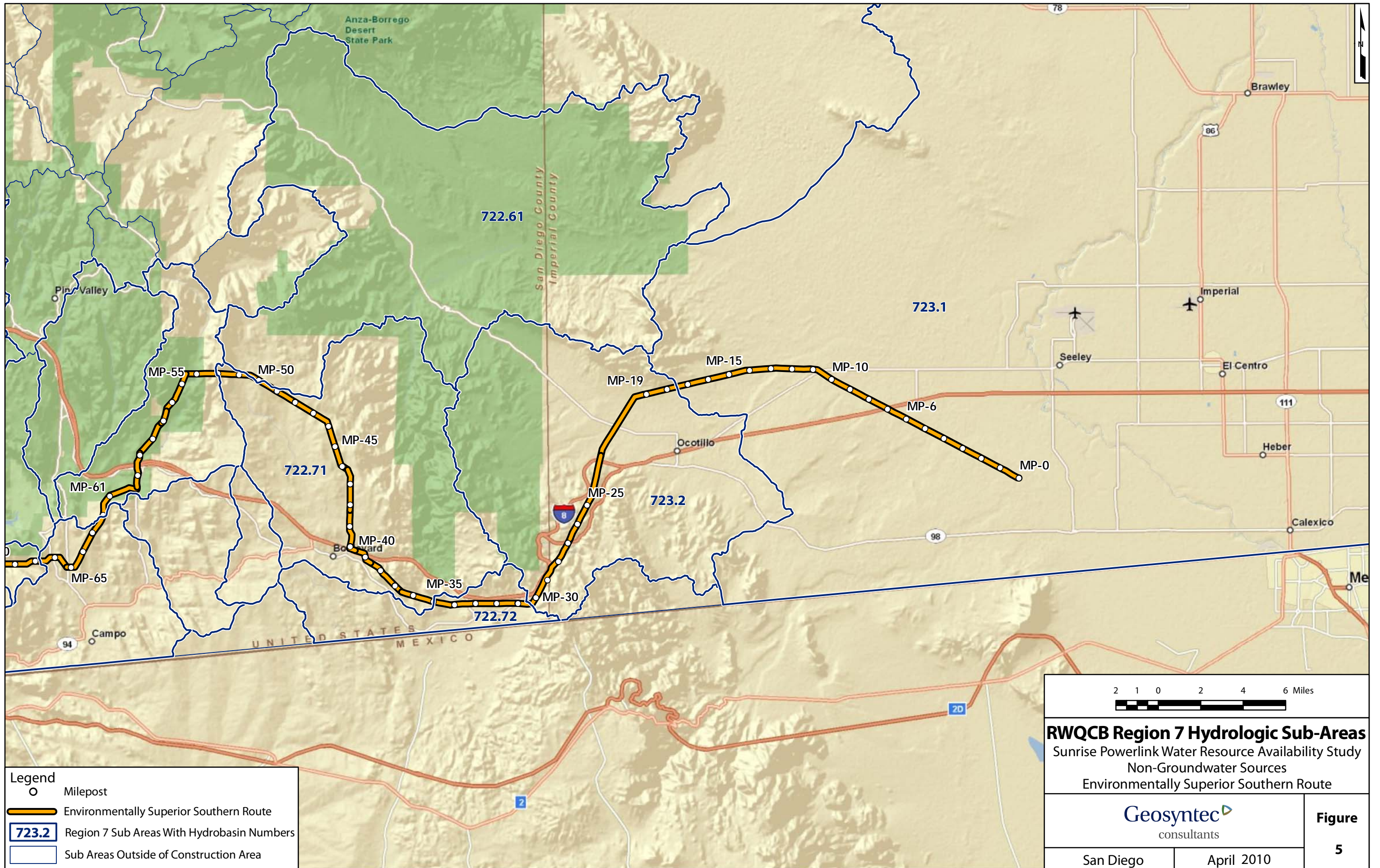
2 1 0 2 4 6 Miles

RWQCB Region 9 Hydrologic Sub-Areas
 Sunrise Powerlink Water Resource Availability Study
 Non-Groundwater Sources
 Environmentally Superior Southern Route

Geosyntec
 consultants

Figure
4

San Diego April 2010



Appendix A

**RWQCB – Region 9 Conditional Waiver
No. 7 – Temporary Discharges of
Reclaimed Water to Land**

Conditional Waiver No. 7 – Discharges of Recycled Water to Land

Conditional Waiver No. 7 is for discharges of recycled water to land. Discharges of recycled water may contain pollutants that can adversely affect the quality of waters of the state. The application of recycled water to land may result in pollutants being concentrated in soils, which may adversely impact the quality of the waters of the state when those concentrated pollutants are leached out during rainfall events and/or overuse of irrigation water. This waiver would not be available or applicable to recycled water projects and users subject to rules and regulations established by master reclamation permits (MRPs), issued pursuant to Water Code section 13523.1, or otherwise regulated under waste discharge requirements (WDRs) or water reclamation requirements (WRRs), issued pursuant to Water Code sections 13260 and 13523, respectively.

The following types of discharge not regulated or authorized under WDRs, WRRs, and/or MRP may be eligible for Conditional Waiver No. 7:

- Discharges to land from short-term recycled water projects (without permanent recycled water delivery and/or distribution systems, not to exceed 365 days)
- Discharges to land from permanent recycled water projects (with permanent recycled water delivery and/or distribution systems, limited to the period prior to the discharge being authorized and regulated under WDRs, WRRs, and/or MRP, not to exceed 365 days)

Discharges from these types of projects have similar properties, threat to water quality, and waiver conditions. Therefore, these types of discharge were grouped together into one discharge classification. Recycled water projects that comply with the waiver conditions are not expected to pose a threat to the quality of waters of the state.

Recycled water may only include sources that contain domestic waste, whole or in part.¹ Domestic wastewater reclamation is subject to the requirements of Water Code Articles 1 through 7 (commencing with section 13500) of Chapter 7, and the use of recycled water must not degrade water quality.² Recycled water cannot be discharged without authorization under WDRs, WRRs, or a MRP,³ unless issued a waiver. A conditional waiver is not available or applicable to recycled water discharges authorized and regulated under WDRs, WRRs, and/or a MRP.

The California Department of Public Health (CDPH), formerly known as the California Department of Health Services, established statewide wastewater reclamation criteria for each type of recycled water use to protect public health.⁴ Depending on the planned use of the recycled water, the domestic wastewater must be treated to one of the following minimum standards:

¹ California Code of Regulations Title 22 section 60302

² Water Code section 13550(a)(4)

³ Water Code section 13529.2(b)

⁴ California Code of Regulations Title 22, Division 4, Chapter 3, Articles 1 through 10

- Undisinfected Secondary Recycled Water⁵
- Disinfected Secondary-23 Recycled Water⁶
- Disinfected Secondary-2.2 Recycled Water⁷
- Disinfected Tertiary Recycled Water⁸

Domestic wastewater that is treated to CDPH secondary recycled water standards contains more pollutants than domestic wastewater that is treated to CDPH tertiary recycled water standards. Domestic wastewater treated to CDPH secondary recycled water standards does not require filtering and will have higher concentrations of nutrients, suspended and dissolved solids, and possibly metals compared to domestic wastewater treated to CDPH tertiary recycled water standards. CDPH domestic wastewater reclamation criteria also require disinfection for most recycled water uses. However, for those uses that do not require disinfection, bacteria may be present in relatively high concentrations.

The different CDPH recycled water standards only include standards for bacteria to be protective of human health, not water quality. Pollutants that are typically present in domestic wastewater that can potentially have an adverse effect on receiving water quality include suspended and dissolved solids and nutrients, among others. Therefore, the discharge of recycled water to land can potentially contain bacteria, nutrients, dissolved and suspended solids, and other pollutants.

⁵ Defined in California Code of Regulations Title 22 section 60301.900 as “oxidized wastewater” or “wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.”

⁶ Defined in California Code of Regulations Title 22 section 60301.225 as wastewater “that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.”

⁷ Defined in California Code of Regulations Title 22 section 60301.220 as wastewater “that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.”

⁸ Defined in California Code of Regulations Title 22 section 60301.230 as “a filtered and subsequently disinfected wastewater that meets the following criteria: (a) The filtered wastewater has been disinfected by either: (1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or (2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration; (b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.”

Recycled water is suitable for a direct beneficial use or a controlled use that would otherwise not occur. However, the pollutants remaining in the recycled water, and recycled water that comes into contact with pollutants and transports those pollutants in surface runoff or leaches those pollutants into the soil and groundwater, can potentially have an adverse effect on the quality of waters of the state.

Recycled water that is discharged directly to surface water would be subject to federal National Pollutant Discharge Elimination System (NPDES) regulations. Recycled water indirectly discharged to surface waters, through surface runoff or overspray, may also be subject to NPDES regulations, but is subject to the water quality standards in the Basin Plan and the regulations of the Water Code. In either case, discharges of recycled water to surface waters could exceed and cause the receiving waters to exceed the water quality objectives in the Basin Plan and would require regulation under WDRs.

Excessive use of recycled water discharged to land can result in a significant amount of infiltration and leaching of pollutants to underlying groundwaters. Over time, recycled water that percolates to groundwater can potentially have an adverse effect on water quality. The San Diego Water Board may not deny issuance of WRRs to a project that only violates a salinity standard in the Basin Plan.⁹ However, discharges that are eligible for a conditional waiver are not expected to adversely affect or pose a threat to water quality. With proper planning, management, and application, the potential threat to groundwater quality from discharges of recycled water to land can be minimized or eliminated. Therefore, waiver conditions must require proper planning, management, and application of recycled water discharged to land to minimize or eliminate the discharge of pollutants to waters of the state.

Waiver conditions should be developed in order for members of the public, cities, counties, local agencies and organizations, and/or the San Diego Water Board to determine if any discharges of recycled water to lands pose a threat to the quality of the waters of the state. If recycled water dischargers are not in compliance with waiver conditions, they can be issued a Notice of Violation and required to correct deficiencies in order to be eligible for Conditional Waiver No. 7. If recycled water dischargers violate any waiver conditions, the San Diego Water Board has the option to terminate the conditional waiver for the discharge and begin regulating the discharge with individual WDRs and/or take other enforcement actions.

In order to be eligible for Conditional Waiver No. 7, discharges must comply with certain conditions to be protective of water quality. The waiver conditions applicable to discharges of recycled water to land include the following:

7.I.A. General Waiver Conditions for Recycled Water Projects

⁹ Water Code section 13523.5

- 7.II.A. Specific Waiver Conditions for Short-term Recycled Water Projects
- 7.II.B. Specific Waiver Conditions for Permanent Recycled Water Projects

Discharges of recycled water to land that comply with the general and specific waiver conditions in Conditional Waiver No. 7 are not expected to pose a threat to the quality of waters of the state. .

7.I.A. General Waiver Conditions for Recycled Water Projects

1. Prevent all windblown spray and surface runoff of recycled water on to property not owned or controlled by the discharger by implementation of management measures (MMs) and/or best management practices (BMPs).
2. Recycled water discharged to land must not adversely affect the quality or beneficial uses of underlying groundwater.
3. The San Diego Water Board and/or other local regulatory agencies must be allowed reasonable access to the site in order to perform inspections and conduct monitoring.
4. The use of recycled water must comply with the requirements of California Code of Regulations Title 22 section 60310(a) through (j), unless sufficient information is provided to demonstrate that a proposed alternative is protective of water quality and human health.
5. Recycled water cannot be used for groundwater recharge unless sufficient information is provided to demonstrate that it will be protective of water quality and human health.

7.II.A. Specific Waiver Conditions for Short-term Recycled Water Projects

1. The operator of a short-term project proposing to discharge recycled water must file a Notice of Intent containing information about the operator, location of the project, source of the recycled water, planned period of and frequency of discharge of recycled water, and the MMs/BMPs or other measures that will be taken to eliminate or minimize the discharge of pollutants that might affect surface water and groundwater quality.
2. The Notice of Intent must include a letter from the permitted recycled water agency supplying the recycled water stating that the project will comply with recycled water regulations in California Code of Regulations Title 22, Division 4, Chapter 3, Articles 1 through 10. The letter shall also specify any monitoring and/or reporting required by the recycled water agency to demonstrate compliance with California Code of Regulations Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 2, 3, 4, 5, and 5.1.
3. Sufficient information demonstrating that the operator will comply with waiver conditions and applicable recycled water regulations must be submitted before the discharge may begin.
4. The Notice of Intent is valid for 365 days after the submittal of a complete Notice of Intent. A new Notice of Intent must be filed with the San Diego Water Board if the short-term project will exceed 365 days. A new Notice of Intent must be received by the San Diego Water Board at least 60 days prior to the expiration of the previous Notice of Intent. If no new Notice of Intent is

received 60 days prior to the expiration of the previous Notice of Intent, the short-term recycled water project must cease operation 365 days after a complete Notice of Intent has been submitted.

