OTAY WATER DISTRICT

WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT

Otay Ranch Village 9

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November 2010

Otay Water District
Water Supply Assessment and Verification Report
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Otay Ranch Village 9

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Executive Summary

The Otay Water District (WD) prepared this Water Supply Assessment and Verification Report (WSA&V Report) at the request of the City of Chula Vista (City) for the Otay Ranch Village 9 project. The Otay Land Company submitted an entitlement application to the City for the development of the Village 9 project. Homefed Corporation, a Delaware Corporation is the parent company to Otay Land Company, a Delaware Limited Liability Company.

The Village 9 project is included within a land use planning document known as the Otay Ranch General Development Plan/Sub-regional Plan (Otay Ranch GDP). The County of San Diego and City of Chula Vista jointly prepared and adopted the Otay Ranch GDP. The Village 9 project is located within what is defined as the Otay River Parcel of the Otay Ranch GDP. The project is a part of the designated 14 villages and five planning areas within the Otay Ranch GDP area. The Chula Vista City Council and the San Diego County Board of Supervisors adopted the Otay Ranch GDP on October 28, 1993, which was accompanied by a Program Environmental Impact Report EIR-90-01 (SCH #89010154). As the Otay Ranch area has developed over time, the Otay Ranch GDP has been periodically amended to address land use and circulation element issues specific to individual Villages. Similar amendments and density transfers are proposed to applicable sections of the Otay Mesa GDP to implement this Sectional Planning Area for the Otay Ranch Village 9 Project.

The Otay Ranch Village 9 Project is approximately 273 acres in size. The total SPA area also includes the 50 acres to be part of the future University site. The Otay Land Company proposed development concept for the approximately 323 acre project is generally planned as a University oriented urban village including a combination of land uses consisting of single and multi family residential neighborhoods, mixed use sites, an elementary school, community purpose facilities, open space, circulation elements, and parks. The project site is designated for 4,000 total residential units and up to 1,500,000 square feet of retail/commercial. Development of the 50 acre future University site is not included in this SPA. Typically a development project of this magnitude is constructed in several phases over many years.

The expected demands for the Otay Ranch Village 9 Project is 1.35 million gallons per day (mgd) or about 1,507 acre feet per year (ac-ft/yr). This is 195 acre-foot per year higher than

the demand estimate in the District's 2009 WRMP. The Otay Land Company retained PBS&J to update the 2009 WRMP to include the entitlement densities and intensities of development proposed with the Otay Ranch Village 9 Project. The District's 2009 WRMP updated November, 2010 now includes the 1,507 acre-foot per year demand estimate in the District's demand projections that was forwarded to the Water Authority for inclusion in their UWMP update. The projected recycled water demand for the proposed project is approximately 0.116 mgd or about 130 ac-ft/yr, representing about 8.6% of total project water demand.

The Water Authority and Metropolitan have an established process that ensures supplies are being planned to meet future growth. Any annexations and revisions to established land use plans are captured in the San Diego Association of Governments (SANDAG) updated forecasts for land use planning, demographics, and economic projections. SANDAG serves as the regional, intergovernmental planning agency that develops and provides forecast information. The Water Authority and Metropolitan update their demand forecasts and supply needs based on the most recent SANDAG forecast approximately every five years to coincide with preparation of their Urban Water Management Plans (UWMP). Prior to the next forecast update, local jurisdictions may require water supply assessment and/or verification reports for proposed land developments that are not within the Otay WD, Water Authority, nor Metropolitan jurisdictions (i.e. pending or proposed annexations) or that have revised land use plans than reflected in the existing growth forecasts. Proposed land areas with pending or proposed annexations or revised land use plans typically result in creating higher demand and supply requirements than anticipated. The Otay WD, Water Authority, and Metropolitan next demand forecast and supply requirements and associated planning documents would then capture any increase or decrease in demands and required supplies as a result of annexations or revised land use planning decisions.

The California Urban Water Management Planning Act (Act), which is included in the California Water Code, requires all urban water suppliers within the state to prepare an UWMP and update it every five years. The purpose and importance of the UWMP has evolved since it was first required 25 years ago. State agencies and the public frequently use the document to determine if agencies are planning adequately to reliably meet future demands. As such, UWMPs serve as an important element in documenting supply availability for the purpose of compliance with state laws, Senate Bills 610 and 221, linking water supply sufficiency to large land-use development approval. Agencies must also have a UWMP prepared, pursuant to the Act, in order to be eligible for state funding and drought assistance.

The Water Authority has started their update to their 2005 UWMP however a new legislative mandate, SBX 7-7 (2009) requires retail agencies to report their target for a 20 percent reduction in urban per capita use by December 31, 2020. To address the new per capita water use reduction measures, the bill grants a 6-month extension to urban retail water suppliers to submit their approved UWMP to the California Department of Water Resources (DWR) by July 1, 2011. As a wholesale supplier, the Water Authority did not receive the extension and

is currently required to submit its UWMP to DWR by December 31, 2010. However, Senate Bill 1478 corrects language in SBX 7-7 to grant wholesale suppliers the same 6-month extension on their UWMPs. Should this bill pass, the Water Authority's submittal date for the next UWMP Update would be July 1, 2011.

The District's 2009 WRMP updated November, 2010 now includes the 1,507 acre-foot per year demand estimate in the District's demand projections that was forwarded to the Water Authority for inclusion in their UWMP update. SANDAG and the City of Chula Vista have also confirmed the Land Offer Agreement that forms the basis for this SPA entitlement was included in the Series 12 update that has been forwarded to both Metropolitan and the Water Authority for their future UWMP updates. Thie Series 12 update was also used by Metropolitan for their demand projections for their 2010 Integrated Resource Plan (IRP) Update.

Metropolitan's IRP identifies a mix of resources (imported and local) that, when implemented, will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, State Water Project supplies, Colorado River supplies, groundwater banking, and water transfers. The 2010 update to the IRP (2010 IRP Update) includes a planning buffer supply intended to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not under or over developing supplies. Managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate water supplies to meet future demands.

Water supply agencies throughout California continue to face climatological, environmental, legal, and other challenges that impact water source supply conditions, such as the court rulings regarding the Sacramento-San Joaquin Delta issues and the recent drought impacting the western states. Challenges such as these essentially always will be present. The regional water supply agencies, the Water Authority and Metropolitan, along with Otay WD nevertheless fully intend to have sufficient, reliable supplies to serve demands.

In Section II.4 of their 2005 Regional Urban Water Management Plan (2005 RUWMP), Metropolitan states that through effective management of its water supply, they fully expect to be 100 percent reliable in meeting all non-discounted non-interruptible demands throughout the next twenty-five years. Metropolitan's 2005 RUWMP identifies potential reserve supplies in the supply capability analysis (Tables II-7, II-8, and II-9), which could be available to meet the unanticipated demands such as those related to the densification of the Village 9 project.

In evaluating the availability of sufficient water supply, the Village 9 project proponents are required to participate in the development of alternative water supply project(s). This can be achieved through payment of the New Water Supply Fee adopted by the Otay Water district

Board in May 2010. These water supply projects are in addition to those identified as sustainable supplies in the current Water Authority and Metropolitan UWMP, IRP, Master Plans, and other planning documents. These new water supply projects are in response to the regional water supply issues. These new additional water supply projects are not currently developed and are in various stages of the planning process. A few examples of these alternative water supply projects include the Middle Sweetwater River Basin Groundwater Well project, the North District Recycled Water Supply Concept, the Rosarito Ocean Desalination Facility project, and the Rancho del Rey Groundwater Well project. The Water Authority and Metropolitan next forecast and supply planning documents would capture any increase in water supplies resulting from any new water resources developed by the Otay WD.

The County Water Authority Act, Section 5 subdivision 11, states that the Water Authority "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs."

As part of preparation of a written water supply assessment and verification report, an agency's shortage contingency analysis should be considered in determining sufficiency of supply. Section 9 of the Water Authority's 2005 UWMP contains a detailed shortage contingency analysis that addresses a regional catastrophic shortage situation and drought management. The analysis demonstrates that the Water Authority and its member agencies, through the Emergency Response Plan, Emergency Storage Project, and Drought Management Plan (DMP) are taking actions to prepare for and appropriately handle an interruption of water supplies. The DMP, completed in May 2006, provides the Water Authority and its member agencies with a series of potential actions to take when faced with a shortage of imported water supplies from Metropolitan due to prolonged drought or other supply shortfall conditions. The actions will help the region avoid or minimize the impacts of shortages and ensure an equitable allocation of supplies.

The WSA&V Report identifies and describes the processes by which water demand projections for the proposed Village 9 project will be fully included in the water demand and supply forecasts of the Urban Water Management Plans and other water resources planning documents of the Water Authority and Metropolitan. Water supplies necessary to serve the demands of the proposed project, along with existing and other projected future users, as well as the actions necessary and status to develop these supplies, have been identified in the Village 9 project WSA&V Report and will be included in the future water supply planning documents of the Water Authority and Metropolitan. The proposed potable water demand projections and supply requirements for the proposed Village 9 project are included in the Otay WD 2009 WRMP updated November, 2010 but have not been included in older water resources planning documents of the Otay WD.

This WSA&V Report includes, among other information, an identification of existing water supply entitlements, water rights, water service contracts, water supply projects, or agreements relevant to the identified water supply needs for the proposed Village 9 project. The WSA&V Report demonstrates and documents that sufficient water supplies are planned

for and are intended to be available over a 20-year planning horizon, under normal conditions and in single and multiple dry years to meet the projected demand of the proposed Village 9 project and the existing and other planned development projects to be served by the Otay WD.

Accordingly, after approval of a WSA&V Report for the Village 9 project by the Otay WD Board of Directors (Board), the WSA&V Report may be used to comply with the requirements of the legislation enacted by Senate Bills 610 and 221 as follows:

1. Senate Bill 610 Water Supply Assessment: The Otay WD Board approved WSA&V Report may be incorporated into the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) compliance process for the Village 9 project as a water supply assessment report consistent with the requirements of the legislation enacted by SB 610. The City as lead agency under CEQA for the Village 9 project EIR may cite the approved WSA&V Report as evidence that a sufficient water supply is planned for and is intended to be made available to serve the Village 9 project.

2. Senate Bill 221 Water Supply Verification: The Otay WD Board approved WSA&V Report may be incorporated into the City's Tentative Map approval process for the Village 9 project as a water supply verification report, consistent with the requirements of the legislation enacted by SB 221. The City, within their process of approving the Village 9 project's Tentative Map, may cite the approved WSA&V Report as verification of intended sufficient water supply to serve the Village 9 project.

Section 1 - Purpose

The Otay Land Company submitted an entitlement application to the City of Chula Vista (City) for the development of the Otay Ranch Village 9 project. The City requested that Otay Water District (WD) prepare a Water Supply Assessment and Verification Report (WSA&V Report) for the Village 9 project. The Village 9 project description is provided in Section 3 of this WSA&V Report.

This WSA&V Report for the Village 9 project has been prepared by the Otay WD in consultation with Dexter Wilson Engineering, Inc., the San Diego County Water Authority (Water Authority), and the City pursuant to Public Resources Code Section 21151.9 and California Water Code Sections 10631, 10656, 10910, 10911, 10912, and 10915 referred to as Senate Bill (SB) 610 and Business and Professions Code Section 11010 and Government Code Sections 65867.5, 66455.3, and 66473.7 referred to as SB 221. SB 610 and SB 221 amended state law, effective January 1, 2002, intending to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the California Environmental Quality Act (CEQA)

environmental documentation and approval process of certain proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are to be available for certain residential subdivisions of property prior to approval of a tentative map. The requirements of SB 610 and SB 221 are being addressed by this WSA&V Report.

The City also requested, since the requirements of SB 610 and SB 221 are substantially similar, that Otay WD prepare both the water supply assessment and verification concurrently.

This WSA&V Report evaluates water supplies that are planned to be available during normal, single dry year, and multiple dry water years during a 20-year planning horizon to meet existing demands, expected demands of the Village 9 project, and reasonably foreseeable planned future water demands served by Otay WD. The Otay WD Board of Directors approved WSA&V Report is planned to be used by the City in its evaluation of the Village 9 project under the CEQA and Tentative Map approval processes.

Section 2 - Findings

The Otay WD prepared this WSA&V Report at the request of the City for the Otay Ranch Village 9 project. The Otay Land Company submitted an entitlement application to the City for the development of the Village 9 project.

The Water Authority and Metropolitan have an established process that ensures supplies are being planned to meet future growth. Any annexations and revisions to established land use plans are captured in the San Diego Association of Governments (SANDAG) updated forecasts for land use planning, demographics, and economic projections. SANDAG serves as the regional, intergovernmental planning agency that develops and provides forecast information. The Water Authority and Metropolitan update their demand forecasts and supply needs based on the most recent SANDAG forecast approximately every five years to coincide with preparation of their urban water management plans. Prior to the next forecast update, local jurisdictions may require water supply assessment and/or verification reports for proposed land developments that are not within the Otay WD, Water Authority, nor Metropolitan jurisdictions (i.e. pending or proposed annexations) or that have revised land use plans than reflected in the existing growth forecasts. Proposed land areas with pending or proposed annexations or revised land use plans typically result in creating higher demand and supply requirements than anticipated. The Otay WD, the Water Authority, and Metropolitan next demand forecast and supply requirements and associated planning documents would then capture any increase or decrease in demands and required supplies as a result of annexations or revised land use planning decisions.

This process is utilized by the Water Authority and Metropolitan to document the water supplies necessary to serve the demands of the proposed Village 9 project, along with existing and other projected future users, as well as the actions necessary to develop these supplies. Through this process the necessary demand and supply information is thus assured to be identified and incorporated within the water supply planning documents of the Water Authority and Metropolitan.