7.II.B. Specific Waiver Conditions for Permanent Recycled Water Projects

1. A recycled water agency proposing to supply and/or distribute recycled water through permanently installed facilities or structures before receiving WDRs must file a Report of Waste Discharge (RoWD) pursuant to Water Code sections 13260 and 13522.5 containing the following:
 - a) Sufficient information for the San Diego Water Board to determine that the project will be consistent with the Water Quality Control Plan for the San Diego Basin and any State Water Resources Control Board recycled water policies, and will comply with all applicable recycled water regulations.
 - b) A letter from the California Department of Public Health (CDPH) stating that the project will comply with recycled water regulations in California Code of Regulations Title 22, Division 4, Chapter 3, Articles 1 through 10. The letter shall also specify any provisions, monitoring, and/or reporting required by the CDPH to demonstrate compliance with California Code of Regulations Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 2, 3, 4, 5, and 5.1.
 - c) A list of recycled water end users that will be regulated by the recycled water agency, and the proposed monitoring and reporting program the recycled water agency will implement to demonstrate that the end users are complying with the waiver conditions and applicable recycled water regulations.
2. The recycled water agency must submit sufficient information demonstrating that the recycled water agency and its end users will comply with waiver conditions and applicable recycled water regulations before the discharge may begin.
3. The conditional waiver issued to the recycled water agency is valid for 365 days after a completed RoWD has been submitted, or until WDRs are adopted for the project, whichever occurs first. The San Diego Water Board will adopt WDRs at the earliest possible opportunity. If the WDRs cannot be adopted within 365 days after the completed RoWD has been submitted, the recycled water agency must request an extension of the conditional waiver at least 60 days prior to the expiration of the previous conditional waiver. If no request for an extension is received 60 days prior to the expiration of the previous conditional waiver, the permanent recycled water project must cease the discharge of recycled water 365 days after the completed RoWD was submitted.
4. If a recycled water agency that obtains a waiver in accordance with the waiver conditions in 7.II.B proposes to significantly add to or modify the treatment process (e.g., change the disinfection or filtration processes), then the discharger shall submit a new RoWD containing the information listed in 7.II.B.1 above.

Appendix B

City of San Diego Reclaimed Water – Detailed Acquisition Instructions



THE CITY OF SAN DIEGO

Steps to Getting Connected to Recycled Water

1. Site Assessment

City of San Diego staff conducts on-site preliminary assessment of the existing water systems. Call (619) 533-7595 to make an appointment.

2. Prepare Design

Customer prepares plans according to State and County health regulations and the [City of San Diego Recycled Water System Guidelines and Standards](#). Refer to the City of San Diego [Recycled Water Rules & Regulations](#) for specifics.

3. Design Review and Plan Check

Plans must be reviewed and approved by the City of San Diego and County of San Diego.

City of San Diego Review:

- Fill out a [general application form](#) and a [Deposit Account/Financial Responsible Party form](#) and submit with **three sets of recycled water plans**, site plans, public improvement drawings and a plan review deposit of \$2,400 to:

Water Department/Recycled Water
600 B Street, 6th Floor
San Diego, CA 92101

Office hours are Monday through Friday 8 a.m. to 4:30 p.m. Call (619) 533-7595 to make an appointment. Checks and money orders payable to City Treasurer.

- For cooling tower, industrial or dual plumbing (toilet/urinals) plan review, three sets of plumbing plans and an engineering report are required in addition to the site plans and deposit noted above.
- If the site does not have an assigned address, contact the Development Services Department address coordinator at (619) 446-5411 to have an address assigned.
- Plan check process is conducted by City staff and takes approximately 14 business days to complete. Customers are notified upon plan approval.

For information on plan requirements, refer to the [Recycled Water Plan Check List](#) (PDF: 25K). Call (619) 533-7595 for additional information.

County of San Diego Review:

Complete [County application form](#) and submit two sets of plans to:

County of San Diego Department of Environmental Health
5201 Ruffin Road, Suite C
San Diego, CA 92123

Call (858) 694-2121 or (858) 694-2145 for assistance.



Water Department

600 B Street, Suite 600, MS 906 • San Diego, CA 92101

Tel (619) 533-7595 Fax (619) 533-5325

4. Pre-Construction Inspection

Following plan approval and prior to the start of construction, a pre-construction inspection must be scheduled with the City of San Diego's Water Department Recycled Water Program. Call (619) 533-7595 to schedule. Construction cannot begin until inspection has been completed.

5. Meter Service Request

Customer initiates meter request by calling (619) 533-7595. Following meter services request processing, [meter fees](#) will be calculated and customer will be notified. Recycled water meter, service, and inspection fees are payable to:

City of San Diego
Development Services Department
1222 First Avenue, 4th Floor
San Diego, CA 92101

Business hours: Monday, Tuesday, Thursday, Friday from 7 a.m. to 4 p.m.

Wednesday from 9 a.m. to 4 p.m.

Call (619) 533-7595 to schedule cross-connection shutdown test with Water Department staff. Test will be conducted by City of San Diego staff following completion of construction.

6. Pre-Connection Inspection and System Shutdown Test

Once on site construction is completed and prior to the final connection to the recycled water system, Water Department staff, in conjunction with the County Department of Environmental Health, conducts a system shutdown test. Call (619) 533-7595 to schedule appointment.

7. Initiate Service

Call Water Department Customer Service to initiate service (619) 515-3500.

8. Required Training

Authorized customer representative is required to attend the [Recycled Water Site Supervisor Course](#) offered by the City of San Diego and the [San Diego County Water Authority](#).

9. Annual Inspections/Shutdown Test/Cross-Connection Control Test

Annual recycled water systems inspections are performed by the City of San Diego Water Department. Every four years a cross-connection test is conducted by the City of San Diego and the County Department of Environmental Health.

10. Information

Call (619) 533-7572 for more information or visit the City's web site at www.sandiego.gov/water/recycled.

Appendix C

City of San Diego – Rules and Regulations for Recycled Water Use and Distribution

Rules and Regulations for
Recycled Water Use and Distribution
within the City of San Diego



September 2008

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SECTION 1: INTRODUCTION

1.1 BACKGROUND

The City of San Diego is primarily dependent on imported water for domestic and industrial uses. This imported supply is considered limited and its future reliability uncertain. In addition, transport of this water requires tremendous energy input which contributes a considerable portion of the total cost to the end user. It is in the best interest of the City of San Diego to promote and implement innovative water management strategies to conserve water and energy resources while still satisfying the water needs of its people.

On July 24, 1989 the San Diego City Council adopted Ordinance 0-17327, the Water Reclamation Ordinance, which provides for the planning of wastewater reclamation facilities, fostering the use of recycled water (also known as reclaimed water), controlling its sage distribution, and permitting and regulating its use. The basis for this ordinance is the California Water Code Section 13551, which states that the continued use of potable water for greenbelt irrigation and certain other non-domestic water uses is an unreasonable use of water if recycled water is available and usable for such purposes.

The use of water recycled from municipal wastewater is regulated by the California Regional Water Quality Control Board (RWQCB). California Water Code Section 13551 establishes a state policy to encourage the use of recycled water. Permission to use recycled water is based on the ability to adequately treat municipal wastewater to the point that the recycled water (effluent) meets the requirements of existing Title 22, Chapter 3 regulations of the California Code of Regulations. Title 22 was promulgated by the California Department of Public Health (DPH) to ensure proper health protection and specify the treatment degree to match the intended applications.

With the City's adoption of Ordinance 0-17327, the following Rules and Regulations have been developed to govern the distribution and use of recycled water for greenbelt irrigation and other non-potable uses as and when it becomes available.

1.2 POLICY

It is the policy of the City of San Diego that recycled water be used for any purpose approved for recycled water use when it is economically, financially, and technically feasible, as mandated by Ordinance 0-17327. Use of potable water for non-domestic uses shall be contrary to the City Policy, and shall not be considered the most beneficial use of a natural resource and shall be avoided to the maximum extent possible.

The distribution and use of recycled water shall be consistent with the standards and requirements of regulatory agencies for the protection of public health and welfare, and the preservation of the quality of the environment.

1.3 PURPOSE

The Rules and Regulations set forth herein pertain to recycled water service provided by the City of San Diego within the City's service area. These Rules and Regulations establish procedures for the distribution and use of recycled water.

Recycled water service from the City is subject to the availability of facilities and adequate capacity in these facilities.

It is the general intent of the City to provide recycled water to all service areas in the City identified in the Water Reclamation and Reuse Conceptual Master Plan for Modifications to the Metropolitan Sewerage System, and subsequent additions, revisions or updates of the plan, herein referred to as "Master Plan". Owners or property identified as being in a class of potential users in the Master Plan within areas for recycled water use shall qualify for a recycled water Use Permit from the City in compliance with these Rules and Regulations.

These Rules and Regulations shall be interpreted in accordance with the purpose, policy, and intent of these Rules and Regulations and the definitions as set forth in Section 2 herein. Insofar as these Rules and Regulations support portions of the California Code of Regulations, Title 22, any amendment of the California Code of Regulations which may be pertinent to these Rules and Regulations shall be incorporated accordingly.

1.4 GOALS

Recycled water shall be distributed and used in a manner that meets all Federal, State, County, and City requirements and which shall achieve the following:

- a. Prevent direct human consumption of recycled water through adherence to all applicable rules and regulations and laws which include a strict cross-connection/backflow prevention program.
- b. Prevent cross-connection between recycled and potable water systems.
- c. Isolate contamination by other sources, such as wastewater, sludge, urban run-off, or other substances which may come into contact with the recycled water.

Because recycled water is not processed to the point that it is acceptable for human consumption, it is important that these Rules and Regulations contain provisions which minimize or eliminate the possible misuse of the recycled water. Currently recycled water is only processed to a tertiary level for irrigation, industrial uses, dual plumbing, dust suppression, and soil compaction.

SECTION 2: DEFINITIONS

The terms hereinafter set forth, unless otherwise specified, shall have the following meanings:

AEROSOL (see WINDBLOWN SPRAY).

AIR-GAP SEPARATION shall mean a physical break between a supply of pipe and a receiving vessel. The air-gap shall be at least double the diameter of the supply pipe, measured vertically above the flood rim of the vessel, and in no case less than one inch. The design shall be to the satisfaction of the City of San Diego.

AMERICAN WATER WORKS ASSOCIATION (AWWA) shall mean the American Water Works Association California-Nevada Section.

APPLICANT shall mean any person, firm, corporation, association, agency or authorized representative who applies for recycled water service under the terms of these Rules and Regulations.

APPLICATION RATE shall mean the rate at which recycled water is applied to an irrigation or construction area expressed in inches per hour (or cm/hr).

APPROVED BACKFLOW PREVENTER shall mean a device installed to protect the potable water supply from contamination by recycled water as approved by California Department of Public Health and the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC), School of Engineering.

APPROVED CHECK VALVE shall mean a watertight semiautomatic device which seats readily and completely and is designed to permit flow in only one direction, as approved by California Department of Public Health (DPH) and the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC), School of Engineering.

APPROVED DOUBLE CHECK VALVE ASSEMBLY (DC) shall mean an assembly of at least two independently acting approved check valves including tightly closing shut-off valve assemblies on each side of the check valve assembly and test cocks available for testing the water tightness of each check valve as approved by California Department of Public Health (DPH) and the Foundation for Cross-Connection and Hydraulic Research, University of Southern California (USC), School of Engineering.

APPROVED USE shall mean the use of recycled water in a manner, and for such purpose, designated in a user permit issued by the City and in compliance with any and all applicable regulatory agency requirements.

APPROVED USE AREA shall mean a site, with well defined boundaries, designated in a user permit issued by the City to receive recycled water for an approved use.

AS-BUILT DRAWINGS (see RECORD DRAWINGS).

AUTOMATIC IRRIGATION SYSTEM shall mean an electronic, electrical, or mechanical system which includes automatic controllers, valves, and associated equipment required for the programming of effective water application rates when using recycled water.

CAPACITY CHARGE shall mean a one-time charge determined from the Schedule of Rates of the City, and payable by the customer for obtaining recycled water. The purpose of this charge is for the expansion of recycled water facilities to accommodate future growth.

CITY shall mean The City of San Diego, California.

CITY COUNCIL shall mean the Council of the City of San Diego.

CITY MAYOR shall mean the City Mayor of the City of San Diego or designee.

COMMERCIAL USE shall mean the use of recycled water for toilets, urinals, decorative fountains, landscape irrigation, industrial, and other related uses.

CONNECTION FEE shall mean a charge imposed by the City for establishing or reestablishing recycled water service, including construction and/or installation of offsite facilities.

CONSTRUCTION USE shall mean the approved use of recycled water to support construction activities such as soil compaction and dust control during grading.

CONTRACTOR shall mean a person, persons, or firm entering into a legal agreement with the owner, customer, or the City for the performance of work on all or any portion of facilities subject to these regulations.

COUNTY shall mean the County of San Diego, California.

CROSS-CONNECTION shall mean any unprotected connection between any part of a potable water system and recycled water system, and/or between any part of recycled water system and other sources such as sewers and sludge force mains whereby contamination may enter the potable water system.

CUSTOMER shall mean any person, firm, corporation, association, or agency that holds a valid recycled water Use Permit or agreement, or has obtained approval from the City to use recycled water.

DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH) shall mean the County of San Diego Department of Environmental Health.

DEPARTMENT OF PUBLIC HEALTH (DPH) shall mean the Department of Public Health for the state of California.

DESIGNATED USE AREA shall mean the area covered by recycled water.

DEVELOPMENT SERVICES DEPARTMENT shall mean the City of San Diego's Development Services Department.

DIRECT BENEFICIAL USE shall mean the use of recycled water which has been transported from the point of production to the point of use without an intervening discharge to waters of the State.

DISCHARGE shall mean any release or distribution of recycled water to a sewerage system, or storm drain system.

DUAL PLUMBING SYSTEM shall mean when the toilets and urinals in a building are served by recycled water.

GPH shall mean the rate of recycled water delivery in gallons per hour.

GPM shall mean the rate of recycled water delivery in gallons per minute.

GRAYWATER shall mean untreated wastewater other than toilet and/or urinal waste and kitchen sink waste.

GREENBELT AREAS shall mean parcels of recreational or unoccupied public or private lands within the service area, including but not limited to, golf courses, cemeteries, parks, street median strips, and landscaping of common areas within the service area.

HCF shall mean the unit of water quantity measurement delivered to the user in hundreds of cubic feet.

INDUSTRIAL WATER shall mean recycled water used in industrial facilities.

INFILTRATION RATE shall mean the rate at which water will penetrate the soil surface and enters the soil profile, expressed in inches per hour (or cm/hr).

INSPECTOR shall mean any person authorized by the City to perform inspections of either onsite or offsite facilities or areas prior to construction, during construction, after construction, and during operation.

KILL SERVICE (see SERVICE KILL)

LANDSCAPE IMPOUNDMENT shall mean a body of recycled water which is stored or used for aesthetic enjoyment or which otherwise serves a function not intended to include bodily contact.

LANDSCAPE STANDARDS shall mean the Landscape Standards of the City of San Diego.

LANDSCAPE TECHNICAL MANUAL shall mean the Landscape Technical Manual (LTM) of the City of San Diego dated November 1989, City Clerk Document No. RR-274506. This manual is used when the Landscape Standards do not cover an area of concern.

MAYOR shall mean the Mayor of the City of San Diego or designee.

MUNICIPAL CODE shall mean the Municipal Code of the City of San Diego.

NON-POTABLE WATER shall mean water that has not been treated for, or is not acceptable for, human consumption in conformance with the Federal, State and local water standards, such as recycled water and raw water.

NON-RESTRICTED RECREATIONAL IMPOUNDMENT shall mean an impoundment of recycled water in which no limitations are imposed on body-contact water sport activities.

OFFSITE FACILITIES shall mean facilities under the control of the City including, but not limited to, recycled water transmission mains, recycled water pipelines, reservoirs, pumping stations, treatment plants, and other appurtenances and property. For recycled water service offsite facilities shall be those upstream of the point of connection with the customer's onsite facilities located at and starting at the downstream end of the meter tailpiece.

ONSITE FACILITIES shall mean the facilities under the control of the applicant, owner, or customer including, but not limited to, landscape irrigation systems and agricultural irrigation systems. For recycled water service, the onsite facilities shall be those downstream of the recycled water service connection, which shall normally be the downstream end of the meter tailpiece.

OPERATIONS PERSONNEL shall mean any employee of the user, owner, or customer whether permanent or temporary, or any contracted worker whose regular or assigned work involves the supervision, operation, or maintenance of equipment, facilities, or a system using recycled water.

PERMIT (see **USE PERMIT**)

PERMITTED CAPACITY OF RECYCLED WATER shall mean the amount of recycled water that the user is entitled to have for the area and use specified in the recycled water permit and plans and/or agreement.

POC shall mean the point of connection of the onsite facilities to the offsite facilities of the recycled water distribution system.

PONDING shall mean the retention of recycled water on the surface of the ground or other man-made surfaces, including the designated use area, for a period of time following the cessation of an approved recycled water use activity such that a hazard or potential hazard to public health results.

POTABLE WATER shall mean water that is pure, wholesome, and suitable for human consumption, and which conforms to the latest edition of the United States Public Health Service Drinking Water Standards, the California Safe Drinking Water Act, and any other applicable standards.

RECLAIMED WATER is also known as recycled water. (See RECYCLED WATER)

RECORD DRAWINGS shall mean approved Mylar drawings that correctly show the completed onsite facilities and/or offsite facilities as constructed or modified. These drawings shall show all potable water, recycled water and sewer lines, and other utility systems.

RECREATIONAL IMPOUNDMENT shall mean a body of recycled water used for recreational activities including, but not limited to, fishing, boating, and/or swimming. Allowable uses will depend on treatment level of the recycled water.

RECYCLED WATER shall have the definition set forth in Title 22, Division 4 of the California Code of Regulations and shall mean water which, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that otherwise would not occur. Specifically excluded from this definition is gray water.

RECYCLED WATER DISTRIBUTION MAINS shall mean recycled water pipelines and appurtenances acquired or constructed and owned by the City, and used for the conveyance of recycled water between the recycled water transmission mains and the recycled water service connections.

RECYCLED WATER FACILITIES shall mean systems, structures, etc., used in the treatment, storage, pumping, transmission and distribution of recycled water.

RECYCLED WATER SERVICE CONNECTION shall mean the point of connection (POC) of the customer's recycled water line with the recycled water service line of the City, which shall normally be the downstream end of the recycled water meter tailpiece.

RECYCLED WATER SERVICE LINES shall mean recycled water distribution pipelines and appurtenances acquired or constructed and owned by the City, and used for the conveyance of recycled water between the recycled water distribution mains and the individual recycled water service connections.

RECYCLED WATER SITE SUPERVISOR shall mean a person designated and authorized by the user, owner, or customer to operate the onsite facilities and irrigation systems and be responsible for the application of the guidelines, criteria, and standards of these Rules and Regulations. The designated Site Supervisor shall be certified to operate and maintain the onsite facilities and irrigation system, and to assume the responsibilities outlined in Section 6.2.2 by completing a Recycled Water Site Supervisor class. Certification classes are offered by the County of Water Authority (CWA) and the City of San Diego.

RECYCLED WATER TRANSMISSION MAINS shall mean major recycled water pipelines and appurtenances acquired or constructed and owned by the City, and used for the conveyance of recycled water between the water reclamation plant and pump station, reservoir, and/or the recycled water distribution mains.

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE (RPPD) shall mean a backflow preventer incorporating not less than two check valves, and automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

REGULATORY AGENCIES shall mean those public entities legally constituted by Federal, State, County, and City statutes to protect public health and safety and water quality.

RESTRICTED RECREATIONAL IMPOUNDMENT shall mean a body of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreation activities.

RULES AND REGULATIONS shall mean these Rules and Regulations for Recycled Water Use and Distribution within the City of San Diego.

RUN-OFF shall mean the movement of recycled water beyond the boundaries of the designated use area along the ground surface or man-made surfaces including, but not limited to, pedestrian walkways, streets, playground surfaces, grassy slopes, and drainage courses.

RWQCB shall mean the Regional Water Quality Control Board of the State of California, San Diego Region.

SCHEDULE OF RATES shall mean a schedule containing fees, charges, and deposits determined and issued by the City for the uses and services of recycled water.

SEPARATION shall mean the horizontal and/or vertical distance between a recycled water pipeline and a parallel potable water pipeline, sewer pipeline, or a sludge force main. The separation shall be the clear outside-to-outside distance between the pipelines in question.

SERVICE AREA shall mean all areas identified for recycled water use in the Water Reclamation and Reuse Conceptual Master Plan or the Recycled Water Distribution Master Plan, including all subsequent revisions/updates for use of recycled water within greater San Diego.

SERVICE KILL shall mean discontinue and cap service at main line and remove the meter.

SPRAY IRRIGATION shall mean application of recycled water to land to maintain vegetation or support growth of vegetation by spraying it from sprinklers or orifices in piping.

SSPWC shall mean the latest edition of the Standard Specifications for Public Works Construction, including the Regional Supplement Amendments of the County of San Diego commonly known as the “Green Book”.

SURFACE IRRIGATION shall mean application of recycled water by means other than spraying.

UNAUTHORIZED DISCHARGE shall mean any release of recycled water that violates these Rules and Regulations or any applicable Federal, State, County, or City statutes, regulations, ordinances, contracts or other requirements.

USE PERMIT (Recycled Water Use Permit) shall mean a permit issued by the City to a recycled water service applicant after the satisfactory completion of the service application procedures set forth in these Rules and Regulations. This permit constitutes a service agreement which legally binds the user to all conditions of these Rules and Regulations.

USER shall mean any person, group, firm, partnership, corporation, association or agency approved to use recycled water by having been issued a Use Permit and having plans approved by the City.

WASTEWATER shall mean a combination of water and water-carried wastes, whether treated or untreated, discharges into or permitted to enter a public sewer.

WATER DEPARTMENT shall mean the Water Department of the City of San Diego.

WINDBLOWN SPRAY shall mean dispersed, airborne particles of recycled water resulting from the discharge of recycled water and capable of being transmitted through the air to locations other than those for which the direct application of recycled water was intended.

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SECTION 3: RECYCLED WATER SERVICE REQUIREMENTS

3.1 GENERAL

The City shall provide recycled water service in accordance with these Rules and Regulations to all areas identified in the Water Reclamation Master Plan and subsequent updates, additions, revisions, or amendments for the use of recycled water, as and when such recycled water becomes available.

3.2 SERVICE CONDITIONS

The City shall control and schedule recycled water distribution to customers. The application for recycled water service and the use of recycled water by any customer shall be subject to all the terms and conditions of the State, Federal, County, and City, including these Rules and Regulations and the California Code of Regulations Title 17 and Title 22.

3.3 APPLICATION PROCEDURE

3.3.1 Filing Application for Recycled Water Service

An applicant meeting the requirements for recycled water service shall file an application for recycled water use with the Water Department, Water Resources and Planning Division, Recycled Water Program, on a standard form designated by the City.

The application form shall contain detailed information concerning the applicant as follows:

- a. The application relationship to the property for which recycled water service is requested. In cases where the applicant is not the legal owner of the property, the legal owner shall consent to the application on a supplemental notarized form.
- b. The address and legal description of the property covered by the application.
- c. The purpose for which the property will be used.
- d. The proposed use of recycled water within a specifically defined designated use area on the property
- e. The estimated service requirements for recycled water.
- f. The designation of a Recycled Water Site Supervisor.
- g. Any special condition for service pursuant to these Rules and Regulations.

Section 3: Recycled Water Service Requirements

3.3.2 Compliance of Application with Regulatory Requirements

The applicant for recycled water shall agree to comply with the requirements of these Rules and Regulations and any and all applicable Federal, State, County, and City statutes, ordinances, regulations and other requirements.

3.3.3 Application Fees and Other Charges

Application fees, deposits, meter and/or services fees, cross connection test fees and capacity charges (if applicable) shall be paid in accordance with the schedule of rates of the City and shall be subject to all terms and conditions of these Rules and Regulations.

3.3.4 Review of Application by the City

Upon receipt of an application for recycled water service, the City shall review the application and conduct any necessary investigation in order to determine whether the City shall provide recycled water service. The City may prescribe requirements in writing to the applicant as to the facilities necessary to be constructed including design, manner of construction, method of operations, and conditions of service.

3.4 ESTABLISHING SERVICE

3.4.1 Request for Service Connection

Following the completion of construction and/or installation of the recycled water facilities, the customer shall request the City to install the service connection.

The request for service connection shall be accompanied by all required fees for installation and connection as indicated in the current schedule of rates and as appropriate for the size and type of service.

3.4.2 Request for Service Start-Up

Following final acceptance of the onsite facilities by the City, the customer shall request recycled water service start-up. The request for start-up shall be accompanied by any outstanding cash payments as per the current schedule of rates in addition to those indicated in Section 3.3.3.

3.4.3 Temporary Use of Potable Water

At the discretion of the City, potable water may be made available on a temporary basis, until recycled water is made available. Before the customer receives temporary potable water and prior to commencement of recycled water service, an inspection of the onsite facilities shall be conducted by the City to verify that the facilities have been maintained

Section 3: Recycled Water Service Requirements

and are in compliance with the recycled water Use Permit. Upon verification of compliance, the customer shall request service start-up.

The City may suspend or terminate recycled water service at any time the recycled water at the terminal point of the City's reclamation plant does not meet the requirements of the regulatory agencies. Recycled water service would, in such case, be restored when the recycled water meets the governing requirements at the terminal point of the treatment plant. In addition, an approved air gap separation must be used in any connection for temporary potable water.

3.4.4 Non-registering Recycled Water Meter

Should a recycled meter be identified as non-functioning, non-registering, or out of service an immediate shutdown of the recycled service to the meter shall be executed. A notice shall be sent to the customer within 24 hours. Re-connection of service shall require the same procedure as a new service per these Rules and Regulations and all applicable Federal, State, County, City, and other applicable regulations.