To fully quantify probable demands to be served by the Water Authority, lands with impending or proposed applications for annexation into the Otay WD, Water Authority, and Metropolitan service areas are identified in the Water Authority 2005 UWMP. Working with its member agencies, the Water Authority identified potential near-term annexations as being parcels that may be annexed to the Otay WD, Water Authority, and Metropolitan within the next five years. Estimated water demands for those parcels were provided to the Water Authority by the member agency or project proponent and were then added to the Water Authority forecast. The Water Authority included the sum of the projected potable and recycled water demands for these projects as a potable water demand within their 2005 UWMP to provide for more comprehensive supply planning and assist member agencies such as Otay WD in complying with Senate Bills 610 and 221. Tables 2-2 and 2-9 within the Water Authority 2005 UWMP provides projected demand information for the anticipated pending annexations and water demand projections prior to the current densification proposal for the Village 9 project.

In evaluating the availability of sufficient water supply, the Village 9 project proponents are required to participate in the development of alternative water supply project(s). This can be achieved through payment of the New Water Supply Fee adopted by the Otay Water District Board in May 2010. These water supply projects are in addition to those identified as sustainable supplies in the current Water Authority and Metropolitan UWMP, IRP, Master Plans, and other planning documents. These new water supply projects are in response to the regional water supply issues related to the Sacramento-San Joaquin Delta and the current ongoing western states drought conditions. These new additional water supply projects are not currently developed and are in various stages of the planning process. A few examples of these alternative water supply projects include the Middle Sweetwater River Basin Groundwater Well project, the North District Recycled Water Supply Concept, the Rosarito Ocean Desalination Facility project, and the Rancho del Rey Groundwater Well project. The Water Authority and Metropolitan next forecast and supply planning documents would capture any increase in water supplies resulting from any new water resources developed by the Otay WD.

Water supplies necessary to serve the demands of the proposed Village 9 project, along with existing and other reasonably foreseeable projected future users, as well as the actions necessary and status to develop these supplies, will be identified and included within the water supply planning documents of the Water Authority and Metropolitan. This WSA&V Report demonstrates and verifies that with development of the resources currently identified and those that may be additional acquired, that there is sufficient water supplies being planned

for and is intended to be developed over the next 20-year planning horizon to meet the projected demand of the proposed Village 9 project and the existing and other reasonably foreseeable planned development projects within the Otay WD.

This WSA&V Report includes, among other information, an identification of existing water supply entitlements, water rights, water service contracts, proposed water supply projects, or agreements relevant to the identified water supply needs for the proposed Village 9 project. This WSA&V Report incorporates by reference the current Urban Water Management Plans and other water resources planning documents of the Otay WD, the Water Authority, and Metropolitan. The Otay WD prepared this WSA&V to verify and document that sufficient water supplies are being planned for and are intended to be acquired to meet projected water demands of the Village 9 project and the existing and other reasonably foreseeable planned development projects within the Otay WD for a 20-year planning horizon, in normal supply years, and in single dry and multiple dry years.

Based on a normal water supply year, the five-year increments for a 20-year projection indicate projected water supply is being planned for and is intended to be acquired to meet the estimated water demand of the Otay WD (38,774 acre-feet (ac-ft) in 2005 to 72,853 ac-ft in 2025 per the Otay WD 2005 UWMP). Based on dry year forecasts, the estimated water supply is also being planned for and is intended to be acquired to meet the projected water demand, during single dry and multiple dry year scenarios. On average, the dry-year demands are about 7% higher than the normal demands. Using this model, the projected single dry year necessary supply requirement for 2010 is 53,299 ac-ft and for multiple dry years beginning in 2007, 46,212 ac-ft, 48,574 ac-ft, and 50,936 ac-ft, respectively, is necessary to meet demand. The Otay WD recycled water supply is assumed to be drought-proof and not subject to reduction during dry periods.

Together, these findings demonstrate and verify that sufficient water supplies are being planned for and are intended to be acquired, as well as the actions necessary and status to develop these supplies are and will be further documented, to serve the proposed Village 9 project and the existing and other reasonably foreseeable planned projects within the Otay WD in both normal and single and multiple dry year forecasts for a 20-year planning horizon.

Section 3 - Project Description

The Otay Ranch Village 9 project is located within the City of Chula Vista, California. Refer to Appendix A for a regional location map of the proposed project.

The Village 9 project is included within a land use planning document known as the Otay Ranch General Development Plan/Sub-regional Plan (Otay Ranch GDP). The County of San Diego and City of Chula Vista jointly prepared and adopted the Otay Ranch GDP. The Village 9 project is located within what is defined as the Otay River Parcel of the Otay Ranch GDP. The project is a part of the designated 14 villages and five planning areas within the

Otay Ranch GDP area. The Otay Ranch Village 9 Project entitlement approval is dependent on the City's eventual adoption of their Sectional Planning Area Plan (SPA). The Land Offer Agreement between the City and the Otay Land Company per document recorded April 24, 2008 as document No. 2008-0218696 forms the basis for the SPA entitlement densities and intensities of development.

The Chula Vista City Council and the San Diego County Board of Supervisors adopted the Otay Ranch GDP on October 28, 1993, which was accompanied by a Program Environmental Impact Report EIR-90-01 (SCH #89010154).

The approximately 23,000 acre Otay Ranch is a master-planned community that includes a broad range of residential, commercial, retail, and industrial development interwoven with civic and community uses, such as libraries, parks, and schools, together with an open space preserve system consisting of approximately 11,375 acres.

The Otay Land Company proposed development concept for the approximately 323 acre Village 9 project is planned as a combination of land uses as shown in Table 1.

Table 1
Otay Ranch Village 9 Proposed Land Uses[1]

Location	Land Use Description	Area	Dwelling Units
Village 9	Single-Family Residential	43.3 acres	266 units
Village 9	Mixed Use / Multi-Family Residential	140.4 acres[2]	3,734 units
Village 9	Community Purpose	5.0 acres	
Village 9	Schools	22.0 acres	
Village 9	Parks	25.1 acres	
Village 9	Open Space	9.6 acres	
Village 9	Future University Site	50.0 acres	
Village 9	Circulation	27.7 acres	
Totals		**323.1 acres**	**4,000 units**

[1] Source: Dexter Wilson Engineering, Inc., "Overview of Water Service for Otay Ranch Village 9," November 2010.
[2] The City has estimated that 17.8 acres will be commercial with a maximum of 1,500,000 SF.

The proposed development within Village 9 consists of 2,000 mixed density residential units, retail commercial, elementary school, community purpose facilities, parks, and opens space. Typically a development project of this magnitude is constructed in several phases over many years. Refer to Appendix B for the proposed development plan of the Village 9 project.

The City has identified discretionary actions and/or permit approval requirements for the Village 9 project. The projected potable and recycled water demands and resulting water supply requirements associated with the Village 9 project have considered the discretionary actions and/or permit approvals and are incorporated into and used in this WSA&V Report. The water demands for the proposed Village 9 project are provided in Section 5 – Historical and Projected Water Demands.

Section 4 – Otay Water District

The Otay WD is a municipal water district formed in 1956 pursuant to the Municipal Water District Act of 1911 (Water Code §§ 71000 et seq.). The Otay WD joined the Water Authority as a member agency in 1956 to acquire the right to purchase and distribute imported water throughout its service area. The Water Authority is an agency responsible for the wholesale supply of water to its 24 public agency members in San Diego County.

The Otay WD currently relies on the Water Authority for 100 percent of its treated potable water supply. The Water Authority is the agency responsible for the supply of imported water into San Diego County through its membership in Metropolitan. The Water Authority currently obtains the vast majority of its imported supply from Metropolitan, but is in the process of diversifying its available supplies.

The Otay WD provides water service to residential, commercial, industrial, and agricultural customers, and for environmental and fire protection uses. In addition to providing water throughout its service area, Otay WD also provides sewage collection and treatment services to a portion of its service area known as the Jamacha Basin. The Otay WD also owns and operates the Ralph W. Chapman Water Reclamation Facility (RWCWRF) which has an effective treatment capacity of 1.2 million gallons per day (mgd) or about 1,300 acre feet per year (ac-ft/yr) to produce recycled water. On May 18, 2007 an additional source of recycled water supply, at least 6 mgd or about 6,720 ac-ft/yr, became available to Otay WD from the City of San Diego's South Bay Water Reclamation Plant (SBWRP).

The Otay WD jurisdictional area is generally located within the south central portion of San Diego County and includes approximately 125 square miles. The Otay WD serves portions of the unincorporated communities of southern El Cajon, La Mesa, Rancho San Diego, Jamul, Spring Valley, Bonita, and Otay Mesa, the eastern portion of the City of Chula Vista and a portion of the City of San Diego on Otay Mesa. The Otay WD jurisdiction boundaries are roughly bounded on the north by the Padre Dam Municipal Water District, on the northwest by the Helix Water District, and on the west by the South Bay Irrigation District (Sweetwater Authority) and the City of San Diego. The southern boundary of Otay WD is the international border with Mexico.

The planning area addressed in the Otay WD 2009 Water Resources Master Plan (2009 WRMP) and the Otay WD revised 2005 Urban Water Management Plan (2005 UWMP) includes the land within the jurisdictional boundary of the Otay WD and those areas outside of the present Otay WD boundaries considered to be in the Area of Influence of the Otay WD. Figure 2-1 contained within the Otay WD 2009 WRMP shows the jurisdictional boundary of the Otay WD and the Area of Influence. The planning area is approximately 143 square miles, of which approximately 125 square miles are within the Otay WD current boundaries and approximately 18 square miles are in the Area of Influence. The area east of Otay WD is rural and currently not within any water purveyor jurisdiction and potentially could be served by the Otay WD in the future if the need for imported water becomes necessary, as is the case for the Area of Influence.

The City of Chula Vista, the City of San Diego, and the County of San Diego are the three land use planning agencies within the Otay WD jurisdiction. Data on forecasts for land use planning, demographics, economic projections, population, and the future rate of growth within Otay WD were obtained from the San Diego Association of Governments (SANDAG). SANDAG serves as the regional, intergovernmental planning agency that develops and provides forecast information through the year 2050. Population growth within the Otay WD service area is expected to increase from the 2005 figure of approximately 179,000 to an estimated 268,000 by 2025, and is estimated to be 277,000 at ultimate build out. Land use information used to develop water demand projections are based upon Specific or Sectional Planning Areas, the Otay Ranch General Development Plan/Sub-regional Plan, East Otay Mesa Specific Plan Area, San Diego County Community Plans, and City of San Diego, City of Chula Vista, and County of San Diego General Plans.

The Otay WD long-term historic growth rate has been approximately 3% per year. Up until the recent economic downturn growth was occurring at a faster rate due to accelerated residential development in the eastern portion of the City of Chula Vista. The growth rate has significantly slowed and it is expected to slow as the inventory of developable land is diminished.

Climatic conditions within the Otay WD service area are characteristically Mediterranean near the coast, with mild temperatures year round. Inland areas are both hotter in summer and cooler in winter, with summer temperatures often exceeding 90 degrees and winter temperatures occasionally dipping to below freezing. Most of the region's rainfall occurs during the months of December through March. Average annual rainfall is approximately 9.4 inches per year.

Historic climate data were obtained from the Western Regional Climate Center for Station 042706 (El Cajon). This station was selected because its annual temperature variation is representative of most of the Otay WD service area. While there is a station in the City of Chula Vista, the temperature variation at the City of Chula Vista station is more typical of a coastal environment than the conditions in most of the Otay WD service area.

4.1 Urban Water Management Plan

In accordance with the California Urban Water Management Planning Act, the Otay WD Board of Directors adopted an Urban Water Management Plan in December 2005 and it was subsequently submitted to the California Department of Water Resources (DWR). DWR required Otay WD to make revisions to the submitted plan. The Otay WD Board of Directors adopted the revised Otay WD 2005 UWMP in July 2007. As required by law, the Otay WD 2005 UWMP includes projected water supplies required to meet future demands through 2030. In accordance with Water Code Section 10910 (c)(2) and Government Code Section 66473.7 (c)(3), information from the Otay WD 2005 UWMP along with supplemental information from the Otay WD 2009 WRMP updated November, 2010have been utilized to prepare this WSA&V Report and are incorporated herein by reference.

Section 5 – Historical and Projected Water Demands

The projected demands for Otay WD are based on Specific or Sectional Planning Areas, the Otay Ranch General Development Plan/Sub-regional Plan, the East Otay Mesa Specific Plan Area, San Diego County Community Plans, and City of San Diego, City of Chula Vista, and County of San Diego General Plans. This land use information is also used by SANDAG as the basis for its most recent forecast data. This land use information is utilized in the preparation of the Otay WD 2009 WRMP updated November, 2010, and Otay WD 2005 UWMP to develop the forecasted demands and supply requirements.

In 1994, the Water Authority selected the Institute for Water Resources-Municipal and Industrial Needs (MAIN) computer model to forecast municipal and industrial water use for the San Diego region. The MAIN model uses demographic and economic data to project sector-level water demands (i.e. residential and non-residential demands). This econometric model has over a quarter of a century of practical application and is used by many cities and water agencies throughout the United States. The Water Authority's version of the MAIN model was modified to reflect the San Diego region's unique parameters and is known as CWA-MAIN.

The foundation of the water demand forecast is the underlying demographic and economic projections. This was a primary reason, why, in 1992 the Water Authority and SANDAG entered into a Memorandum of Agreement (MOA), in which the Water Authority agreed to use the SANDAG current regional growth forecast for water supply planning purposes. In addition, the MOA recognizes that water supply reliability must be a component of San Diego County's regional growth management strategy required by Proposition C, as passed by the San Diego County voters in 1988. The MOA ensures a strong linkage between local general plan land use forecasts and water demand projections and resulting supply needs for the San Diego region.