3.4.5 Wholesale Service

Wholesale service to other water agencies (i.e. City of Poway, Olivenhain, and Otay) downstream of the City of San Diego point-of-connection (POC) requires those agencies to enforce all Federal, State, County, and other applicable regulations on their "retail" customers. Upstream of the wholesale service POC shall be the responsibility of the City of San Diego per these Rules and Regulations and all applicable Federal, State, County, and other applicable regulations

3.5 CONDITIONS FOR RECYCLED WATER SERVICE

Permits for recycled water service and any connections for service made, as provided in the permit issued under these Rules and Regulations, shall be subject to the following conditions:

3.5.1 Control of Facilities (Liability)

- a. The City shall have control of and shall maintain and repair recycled water service lines and meters. The customer shall repair and maintain in good working condition the recycled water service connections and onsite facilities. The City shall be entitled to inspect and test all connections and onsite facilities in the manner in these Rules and Regulations.
- b. The City and its agents shall be indemnified and held harmless by the permit holder from and against all claims, damages, losses or expenses arising from the use of recycled water, and/or during the testing and inspection of a recycled water user site under the permit or from the use of facilities by which recycled water is

Section 3: Recycled Water Service Requirements

conveyed, except that the City shall retain liability for its established sole negligence or willful misconduct.

- c. The customer shall, at all times, keep the meter assembly and the area around the meter, or other facilities free from deposits of oil, toxic, hazardous or contaminated liquid or waste, trash, soil, building materials or substances, objects, or obstructions. The customer shall not allow or permit meter boxes, or other facilities to become obstructed or obscured by trees, shrubs, plants or in any manner impede their use or access to them. If such substances, objects, or obstructions are not cleaned and removed by the customer, the cleaning and removal shall be done by the City at the expense of the customer after a reasonable time of notification.

3.5.2 Extension of Distribution Mains

The customer shall pay for all onsite facilities, including their installation, as well as for recycled water service lines and extension of recycled water transmission and distribution mains in order to provide recycled water service to the customer.

3.5.2.1 Reimbursement Agreement:

In cases where a customer and/or developer requests recycled water services in areas where the City does not have existing transmission and distribution mains, the customer's request for recycled water service shall be handled as follows:

Where the City determines it will be most practical to require extension of transmission and distribution mains to areas not covered in a permit application, or where oversized or additional facilities may be needed to accommodate future development, the permit may be conditioned upon the applicant financing and developing such extra service lines. In this event, the City or applicant shall undertake to provide for cost reimbursement whereby subsequent developers of benefited property will reimburse the original developer or the City for proportional shares of the improvements.

Such reimbursement shall be accomplished pursuant to the Cost Reimbursement District Procedural Ordinance of the San Diego Municipal Code, or in the event that the total cost of all improvements is less than an amount established by the City Council, by the Municipal Code, pursuant to MC 67.52.

3.5.2.2 Participation Agreement:

In cases, where the City has planned capital improvement projects which are scheduled for undertaking and completion on a planned timetable, and where the customer and/or developer finds the City's plan for implementation and completion too long to wait for, and where the customer chooses to undertake and

Section 3: Recycled Water Service Requirements

complete a specific planned capital improvement project of the City with the customer's own financial resources, then a participation agreement shall be concluded with the customer or developer and the City agreeing on equitable sharing of the financial outlay of the project, and the project shall be completed in accordance with the design and specification of the City.

3.5.3 Prohibition of Changes:

The customer shall not make any changes in, or additions to, the recycled water system or the potable system in the recycled water use area. Any changes or alterations to existing onsite facilities, whether the result of intended or unintended damage, shall be reported in writing immediately to the City.

3.5.4 Services to Common Areas

The City reserves the right to supply recycled water to contiguous areas of a single ownership through a single recycled water service connection.

Common areas owned or operated by home owner's associations or similar cooperatives should have only one service connection whenever it is practical, and will be operated as a single ownership. A recycled water service connection and water meter shall not be used to supply property not covered by the permit authorizing the connection.

3.5.5 Subdividing an Approved Service Area

- a. When a property provided with a recycled water service connection and water meter is subdivided, such connection and meter shall be considered as serving a lot or parcel of land on which the meter is located. Additional recycled water distribution mains and/or service lines will be required for all subdivided areas in accordance with these Rules and Regulations, unless the sub divider provides covenants, conditions, and restrictions (CC&R's) properly recorded with the County Recorder for the operation of onsite recycled water facilities serving more than one lot, and also provides easements for recycled water distribution mains and/or service lines or shows easement locations in the CC&R's.
- b. All recycled water used on any premise where a meter is installed must pass through the meter. Customers shall be charged for all recycled water passing through the meter.
- c. Every recycled water service connection and meter assembly shall include a curb cock or wheel valve, as approved by the City, on the inlet side of the meter, which shall be used exclusively by the City for controlling the recycled water supply through the recycled water service line. If the curb cock or wheel valve is damaged by the customer's use, repair and/or replacement by the City shall be at the customer's expense.

Section 3: Recycled Water Service Requirements

- d. Each customer shall restrict the use of recycled water to those uses set forth in the Use Permit for recycled water services approved by the City.

3.5.6 Temporary Discontinuation of Recycled Water Service

By reason of circumstances beyond the control of the City, or in order to protect the facilities of the City, or for the protection of public health, safety and welfare of the residents or property owners of the City, recycled water service may be terminated under the conditions set forth below:

- a. On a temporary or permanent basis in the manner provided for in Section 11.1.
- b. On a temporary basis at any time the recycled water, at the terminal point of the City's water reclamation plant takeoff, does not meet the requirements of the regulatory agencies, including but not limited to those prescribed by the California Code of Regulations, Title 22. Recycled water service would, in such case, be renewed at such time that recycled water at the terminal point of the water reclamation plant would again meet the requirements of the regulatory agencies or at such time that the City would supplement the recycled water system from the potable water system.
- c. When the City determines that a water shortage exists or is threatened which prevents further recycled water service.
- d. When a meter is found to be out of service or is not registering, the system will be shutdown until the meter is serviced and inspected.

3.5.7 Interim Water Service

Recycled water may be provided via a potable water meter which is connected to a fire hydrant on an interim basis if requested by a customer provided the following conditions are met:

- a. Water is provided to the customer for no longer than twelve (12) months.
- b. A Reduced Pressure Principal Assembly is connected to the outlet side of a fire hydrant meter.
- c. "Do not drink" signage (per standard sign detail).
- d. All above ground, exposed facilities shall be consistently color-coded (purple) and marked to differentiate recycled water facilities from potable water and/or wastewater facilities, as per Recycled Water System Guidelines Book 7 Standard Drawings of the City of San Diego.

3.5.8 Conditions of Pressure and Service

Pressure and service shall be provided on an as available basis, at the location of the customer's meter. The Water Department Director shall state the desirable pressure of the system in the department's design guide. All customers shall hold the City harmless from any and all damages and liabilities caused in whole or in part by pressure conditions, water quality variations, or interruptions in service. It shall be the owner's responsibility to install booster pumps or increase pressure if necessary.

3.6 SIZE AND LOCATIONS OF SERVICE CONNECTIONS

The City reserves the right to determine the size and location of recycled water service lines, the service connections, and the meters. The City shall also have the right to determine the kinds and size of backflow prevention devices and any and all other appurtenances to the service.

The recycled water service lines shall be extended to a curb line, or property line of the customer's property, abutting upon a public street, highway, road, or City's easement in which recycled water distribution mains are installed.

3.7 ILLEGAL CONNECTIONS

No person shall make any connection to recycled water facilities of the City without a permit from the City. Penalties for violations may be assessed according to Section 11 of these Rules and Regulations.

3.8 METER TESTING

Any customer may request that the meter through which the recycled water is being furnished be examined and tested by the City for the purpose of ascertaining whether or not it is correctly registering the amount of recycled water being delivered through it. In such an event, the customer shall make a request to the Customer Services Office of the Water Department for a Meter Controversy Test. The meter testing shall be performed in conformance with the standards set in the Municipal Code Section 67.22 for potable water meters.

3.9 CROSS-CONNECTION PREVENTION

3.9.1 Purpose

The primary purpose of a cross-connection program is to protect the City's potable water supply from possible contamination by prohibiting and preventing cross-connections between the potable water distribution system and the recycled water distribution system, in accordance with Title 17, Chapter 5 of the California Code of Regulations. The secondary purpose is to protect the recycled water system from other contaminants.

Section 3: Recycled Water Service Requirements

The following provisions are in additions to, and not in lieu of, the controls and requirements of other regulatory agencies, such as the County of San Diego Department of Environmental Health (DEH):

3.9.2 Backflow Prevention

Regulations governing backflow prevention devices are intended to protect the City's potable water supplies and are not intended to protect users from potential hazards of cross-connections in the user's onsite facilities.

City approved backflow prevention for the City's recycled water supply shall be provided by the user in accordance with the specifications of the Water Department. Provisions, installation, maintenance and inspection of backflow prevention devices shall be the sole responsibility and duty of the customer, and at customer's expense. Inspection of backflow prevention devices shall be done at least once a year, or more often in those instances where successive inspections indicate repeated failures. These devices shall be inspected, repaired, overhauled or replaced at the expense of the customer whenever they are found to be defective. Records of such tests, repairs and overhauls shall be kept by the City, and such records shall be made available to any concerned regulatory agency on request.

The installation and inspection of backflow prevention devices shall be done by a certified inspector at the expense of the customer. The customer shall submit to the City Water Department original inspection certificates as proof of compliance. All inspection and testing shall be done to the satisfaction of the City and the regulatory agencies concerned.

3.9.3 Type of Protection

The level of protection required is related to the degree of hazard that the City determines exists on the premises served. The following protective devices may be required: Reduced Pressure Principle Backflow Prevention Device (RPPD), Double Check valve (DC), and/or an Air Gap separation (AG). The user may choose a higher level of protection than required by the City. Minimum types required, relative to various situations, are listed below. Situations not listed shall be evaluated on a case-by-case basis and the appropriate level of protection required shall be determined by the City in consultation with the County of San Diego Department of Environmental Health (DEH) and the California Department of Public Health (DPH).

Section 3: Recycled Water Service Requirements

3.9.3.1 Type of Backflow Prevention

Recycled Water Situations:	Type of Prevention
a. Premises where the public water system is used to supplement the recycled water supply.	AG
b. Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RPPD
c. Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).	DC

3.9.3.2 Color-Coding Dual or Multiple Water Systems:

Where any property subject to recycled water service is served by or contains dual or multiple water systems and piping, the exposed portion of recycled water pipelines, valves, and other fittings shall be painted purple, banded or marked to distinguish clearly which is used for potable water and which is used for recycled water. In addition, all new unexposed recycled water pipes installed on any such property shall be similarly painted purple, banded or marked. All recycled water outlets shall be posted with bilingual precautionary posters with the wording “CAUTION: RECYCLED WATER - DO NOT DRINK” and “CUIDADO: AGUA RECICLADA - NO TOME EL AGUA”. Main shut-off valves shall be clearly identified to distinguish between recycled water and potable water systems.

3.9.4 User’s Designated Recycled Water Site Supervisor

The user’s designated Recycled Water Site Supervisor, whose qualifications and responsibilities are discussed in Section 6.2.2, shall be responsible for the prevention of any cross-connections on the property. In the event of a cross-connection to the potable water system, the user shall immediately shut off the main recycled water supply valve and depressurize the recycled water system to prevent further mixing with the potable supply. The user shall also immediately advise the City of the occurrence of the cross-

Section 3: Recycled Water Service Requirements

connection. The County and State health officers shall be immediately advised by the City so that appropriate measures may be taken to control any contamination or pollution.

The user shall assume all responsibilities for the prevention of cross-connections between the on-site facilities and any potable water supply, and shall indemnify and hold the City harmless from and against any claim of damage or loss which is caused or is alleged to have been caused, in whole or in part, by cross-connections of on-site facilities. Notwithstanding this covenant, the user shall be subject to the rules pertaining to the use of recycled water as otherwise provided herein, including but not limited to those allowing the City or County DEH to inspect and approve all on-site recycled water facilities.

3.10 CONVERSION TO/FROM RECYCLED WATER SERVICE

3.10.1 Conversion to Recycled Water Service

When a user proposes the conversion of any existing potable water irrigation system to a recycled water irrigation system, a comprehensive investigation of the proposed recycled water system shall be performed for the City at the expense of the user. On a case-by-case basis, the City and the County DEH shall review the as-built drawings, and investigation reports, and determine the measures necessary to bring the existing system into full compliance with these Rules and Regulations. No existing potable water facilities shall be converted to, or incorporated into, the recycled water system without proper testing and approval by the City and/or other regulatory agencies. The City or the County of San Diego may deny issuance of recycled water users permit if either determines that the proposed conversion cannot be made safely.

3.10.2 Conversion from Recycled Water Service

If, due to onsite failure of the recycled water system, or use violations, the City determines it necessary to convert the onsite facilities from recycled water supply to a potable water system, or other water supply, it shall be the responsibility of the user to

pay all costs for such conversion, unless determined otherwise by the City. Conversion costs shall include the following:

3.10.2.1 Isolation of the Recycled Water Supply

Service shall be killed and meter shall be removed by the City at the recycled water main, or abandoned in a manner approved by the City.

3.10.2.2 Installation of Backflow Prevention Device

The user shall install approved backflow devices on all potable water, or other water meter connections.

Section 3: Recycled Water Service Requirements

3.10.2.3 Removal of Existing Fittings

The user shall be responsible for removal and replacement of all fittings with approved fittings for potable water.

3.10.2.4 Hydraulic Testing and Disinfections

The user shall be responsible for hydraulic testing and disinfection of the converted pipeline.

3.10.2.5 Notification

The user shall notify all personnel involved with the operation of the abandoned recycled water service.

3.10.2.6 Warning Labels/Signs

The user shall be responsible for the removal of all warning signs and labels.

3.10.2.7 Installation of Potable Water System:

Provisions and installation of all potable water lines and facilities and any capacity fees due, as provided for in these Rules and Regulations shall be the responsibility of the user.

3.10.2.8 Threshold Valves:

Threshold valves are required for potable water at the building in order to isolate during testing. A bypass is required downstream of the threshold valve for testing purposes.

3.11 AUTHORIZED USES OF RECYCLED WATER

The uses of recycled water may include, but are not limited to, landscape irrigation, agricultural irrigation, construction water, industrial process water, toilet and urinal flushing, commercial use, groundwater recharge, enhancement of wildlife habitat, and recreational impoundment. Each such use must be considered for approval by the City on a case-by-case basis. Determinations as to specific uses to be allowed shall be in accordance with the standards set forth in Title 22, Division 4 of the California Code of Regulations and with the intent of this ordinance to preserve the public health. The City may, at its discretion, set forth specific requirements as conditions to providing such services and/or require specific approval from the appropriate regulatory agencies. The use of recycled water in swimming pools is not permitted.

3.12 SCHEDULING RECYCLED WATER

The City will control and schedule the delivery of recycled water if, in the opinion of the City, scheduling is necessary for purposes including, but not limited to, the maintenance of an acceptable working pressure in the recycled water system and the provision for reasonable safeguards in relation to public health.

3.13 TEMPORARY/EMERGENCY CONNECTIONS TO THE POTABLE WATER SYSTEM

If, in the opinion of the City an emergency exists, or is threatened to occur, whereby all or a portion of the water in the recycled water system is not available, the City may approve a temporary connection to the potable water system. Such a temporary connection shall be made in accordance with these Rules and Regulations. The decision to allow temporary service to the potable water system shall be at the sole discretion of the City, and the City shall maintain and operate all connections.

Before such temporary connection is made, the portion where potable water is to be supplied shall be isolated by an air gap separation from the remainder of the recycled water system. This isolation shall occur at either individual services or on the offsite system, as determined by the City. An approved backflow prevention device shall be installed on the potable water lines in accordance with Section 3.10 of these Rules and Regulations and all applicable regulations of the governing agencies. The emergency connection shall be removed before connection is re-established to the recycled water system. Re-establishment of recycled water service must be inspected and approved by a City inspector prior to resuming delivery of recycled water.

On a case by case basis, the City of San Diego and all related regulatory agencies may approve a temporary potable water connection for a customer's recycled water system used for irrigation without an air gap. The temporary connection shall be designed to allow only one water source to serve the customer's system at any given time. An approved backflow device and meter shall be installed on the potable water service and the recycled water service prior to the customer's connection, in accordance with Section 3.10. At no time shall the potable water system be connected to a system simultaneously served by a non-potable source.

The City, at its own discretion, may provide potable water or disinfected raw water in lieu of recycled water.

3.14 ADDITIONAL RESTRICTIONS ON THE USES OF RECYCLED WATER

3.14.1 Run-off And Ponding

- a. The onsite facilities shall be designed to meet the peak moisture demand of all plant materials used within the design area and to apply irrigation water in a

Section 3: Recycled Water Service Requirements

manner compatible with the infiltration rates of the soil types within the approved use area.

Conditions that directly or indirectly cause a run-off of recycled water outside of the approved recycled water use areas; cause a ponding of recycled water; or permit windblown spray to pass outside of the approved use area, whether by design, construction practice, or system operations, shall be eliminated or controlled to the greatest extent possible with the use of the best practicable technology or methodology.

- b. The use of recycled water shall be limited to those uses permitted by Federal and State law, and to those uses approved by the City for the recycled water service area.

3.14.2 Protection Of Drinking Fountains And Public Facilities

Any and all drinking fountains located within an approved recycled water use area shall be protected by re-siting or isolating them with a protective structure from contact with recycled water, whether by windblown spray or by direct application through irrigation or other approved uses.

Recycled water irrigation systems shall not be installed near food establishments or public facilities such as picnic tables. Design of systems near such facilities shall require the County DEH approval.

3.14.3 Hose Bibs And Quick Couplers

No customer shall use or install any hose bibs on a recycled water system regardless of style, construction, or identifications. The use of quick couplers is at the sole discretion of the City of San Diego Water Department. Their intended use shall require a separate plan review from the Department. Only quick couplers with the approved color and identification will be allowed.

Section 3: Recycled Water Service Requirements

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SECTION 4: FACILITIES DESIGN AND CONSTRUCTION

4.1 DESIGN GUIDELINES FOR ON/OFFSITE FACILITIES

The design of the offsite facilities, including the preparation of plans and specifications shall be under the responsibility of an engineer registered with the State of California. The design of the onsite facilities that will use recycled water and the preparation of plans and specifications, shall be under the responsibility of a landscape architect, civil engineer or mechanical engineer registered with the State of California. All offsite and onsite recycled water facilities shall comply with the Guidelines for Distribution of Non-potable Water developed by the American Water Works Association (AWWA) California-Nevada Section and the State Department of Public Health Guidelines for Use of Recycled Water. All offsite and onsite facilities shall also comply with all the requirements, conditions and standards set forth in the current edition of the Standard Specifications for Public Works Construction including the Regional Amendments of the County and City of San Diego and the Recycled Water System Guidelines Book 7 Standard Drawings of the City of San Diego, The City's Landscape Technical Manual, Park and Recreation Consultant's Guide, California Health Laws Related to Recycled Water ("The Purple Book"), and the provisions of these Rules and Regulations, and other related design standards and construction specifications guidelines.

The recycled water system including both offsite and onsite facilities, shall be separate and independent of any potable water system. Refer to Book 7 for offsite requirements.

4.2 ONSITE RECYCLED WATER FACILITIES

All onsite recycled water facilities which specifically benefit the approved use area shall be provided by the applicant, owner or customer at his/her expense. The customer shall make, at his/her expense, any modification to the potable water system on the premises which is required by the City, in order to permit recycled water service, including but not limited to the installation by the customer of approved backflow preventers. Onsite recycled water facilities shall be designed to accommodate the use of recycled water in those areas where the City has determined that recycled water will be supplied in the future, even though recycled water service is not immediately available when the design area is ready for construction. Provisions shall be made for connection to the recycled water system when it becomes available. In the interim, potable water will be supplied to the onsite facilities through an approved temporary potable water connection. Such temporary connection to the potable water system shall be provided with an approved reduced pressure backflow prevention device installed by the user to the satisfaction of the City and County DEH. Plan and specifications for customer recycled water facilities shall be submitted to the City as specified in these Rules and Regulations.

4.2.1 Pressure Requirements

Service pressure requirements shall be determined by the City. The user shall design for available pressure.

If available service pressure is excessive, the user shall utilize pressure regulators downstream of the meter to obtain the correct pressure. If available pressure is insufficient, the user shall provide booster pumping to increase the pressure.

Whenever possible, the City will operate the recycled water system at a lower pressure than the potable water systems. This will aid in the prevention of a cross-connection.

4.2.1.1 Booster Pumps:

Customers who use booster pumps to increase the operating pressure shall identify the pumping systems as recycled water, avoid release of recycled water in an uncontrolled manner, and provide a proper drainage of the packing seal water. At least one sign in English and Spanish shall be posted on the premises of the booster pumps which can be readily seen by all operations personnel working in the area.

4.2.1.2 Sealing Water:

Any potable water used as a seal water for recycled water pump seals shall be adequately protected against backflow. If at all possible, recycled water should be used as a seal water, as it is the preferred method.

4.2.2 Depth of Pipe Cover

The depth of cover on service lines shall be considered on a case-by-case basis in accordance with the City's Landscape Technical Manual.

4.2.3 Separations

4.2.3.1 Horizontal

A 10-foot separation of the recycled water pipeline shall be maintained at all times between a potable water pipeline and/or a parallel sanitary sewer or sludge pipeline. If a 10-foot separation is not available, the approval for special construction requirements shall be obtained from the City, the County DEH and California Department of Public Health (DPH) prior to commencement of construction. Common trench construction shall not be permitted. In any event, a horizontal separation less than four (4) feet shall not be allowed.

4.2.3.2 Vertical

All new systems, including potable water, recycled water, and sewer lines shall be located from the ground surface in order of descending quality. Potable water shall be above recycled water which should be above sewer. Minimum vertical separation between a potable water line and a recycled water line shall be one foot between the outside top and bottom surfaces of pipes. A ten (10) foot separation shall be maintained at all times between a potable water line and a recycled water line. A sleeve shall be installed wherever recycled water crosses potable water lines unless there is a ten (10) foot vertical separation. The sleeve shall extend ten (10) feet each side of the crossing. Irrigation systems where intermittently pressurized recycled water lines serve sprinkler heads, the potable water line(s) may be placed under the recycled water services. No special construction requirements are necessary provided that one foot vertical separation is maintained.

4.2.4 Color Identification of Recycled Water Pipes

All service pipelines, valves and other appurtenances shall either be colored purple and embossed, or be integrally stamped/marked “CAUTION: RECYCLED WATER – DO NOT DRINK”, and “CIUDADO: AGUA RECICLADA – NO TOME EL AGUA”, or be installed with a purple identification tape, or a purple polyethylene or vinyl wrap.

Color coded identification (caution) tape differentiating the recycled water piping from other utility lines shall be consistent throughout the service area. The purple color shall be standardized by the City.

When converting an existing potable water pipeline to recycled water usage the water pipeline shall be accurately located and tested in coordination with the Water Department and the regulatory agencies, and the necessary actions taken to bring the water pipeline and appurtenances in compliance with these Rules and Regulations.

If the existing pipeline meets approval of the Water Department and the regulatory agencies, except for the pipe identification, the pipeline shall be approved for recycled water service. If verification of the existing pipeline is not possible, the pipeline shall be uncovered, inspected, and identified prior to use. However, all replacements of an offsite distribution and/or delivery system connected to a recycled water irrigation system shall be color-coded for identification in accordance with the provisions of these Rules and Regulations.

For all offsite requirements refer to Book 7.

4.2.5 Identification Tapes

Warning tapes or tags with metallic backing shall be installed on all recycled water lines which help to trace the pipeline shall be prepared with black printing on a purple field having the words “CAUTION: RECYCLED WATER-DO NO DRINK” and “CUIDADO: AGUA RECICLADA- NO TOME EL AGUA”. The overall width of the tape shall be at least three inches.

Warning tapes shall be installed over the pipe longitudinally 2 feet below the finished surface and shall be centered. The identification shall be continuous in its coverage on the pipe and shall be fastened to each pipe length. Taping attached to sections of pipe before they are placed in the trench shall have overlaps sufficient for continuous coverage. Other satisfactory means of securing the tape during backfill of the trench may be used if suitable for the work, as determined by the Water Department. Sample tape marking and the inscriptions that go with it are as shown in the following figures:

CAUTION: RECYCLED WATER – DO NOT DRINK

CUIDADO: AGUA RECICLADA - NO TOME EL AGUA

4.2.6 Valve Casings, Frame and Cover Box Identification

Valve casings and frames shall be a special triangular, heavy-duty cover. For new construction all valve covers shall be, and for retrofits all valve covers should be of non-interchangeable shape with potable water covers. All covers must have a recognizable inscription indicating recycled water cast on the top surface. For offsite facilities refer to Book 7.

4.2.7 Color-Coding Exposed Recycled Water Facilities.

All above ground, exposed facilities shall be consistently color-coded (purple) and marked to differentiate recycled water facilities from potable water and/or wastewater facilities, as per Book 7.

4.2.8 Blow-Off Assemblies

Either in-line type or end-of-line type blow-off or drain assembly shall be installed for removing water or sediment from the pipe. The line tap for the assembly shall be no closer than 18 inches to a valve, coupling, joint, or fitting unless it is at the end of the line (refer to Standard Drawings). If there are restrictions on discharge or runoff, the regulatory agencies (Storm Water Pollution Prevention Program, Metropolitan Wastewater Department) shall be consulted to find an acceptable alternative.

4.2.9 Hundred Year Flood Clause

4.2.9.1 Runoff and Erosion

All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from 100-year frequency 24-hour-duration storms.

4.2.9.2 Peak Flood Levels

All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the County of San Diego flood control agency.

4.3 RECYCLED WATER FOR CONSTRUCTION USE

4.3.1 Permits

The use of recycled water for construction purposes requires approval of the City and other regulatory agencies. The permit shall be obtained prior to beginning construction.

4.3.2 Uses

Recycled water used for construction purposes may only be used for soil compaction during grading operations, dust control and consolidation and compaction of backfill in trenches for non-potable water, sanitary sewer, storm drain, gas and electric pipelines.

4.3.3 Equipment

Equipment operators shall be instructed about the requirements contained herein and the potential health hazards involved with the use of recycled water. Water trucks, hoses, drop tanks, etc. shall be identified as containing non-potable water, and not suitable for drinking.