Consistent with the previous CWA-MAIN modeling efforts, on February 26, 2010, the SANDAG Board of Directors accepted the Series 12: 2050 Regional Growth Forecast. The 2050 Regional Growth Forecast will be used by SANDAG as the foundation for the next Regional Comprehensive Plan update. SANDAG forecasts also are used by local governments for planning, including the San Diego County Water Authority 2010 Urban Water Management Plan update. The SANDAG Series 12: 2050 Regional Growth Forecast included the Land Offer Agreement between the City and the Otay Land Company that forms the basis for the SPA entitlement densities and intensities of development for this project.

The municipal and industrial forecast also included an updated accounting of projected conservation savings based on projected regional implementation of the California Urban Water Conservation Council (CUWCC) Best Management Practices and SANDAG demographic information for the period 2005 through 2030. These savings estimates were then factored into the baseline municipal and industrial demand forecast.

A separate agricultural model, also used in prior modeling efforts, was used to forecast agricultural water demands within the Water Authority service area. This model estimates agricultural demand to be met by the Water Authority's member agencies based on agricultural acreage projections provided by SANDAG, crop distribution data derived from the Department of Water Resources and the California Avocado Commission, and average crop-type watering requirements based on California Irrigation Management Information System data.

The Water Authority and Metropolitan update their water demand and supply projections within their jurisdictions utilizing the SANDAG most recent growth forecast to project future water demands. This provides for the important strong link between demand and supply projections to the land use plans of the cities and the county. This provides for consistency between the retail and wholesale agencies water demand projections, thereby ensuring that adequate supplies are and will be planned for the Otay WD existing and future water users. Existing land use plans, any revisions to land use plans, and annexations are captured in the SANDAG updated forecasts. The Water Authority and Metropolitan will update their demand forecasts based on the SANDAG most recent forecast approximately every five years to coincide with preparation of their urban water management plans. Prior to the next forecast update, local jurisdictions may require water supply assessment and/or verification reports consistent with Senate Bills 610 and 221 for proposed land use developments that either have pending or proposed annexations into the Otay WD, Water Authority, and Metropolitan or that have revised land use plans than originally anticipated. The Water Authority and Metropolitan next forecast and supply planning documents would then capture any increase or decrease in demands caused by annexations or revised land use plans.

In evaluating the availability of sufficient water supply, the Village 9 project proponents are required to participate in the development of alternative water supply project(s). This can be achieved through payment of the New Water Supply Fee adopted by the Otay Water District

Board in May 2010. These water supply projects are in addition to those identified as sustainable supplies in the current Water Authority and Metropolitan UWMP, IRP, Master Plans, and other planning documents. These new water supply projects are in response to the regional water supply issues related to climatological, environmental, legal, and other challenges that impact water source supply conditions, such as the court rulings regarding the Sacramento-San Joaquin Delta and the current ongoing western states drought conditions. These new additional water supply projects are not currently developed and are in various stages of the planning process. A few examples of these alternative water supply projects include the Middle Sweetwater River Basin Groundwater Well project, the North District Recycled Water Supply Concept, the Rosarito Ocean Desalination Facility project, and the Rancho del Rey Groundwater Well project. The Water Authority and Metropolitan next forecast and supply planning documents would capture any increase in water supplies resulting from any new water resources developed by the Otay WD.

In addition, Metropolitan's 2005 Regional Urban Water Management Plan identified potential reserve supplies in the supply capability analysis (Tables II-7, II-8, and II-9), which could be available to meet any unanticipated demands. The Water Authority and Metropolitan next forecast and supply planning documents would capture any increase in necessary supply resources resulting from any new water supply resources.

To fully quantify probable demands served by the Water Authority, lands with impending or proposed applications for annexation to the Otay WD, Water Authority, and Metropolitan service areas are identified in the Water Authority 2005 Updated Urban Water Management Plan (2005 UWMP). Working with its member agencies, the Water Authority identified potential near-term annexations as being parcels that may be annexed to the Otay WD, Water Authority, and Metropolitan within the next five years. Estimated water demands for those parcels were provided to the Water Authority by the member agency or project proponent and then added to the Water Authority forecast. The Water Authority included the potential near-term annexation land areas projected potable water demands within their 2005 UWMP to provide for more comprehensive supply planning and assist member agencies such as Otay WD in complying with Senate Bills 610 and 221. Tables 2-2 and 2-9 within the Water Authority 2005 UWMP provides projected demand information for the anticipated pending annexations.

The Otay WD water demand projection methodology utilizes a component land use approach. This is done by applying representative values of water use to the acreage of each land use type and then aggregating these individual land use demand projections into an overall total demand for the Otay WD. This is called the water duty method, and the water duty is the amount of water used in acre-feet per acre per year. This approach is used for all the land use types except residential development where a demand per dwelling unit was applied. In addition, commercial and industrial water use categories are further subdivided by type including separate categories for golf courses, schools, jails, prisons, hospitals, etc. where specific water demands are established.

To determine water duties for the various types of land use, the entire water meter database of the Otay WD is utilized and sorted by the appropriate land use types. The metered consumption records are then examined for each of the land uses, and water duties are determined for the various types of residential, commercial, industrial, and institutional land uses. For example the water duty factors for commercial and industrial land uses are estimated using 1,785 and 893 gallons per day per acre, respectively. Residential water demand is established based on the same data but computed on a per-dwelling unit basis. The focus is to ensure that for each of the residential land use categories (very low, low, medium, and high densities), the demand criteria used is adequately represented based upon actual data. This method is used because residential land uses constitute a substantial percentage of the total developable planning area of the Otay WD.

By applying the established water duties to the proposed land uses, the projected water demand for the entire Otay WD planning area at ultimate development is determined. Projected water demands for the intervening years were determined using growth rate projections consistent with data obtained from SANDAG and the experience of the Otay WD.

The historical and projected potable water demands for Otay WD are shown in Table 2.

Table 2
Historical and Projected Potable Water Fiscal Year Demands (acre-feet)
Incorporating Water Conservation BMP Efforts[1]

Water Use Sectors	1995	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	10,604	15,331	19,850	25,442	29,130	33,316	37,211	42,089
Multi-Family Residential	1,880	1,986	2,893	3,708	4,245	4,855	5,423	6,134
Commercial & Industrial	1,650	3,043	1,549	1,986	2,274	2,600	2,904	3,285
Institutional & Governmental	1,680	2,089	2,115	2,711	3,104	3,550	3,965	4,485
Landscape	3,983	6,256	8,512	10,910	12,491	14,286	15,956	18,048
Agricultural	487	171	2,268	2,907	3,328	3,806	4,251	4,809
Known Losses	*	*	511	655	749	857	957	1,083
System Losses	*	1,733	1,076	1,494	1,711	1,957	2,186	2,472
Totals	**20,284**	**30,609**	**38,774**	**49,813**	**57,032**	**65,227**	**72,853**	**82,405**

[1] Source: The Otay WD 2005 UWMP.
* Known losses (i.e. unaccounted for water in the Otay WD 2005 UWMP) and system losses unavailable.

The historical and projected recycled water demands for Otay WD are shown in Table 3.

Table 3
Historical and Projected Recycled Water Fiscal Year Demands (acre-feet)
Incorporating Water Conservation BMP Efforts[1]

Water Use Sector	1995	2000	2005	2010	2015	2020	2025	2030
Landscape	614	1,274	1,155	4,040	4,684	5,430	6,294	7,297
Totals	**614**	**1,274**	**1,155**	**4,040**	**4,684**	**5,430**	**6,294**	**7,297**

[1] Source: The Otay WD 2005 UWMP.

Using the land use demand projection criteria as established in the Otay WD 2009 WRMP updated November, 2010, the current projected potable water demand for the proposed Village 9 project is shown in Table 4, which totals approximately 1.35 mgd or about 1,507 ac-ft/yr.

Table 4
Otay Ranch Village 9 Projected Potable
Water Annual Average Demands[1]

Location	Land Use Description	Dwelling Units	Demand (gpd)
Village 9	Single-Family Residential	266 units	133,000
Village 9	Multi-Family/Mixed Use	3,734 units	952,170
Village 9	Mixed Use – Retail		210,000
Village 9	Community Purpose		3,570
Village 9	Schools		31,420
Village 9	Parks – Potable		14,910
Village 9	Open Space		0
Village 9	Circulation		0
Totals		**4,000 units**	**1,345,070**

[1] Source: Dexter Wilson Engineering, Inc., "Overview of Water Service for Otay Ranch Village 9," November 2010

This projection of potable water demand for Village 9 is included in the 2009 WRMP updated November, 2010.

The current projected recycled water demand for the proposed Village 9 project is provided in Table 5, which totals approximately 0.137 mgd or about 154 ac-ft/yr, representing about 17% of total Village 9 project demand.

Table 5
Otay Ranch Village 9 Projected Recycled Water Annual Average Demands[1]

Location	Land Use Description	Area	Demand (gpd)
Village 9	Community Purpose Facility	5.0 acres	1,080
Village 9	Mixed Use	140.4 acres	30,170
Village 9	Parks	25.1 acres	54,090
Village 9	Schools	22.0 acres	9,490
Village 9	Irrigated Open Space	10.0 acres	21,550
Totals		**198.2 acres**	**116,380**

[1] Source: Dexter Wilson Engineering, Inc., "Overview of Water Service for Otay Ranch Village 9," November 2010

5.1 Demand Management (Water Conservation)

Demand management, or water conservation is a critical part of the Otay WD 2005 UWMP and its long term strategy for meeting water supply needs of the Otay WD customers. Water conservation, is frequently the lowest cost resource available to any water agency. The goals of the Otay WD water conservation programs are to:

- Reduce the demand for more expensive, imported water.
- Demonstrate continued commitment to the Best Management Practices (BMP).
- Ensure a reliable water supply.

The Otay WD is signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, which created the California Urban Water Conservation Council (CUWCC) in 1991 in an effort to reduce California's long-term water demands. Water conservation programs are developed and implemented on the premise that water conservation increases the water supply by reducing the demand on available supply, which is vital to the optimal utilization of a region's water supply resources. The Otay WD participates in many water conservation programs designed and typically operated on a shared cost participation program basis among the Water Authority, Metropolitan, and their member agencies. The demands shown in Tables 2, 3, 4, and 5 take into account implementation of water conservation measures within Otay WD.

As one of the first signatories to the MOU Regarding Urban Water Conservation in California, the Otay WD has made BMP implementation for water conservation the cornerstone of its conservation programs and a key element in its water resource management strategy. As a member of the Water Authority, Otay WD also benefits from regional programs performed on behalf of its member agencies. The BMP programs implemented by Otay WD and regional BMP programs implemented by the Water Authority that benefit all their member agencies are addressed in the Otay WD 2005 UWMP. In partnership with the Water Authority, the County of San Diego, City of San Diego, City of Chula Vista, and developers, the Otay WD water conservation efforts are expected to grow and expand. The resulting savings directly relate to additional available water in the San Diego County region for beneficial use within the Water Authority service area, including the Otay WD.

Additional conservation or water use efficiency measures or programs practiced by the Otay WD include the following:

- Supervisory Control and Data Acquisition System

  The Otay WD implemented and has operated for many years a Supervisor Control and Data Acquisition (SCADA) system to control, monitor, and collect data regarding the operation of the water system. The major facilities that have SCADA capabilities are the water flow control supply sources, transmission network, pumping stations, and water storage reservoirs. The SCADA system allows for many and varied useful functions. Some of these functions provide for operating personnel to monitor the water supply source flow rates, reservoir levels, turn on or off pumping units, etc. The SCADA system aids in the prevention of water reservoir overflow events and increases energy efficiency.

- Water Conservation Ordinance

  California Water Code Sections 375 et seq. permit public entities which supply water at retail to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving water supplies of such public entity. The Otay WD Board of Directors established a comprehensive water conservation program pursuant to California Water Code Sections 375 et seq., based upon the need to conserve water supplies and to avoid or minimize the effects of any future shortage. A water shortage could exist based upon the occurrence of one or more of the following conditions:

  1. A general water supply shortage due to increased demand or limited supplies.
  2. Distribution or storage facilities of the Water Authority or other agencies become inadequate.
  3. A major failure of the supply, storage, and distribution facilities of Metropolitan, Water Authority, and/or Otay WD.

> The Otay WD water conservation ordinance finds and determines that the conditions prevailing in the San Diego County area require that the available water resources be put to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use, of water be prevented and that the conservation of such water be encouraged with a view to the maximum reasonable and beneficial use thereof in the interests of the people of the Otay WD and for the public welfare.

As a signatory to the MOU Regarding Urban Water Conservation in California, the Otay WD is required to submit biannual reports that detail the implementation of current water conservation practices. The Otay WD voluntarily agreed to implement the fourteen water conservation Best Management Practices beginning in 1992. The Otay WD submits its report to the CUWCC every two years. The Otay WD BMP Reports for 2001 to 2004, as well as the BMP Coverage Report for 2003-04, are included in the Otay WD 2005 UWMP.

The Village 9 project will implement the CUWCC Best Management Practices for water conservation such as installation of ultra low flow toilets, development of a water conversation plan, and potential beneficial use of recycled water, all of which are typical requirements of development projects within the City of Chula Vista.

Section 6 - Existing and Projected Supplies

The Otay WD currently does not have an independent raw or potable water supply source. The Otay WD is a member public agency of the Water Authority. The Water Authority is a member public agency of Metropolitan. The statutory relationships between the Water Authority and its member agencies, and Metropolitan and its member agencies, respectively, establish the scope of the Otay WD entitlement to water from these two agencies.

The Water Authority through two delivery pipelines, referred to as Pipeline No. 4 and the La Mesa Sweetwater Extension Pipeline, currently supply the Otay WD with 100 percent of its potable water. The Water Authority in turn, currently purchases the majority of its water from Metropolitan. Due to the Otay WD reliance on these two agencies, this WSA&V Report includes referenced documents that contain information on the existing and projected supplies, supply programs, and related projects of the Water Authority and Metropolitan. The Otay WD, Water Authority, and Metropolitan are actively pursuing programs and projects to diversify their water supply resources.

The description of local recycled water supplies available to the Otay WD is also discussed below.

6.1 Metropolitan Water District of Southern California 2005 Regional Urban Water Management Plan

In November 2005, Metropolitan adopted its 2005 Regional Urban Water Management Plan (RUWMP). The 2005 RUWMP provides Metropolitan's member agencies, retail water utilities, cities, and counties within its service area with, among other things, a detailed evaluation of the supplies necessary to meet future demands, and an evaluation of reasonable and practical efficient water uses, recycling, and conservation activities. During the preparation of the 2005 RUWMP, Metropolitan also utilized the previous SANDAG regional growth forecast in calculating regional water demands for the Water Authority service area.

6.1.1 Availability of Sufficient Supplies and Plans for Acquiring Additional Supplies

Metropolitan is a wholesale supplier of water to its member public agencies and obtains its supplies from two primary sources: the Colorado River, via the Colorado River Aqueduct (CRA), which it owns and operates, and Northern California, via the State Water Project (SWP). The 2005 RUWMP documents the availability of these existing supplies and additional supplies necessary to meet future demands.

6.1.1.1 Metropolitan Supplies

Metropolitan's Integrated Resources Plan (IRP) identifies a mix of resources (imported and local) that, when implemented, will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, State Water Project supplies, Colorado River supplies, groundwater banking, and water transfers. The 2010 update to the IRP (2010 IRP Update) includes a planning buffer supply intended to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not under or over-developing supplies. Managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate supplies to meet future demands.

In November 2005, Metropolitan adopted its 2005 RUWMP in accordance with state law. The resource targets included in the preceding 2004 IRP Update serve as the foundation for the planning assumptions used in the 2005 RUWMP. Metropolitan's 2005 RUWMP contains a water supply reliability assessment that includes a detailed evaluation of the supplies necessary to meet demands over a 25-year period in average, single dry year, and multiple dry year periods. As part of this process, Metropolitan also uses the current SANDAG regional growth forecast in calculating regional water demands for the Water Authority's service area. As stated in Metropolitan's 2005 RUWMP, that plan may be used as a source document for meeting the requirements of SB 610 and SB 221 until the next scheduled update is completed in 2010. The 2005 RUWMP includes a "Justifications for Supply Projections" in Appendix

A.3, that provides detailed documentation of the planning, legal, financial, and regulatory basis for including each source of supply in the plan. A copy of Metropolitan's 2005 RUWMP can be found on the World Wide Web at the following site address: www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2005.pdf.

SANDAG has included the increase in density from this project in their latest Series 12 Update. Now that Metropolitan has update their IRP, both Metropolitan and the Water Authority will be updating their UWMPs. The UWMP for both Metropolitan and the Water Authority will include the increase in demand projections included in SANDAG's Series 12 Update and from the projections from Otay WD 2009 WRMP updated November, 2010.

Water supply agencies throughout California continue to face climatological, environmental, legal, and other challenges that impact water source supply conditions, such as the court rulings regarding the Sacramento-San Joaquin Delta and the current western states drought conditions. Challenges such as these essentially always will be present. The regional water supply agencies, the Water Authority and Metropolitan, along with Otay WD nevertheless fully intend to have sufficient, reliable supplies to serve demands.

6.1.1.2 Pipeline 6

Metropolitan completed its System Overview Study (SOS) in fall 2005. The SOS determines if Metropolitan's current system is capable of delivering the supplies to meet the demands shown in its 2004 IRP Update.

Pipeline 6 is included in the SOS as an untreated water pipeline to deliver additional Metropolitan supplies to the San Diego County region. The addition of Pipeline 6 would allow the Water Authority and Metropolitan to convert one of the existing untreated water pipelines to a treated water pipeline. With the conversion, the capacity to import both treated and untreated water would increase significantly, thereby enabling Metropolitan to increase both treated and untreated imported water delivery capacity to the San Diego County region.

Based on current planning assumptions of the Water Authority and Metropolitan, new imported supplies delivered though Pipeline 6 would be required no earlier than 2018, absent development of new supplies from seawater desalination or some combination of new local supplies, totaling 56,000 ac-ft/yr (see Section 6.2.1 below). With development of 56,000 ac-ft/yr, Pipeline 6 would not be needed until 2023. Based on a nine-year lead time requested by Metropolitan, a decision to proceed with Pipeline 6 would need to be communicated to Metropolitan by 2014. Activities associated with implementation of Pipeline 6 include the following:

- Coordination between Metropolitan and the Water Authority regarding planning and design of Pipeline 6 is ongoing.

- An alignment for the entire approximately 30-mile pipeline was identified in the original 1993 Environmental Impact Report. Metropolitan is conducting a feasibility study to revisit the 1993 alignment and evaluate alternative alignments north of the San Luis Rey River in light of changed conditions since 1993. The Water Authority plans to conduct a similar feasibility study of Pipeline 6 alignments south of the San Luis Rey River. Based on these updated feasibility studies, an updated environmental analysis for the project is also planned.

6.1.2 Metropolitan Capital Investment Plan

As part of Metropolitan's annual budget approval process, a Capital Investment Plan is prepared. The cost, purpose, justification, status, progress, etc. of Metropolitan's infrastructure projects to deliver existing and future supplies are documented in the Capital Investment Plan. The financing of these projects is addressed as part of the annual budget approval process.

Metropolitan's Capital Investment Plan includes a series of projects identified from Metropolitan studies of projected water needs, which, when considered along with operational demands on aging facilities and new water quality regulations, identify the capital projects needed to maintain infrastructure reliability and water quality standards, improve efficiency, and provide future cost savings. All projects within the Capital Investment Plan are evaluated against an objective set of criteria to ensure they are aligned with the Metropolitan's goals of supply reliability and quality.

6.2 San Diego County Water Authority Regional Water Supplies

The Water Authority has adopted plans and is taking specific actions to develop adequate water supplies to help meet existing and future water demands within the San Diego region. This section contains details on the supplies being developed by the Water Authority. A summary of recent actions pertaining to development of these supplies includes:

- In accordance with the Urban Water Management Planning Act, the Water Authority adopted their 2005 UWMP in November 2005 and updated the 2005 UWMP in April 2007 that identifies a diverse mix of local and imported water supplies to meet future demands. A copy of the updated Water Authority 2005 UWMP can be found on the World Wide Web at www.sdcwa.org.

- Deliveries of conserved agricultural water from the Imperial Irrigation District (IID) to San Diego County have increased annually since 2003, with 70,000 ac-ft of deliveries in Fiscal Year (FY) 2010.

- As part of the October 2003 Quantification Settlement Agreement (QSA), the Water Authority was assigned Metropolitan's rights to 77,700 ac-ft/yr of conserved water from

the All-American Canal (AAC) and Coachella Canal (CC) lining projects. The Water Authority has begun implementation of these projects, with the CC project now complete and deliveries being made to the San Diego County region.

Through implementation of the Water Authority and member agency planned supply projects, along with reliable imported water supplies from Metropolitan, the region anticipates having adequate supplies to meet existing and future water demands.

To ensure sufficient supplies to meet projected growth in the San Diego region, the Water Authority uses the SANDAG most recent regional growth forecast in calculating regional water demands. The SANDAG regional growth forecast is based on the plans and policies of the land-use jurisdictions with San Diego County. The existing and future demands of the member agencies are included in the Water Authority's projections.

6.2.1 Availability of Sufficient Supplies and Plans for Acquiring Additional Supplies

The Water Authority currently obtains imported supplies from Metropolitan, conserved water from the CC lining project, and an increasing amount of conserved agricultural water from IID. Of the twenty-seven member agencies that purchase water supplies from Metropolitan, the Water Authority is Metropolitan's largest customer. In FY 2006, the Water Authority purchased 577,944 ac-ft from Metropolitan, an increase of approximately 4,000 ac-ft over the FY 2005 amount.

Section 135 of Metropolitan's Act defines the preferential right to water for each of its member agencies. As calculated by Metropolitan, the Water Authority's FY 2006 preferential right is 16.46% of Metropolitan's supply, while the Water Authority accounted for approximately 25% of Metropolitan's water sales. Under preferential rights, Metropolitan could allocate water without regard to historic water purchases or dependence on Metropolitan. The Water Authority and its member agencies are taking measures to reduce dependence on Metropolitan through development of additional supplies and a water supply portfolio that would not be jeopardized by a preferential rights allocation. Metropolitan has stated, consistent with Section 4202 of its Administrative Code that it is prepared to provide the Water Authority's service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. When and as additional water resources are required to meet increasing needs, Metropolitan stated it will be prepared to deliver such supplies. In Section II.4 of their 2005 RUWMP, Metropolitan states that through effective management of its water supply, they fully expect to be 100 percent reliable in meeting all non-discounted non-interruptible demands throughout the next twenty-five years.

The Water Authority has made large investments in Metropolitan's facilities and will continue to include imported supplies from Metropolitan in the future resource mix. As discussed in the Water Authority's 2005 UWMP, the Water Authority and its member agencies are planning to diversify the San Diego regions supply portfolio and reduce purchases from Metropolitan.

As part of the Water Authority's diversification efforts, the Water Authority is now taking delivery of conserved agricultural water from IID and water saved from the CC lining project. The Water Authority is currently implementing the AAC lining projects. Table 6 summarizes the planned yields from these supply projects, with detailed information included in the sections to follow. Deliveries from Metropolitan are also included in Table 6, which is further discussed in Section 6.1 above. The Water Authority's member agencies provided the verifiable local supply targets for groundwater, groundwater recovery, recycled water, and surface water, which are discussed in more detail in Section 5 of the Water Authority's 2005 UWMP.

Table 6
Projected Verifiable Water Supplies – Water Authority Service Area
Normal Year (acre feet)

Water Supply Sources	2010	2015	2020	2025	2030
Water Authority Supplies					
Metropolitan Supplies	445,858	399,855	331,374	342,870	372,922
Water Authority/IID Transfer	70,000	100,000	190,000	200,000	200,000
AAC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Member Agency Supplies					
Local Surface Water	59,649	59,649	59,649	59,649	59,649
Recycled Water	33,668	40,662	45,548	46,492	47,584
Seawater Desalination	0	34,689	36,064	37,754	40,000
Groundwater	17,175	18,945	19,775	19,775	19,775
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Total Projected Supplies	715,450	742,900	771,510	795,640	829,030

Source: The Water Authority 2005 Urban Water Management Plan.

Section 5 of the Water Authority's 2005 UWMP also includes a discussion on the local supply target for seawater desalination. Seawater desalination supplies represent a significant future local resource in the Water Authority's service area. Poseidon Resources is pursuing the development of a local, privately owned desalination project located adjacent to the Encina Power Station. As of June 2007, Poseidon has contracted with the Carlsbad Municipal Water District (MWD) (up to 28,000 ac-ft/yr depending on demands), Valley Center MWD (7,500 ac-ft/yr), Rincon Del Diablo MWD (4,000 ac-ft/yr), and Sweetwater Authority (2,400 ac-ft/yr) to supply up to 41,900 ac-ft/yr of desalinated seawater. The verifiable seawater desalination figure is based on the contract amounts and projected seawater desalination deliveries to Carlsbad MWD. As shown in Table 6, the verifiable projected local seawater desalination supplies vary each year based on the Carlsbad MWD demands (which are less than their desalinated seawater contract amount of 28,000 ac-ft/yr). There are several contingencies related to Poseidon's agreements with these member agencies and the Water Authority that must be satisfied before implementation of the project and its ultimate yield can be determined. These contingencies include obtaining legal entitlements for construction

of the project, determination of mutually acceptable delivery interconnection points and delivery charge, and engagement of a third party exchange agency partner where physical delivery to the contracting agency is not practical. The Water Authority is negotiating specific elements for a water purchase agreement with Poseidon which include water purchase price, allocation of risk and options to eventually purchase the project's pipeline and the entire desalination plant. This agreement will supersede the contracts Poseidon has negotiated with the four Districts. Before negotiations begin on a final agreement, Poseidon must secure sufficient financial commitments from private investors to meet requirements for fully funding project construction. In addition, Poseidon must execute all agreements for construction and operation of the project and finalize the documents needed to finance the project in the bond market.

The Water Authority's existing and planned supplies from the IID transfer and canal lining projects are considered "drought-proof" supplies and should be available at the yields shown in Table 6 in normal, single dry, and multi dry year scenarios. For dry year yields from Metropolitan supplies, refer to Metropolitan's 2005 RUWMP, discussed in Section 6.1 above.

As part of preparation of a written water supply assessment and/or verification report, an agency's shortage contingency analysis should be considered in determining sufficiency of supply. Section 9 of the Water Authority's 2005 UWMP contains a detailed shortage contingency analysis that addresses a regional catastrophic shortage situation and drought management. The analysis demonstrates that the Water Authority and its member agencies, through the Emergency Response Plan, Emergency Storage Project, and Drought Management Plan (DMP) are taking actions to prepare for and appropriately handle an interruption of water supplies. The DMP, completed in May 2006, provides the Water Authority and its member agencies with a series of potential actions to take when faced with a shortage of imported water supplies from Metropolitan due to prolonged drought or other supply shortfall conditions. The actions will help the region avoid or minimize the impacts of shortages and ensure an equitable allocation of supplies.