Recycled water shall not be introduced into any domestic water piping system. No unprotected connection shall be made between equipment containing recycled water and any part of a domestic water system as per Title 17 Division 1, Chapter 5, Group 4, Articles 1 and 2.

4.3.4 Ponds

Ponds used for storage of construction recycled water shall be posted to limit public access. Fences shall be in accordance to Chapter 10, Article 1, Division 10 of the Municipal Code.

4.3.5 Equipment And Facilities Cleaning

4.3.5.1 Equipment

Any equipment or facilities such as tanks, temporary piping or valves, and portable pumps which have been used with recycled water shall be cleaned and disinfected before removal from the approved use area for use at another job site. This disinfection and cleaning shall ensure the protection of public health in the event of any subsequent use as approved by the City supervisor or inspector and the disinfection process shall be performed in the presence of authorized personnel.

Service connections, equipped with recycled water meters, for the construction use of recycled water shall be provided by the City at locations convenient to the user but at the discretion of the City.

4.3.5.2 Tanks and Other Recycled Water Storage Devices

Disinfection of storage tanks shall be performed per American Water Works Association (AWWA) Standard C52 using the following procedure:

1. Personnel must not drink recycled water.
2. Drain all recycled water from pumper tanks.
3. Rinse all fittings, hose, and tank with potable (drinking) water.
4. Fill tanks with chlorinated water using one gallon of chlorine bleach (5-¼% sodium
5. Hold for at least 30 minutes.
6. Drain chlorinated tank (if draining to storm drain, dechlorinate first with 0.4 pound of sodium sulfite or 0.3 pound of sodium thiosulfate per 500 gallons).
7. Refill pumper tank with potable water.

4.4 SUBMITTALS

The following information shall be submitted to and approved by the City prior to commencing any construction:

4.4.1 Customer's Plans and Specifications

Plans and specifications prepared by an on-site system designer, civil engineer, a mechanical engineer or a landscape architect registered with the State of California, for the construction of onsite recycled water facilities shall be submitted to the City for review and approval. The plans shall delineate the proposed recycled water service area,

Section 4: Facilities Design and Construction

the proposed location, size and type of all recycled water service connections and onsite facilities. The plans shall include the layout of existing potable water pipelines and facilities including any areas in which recycled water must be specifically excluded. The plans shall also include the offsite potable and recycled water mains, services and points of connection.

4.4.2 Information on Customer's Plans

Exterior drinking fountains and potable water hose bibs and other public facilities shall be shown and called out on the plans. If no exterior drinking fountains or other public facilities are present in the design area, then it shall be specifically stated on the plans that none exist.

A signage plan shall be prepared and forwarded to the County of San Diego and the City of San Diego, for approval prior to the use of recycled water.

4.4.3 Information Required For Recycled Water Irrigation Systems

If the onsite facilities include a landscape irrigation system, data for the materials used in the irrigation system shall be included on the plans.

4.5 RECORD (AS-BUILT) DRAWINGS

The applicant, customer, or owner shall submit as-built record drawings to the City before a request for service start-up is made.

All changes in the work constituting departures from the original design drawings shall be accurately recorded on one set of drawings and submitted to the City for agreement and approval prior to construction. Such changes shall be approved by the City before any changes, modifications, or additions are made.

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SECTION 5: DUAL PLUMBING SYSTEM

5.1 INTRODUCTION

As per its definition, a dual plumbing system is when the toilets and urinals in a building are served by recycled water while the remaining fixtures are served by potable water. This co-existence of the two systems will require extra caution to prevent un-authorized plumbing modifications that can lead to a cross-connection between recycled water and potable water systems which is absolutely prohibited by state laws. This section establishes the rules and regulations to aid the designer and installer on dual plumbing projects; and to provide information on permit and inspection requirements.

5.2 RECYCLED WATER SITE SUPERVISOR

The recycled water user shall designate a Recycled Water Site Supervisor who is responsible for the recycled water system at each area under the user's control. Specific responsibilities of the Recycled Water Site Supervisor include the proper installation, operation, and maintenance of the recycled water system; compliance of the project/facility with the recycled water laws, rules and regulations, prevention of potential hazards and preservation of the recycled water distribution system plans in "as built" form. Designated Recycled Water Site Supervisors shall obtain instruction to use recycled water from the City of San Diego Water Department or other approved institutions.

5.3 DESIGN GUIDELINES OF DUAL PLUMBING SYSTEMS

The design of the dual plumbing systems, including the preparation of plans and specifications, shall be under the responsibility of a mechanical engineer registered with the State of California. A registered architect or a registered civil engineer can stamp and sign the drawings if he/she is directly responsible for the plumbing system design of the building.

The plans shall be reviewed by the City of San Diego Water Department's Recycled Water Program and the County DEH. Additionally, it is essential to obtain the approval of the California Department of Public Health (DPH). For dual plumbing, an additional engineering report and set of plans shall be added to the submittal package to the City of San Diego. The City of San Diego Recycled Water Program staff will forward the additional copy to the California DPH.

The recycled water portion of the dual plumbing system shall comply with:

- a. The recycled water Chapter 16 of the Uniform Plumbing Code

- b. The Guidelines for Distribution of Non-potable Water developed by the American Water Works Association (AWWA) California-Nevada Section
- c. The State of California Guidelines for Use of Recycled Water
- d. The conditions and standards set forth in the current edition of the Standard Specifications for Public Works Construction including the Regional Amendments of the County and City of San Diego
- e. The Recycled Water System Guidelines Book 7 Standard Drawings of the City of San Diego
- f. California Health Laws Related to the latest edition of the Recycled Water (“The Purple Book”)
- g. The provisions of these Rules and Regulations, and other related design standards and construction specification guidelines.

The recycled water system shall be separate and independent of any potable water system. Separate means physically separate with absolutely no direct connection or no connection through devices such as backflow prevention devices.

The user shall notify the City of any proposed facility modifications and/or proposed recycled water use changes for City’s review and approval. All facility modifications must be inspected by the City upon completion of construction and customer shall submit revised as-built drawings to the city.

The user shall implement on-site controls which meet the requirements established by City, County, State, Federal, and local regulatory agencies to protect the health of customer’s employees and the public.

Service pressure requirements shall be determined by the City. The user shall design for available pressure. The pressure setting and pipe sizing shall be as per the requirement of the current California Plumbing Code’s potable water requirements.

5.4 SEPARATION BETWEEN POTABLE WATER AND RECYCLED WATER SYSTEMS

Physical separation between all recycled water and potable water piping and appurtenances is essential. Separation between the above mentioned systems shall be maintained. No modification or any type of plumbing work can be done without the approval of the City of San Diego Water Department’s Recycled Water Program, the County of San Diego Department of Environmental Health (DEH), and the California Department of Public Health (DPH).

All recycled water piping and devices, valves and other appurtenances shall either be colored purple and embossed, or be integrally stamped/marked "CAUTION: RECYCLED WATER - DO NOT DRINK", and "CUIDADO: AGUA RECICLADA –

NO TOME EL AGUA", or be installed with a purple identification tape, or a purple polyethylene or vinyl wrap. Color coded identification (caution) tape differentiating the recycled water piping from PW lines shall be consistent throughout the building.

When converting an existing building from a single potable system to a dual plumbing system, a new separate recycled water piping system shall be installed, or the existing system shall be modified to have a separate recycled water system with appropriate identification to distinguish between recycled water and potable water. The recycled water piping shall be accurately located and tested in coordination with the City of San Diego, Recycled Water Program, the County DEH, and DPH. Correction actions as instructed by the same regulatory agencies maybe taken to bring the recycled water system and related appurtenances in compliance with these Rules and Regulations.

5.5 DESIGN PROCEDURE

Dual plumbing system design drawings and specifications shall be provided by the applicant, owner or customer at his/her expense. The customer shall make, at his/her expense, any modification to the potable water system on the premises which is required by the City, DEH and DPH in order to permit recycled water service, including but not limited to the separation of the piping system. A dual plumbing system shall be designed to accommodate the use of recycled water in those areas where the City has determined that recycled water will be supplied in the future, even though recycled water service is not immediately available when the design area is ready for construction. Provisions shall be made for connection to the recycled water system when it becomes available. In the interim, potable water will be supplied to the onsite facilities through an approved temporary potable water connection. Such temporary connection to the potable water system shall be provided with an approved reduced pressure backflow prevention device installed by the user to the satisfaction of the City, DEH, and DPH.

Plans and specifications for customer recycled water facilities shall be submitted to the City as specified in these Rules and Regulations.

5.6 IDENTIFICATION OF ONSITE PIPES AND FITTINGS

New onsite pipelines shall be identified as recycled water pipes by using a purple color code differentiating them from potable water piping. All piping and valves must also be appropriately labeled or continuously taped with appropriate identification.

Approved use areas for recycled water service shall also be posted with precautionary notices to warn the public.

When converting an existing potable water line to recycled water usage the water line shall be accurately located and tested in coordination with the City and the regulatory agencies, and the necessary actions taken to bring the water line and appurtenances in

compliance with these Rules and Regulations. Approval of the existing line may be granted if the existing line meets the Water Department and the regulatory agencies approval conditions. If verification of the existing line is not possible, the line shall be uncovered, inspected, and identified prior to use. However, all replacements of an existing recycled water system shall be color-coded for identification in accordance with the provisions of these Rules and Regulations.

5.6.1 Warning Tapes

A warning tape or tag with metallic backing shall be installed on all recycled water pressure and/or non-pressure service pipelines. A purple tape with black lettering stating "CAUTION: RECYCLED WATER - DO NOT DRINK" and "CUIDADO: AGUA RECICLADA - NO TOME EL AGUA" shall be fastened to the top of the pipe. The tape shall run continuously the entire length of the pipe and shall be at least 3 inches in width.

5.6.2 Color-Code For Recycled Water Pipes

The use of purple colored pipe, with the words "CAUTION: RECYCLED WATER – DO NOT DRINK" and "CUIDADO: AGUA RECICLADA - NO TOME EL AGUA" embossed or integrally stamped/marked on the pipe as an acceptable alternative to the tape as mentioned in these Rules and Regulations. The warning should be stamped on opposite sides of the pipe, repeated every three feet.

All connections, temporary and permanent, to a recycled water system shall be identified in such a manner as to differentiate them from connections to a potable water system.

When potable water is being supplied to an area which is also being supplied with recycled water, the potable water main shall also be identified. A color-coded tape, as determined by Water Department, with the words "CAUTION: DRINKING WATER LINE" and "CUIDADO: LA LINEA DEL AGUA" shall be fastened directly to the top of the potable water pipe and run continuously the entire length of the pipe. This tape shall be at least 3 inches in width. The color code for potable water is blue to differentiate it from recycled water.

5.7 RECYCLED WATER NOTES FOR INCLUSION ON CUSTOMER'S PLANS

Provide the following notes, as applicable, on the recycled water improvement and irrigation plans under the heading "City of San Diego Recycled Water Notes":

1. Two (2) working days prior to commencement of any excavation on site improvements, contractor shall notify the Recycled Water Program at 619.533.7485.
2. All work shall be done in accordance with the "City of San Diego Rules and Regulations for Recycled Water Use and Distribution within the City of San Diego" and the County of San Diego Department of Environmental Health requirements.

Section 5: Dual Plumbing

3. All backflow preventer installations and locations shall be subjected to approval by the City of San Diego Water Department.
4. All public facilities such as comfort stations, drinking fountains, etc. shall be protected from spray and/or misting by recycled water.
5. No ponding, run-off, or over-spray is permitted. Adjust all sprinkler heads to prevent over-spraying onto sidewalks, streets and private lots.
6. Hose bibs on recycled water systems are prohibited.
7. Onsite cross-connection between recycled water lines and potable water lines is strictly prohibited.
8. Quick coupling valves used in recycled water systems shall conform to the following:
 - a. A type approved for recycled water use with a normal working pressure of 150 p.s.i.
 - b. Recycled water quick coupler must be different from potable water quick coupler valves.
 - c. In order to prevent unauthorized use, the valve shall be operated only with a special coupler key with an acme thread for opening and closing the valve.
 - d. The cover shall be permanently attached to the quick-coupling valves. It shall be purple rubber or vinyl.
 - e. Locking covers are required.
9. No substitution of pipe materials will be allowed without prior approval by the City of San Diego.
10. Install approved, metallic backed and stenciled warning tape over all pressure recycled water lines. Stencil and color code (purple pantone 522) all irrigation pipe. Orient the stenciling to the top of the trench.
11. Provide a minimum of at least 18 inches of covering over all wiring and piping.
12. Operate the irrigation system only between 9:00 pm and 6:00 am, unless the certified Site Supervisor is present at the site during the irrigation period.
13. When potable water lines and recycled water lines cross, the recycled line shall be installed within a protective sleeve. The sleeve shall extend 10 feet from each side, from the center line of potable line, for a total of 20 feet.

Section 5: Dual Plumbing

14. Maintain a 10 foot horizontal separation between potable water and recycled water or sewer lines. Install sewer line below recycled water line and recycled water line below the potable water line.
15. Provide a minimum of 12 inches of vertical separation between potable/recycled water/sewer.
16. The site irrigation systems as shown on these documents will utilize potable water until such time as the City of San Diego makes recycled water available to the site.
17. Install purple colored pantone #522 material for all above ground irrigation facilities:
 - a. Valve and other on grade boxes - integral color
 - b. Backflow devices - painted 2 coats of enamel
 - c. Sprinkler heads - integral color plastic
18. Tag all valves and other below grade appurtenances within boxes with permanent recycled water labels in both English and Spanish that identify recycled water in use (“Recycled Water-Do Not Drink”). Attach the label with either stainless steel wire or self locking plastic ties.
19. The required cross-connection test shall be done by the City of San Diego Water Department and monitored by the County of San Diego Department of Environmental Health. Copies of inspection reports will be forwarded to the non-inspecting party.
20. The design locations proposed for recycled water “do not drink” signs shall be called out on the plans.
21. An annual cross-connection inspection will be done by the City of San Diego subject to approval by the County of San Diego Department of Environmental Health. Copies of the inspection reports will be forwarded to the non-inspection party. A cross-connection shutdown test will be performed every four years.
22. Prior to conversion to recycled water, an onsite Recycled Water Site Supervisor shall be designated in writing. This individual shall be familiar with plumbing systems within the property and with the basic requirements of recycled water systems. The designated Site Supervisor shall be certified by attending a class for recycled water site supervisors. Site Supervisor must be re-certified every five years. Copies of the Site Supervisor’s certificate, with a 24-hour contact number, shall be provided to the City of San Diego and the County Department of Environmental Health with the following information:

In case of emergency contact: _____ at _____

After hours contact: _____ at _____.

Section 5: Dual Plumbing

23. A physical separation shall be provided between adjacent areas irrigated with recycled water and potable water. Separation shall be provided by distance, concrete mow strips, or other approved methods.
24. Call out on the plans if there are or are not any drinking fountains and/or designated outdoor eating areas on the site.
25. All public and private potable water mains including fire mains and any water wells and water courses within the recycled water project shall be shown on the plans.
26. Educate all maintenance personnel on a continuous basis of the presence of recycled water. Personnel must be informed that recycled water is meant for the site's designated purposes only, and is not approved for drinking purposes, hand washing, cleaning of tools, etc. Given the high turnover rate of employees in the landscape industry, it is important this information be disseminated on an almost daily basis.
27. Prior to installation of any recycled water work, it must be inspected by the City's Recycled Water Program personnel. The initial cross-connection shutdown test should be performed using potable water from a fire hydrant and through a construction meter with an approved backflow device issued by the City Water Department.
28. All initial irrigation shall use potable water. No recycled water shall be used until the site has passed the initial shutdown cross-connection test and has been approved by the City of San Diego and County of San Diego.

Declaration of Responsible Charge:

I hereby declare that I am the licensed design professional of the work for this project and that I have exercised responsible charges over the design of this project as defined in Section 6703 of the Business and Professions Code and the design is consistent with current standards.

I understand that the check of project drawings and specifications by the City of San Diego and San Diego County Department of Environmental Health is confined to a review only and does not relieve me, as the licensed design professional of the work, of my responsibilities for project design.

Firm Name _____

Responsible Party Name _____

Address _____

Phone _____ Email _____

Signature _____ Date _____

Registration Number _____ Expiration Date _____

5.8 INSPECTIONS

5.8.1 Installation Inspection

In addition to other inspections performed by building and plumbing inspectors, piping and devices shall be kept exposed until the recycled water cross-connection control inspection is completed.

5.8.2 Annual Inspection

An annual cross-connection inspection will be done by the City of San Diego subject to approval by the County DEH. Copies of the inspection reports will be forwarded to the non-inspection party.

5.8.3 Quadrennial Shutdown Test

Every four years a cross-connection shut-down test will be done by the City of San Diego subject to approval by the DEH, and the DPH. Copies of the test reports will be forwarded to the non-inspection party.

5.9 ACCESS TO CUSTOMER'S PREMISES

City and/or other authorized regulatory personnel showing proper identification shall have the right to enter customer's premises for the purpose of: a) monitoring and inspecting all recycled water systems to ascertain compliance with these Rules and Regulations and other regulatory requirements; and b) installing, maintaining, repairing, and reading City owned facilities serving the customer's premises. Where necessary, keys and lock combinations shall be provided to the City for site access during business hours.

5.10 FIELD OPERATIONAL RECORD (LOG BOOK)

A log book shall be maintained throughout the life of the dual-plumbed system consisting of a schematic numbering of each valve. A table that includes a list of valves with the corresponding description of the location of each valve and plumbing fixture served by that valve shall be maintained.

The table shall note the current valve seal number and any previous valve seals for each valve. When a valve seal is broken, the cause for breaking the seal must be noted, dated, and signed off by the Site Supervisor and a Cross-Connection Control Specialist from the City or San Diego County DEH. A copy of the most recently updated and approved as-built drawing shall be kept with the logbook.

5.11 RECYCLED WATER CONVERSION PROCEDURE

Prior to conversion to recycled water, an onsite Recycled Water Site Supervisor shall be designated in writing. This individual shall be familiar with plumbing systems within the property and with the basic requirements of recycled water systems.

The designated Site Supervisor shall attend the Recycled Water Site Supervisor Certification Workshop sponsored by the County Water Authority or the City of San Diego. Copies of the Site Supervisor's certificate, with a 24 hour contact number, shall be provided to the City of San Diego and the County of San Diego Department of Environmental Health. Site Supervisor must be re-certified every five years.

All maintenance personnel must be educated on a continual basis regarding the proper usage of recycled water. Personnel must be informed that recycled water is used for toilet and urinal fixtures only, and is not approved for drinking, hand washing, cleaning of tools, etc. It is important that this information be disseminated on a regular basis.

5.12 RECYCLED WATER SYSTEM FACILITIES

5.12.1 Tampering with or Obstructing Recycled Water System

It is unlawful to break, disassemble or otherwise tamper with a water meter, or other equipment or appurtenances of the City's recycled water system.

5.12.2 Unauthorized Use of Recycled Water and Property Damage

It is unlawful to use City recycled water which does not pass through a City meter, regardless of knowledge or intent. It is unlawful to make, maintain, or permit any bypass or connection between the City meter and the main, regardless of knowledge or intent.

Section 5: Dual Plumbing

Any unauthorized person entering, breaking, damaging, destroying, uncovering, defacing, or tampering with any structure, equipment or appurtenance which is a part of the City's recycled water system shall be in violation of these Rules and Regulations.

Any person who causes obstruction, damage, or any other impairment to the City's facilities, shall become liable to the City for all expense, loss, or damage.

SECTION 6: FACILITIES OPERATION

6.1 OFFSITE RECYCLED WATER FACILITIES

Operation, maintenance, and monitoring of all of the City's offsite recycled water systems including, but not limited to, recycled water transmission and distribution main, service lines, valves, connections, storage facilities, and other appurtenances and properties up to and including the City's meter, shall be under the management and control of the City. No other person except authorized representatives of the City shall have any right to operate, adjust, repair, change, alter, move or relocate any portion of the offsite recycled water system.

6.2 ONSITE RECYCLED WATER FACILITIES

6.2.1 Customer's Responsibilities

The customer or owner shall be responsible for the safe and efficient operation, maintenance, and upkeep of his onsite facilities. However, the City shall also have the right to monitor and inspect the onsite operation of the customer's facilities. Pursuant to Section 6 of these Rules and Regulations, the City or authorized representatives of the City shall monitor and inspect the entire recycled water distribution facility, including customer facilities and for these purposes shall have the right to enter the customer's premises during reasonable hours. Reasonable hours shall include hours when irrigation is being performed.

Except in emergencies, the City and other parties authorized by the City shall be entitled to enter the customer's premises with reasonable notice to the user for onsite inspection during reasonable hours to verify that the customer's facilities are in conformance with the provisions of these Rules and Regulations and all applicable permits.

The customer shall notify the City of any and all updates or proposed changes, modifications or additions to the onsite facilities. Changes shall be approved by the City and shall be designed and constructed according to the requirements, conditions, and standards set forth in these Rules and Regulations and other City requirements.

The customer shall comply with any and all applicable Federal, State, and local statutes, ordinances, regulations, contracts and requirements prescribed by the City.

In the event of violations, charges and penalties shall be applied by the City in accordance with Section 11 of these Rules and Regulations.

It shall be the responsibility of the customer to notify the City of any and all failures in a recycled water system whether or not in the user's opinion the failures resulted in violations. It shall also be the responsibility of the customer to notify the City of any and all violations which occur as a result of the user's action or the action of his operations personnel.

The user shall keep a written log of all system failures and violations including corrective action taken. The log shall be reviewed by the City regularly.

6.2.2 Designation/Responsibility of the Recycled Water Site Supervisor

Each recycled water customer shall designate a Recycled Water Site Supervisor. The Recycled Water Site Supervisor shall be a person accepted and approved by the City to operate and maintain the onsite facilities and irrigation systems, and to assume the responsibilities outlined below. The City shall require that the designated Recycled Water Site Supervisor obtain instruction in the use of recycled water, such instruction being provided or approved by the City. A Site Supervisor must be re-certified every five years. The Recycled Water Site Supervisor shall be the contact person for the user in all matters between the user and the City concerning the operation of the onsite system and the use of recycled water (see Section 3.10.4). It shall be the responsibility of the customer to notify the City whenever a change of the Recycled Water Site Supervisor occurs. Subsequently the customer shall be responsible to obtain the City's acceptance and approval of his newly designated supervisor. The Recycled Water Site Supervisor will have the following responsibilities:

- a. To oversee recycled water service and maintain onsite facilities.
- b. To ensure that all operations personnel are trained and familiarized with the use of recycled water, including all pertinent information contained in these Rules and Regulations and those applicable portions of the California Code of Regulations. This information shall be supplied by the City upon request by the user, customer, owner, or applicant.
- c. To furnish operations personnel with operating instructions, maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the facilities design and these Rules and Regulations and all applicable permits. At least one complete set of this information shall be kept onsite or in the nearest field office or maintenance building.
- d. To operate and control the customer's recycled water system in order to prevent direct human consumption of recycled water and to control and prevent run-off.

- e. To provide a preventative maintenance program and carry out ongoing regular maintenance and upkeep to ensure the continued operation of all system elements within the requirements of these Rules and Regulations.
- f. To prevent cross-connections to potable water systems, and also to protect the recycled water system from contamination from cross-connections to other sources.
- g. To ensure that maintenance and inspection of backflow prevention assemblies is done regularly on an annual basis as per requirements of regulatory agencies, or more often in those instances where successive inspections indicate repeated failures.
- h. To report to the City any and all failures (potential or actual cross-connections, large spills, misuse or other violations, etc.) in the onsite facilities whether or not such failures may result in violations.
- i. To ensure that Site Supervisor certification is valid. A Site Supervisor must attend one of the certification classes every five years. Certification classes are offered by the San Diego County Water Authority (CWA) and The City of San Diego.

6.2.3 Operation and Control of Onsite Recycled Water System

To the extent possible, the operation of the irrigation system shall be during periods of minimal public use of the approved area. Such periods of operation shall remain within any general period of recycled water irrigation operation specified by the City - generally this is between 9 p.m. and 6 a.m.

Operation and control measures of onsite recycled water systems shall include, but not be limited to, the following:

- a. Onsite recycled water facilities shall be operated in such manner to prevent or control surface flows or windblown sprays of recycled water across boundary lines, or into areas not approved for recycled water use. The system design shall avoid spray patterns that tend to accumulate recycled water to produce ponding and/or run-off on public rights-of-way or adjoining areas not approved for recycled water use.
- b. Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities shall be compatible with the lowest infiltration rate anticipated or designed appropriately for the soil type to prevent run-off.

- c. No sprinkler system shall be allowed to operate for a time longer than the landscape's water requirements. The intent is to control and limit run-off and ponding.
- d. The user shall enforce the following prohibitions per these Rules and Regulations:
 - Cross-connections
 - Disposal of recycled water in unapproved areas
 - The use of hose bibs
 - Ponding and run-off
 - Windblown sprays
 - Unapproved uses of recycled water

6.3 POSTING APPROVED USE AREAS

Posting the use areas of recycled water is required to inform the public that recycled water is being used. Posting shall be required at any customer field office, maintenance building, or yard within the approved use area, except as required by the regulatory agencies on a case-by-case basis. Warning notices and labels shall be posted on designated facilities such as controller panels, wash downs, or blow off valves on trucks, and temporary construction facilities. The labels shall indicate that the system contains recycled water that is unsafe to drink or whatever other restrictions may apply. It shall be the responsibility of the Recycled Water Site Supervisor to ensure the required bilingual postings in English and Spanish are installed and maintained, and so placed that they can be readily seen by all personnel or public utilizing the facilities.

Where recycled water is used for recreational impoundments, warning signs shall be installed to notify that the water in the impoundment is unsafe to drink. The agency responsible for the impoundment shall prepare a detailed plan showing placement and spacing of proposed signs. The signs shall include the international warning sign of "do not drink" for all recycled water systems.

A signage plan shall be prepared and forwarded to the County of San Diego Department of Environmental Health and the City of San Diego for approval prior to the use of recycled water.