6.2.1.1 Water Authority-Imperial Irrigation District Water Conservation and Transfer Agreement

The QSA was signed in October 2003, and resolves long-standing disputes regarding priority and use of Colorado River water and creates a baseline for implementing water transfers. With approval of the QSA, the Water Authority and IID were able to implement their Water Conservation and Transfer Agreement. This agreement not only provides reliability for the San Diego region, but also assists California in reducing its use of Colorado River water to its legal allocation.

On April 29, 1998, the Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority-IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by

Imperial Valley farmers who voluntarily participate in the program and then transferred to the Water Authority for use in San Diego County.

Implementation Status

On October 10, 2003, the Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified certain aspects of the 1998 Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water transfer, and related agreements. The lawsuits have been coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and State are defending these suits and coordinating to seek validation of the contracts. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation and current progress, please contact the Water Authority's General Counsel.

Expected Supply

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 ac-ft. The Water Authority received 20,000 ac-ft in 2004, 30,000 in 2005, and 40,000 in 2006. The quantities will increase annually to 200,000 ac-ft by 2021 then remain fixed for the duration of the Transfer Agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

During dry years, when water availability is low, the conserved water will be transferred under the IID Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks. In recognition for the value of such reliability, the 1998 contract required the Water Authority to pay a premium on transfer water under defined regional shortage circumstances. The shortage premium period duration is the period of consecutive days during which any of the following exist: 1) a Water Authority shortage; 2) a shortage condition for the Lower Colorado River as declared by the Secretary; and 3) a Critical Year. Under terms of the October 2003 amendment, the shortage premium will not be included in the cost formula until Agreement Year 16.

Transportation

The Water Authority entered into a water exchange agreement with Metropolitan on October 10, 2003, to transport the Water Authority-IID transfer water from the Colorado River to San Diego County. Under the exchange agreement, Metropolitan will take delivery of the transfer water through its Colorado River Aqueduct. In exchange, Metropolitan will deliver to the Water Authority a like quantity and quality of water. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. According to the water exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority elects to extend the agreement another 10 years for a total of 45 years.

Cost/Financing

The costs associated with the transfer are proposed to be financed through the Water Authority's rates and charges. In the agreement between the Water Authority and IID, the price for the transfer water started at $258 per acre-foot and increases by a set amount for the first five years. The 2005 price for transfer water is $276 per acre-foot. Procedures are in place to evaluate and determine market-based rates following the first five-year period.

In accordance with the October 2003 amended exchange agreement between Metropolitan and the Water Authority, the initial cost to transport the conserved water was $253 per acre-foot. Thereafter, the price would be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable laws and regulation, and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies. The transportation charge in 2005 was $258 per acre-foot.

The Water Authority is providing $10 million to help offset potential socioeconomic impacts associated with temporary land fallowing. IID will credit the Water Authority for these funds during years 16 through 45. At the end of the fifth year of the transfer agreement (2007), the Water Authority will prepay IID an additional $10 million for future deliveries of water. IID will credit the Water Authority for this up-front payment during years 16 through 30.

As part of implementation of the QSA and water transfer, the Water Authority also entered into an environmental cost sharing agreement. The agreement specifies that the Water Authority will contribute $64 million for the purpose of funding environmental mitigation costs and contributing to the Salton Sea Restoration Fund.

Written Contracts or Other Proof

The supply and costs associated with the transfer are based primarily on the following documents:

Agreement for Transfer of Conserved Water by and between IID and the Water Authority (April 29, 1998). This Agreement provides for a market-based transaction in which the Water Authority would pay IID a unit price for agricultural water conserved by IID and transferred to the Water Authority.

Revised Fourth Amendment to Agreement between IID and the Water Authority for Transfer of Conserved Water (October 10, 2003). Consistent with the executed Quantification Settlement Agreement (QSA) and related agreements, the amendments restructure the agreement and modify it to minimize the environmental impacts of the transfer of conserved water to the Water Authority.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the transfer water to the Water Authority.

Environmental Cost Sharing, Funding, and Habitat Conservation Plan Development Agreement among IID, Coachella Valley Water District (CVWD), and Water Authority (October 10, 2003). This Agreement provides for the specified allocation of QSA-related environmental review, mitigation, and litigation costs for the term of the QSA, and for development of a Habitat Conservation Plan.

Quantification Settlement Agreement Joint Powers Authority Creation and Funding Agreement (October 10, 2003). The purpose of this agreement is to create and fund the QSA Joint Powers Authority and to establish the limits of the funding obligation of CVWD, IID, and Water Authority for environmental mitigation and Salton Sea restoration pursuant to SB 654 (Machado).

Federal, State, and Local Permits/Approvals

Federal Endangered Species Act Permit. The U.S. Fish and Wildlife Service (USFWS) issued a Biological Opinion on January 12, 2001, that provides incidental take authorization and certain measures required to offset species impacts on the Colorado River regarding such actions.

State Water Resources Control Board (SWRCB) Petition. SWRCB adopted Water Rights Order 2002-0016 concerning IID and Water Authority's amended joint petition for approval of a long-term transfer of conserved water from IID to the Water Authority and to change the point of diversion, place of use, and purpose of use under Permit 7643.

Environmental Impact Report (EIR) for Conservation and Transfer Agreement. As lead agency, IID certified the Final EIR for the Conservation and Transfer Agreement on June 28, 2002.

U. S. Fish and Wildlife Service Draft Biological Opinion and Incidental Take Statement on the Bureau of Reclamation's Voluntary Fish and Wildlife Conservation Measures and Associated

Conservation Agreements with the California Water Agencies (12/18/02). The U. S. Fish and Wildlife Service issued the biological opinion/incidental take statement for water transfer activities involving the Bureau of Reclamation and associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

Addendum to EIR for Conservation and Transfer Agreement. IID as lead agency and Water Authority as responsible agency approved addendum to EIR in October 2003.
Environmental Impact Statement (EIS) for Conservation and Transfer Agreement. Bureau of Reclamation issued a Record of Decision on the EIS in October 2003.

CA Department of Fish and Game California Endangered Species Act Incidental Take Permit #2081-2003-024-006). The California Department of Fish and Game issued this permit (10/22/04) for potential take effects on state-listed/fully protected species associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

California Endangered Species Act (CESA) Permit. A CESA permit was issued by California Department of Fish and Game (CDFG) on April 4, 2005, providing incidental take authorization for potential species impacts on the Colorado River.

6.2.1.2 All-American Canal and Coachella Canal Lining Projects

As part of the QSA and related contracts, the Water Authority was assigned Metropolitan's rights to 77,700 ac-ft/yr of conserved water from projects that will line the All-American Canal (AAC) and Coachella Canal (CC). The projects will reduce the loss of water that currently occurs through seepage, and the conserved water will be delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million acre-feet over the 110-year life of the agreement.

Implementation Status

Earthwork for the Coachella Canal lining project began in November 2004 and involves approximately 37 miles of canal. National Environmental Policy Act (NEPA) and CEQA documentation is complete, including an amended Record of Decision by the U.S. Bureau of Reclamation (USBR). The amendment was required after revising the project design: instead of lining the canal in place, the project entailed the construction of a parallel canal. The project was completed in 2006, and deliveries of conserved water started in 2007.

The lining project consists of constructing a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3. NEPA and CEQA documentation is complete, environmental mitigation measures have been identified, and Endangered Species Act consultations are pending. Construction of the project began in 2007 and was completed earlier this year.

In July 2005, a lawsuit (*CDEM v United States,* Case No. CV-S-05-0870-KJD-PAL) was filed in the U. S. District Court for the District of Nevada on behalf of U.S. and Mexican groups challenging the lining of the AAC. The lawsuit, which names the Secretary of the Interior as a defendant, claims that seepage water from the canal belongs to water users in Mexico. California water agencies note that the seepage water is actually part of California's Colorado River allocation and not part of Mexico's allocation. The plaintiffs also allege a failure by the United States to comply with environmental laws. Federal officials have stated that they intend to vigorously defend the case.

Expected Supply

The AAC lining project will yield 67,700 acre-feet per year of Colorado River water for allocation upon completion of construction. The CC lining project will yield 26,000 acre-feet of Colorado River water each year available for allocation upon completion of construction. The October 10, 2003, Allocation Agreement states that 16,000 acre-feet per year of conserved CC lining water will be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 10,000 acre-feet per year from the CC lining conserved water plus the 67,700 acre-feet per year AAC lining conserved water totaling 77,700 acre-feet per year, will be available to the Water Authority. According to the Allocation Agreement, IID has call rights to a portion (5,000 acre-feet per year) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

Transportation

The October 10, 2003, Exchange Agreement between the Water Authority and Metropolitan also provides for the delivery of the conserved water from the canal lining projects. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. In the Agreement, Metropolitan will deliver the canal lining water for the term of the Allocation Agreement (110 years).

Cost/Financing

Under California Water Code Section 12560 et seq., the Water Authority will receive $200 million in state funds for construction of the projects. In addition, under California Water Code Section 79567, $20 million from Proposition 50 is also available for the lining projects. Additionally, the Water Authority will receive $35 million for groundwater conjunctive use projects as part of the agreement. The Water Authority would be responsible for additional expenses above the funds provided by the state.

The rate to be paid to transport the canal lining water will be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable law and regulation and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies.

In accordance with the Allocation Agreement, the Water Authority will also be responsible for a portion of the net additional Operation, Maintenance, and Repair (OM&R) costs for the lined canals. Any costs associated with the lining projects as proposed, are to be financed through the Water Authority's rates and charges.

Written Contracts or Other Proof

The expected supply and costs associated with the lining projects are based primarily on the following documents:

U.S. Public Law 100-675 (1988). Authorized the Department of the Interior to reduce seepage from the existing earthen AAC and CC. The law provides that conserved water will be made available to specified California contracting water agencies according to established priorities.

California Department of Water Resources - Metropolitan Funding Agreement (2001). Reimburse Metropolitan for project work necessary to construct the lining of the CC in an amount not to exceed $74 million. Modified by First Amendment (2004) to replace Metropolitan with the Authority. Modified by Second Amendment (2004) to increase funding amount to $83.65 million, with addition of funds from Proposition 50.

California Department of Water Resources - IID Funding Agreement (2001). Reimburse IID for project work necessary to construct a lined AAC in an amount not to exceed $126 million.

Metropolitan - CVWD Assignment and Delegation of Design Obligations Agreement (2002). Assigns design of the CC lining project to CVWD.

Metropolitan - CVWD Financial Arrangements Agreement for Design Obligations (2002). Obligates Metropolitan to advance funds to CVWD to cover costs for CC lining project design and CVWD to invoice Metropolitan to permit the Department of Water Resources to be billed for work completed.

Allocation Agreement among the United States of America, The Metropolitan Water District of Southern California, Coachella Valley Water District, Imperial Irrigation District, San Diego County Water Authority, the La Jolla, Pala, Pauma, Rincon, and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido, and Vista Irrigation District (October 10, 2003). This agreement includes assignment of Metropolitan's rights and interest in delivery of 77,700 acre-feet of Colorado River water previously intended to be delivered to Metropolitan to the Water Authority. Allocates water from the AAC and CC lining projects for at least 110 years to the Water Authority, the San Luis Rey Indian Water Rights Settlement Parties, and IID, if it exercises its call rights.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the conserved canal lining water to the Water Authority.

Agreement between Metropolitan and Water Authority regarding Assignment of Agreements related to the AAC and CC Lining Projects. This agreement was executed in April 2004 and assigns Metropolitan's rights to the Water Authority for agreements that had been executed to facilitate funding and construction of the AAC and CC lining projects:
Assignment and Delegation of Construction Obligations for the Coachella Canal Lining Project under the Department of Water Resources Funding Agreement No. 4600001474 from the San Diego County Water Authority to the Coachella Valley Water District, dated September 8, 2004.

Agreement Regarding the Financial Arrangements between the San Diego County Water Authority and Coachella Valley Water District for the Construction Obligations for the Coachella Canal Lining Project, dated September 8, 2004.

Agreement No. 04-XX-30-W0429 Among the United States Bureau of Reclamation, the Coachella Valley Water District, and the San Diego County Water Authority for the Construction of the Coachella Canal Lining Project Pursuant to Title II of Public Law 100-675, dated October 19, 2004.

California Water Code Section 12560 et seq. This Water Code Section provides for $200 million to be appropriated to the Department of Water Resources to help fund the canal lining projects in furtherance of implementing California's Colorado River Water Use Plan.

California Water Code Section 79567. This Water Code Section identifies $20 million as available for appropriation by the California Legislature from the Water Security, Clean Drinking Water, Coastal, and Beach Protection Fund of 2002 (Proposition 50) to DWR for grants for canal lining and related projects necessary to reduce Colorado River water use. According to the Allocation Agreement, it is the intention of the agencies that those funds will be available for use by the Water Authority, IID, or CVWD for the AAC and CC lining projects.

California Public Resources Code Section 75050(b)(1). This section identifies up to $36 million as available for water conservation projects that implement the Allocation Agreement as defined in the Quantification Settlement Agreement.

Federal, State, and Local Permits/Approvals

AAC Lining Project Final EIS/EIR (March 1994). A final EIR/EIS analyzing the potential impacts of lining the AAC was completed by the Bureau of Reclamation (Reclamation) in March 1994. A Record of Decision was signed by Reclamation in July 1994, implementing the preferred alternative for lining the AAC. A re-examination and analysis of these environmental

compliance documents by Reclamation in November 1999 determined that these documents continued to meet the requirements of the NEPA and the CEQA and would be valid in the future.

CC Lining Project Final EIS/EIR (April 2001). The final EIR/EIS for the CC lining project was completed in 2001. Reclamation signed the Record of Decision in April 2002. An amended Record of Decision has also been signed to take into account revisions to the project description.

Mitigation, Monitoring, and Reporting Program for Coachella Canal Lining Project, SCH #1990020408; prepared by Coachella Valley Water District, May 16, 2001.

Environmental Commitment Plan for the Coachella Canal Lining Project, approved by the US Bureau of Reclamation (Boulder City, NV) on March 4, 2003.

Environmental Commitment Plan and Addendum to the All-American Canal Lining Project EIS/EIR California State Clearinghouse Number SCH 90010472 (June 2004, prepared by IID).

Addendum to Final EIS/EIR and Amendment to Environmental Commitment Plan for the All-American Canal Lining Project (approved June 27, 2006, by IID Board of Directors).

6.2.2 Water Authority Capital Improvement Program and Financial Information

The Water Authority's capital improvement program (CIP) budget document includes a description of each of the projects and programs being implemented to ensure existing and future facilities are adequate to deliver water supplies throughout the region. The project costs, along with information on the activities that need to be completed, are included in the CIP document. The Water Authority's Master Plan identifies future facilities and other improvements to the Water Authority's system that are necessary to maintain reliability throughout the region. A programmatic environmental impact report was certified by the Water Authority Board of Directors for the Master Plan in November 2003. Projects identified in the Master Plan will be included in the CIP based on Water Authority Board of Directors' approval. Information on the Water Authority's most recent CIP can be found on the World Wide Web at www.sdcwa.org/infra/cip.phtml.

One of the highest priority projects identified in the Master Plan is the development of additional treatment capacity within the region. During recent summers, the Water Authority experienced peak-demand conditions that have exceeded the region's rated treatment capacity. The Master Plan recommended development of an additional 50 mgd of treatment capacity immediately and another 50 mgd capacity by 2010. In response to this recommendation, the Water Authority board of directors in September 2005, approved construction of a 100 mgd water treatment plant. The water treatment plant was completed and placed into operation in 2008.

The Master Plan also identified carryover storage as a way to improve water supply reliability for the region. The Water Authority identified the three main benefits of carryover storage as: 1) enhance water supply reliability by providing a reliable and readily available source of water during periods of potential shortage, such as during dry years; 2) increase system efficiency by providing operational flexibility to serve above normal demands, such as those occurring in dry years, from storage rather than by the over-sizing of the Water Authority's imported water transmission facilities; and 3) better management of water supplies to allow the Water Authority to accept additional imported deliveries during periods of availability, such as during wet years, to ensure water availability during dry years. The Water Authority prepared an EIR/EIS for a carryover storage project, with the preferred alternative being an expansion of the San Vicente Reservoir.

The Water Authority Board of Directors is provided a semi-annual and annual report on the status of development of the CIP projects. As described in the Water Authority's biennial budget, a combination of long and short term debt and cash (pay-as-you-go) will provide funding for capital improvements. Additional information is included in the Water Authority's biennial budget, which also contains selected financial information and summarizes the Water Authority's investment policy.

6.3 Otay Water District

The Otay WD 2009 Water Resources Master Plan updated November, 2010 and revised 2005 Urban Water Management Plan contain comparisons of projected supply and demands through the year 2030. Projected potable water resources to meet planned demands as documented were planned to be supplied entirely with imported water received from the Water Authority. Recycled water resources to meet projected demands are planned to be supplied from local wastewater treatment plants. The Otay WD currently has no local supply of raw water, potable water, or groundwater resources.

The development and/or acquisition of potential groundwater, recycled water market expansion, and seawater desalination supplies by the Otay WD have evolved and are planned to occur in response to the regional water supply issues. These water supply projects are in addition to those identified as sustainable supplies in the current Water Authority and Metropolitan UWMP, IRP, Master Plans, and other planning documents. These new additional water supply projects are not currently developed and are in various stages of the planning process. These local and regional water supply projects will allow for less reliance upon imported water and are considered a new water supply resource for the Otay WD.

The Otay WD expansion of the market areas for the use of recycled water within the watersheds upstream of the Sweetwater Reservoir, Otay Mesa, and the Lower Otay Reservoir will increase recycled water use and thus require less dependence on imported water for irrigation purposes.

The supply forecasts contained within this WSA&V Report do consider development and/or acquisition of potential groundwater, recycled water market expansion, and seawater desalination supplies by the Otay WD.

6.3.1 Availability of Sufficient Supplies and Plans for Acquiring Additional Supplies

The availability of sufficient potable water supplies and plans for acquiring additional potable water supplies to serve existing and future demands of the Otay WD is founded upon the preceding discussions regarding Metropolitan's and the Water Authority's water supply resources and water supplies to be acquired by the Otay WD. Historic imported water deliveries from the Water Authority to Otay WD and recycled water deliveries from the Otay WD Ralph W. Chapman Water Reclamation Facility (RWCWRF) are shown in Table 7. Since the year 2000 through mid May 2007, recycled water demand has exceeded the recycled water supply capability typically in the summer months. The RWCWRF is limited to a maximum production of about 1,300 ac-ft/yr. The recycled water supply shortfall had been met by supplementing with potable water into the recycled water storage system as needed by adding potable water supplied by the Water Authority. On May 18, 2007 an additional source of recycled water supply from the City of San Diego's South Bay Water Reclamation Plant (SBWRP) became available. The supply of recycled water from the SBWRP is a result of essentially completing construction and commencement of operations of the transmission, storage, and pump station systems necessary to link the SBWRP recycled water supply source to the existing Otay WD recycled water system.

Table 7
Historic Imported and Local Water Supplies
Otay Water District

Calendar Year	Imported Water (acre-feet)	Recycled Water (acre-feet)	Total (acre-feet)
1980	12,558	0	12,558
1985	14,529	0	14,529
1990	23,200	0	23,200
1995	20,922	614	21,536
2000	30,936	948	31,884
2005	40,322	1,227	41,549
2009	37,566	4,533	42,099

Source: Otay WD operational records.

6.3.1.1 Imported and Regional Supplies

The availability of sufficient imported and regional potable water supplies to serve existing and planned uses within Otay WD is demonstrated in the above discussion on Metropolitan and the Water Authority's water supply reliability. The County Water Authority Act, Section 5 subdivision 11, states that the Water Authority "as far as practicable, shall provide each of

its member agencies with adequate supplies of water to meet their expanding and increasing needs." The Water Authority provides between 75 to 95 percent of the total supplies used by its 24 member agencies, depending on local weather and supply conditions. In calendar year 2009 the supply to Otay WD was 37,566 ac-ft of supply from the Water Authority. An additional 4,533 ac-ft of recycled water from the City of San Diego and from the District's Ralph W. Chapman Water Reclamation Facility. The demand for potable water within the Otay WD is expected to increase to about 72,900 ac-ft by 2025 as per the Otay WD 2005 UWMP. These figures take into account the amount of local supply (i.e. groundwater, conservation, recycling, etc.) that is expected to meet demands within Otay WD service area.

Potable Water System Facilities

The Otay WD continues to pursue diversification of its water supply resources to increase reliability and flexibility. The Otay WD also continues to plan, design, and construct potable water system facilities to obtain these supplies and to distribute potable water to meet customer demands. The Otay WD has successfully negotiated two water supply diversification agreements that enhance reliability and flexibility, which are briefly described as follows.

- The Otay WD entered into an agreement with the City of San Diego, known as the Otay Water Treatment Plant (WTP) Agreement. The Otay WTP Agreement provides for raw water purchase from the Water Authority and treatment by the City of San Diego at their Otay WTP for delivery to Otay WD. The supply system link to implement the Otay WTP Agreement to access the regions raw water supply system and the local water treatment plant became fully operational in August 2005. This supply link consists of the typical storage, transmission, pumping, flow measurement, and appurtenances to receive and transport the treated water to the Otay WD system. The City of San Diego obligation to supply 10 mgd of treated water under the Otay WTP Agreement is contingent upon there being available 10 mgd of surplus treatment capacity in the Otay WTP until such time as Otay WD pays the City of San Diego to expand the Otay WTP to meet the Otay WD future needs. In the event that the City of San Diego's surplus is projected to be less than 10 mgd the City of San Diego will consider and not unreasonably refuse the expansion of the Otay WTP to meet the Otay WD future needs. The Otay WTP existing rated capacity is 40 mgd with an actual effective capacity of approximately 34 mgd. The City of San Diego's typical demand for treated water from the Otay WTP is approximately 20 mgd. It is at the City of San Diego's discretion to utilize either imported raw water delivered by the Water Authority Pipeline No. 3 or local water stored in Lower Otay Reservoir for treatment to supply the Otay WD demand.

- The Otay WD entered into an agreement with the Water Authority, known as the East County Regional Treated Water Improvement Program (ECRTWIP Agreement). The ECRTWIP Agreement provides for transmission of raw water to the Helix WD R. M. Levy WTP for treatment and delivery to Otay WD. The supply system link to implement the ECRTWIP Agreement is complete allowing access to the regions raw water supply

system and the local water treatment plant. This supply link consists of the typical transmission, pumping, storage, flow control, and appurtenances to receive and transport the potable water from the R. M. Levy WTP to Otay WD. The Otay WD is required to take a minimum of 10,000 ac-ft/yr of treated water from the R.M. Levy WTP supplied from the regions raw water system.

Cost and Financing

The capital improvement costs associated with water supply and delivery are financed through the Otay WD water meter capacity fee, New Water Supply Fee, and user rate structures. The Otay WD potable water sales revenue are used to pay for the wholesale cost of the treated water supply and the operating and maintenance expenses of the potable water system facilities.

Written Agreements, Contracts, or Other Proof

The supply and cost associated with deliveries of treated water from the Otay WTP and the R.M. Levy WTP is based on the following documents.

Agreement for the Purchase of Treated Water from the Otay Water Treatment Plant between the City of San Diego and the Otay Water District. The Otay WD entered into an agreement dated January 11, 1999 with the City of San Diego that provides for 10 mgd of surplus treated water to the Otay WD from the existing Otay WTP capacity. The agreement allows for the purchase of treated water on an as available basis from the Otay WTP. The Otay WD pays the Water Authority at the prevailing raw water rate for raw water and pays the City of San Diego at a rate equal to the actual cost of treatment to potable water standards.

Agreement between the San Diego County Water Authority and Otay Water District Regarding Implementation of the East County Regional Treated Water Improvement Program. The ECRTWIP Agreement requires the purchase of at least 10,000 ac-ft per year of potable water from the Helix WD R.M. Levy WTP at the prevailing Water Authority treated water rate. The ECRTWIP Agreement is dated April 27, 2006.

Agreement between the San Diego County Water Authority and Otay Water District for Design, Construction, Operation, and Maintenance of the Otay 14 Flow Control Facility Modification. The Otay WD entered into the Otay 14 Flow Control Facility Modification Agreement dated January 24, 2007 with the Water Authority to increase the physical capacity of the Otay 14 Flow Control Facility. The Water Authority and Otay WD to 50% share the capital cost to expand its capacity from 8 mgd to 16 mgd.

Federal, State, and Local Permits/Approvals

The Otay WD acquired all the permits for the construction of the pipeline and pump station associated with the Otay WTP supply source and for the 640-1 and 640-2 water storage

reservoirs project associated with the ECRTWIP Agreement through the typical planning, environmental approval, design, and construction processes.

The transmission main project constructed about 26,000 feet of a 36-inch diameter steel pipeline from the Otay 14 Flow Control Facility to the 640-1 and 640-2 Reservoirs project. The Otay 14 Flow Control Facility modification increased the capacity of the existing systems from 8 mgd to 16 mgd. CEQA documentation is complete for both projects. Construction of both of these projects was completed October 2010.

The City of San Diego and the Helix Water District are required to meet all applicable federal, state, and local health and water quality requirements for the potable water produced at the Otay WTP and the R.M. Levy WTP respectively.

6.3.1.2 Recycled Water Supplies

Wastewater collection, treatment, and disposal services provided by the Otay WD is limited to a relatively small area within what is known as the Jamacha Basin, located within the Middle Sweetwater River Basin watershed upstream of the Sweetwater Reservoir and downstream of Loveland Reservoir. Water recycling is defined as the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-potable reuse. The Otay WD owns and operates the Ralph W. Chapman Water Reclamation Facility, which produces recycled water treated to a tertiary level for landscape irrigation purposes. The recycled water market area of the Otay WD is located primarily within the eastern area of the City of Chula Vista and on the Otay Mesa. The Otay WD distributes recycled water to a substantial market area that includes but is not limited to the U.S. Olympic Training Center, the EastLake Golf Course, and other development projects.

The Otay WD projects that annual average demands for recycled water will increase to about 6,294 ac-ft/yr by 2025 and are estimated to approach 10,000 ac-ft/yr at ultimate build out. About 1,300 ac-ft/yr of supply is generated by the RWCWRF, with the remainder planned to be supplied to Otay WD by the City of San Diego's SBWRP.

<u>North District Recycled Water Concept</u>

The Otay WD is a recognized leader in the use of recycled water for irrigation and other commercial uses. The Otay WD continues the quest to investigate all viable opportunities to expand the successful recycled water program into areas that are not currently served. One of these areas is in the portion of the service area designated as the North District, located within the Middle Sweetwater River Basin watershed upstream of the Sweetwater River. The close proximity of the recycled water markets in the North District to the Otay WD's source of recycled water, the RWCWRF, means that the distribution system to serve this area could be constructed relatively cost effectively. This makes the North District a logical location for the expansion of the Otay WD's recycled water system and market area.