SECTION 7: MONITORING AND INSPECTION

The City of San Diego, the County of San Diego Department of Environmental Health, and/or the Regional Water Quality Control Board, or authorized representatives of any of these agencies shall have authority to monitor and inspect the entire recycled water system including both onsite and offsite facilities.

The City shall conduct monitoring programs, as it deems necessary, to ensure that customer's recycled water facilities are being operated in accordance with these Rules and Regulations, including the provision that cross-connections between potable water facilities and the recycled water facilities do not exist.

In carrying out these functions the City, the County of San Diego Department of Environmental Health, and/or the Regional Water Quality Control Board, or authorized representatives of any of these agencies shall have the right to enter any customer's premises during reasonable hours upon presentation of proper credentials. Reasonable hours shall include hours when irrigation is being performed to ascertain whether the user is complying with these Rules and Regulations. The customer shall indemnify and hold the City harmless for any damage, loss, or injury alleged to have been caused by City personnel while inspecting on-site facilities, except where the City's sole negligence is duly established.

Each time there is a change of either owner or customer on any commercial or industrial premises, the owner or customer shall notify the City immediately. The City will then reassess the level of protection required. Also, any alterations to existing onsite facilities that may affect required protection levels must be reported immediately to the City.

At their discretion, the City or representatives of any health agency having jurisdiction may conduct surveys of any property where recycled water service is provided by the City. These surveys are to determine if any actual or potential cross-connection exists. The applicant, owner, or customer shall provide full cooperation to facilitate these surveys.

An annual cross-connection control site inspection will be required at all recycled water use sites. The annual inspection will be performed by the City of San Diego, the County of San Diego Department of Environmental Health, or an authorized and certified cross-connection specialist. At the discretion of the City, cross-connection control inspections may occur more frequently, especially on potable irrigation systems which have been converted to a recycled water irrigation system. A copy of the inspection report will be forwarded to the non-inspecting agency.

In situations where potable water lines are on the same property and located in the same area as recycled water lines, a quadrennial (every four years) cross-connection control shutdown test is required at all recycled water use sites. The quadrennial test shall be performed by the City of

Section 7: Monitoring and Inspection

San Diego and the County of San Diego Department of Environmental Health, or an authorized and certified cross-connection control specialist.

At the discretion of the City, quadrennial cross-connection control shutdown tests may occur more frequently, especially on potable irrigation systems which have been converted to a recycled water irrigation system. A copy of the test report will be forwarded to the non-inspecting agency.

SECTION 8: CONNECTION, METER, AND SERVICE LINE CHARGES

The City shall make charges for the installation, and perpetual maintenance of all recycled water services, meters, and appurtenances thereto, and these shall remain the property of the City. Said charges, in addition to all other usual and regular charges of the City must be paid before work will be performed. Any backflow prevention devices on potable water services and flow or pressure control devices required due to application for recycled water service shall be downstream of the meter and shall be provided by the applicant, owner, or customer at his/her expense.

Whenever an installation is required by a customer that is not covered by the schedule of rates established from time to time by the City, such work will be done with charges based upon a statement of costs made by the City. If the required installation, for any valid reason, cannot be installed for the amount stated in the appropriate schedule of rates established by the City, owing to the peculiarity of the proposed service, the City reserves the right to make said installation on the basis of a statement of cost.

Whenever recycled water service lines, meters or other appurtenances are requested to be removed by the customer for any reason whatsoever, the charges shall be made on the basis of a statement of costs by the City.

Section 8: Connection, Meter, and Service Line Charges

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SECTION 9: RECYCLED WATER SERVICE RATES

Recycled water service rates, capacity charges, and meter fees within the City shall be established by the Municipal Code. The establishment of the above mentioned rates is beyond the scope of these Rules and Regulations.

For further information please refer to the City of San Diego Information Bulletin 104 “Schedule for Water and Sewer Fees”.

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SECTION 10: SEVERABILITY

If any section, subsection, sentence, clause, phrase, part or portion of these Rules and Regulations is for any reason held to be invalid or unconstitutional, such invalidity shall not affect any of the remaining portions of these Rules and Regulations.

The City declares that each section, subsection, sentence, clause, phrase or part of these Rules and Regulations would have been adopted irrespective of the invalidity of any part. These Rules and Regulations shall be interpreted so as to comply with applicable Federal, State, and County laws and regulations.

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SECTION 11: ENFORCEMENT, REMEDIES, AND PENALTIES

11.1 GENERAL

Any person, firm, corporation, association, or agency found to be violating any provision of these Rules and Regulations or the terms and conditions of the customer's service agreement, permit or any applicable Federal, State, County, or City statute, regulation, resolution, ordinance or other requirement shall be served by the City with written notice, stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations. This provision is in addition to, and not by way of, derogation of any other remedies or procedures available to the City by law, regulation, or pursuant to any of the provisions of these Rules and Regulations.

Failure to permanently cease all violations within the time stated will result in revocation of the permit by the City and termination of recycled water service.

Any person, firm, corporation, association, or agency who violates any penal provision of these Rules and Regulations and who fails to comply with the requirements of the written notice by the City, shall be subject to any penalties and/or remedies, provided in the City of San Diego Municipal Code, including but not limited to Chapter 1, Articles 1-3 inclusive.

11.2 USE PERMIT

Use Permit shall be required as per Section 64.0807(e) SDMC. All remedies available under the Municipal Code apply to violations of the Use Permit.

The City of San Diego reserves the right to make additional requirements in the Use Permit where it deems necessary to protect public health and safety. Any exceptions to these regulations must be approved by the City and specifically detailed in the Use Permit. Exceptions cannot violate applicable State of California, County of San Diego or City of San Diego Codes.

A copy of the current Use Permit must be available for review at all times clearly posted at the use site, and/or on file at the user's office.

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SECTION 12: APPLICABILITY OF GENERAL WATER SYSTEM ORDINANCES

To the extent that the provisions of the San Diego Municipal Code do not conflict with these Rules and Regulations for the use of recycled water, said provisions shall be and hereby are incorporated herein by reference and shall be applicable to recycled water facilities and use.

Appendix D

City of San Diego - Reclaimed Water Training Guide



Recycled Water Site Supervisor Certification Training

Class Information:

Thurs Jan 14, 2010
Thurs March 4, 2010
Thurs May 6, 2010

8:00 a.m. - 12:00 p.m.
 City of San Diego Water
 Department Training
 Center
 5510 Kiowa Drive
 La Mesa, CA, 91942

Cost:

\$50 per person
 No on-site registration
 No refunds
 Payable by check only
 Checks payable to
 "City Treasurer"

Enrollment deadline
 Seven days prior to
 start of class

This half-day course is designed to provide recycled water users in the state of California with the necessary information required to become fluent in the operational practices of recycled water. The \$50 registration fee includes learning materials and a supervisor identification card that is valid for five (5) years.

Bi-lingual staff will be on site to address questions related to Roles and Responsibilities relevant to participants.

Testing materials are available in Spanish as well.



Send registration form and payment to:
 Account Clerk
 San Diego Water Department
 5510 Kiowa Drive
 La Mesa CA 91942
 MS 43A

Earn Continuing Education Units



Recycled Water Site Supervisor Registration Form

 First Name

 Last Name (will appear on the completion card)

 Organization/Business Name

 Street Address

 City, State, Zip

 Phone

 Email

 Class Date

For more information, please contact:
 William Curcio
 619-668-2091
 wcurcio@sandiego.gov

Appendix E

**Padre Dam - "Rules and Regulations"
section of RWQCB Order No. 97-49**

RULES AND REGULATIONS FOR RECYCLED WATER USE PROJECTS

Pursuant to California Water Code (CWC) Section 13523.1(b)(3), this Order requires the recycled water agency to establish and to enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the with the following criteria:

- a) Title 22, Division 4, Chapter 3, *Wastewater Reclamation Criteria*;
- b) Title 17, Division 1, Chapter 5, Group 4, Article 1 & 2, of the California Code of Regulations;
- c) The State Department of Health Services (DOHS) *Guidelines For Use of Recycled Water, Guidelines for Use of Recycled Water for Construction Purposes, and the County of San Diego Department of Environmental Health Recycled Water Plan Check and Inspection Manual*;
- d) Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada Section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting To Recycled Water* or alternate measures that are acceptable to DOHS.

At a minimum, the rules and regulations shall notify the users that:

1. The use of recycled water shall not cause a pollution, contamination or nuisance, as defined by Section 13050 of the California Water Code.
2. The Recycled Water Agency, the Regional Board, the State and Local Health Department, or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Recycled Water Agency's rules and regulations.
3. The recycled water user shall provide written notification, in a timely manner, to the Recycled Water Agency of any material change or proposed change in the character of the use of recycled water.
4. Prior to the initiation of recycled water service, the recycled water user shall submit plans and specifications for recycled water distribution facilities to the Recycled Water Agency.

5. The recycled water user shall designate a recycled water supervisor who is responsible for the recycled water system at each use area under the user's control. Specific responsibilities of the recycled water supervisor include the proper installation, operation, and maintenance of the irrigation system; compliance of the project with the Recycled Water Agency's rules and regulations, prevention of potential hazards and preservation of the recycled water distribution system plans in "as built" form. Designated recycled water supervisors shall obtain instruction in the use of recycled water from an institution approved by the State and County Health Departments.
6. The Recycled Water Agency may terminate service to a recycled water user who uses, transports, or stores such water in violation of the Recycled Water Agency's rules and regulations.
7. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24 hour frequency storm unless the Regional Board Executive Officer approves relaxed storm protection measures for the facility.
8. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100 - year frequency peak stream flows as defined by the San Diego County flood control agency unless the Regional Board Executive Officer approves relaxed storm protection measures for the facility.
9. The Regional Board may initiate enforcement action against any recycled water user who discharges recycled water in violation of any applicable discharge requirement prescribed by the Regional Board or in a manner which creates or threatens to create conditions of pollution, contamination or nuisance, as defined in Water Code Section 13050.
10. A copy of the recycled water rules and regulations, irrigation system layout map, and a recycled water system operations manual shall be maintained at the use area. These documents shall be available to operating personnel at all times.
11. Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:
 - a) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - b) The well contains an annular seal that extends from the surface into the aquitard.

- c) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - d) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - e) The owner of the well approves of the elimination of the buffer zone requirement.
12. Impoundment of disinfected tertiary recycled water shall not occur within 100 feet of any domestic water supply well.
 13. Irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary -23 recycled water shall not take place within 100 feet of any domestic water supply well.
 14. Irrigation with, or impoundment of, undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.
 15. Reclaimed water facilities shall be operated in accordance with best management practices (BMP's) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMP's shall be implemented that will minimize both public contact and discharge onto areas not under customer control.
 16. Irrigation with reclaimed water shall be during periods of minimal human use of the service area. Consideration shall be given to allow a adequate dry-out time before the irrigated area will be used by the public.
 17. All drinking fountains located within the approved use area shall be protected by location and/or structure from contact with recycled water spray, mist, or runoff. Protection shall be by design, construction practice, or system operation.
 18. Facilities that may be used by the public, including but not limited to eating surfaces and playground equipment and located within the approved use areas, shall be protected to the maximum extent possible by siting and/or structure from contact by irrigation with recycled water spray, mist, or runoff. Protection shall be by design, construction practice or system operation.
 19. Spray irrigation with recycled water, other than disinfected tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

20. All use areas where recycled water is used and that are accessible to the public shall be posted with conspicuous signs, in a size no less than 4 inches by 8 inches, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Lettering shall be of a size easily readable by the public.
21. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.
22. The recycled water piping system shall not include any hose bibs. Quick couplers that are different from that used on the potable water system may be used.
23. The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of Sections 7602(a) and 7603(a) of Title 17 and the approval of the public water system has been obtained. If a "Swivel-ell" type connection is used it must be used in accordance with the provisions of the Department of Health Services Policy Memo 95-004. Approved backflow prevention devices shall be provided, installed, tested, and maintained by the recycled water user in accordance with the applicable provisions of Title 17, Division 1, Chapter 5, Group 4, Article 2.
24. No person other than the Recycled Water Agency shall deliver recycled water to a facility. Connection to the irrigation system by an individual residence is prohibited.
25. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with Chapter 7.9, section 4049.54 of the California Health and Safety Code.
26. Reuse site shut down tests and inspections shall be monitored by the County of San Diego Department of Environmental Health or the State Department of Health Services.
27. Customer complaints concerning recycled water use that may involve public illness shall be reported to the County of San Diego Department of Environmental Health and the State Department of Health Services, and to the Recycled Water Agency who shall maintain a log of all customer complaints regarding recycled water.
28. Any backflow prevention device installed to protect the public water system shall be inspected and maintained in accordance with Section 7605 of Title 17.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

**MONITORING AND REPORTING PROGRAM NO. 97-49
FOR
THE PRODUCTION AND PURVEYANCE OF RECYCLED WATER
FOR
PADRE DAM MUNICIPAL WATER DISTRICT
SAN DIEGO COUNTY**

A. MONITORING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this Order and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. Monitoring points shall not be changed without notification to and the approval of the Executive Officer.
2. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than +5 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:
 - (a) "A Guide to Methods and Standards for the Measurement of Water Flow," U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)
 - (b) "Water Measurement Manual," U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 127,19/2:W29/2, Stock No. S/N 24003-0027.)