The purpose of the North District Recycled Water System Development Project, Phase I Concept Study, is to identify the feasibility of using recycled water in the North District and to investigate and assess any limitations or constraints to its use. The Phase I study components of the North District Recycled Water Concept encompassed the preparation of six technical memorandums including the project definition, a discussion of the regulatory process, a discussion of the protection of the watershed that would be affected by recycled water use in the North District, identification of stakeholders, public outreach, and an implementation plan.

Several opportunities that could be realized with the implementation of the use of recycled water in the North District were identified. These include a reduction of demand on the potable water system and maximizing recycled water resources which in turn minimizes treated wastewater discharges to the local ocean outfall. Other opportunities are a possible partnership with Sweetwater Authority to monitor any benefits and impacts of increased recycled water use in the watershed and stakeholder outreach to resolve any water quality concerns and to retain consumer confidence. Also identified were two major constraints associated with the North District Recycled Water System Development Project. One constraint is the water quality objectives for the Middle Sweetwater Basin that will affect the effluent limitations for the recycled water produced at the RWCWRF. At this time, the effluent limit that is of concern is total nitrogen. An examination as to how the treatment process might be modified to enhance nitrogen removal and an action plan is being developed. The other major constraint is the cost of the infrastructure needed to convey and store recycled water in the North District. These costs are estimated to be in the range of $14 to $15 million dollars.

There are two additional phases proposed for the North District Recycled Water System Development Project. Phase II would include further investigation of the issues identified in Phase I as requiring further study. These include stakeholder outreach, regulatory issues, and facility planning. The third phase of the effort would include the facility planning, permitting, environmental compliance, design, and construction of the improvements necessary for delivery of recycled water to the North District markets.

The estimated amount of imported water saved at full implementation of the North District Recycled Water System Development Project is 800 ac-ft/yr. This saved imported water could than be used to offset new potable water demands.

Recycled Water System Facilities

The Otay WD has and continues to construct recycled water storage, pumping, transmission, and distribution facilities to meet projected recycled water market demands. For nearly 20 years, millions of dollars of capital improvements have been constructed. The supply link consisting of a transmission main, storage reservoir, and a pump station to receive and transport the recycled water from the City of San Diego's SBWRP are complete and recycled water deliveries began on May 18, 2007.

Cost and Financing

The capital improvement costs associated with the recycled water supply and distribution systems are financed through the Otay WD water meter capacity fee and user rate structures. The Otay WD recycled water sales revenue, along with Metropolitan and the Water Authority's recycled water sales incentive programs are used to help offset the costs for the wholesale purchase and production of the recycled water supply, the operating and maintenance expenses, and the capital costs of the recycled water system facilities.

Written Agreements, Contracts, or Other Proof

The supply and cost associated with deliveries of recycled water from the SBWRP is based on the following document.

Agreement between the Otay Water District and the City of San Diego for Purchase of Reclaimed Water from the South Bay Water Reclamation Plant. The agreement provides for the purchase of at least 6,721 ac-ft per year of recycled water from the SBWRP at an initial price of $350 per acre-foot. The Otay WD Board of Directors approved the final agreement on June 4, 2003 and the San Diego City Council approved the final agreement on October 20, 2003.

Federal, State, and Local Permits/Approvals

The Otay WD has in place an agreement with Metropolitan for their recycled water sales incentive program for supplies from the RWCWRF and the SBWRP. Also, the Otay WD has in place an agreement with the Water Authority for their recycled water sales incentive program for supplies from the RWCWRF and the SBWRP. The Water Authority sales incentive agreement was approved by Water Authority on July 26, 2007 and by Otay WD on August 1, 2007. All permits for the construction of the recycled water facilities to receive, store, and pump the SBWRP supply have been acquired through the typical planning, environmental approval, design, and construction processes.

The California Regional Water Quality Control Board San Diego Region (RWQCB) "Master Reclamation Permit for Otay Water District Ralph W. Chapman Reclamation Facility" was adopted on May 9, 2007 (Order No. R9-2007-0038). This order establishes master reclamation requirements for the production, distribution, and use of recycled water in the Otay WD service area. The order includes the use of tertiary treated water produced and received from the City of San Diego's SBWRP. Recycled water received from and produced by the SBWRP is regulated by Regional Board Order No. 2000-203 and addenda. The City of San Diego is required to meet all applicable federal, state, and local health and water quality requirements for the recycled water produced at the SBWRP and delivered to Otay WD in conformance with Order No. 2000-203.

6.3.1.3 Potential Groundwater Supplies

The Otay WD 2005 UWMP and the Otay WD March 2007 Integrated Water Resources Plan (2007 IRP) both contain a description of the development of potential groundwater supplies. Over the past several years, Otay WD has studied numerous potential groundwater supply options that have shown, through groundwater monitoring well activities, poor quality water and/or insufficient yield from the basins at a cost effective level. The Otay WD has a few capital improvement program projects to continue the quest to develop potential groundwater resources. Local Otay WD groundwater supply development is currently considered as a viable water supply resource to meet projected demands.

The development and/or acquisition of potential groundwater supply projects by the Otay WD have evolved and have been resurrected in response to the regional water supply issues related to water source supply conditions. Local ground water supply projects will allow for less reliance upon imported water, achieve a level of independence of the regional wholesale water agencies, and diversify the Otay WD's water supply portfolio consistent the Otay WD 2007 IRP.

In recognition of the need to develop sufficient alternative water supplies, the Otay WD has adopted a New Water Supply Fee and is planning to take the next step towards development of production groundwater well projects.

There are four groundwater well projects that the Otay WD is actively pursuing to develop as new local water supplies. They are known as the Middle Sweetwater River Basin Groundwater Well, the Otay Mesa Lot 7 Groundwater Well, the Rancho del Rey Groundwater Well, and the Otay River Groundwater Well Desalination project.

<u>Middle Sweetwater River Basin Groundwater Well</u>

The Middle Sweetwater River Basin Groundwater Well is a new additional water supply project had been thoroughly studied and documented in the 1990's. The Middle Sweetwater River Basin is located within the Sweetwater River watershed and is that reach of the river from Sweetwater Reservoir to the upstream Loveland Reservoir. The next step in development of the Middle Sweetwater River Basin Groundwater Well is the implementation of a pilot well project.

The Otay WD in cooperation with Sweetwater Authority and the Water Authority prepared a water resources audit for the Middle Sweetwater River Groundwater Basin in June 1991. The document was prepared by NBS Lowry and is entitled "Middle Sweetwater River System Study Water Resources Audit". The report was prepared as part of an overall study to

identify and evaluate water management alternatives within the Middle Sweetwater River System (MSRS). The report graphically summarizes water resources data for the MSRS.

The Otay WD in cooperation with Sweetwater Authority and the Water Authority prepared an alternatives evaluation study of the Middle Sweetwater River System Study Water Resources Audit in May 1993. The document was prepared by Michael R. Welch and is entitled "Middle Sweetwater River System Study Alternatives Evaluation". The overall goal of the study was to identify physical projects and/or management strategies which could enhance the availability and quality of surface and ground waters within the MSRS.

The Otay WD prepared potential conjunctive use strategies for the Middle Sweetwater River Basin in September 1994. A report was prepared by Michael R. Welch and is entitled "Middle Sweetwater River Basin Conjunctive Use Alternatives". The report was prepared for the consideration of the Otay WD and Sweetwater Authority. The conceptual level planning information within report identifies and evaluates eight conjunctive use alternatives within the Middle Sweetwater River Basin.

The ultimate objective of the Otay WD is to develop a groundwater well production system within the Middle Sweetwater River Basin capable of producing a sustainable yield of potable water as a local supply.

The purpose of the Middle Sweetwater River Basin Groundwater Well Pilot project is to identify the feasibility of developing a groundwater resource production system and to determine and assess any limitations or constraints that may arise.

The Middle Sweetwater River Basin Groundwater Well Pilot Project scope of work will accomplish six primary goals as follows:

- Update project setting
- Update applicable project alternatives analysis
- Prepare groundwater well pilot project implementation plan
- Construct and test pilot monitoring and extraction wells
- Provide recommendations regarding costs and feasibility to develop a groundwater well production system within the Middle Sweetwater River Basin capable of producing a sustainable yield of potable water
- Prepare groundwater well production project implementation plan and scope of work

The groundwater conjunctive use concept planned to be developed is described as the extraction of the quantity of water from the groundwater basin that was placed there by customers of the Otay WD by means of their use of imported treated water that contributed to the overall volume of groundwater within the basin. This quantity has been estimated to be on the order of 12.5% of the total consumption of the Otay WD customers within that basin as measured by their water meters. In the 1994/1995 time frame 810 ac-ft/yr was the estimated quantity that was placed into the groundwater basin. Currently, that 12.5% quantity could be

on the order of 1,000 ac-ft/yr. The scope of work is planned to address this Phase I concept while further development of the groundwater basin as an additional supply resource is appropriately considered.

Further development of the groundwater basin to enhance the total groundwater production could be accomplished by the Otay WD by means of additional extraction of water from the basin that is placed there by means of either injection and/or spreading basins using imported untreated water as the resource supply (Phase II). The existing La Mesa Sweetwater Extension Pipeline, owned by the Water Authority, once converted to an untreated water deliver system, could be the conveyance system to transport untreated water for this conjunctive use concept.

These two distinct water resource supply conjunctive use concepts will be addressed so they may coexist and to allow for their development as separate phases.

The scope of work to complete Middle Sweetwater River Basin Groundwater Well Pilot Project consists of many major tasks and is to address the groundwater supply concepts outlined above. The detailed scope of work and draft request for proposal has been prepared. It is anticipated that the consultant fee for the entire scope of work, could cost an estimated $2,000,000, which includes a contingency and may take up to two years to complete.

The primary desired outcome of the Middle Sweetwater River Basin Groundwater Well Pilot Project is for an engineering consultant to determine and make recommendations if it is financially prudent and physically feasible to develop a Phase I groundwater well production system within the Middle Sweetwater River Basin capable of producing a sustainable yield of up to 1,500 ac-ft/yr of potable water for the Otay WD. If it is deemed that a Middle Sweetwater River Basin Groundwater Well Production Project is viable then the consultant will develop and provide a groundwater well production project implementation plan and related scope of work.

Otay Mesa Lot 7 Groundwater Well

In early 2001 the Otay WD was approached by a landowner representative about possible interest in purchasing an existing well or alternatively, acquiring groundwater supplied from the well located on Otay Mesa. The landowner, National Enterprises, Inc., reportedly stated that the well could produce 3,200 ac-ft/yr with little or no treatment required prior to introducing the water into the Otay WD potable water system or alternatively, the recycled water system. In March 2001 authorization to proceed with testing of the Otay Mesa Lot 7 Groundwater Well was obtained and the Otay WD proceeded with the investigation of this potential groundwater supply opportunity.

The May 2001 Geoscience Support Services, Inc. completed for the Otay WD the preparation of a report entitled, “Otay Mesa Lot 7 Well Investigation,” to assess the Otay Mesa Lot 7 Well. The scope of work included a geohydrologic evaluation of the well, analyses of the

water quality samples, management and review of the well video log, and documentation of well pump testing.

The primary findings, as documented in the report, formed the basis of the following recommendations:

- For the existing well to be use as a potable water supply resource, a sanitary seal must be installed in accordance with the CDPH guidelines.
- Drawdown in the well must be limited to avoid the possibility of collapsing the casing.
- Recover from drawdown from pumping is slow and extraction would need to be terminated for up to 2 days to allow for groundwater level recovery.
- The well water would need to be treated and/or blended with potable water prior to introduction into the potable water distribution system.

In October 2001, the outcome and recommendations of the Geoscience Support Services, Inc. Otay Mesa Lot 7 Well efforts were presented to the Otay WD Board of Directors. The existing Otay Mesa Lot 7 Well, based upon the above findings, was determined not to be a reliable municipal supply of potable water and that better water quality and quantity perhaps could be discovered deeper or at an alternative location within the San Diego Formation.

The Otay WD is continuing to pursue the Otay Mesa groundwater well opportunity with due consideration of the recommendations of the existing report and plans to develop a groundwater well production facility to extract perhaps at least 600 ac-ft/yr. The steps necessary to put such a well into production are as follows:

- Review the results of available water quality data, video survey for casing and screen condition, and pump testing.
- Investigate, discover, and confirm a reliable sufficient quality and quantity of source water.
- Establish feasibility and cost effectiveness of a production well system.
- Negotiate the purchase of a well site.
- Proceed with the planning, environmental compliance, permitting, design, and construction of a groundwater well production system.

<u>Rancho del Rey Groundwater Well</u>

In 1991, the McMillin Development Company drilled the Rancho del Rey Groundwater Well to augment grading water supplies for their Rancho del Rey development projects. Although the well was considered a “good producer,” little was known regarding its water quality and sustainable yield for the water was used solely for earthwork (i.e. dust control and soil compaction). The well was drilled to 865 feet, with a finished depth of 830 feet and produced approximately 400 ac-ft/yr of low quality water for four years until its use was discontinued in April 1995 as McMillin Development Company no longer needed the well. McMillin

Development Company had previously notified the Otay WD of its intent to sell off the groundwater well asset.

The Otay WD continued discussions with McMillin Development Company and decided to determine if the Otay WD could use the water from the well and establish if purchase the property along with the existing well were appropriate. The Otay WD retained Quality Assurance Laboratories to conduct water quality testing in February 1995. It was established that the water from the well had a high total dissolved solids levels that exceeded well over 2,000 milligrams per liter. The Otay WD also retained engineering and well drilling firms, Barrett Consulting Group and Multi Water Systems respectively, which performed pump draw down tests in December 1995. The results of these efforts established the well's long term yield to be about 629 ac-ft/yr. In February 1996 the Otay WD retained Boyle Engineering Corporation to prepare a feasibility study to compare alternatives for treating and using the groundwater and to provide a benefit/cost analysis. The September 1996 Boyle Engineering Corporation, "Groundwater Treatment Feasibility Study Ranch del Ray Well Site," report concluded that a Rancho del Rey Groundwater Well project could be feasible. It was established that both capital and operation and maintenance costs would require the well to produce at least 700 ac-ft/yr for a minimum of ten years to make the project economically viable. In October 1997 the Otay WD became owners of the property and well.

In May 1997 the Otay WD prepared and submitted to CDPH an Application for an Amended Operating Permit to add as a source water supply the Rancho del Rey Groundwater Well. The CDPH established that it would not issue an amended permit for the operation of the Rancho del Rey Groundwater Well and any related treatment facilities until the system design and specifications have been reviewed and approved and the facilities must pass field inspection following construction.

In April 1998 the Otay WD received four proposals from consultants interested in designing the project. These proposals came in at almost double the estimated cost and in March 2000 the Otay WD decided to suspend further work on the developing the Rancho del Rey Groundwater Well until the project becomes economically viable or other circumstance would make it desirable to pursue development of the well.

In 2008 the Otay WD decided to reestablish the pursuit of the Rancho del Rey Groundwater Well project based upon the current water supply and water pricing conditions. The steps necessary to put such a well into production are as follows:

- Review the results of available data, tests, reports, etc.
- Reevaluate the cost effectiveness of a production well system.
- Proceed with the planning, environmental compliance, permitting, design, and construction of a groundwater well production system.

<u>Otay River Groundwater Desalination Facility</u>

Many local entities in San Diego County have studied the San Diego Formation and are interested in its potable water supply potential. These include the Sweetwater Authority, the Water Authority, City of San Diego, Otay WD, and the United Stated Geological Service. The San Diego Formation extends from the California-Mexico border to near Mission Bay in San Diego County, a distance of approximately 16 miles and from the coast to approximately six miles inland.

What is known about the San Diego Formation is that the geology is complex, and at present, only partly understood. The heterogeneity of the aquifer makes it extremely difficult to accurately predict groundwater flow or well performance. Few, if any, investigations have been performed on the San Diego Formation in the Otay River Valley. Most of the knowledge is based in the Sweetwater River Valley and the Tijuana River Valley. Therefore, the Otay River Groundwater Desalination Facility (Otay River) project would produce valuable and useful data to aid in characterizing the San Diego Formation that could ultimately lead to the production of potable water.

The objective of Otay WD and Sweetwater Authority is to plan, and potentially permit, design, and construct an Otay River project within the Lower Otay River Basin capable of producing a sustainable yield of potable water as a local supply. The Lower Otay River Basin is located within the Otay River watershed and is that reach of the river below the Lower Otay Reservoir. The San Diego Formation is the principal aquifer in the South San Diego Bay area and underlies the Otay River Basin and other river basins.

The purpose of the Otay River project is to increase the quantity of local water supply within the South San Diego Bay region by development of a brackish groundwater well and desalination production system to extract, to the maximum extent practical, groundwater from the San Diego Formation; thereby, reducing imported and treated water demand from the Water Authority and Metropolitan.

The development of the Otay River project is being developed in a phased approach. The Sweetwater Authority and Otay WD are proceeding with the Otay River project and are participating in all phases of development and intend share equally all aspects and outcomes such as costs, risks, water supply, benefits, etc.

The Otay River project effort is currently being accomplished in two phases. Phase I, which is well underway, is envisioned as the planning and feasibility aspects of the project intended to determine the viability of extracting brackish groundwater from the San Diego Formation with the purpose to eventually construct brackish groundwater desalination treatment and transport facilities. Phase II is envisioned as proceeding with a pilot project, environmental compliance, permitting, design, construction, operation, maintenance, and other requirements of the Otay River project production and transport facilities to treat the groundwater and deliver the produced potable water to customers of both Sweetwater Authority and Otay WD. Proceeding with Phase II is dependent upon the outcomes of the Phase I efforts.

In 2006, Sweetwater Authority, in partnership with Otay WD received notification from the California Department of Water Resources (DWR) that Sweetwater Authority had been selected to receive a matching grant for the Otay River Basin Brackish Groundwater Desalination Study. The grant amount from DWR is $242,000. The combined Sweetwater Authority and Otay WD contribution is $357,000, for a total of $599,000 to accomplish the DWR grant study. Through the Otay River Basin Brackish Groundwater Desalination Study, Sweetwater Authority and Otay WD will determine the feasibility of extracting brackish groundwater from the San Diego Formation. A portion of the work involves the United States Geological Society (USGS) services to construct multi-depth monitoring wells near the Otay River. The monitoring wells have been constructed.

In 2007, Sweetwater Authority , in partnership with Otay WD received notification from the Water Authority that Sweetwater Authority had been selected to receive a matching grant from the Water Authority Local Investigations and Studies Assistance (LISA) grant funding program for the USGS Study of the San Diego Formation for Potential In-lieu Conjunctive Use concept. The grant amount is $1,500,000. The combined Sweetwater Authority and Otay WD contribution is $1,500,000, for a total of $3,000,000 to complete the LISA grant study.

The USGS Study of the San Diego Formation for Potential In-lieu Conjunctive Use effort has two primary objectives as follows.

- Develop an integrated, comprehensive understanding of the geology and hydrology of the San Diego Formation and the overlying alluvial deposits. With this understanding, the sustainable yield of the San Diego Formation can be determined founded upon good science.
- Use this understanding to evaluate use of the alluvial deposits and the San Diego Formation for an in-lieu conjunctive use project for expanded extraction.

The study phase, Phase I, of the Otay River project is to collect necessary geologic, groundwater, and water quality data that can be used to determine the safe yield from the aquifer and to develop a solidified plan for completing a Otay River project that could potentially yield at least 4,500 ac-ft/yr of desalinated potable water.

The achievable goals of the Otay River project are as follows:

- Obtain valuable well data that can be used to determine the hydro geological condition of the San Diego Formation in the Otay River Basin.
- Determine the water quality of the aquifer in this region.
- Conceptually layout the facilities needed to collect, treat, and deliver desalinated water to potable water customers of Sweetwater Authority and Otay WD.
- Develop a long-range monitoring program for well development and an implementation plan that clearly identifies the steps needed to complete the ultimate project.

The Otay River project will allow the partnering each agency to complete a significant step towards developing a new potable water source from brackish groundwater that is currently not used.

6.3.1.4 Potential Ocean Desalination Supplies

The Otay WD is currently investigating the feasibility of purchasing desalinated water from a seawater reverse osmosis plant that is planned to be located in Rosarito, Mexico. This project is known as the Rosarito Ocean Desalination Facility (Rosarito) project. The treatment facility is intended to be designed, constructed, and operated in Mexico by a third party. On June 21, 2010 a report was prepared for the Otay WD by Camp Dresser & McKee, Inc. entitled Rosarito Desalination Facility Conveyance and Disinfection System Project.

The Rosarito Desalination Facility Conveyance and Disinfection System Project report discusses the likely issues to be considered in terms of water treatment and monitoring, potential conveyance options within the United States from the international border to potential delivery points, and environmental, institutional, and permitting considerations for Otay WD to import the Rosarito project product water as a new local water supply resource. The three main treatment considerations addressed are:

- Treatment required for a reliable, high quality source, which blends effectively with the existing water supply.
- Treatment and monitoring required for compliance with the California Department of Public Health (CDPH) regulations.
- Treatment required for public perception concerns.

While the treatment facility for the Rosarito project will likely not be designed or operated by the Otay WD as the lead agency, it is important that Otay WD maintain involvement with the planning, design, and construction of the facility to ensure that the implemented processes provide a product water of acceptable quality for distribution and use within the Otay WD system as well as in other agencies' systems in the region that may use the product water, e.g. City of San Diego, the Water Authority, etc. A seawater reverse osmosis treatment plant removes constituents of concern from the seawater, producing a water quality that far exceeds established United States and California drinking water regulations for most parameters, however, a two-pass treatment system may be required to meet acceptable concentrations of boron and chlorides, similar to the levels seen within the existing Otay WD supply sources. The Rosarito Desalination Facility Conveyance and Disinfection System Project report addresses product water quality that is considered acceptable for public health and distribution.

The Otay WD, or any other potential participating agencies, will be required to get approval from the CDPH in order to use the desalinated seawater as a water source. Three alternatives approaches are identified for getting this approval: 1) Certification of the Rosarito project in

Mexico by CDPH; 2) Disinfection treatment only in the United States, receiving a waiver of specific filtration requirements through CDPH; and 3) Full filtration and disinfection treatment of water entering the United States with waiver of certain typical Watershed Sanitary Survey requirements. These alternatives vary in their cost and their likelihood of meeting CDPH approval.

The Rosarito Desalination Facility Conveyance and Disinfection System Project report addresses two supply targets for the desalinated water (i.e. local and regional). The local alternative assumes that only Otay WD would participate and receive desalinated water, while the regional alternative assumes that other regional and/or local agencies would also participated in the Rosarito project.

On November 3, 2010, the District authorized the General Manager to enter into an agreement with AECOM for the engineering design, environmental documentation, and the permitting for the construction of the conveyance pipeline, pump station, and disinfection facility to be constructed within the District. The supply target is assumed to be 50 mgd.

The Otay WD is proceeding with negotiations among the parties to establish water supply resource acquisition terms through development of a Principles of Understanding document.

6.3.2 Otay WD Capital Improvement Program

The Otay WD plans, designs, constructs, and operates water system facilities to acquire sufficient supplies and to meet projected ultimate demands placed upon the potable and recycled water systems. In addition, the Otay WD forecasts needs and plans for water supply requirements to meet projected demands at ultimate build out. The necessary water facilities and water supply projects are implemented and constructed when development activities proceed and require service to achieve timely and adequate cost effective water service.

New water facilities that are required to accommodate the forecasted growth within the entire Otay WD service area are defined and described within the Otay WD 2009 WRMP updated November, 2010. These facilities are incorporated into the annual Otay WD Six Year Capital Improvement Program (CIP) for implementation when required to support development activities. As major development plans are formulated and proceed through the land use jurisdictional agency approval processes, Otay WD prepares water system requirements specifically for the proposed development project consistent with the Otay WD 2009 WRMP updated November, 2010. These requirements document, define, and describe all the potable water and recycled water system facilities to be constructed to provide an acceptable and adequate level of service to the proposed land uses, as well as the financial responsibility of the facilities required for service. The Otay WD funds the facilities identified as CIP projects. Established water meter capacity fees and user rates are collected to fund the CIP project facilities. The developer funds all other required water system facilities to provide water service to their project.

Section 7 – Conclusion: Availability of Sufficient Supplies

The Village 9 project is located within the jurisdictions of the Otay WD, the Water Authority, and Metropolitan, and is eligible to utilize imported water supply (i.e. to obtain imported water supply service).

The Water Authority and Metropolitan have an established process that ensures supplies are being planned to meet future growth. Any annexations and revisions to established land use plans are captured in the SANDAG updated forecasts for land use planning, demographics, and economic projections. SANDAG serves as the regional, intergovernmental planning agency that develops and provides forecast information. The Water Authority and Metropolitan update their demand forecasts and supply needs approximately every five years to coincide with preparation of their urban water management plans based on the most recent SANDAG forecast. Prior to the next forecast update, local jurisdictions may require water supply assessment and/or verification reports for proposed land developments that are not within the Otay WD, Water Authority, nor Metropolitan jurisdictions (i.e. pending or proposed annexations) or that have revised land use plans than reflected in the existing growth forecasts. Proposed land areas with pending or proposed annexations or revised land use plans typically result in creating higher demand and supply requirements than anticipated. The Water Authority and Metropolitan next demand forecast and supply requirements and associated planning documents would then capture any increase or decrease in demands and required supplies as a result of annexations or revised land use planning decisions such as the proposed densification of the Village 9 project.

Metropolitan's Integrated Resources Plan identifies a mix of resources (imported and local) that, when implemented, will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, State Water Project supplies, Colorado River supplies, groundwater banking, and water transfers. The 2010 IRP Update includes a planning buffer supply intended to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not under or over-developing supplies. Managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate supplies to meet future demands.

In Section II.4 of their 2005 Regional Urban Water Management Plan, Metropolitan states that through effective management of its water supply, they fully expect to be 100 percent reliable in meeting all non-discounted non-interruptible demands throughout the next twenty-five years. Metropolitan's 2005 RUWMP identifies potential reserve supplies in the supply

capability analysis (Tables II-7, II-8, and II-9), which could be available to meet the unanticipated demands such as those related to the densification of the Village 9 project.

The County Water Authority Act, Section 5 subdivision 11, states that the Water Authority "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs."

As part of preparation of a written water supply assessment and/or verification report, an agency's shortage contingency analysis should be considered in determining sufficiency of supply. Section 9 of the Water Authority's 2005 UWMP contains a detailed shortage contingency analysis that addresses a regional catastrophic shortage situation and drought management. The analysis demonstrates that the Water Authority and its member agencies, through the Emergency Response Plan, Emergency Storage Project, and Drought Management Plan are taking actions to prepare for and appropriately handle an interruption of water supplies. The DMP, completed in May 2006, provides the Water Authority and its member agencies with a series of potential actions to take when faced with a shortage of imported water supplies from Metropolitan due to prolonged drought or other supply shortfall conditions. The actions will help the region avoid or minimize the impacts of shortages and ensure an equitable allocation of supplies.

This WSA&V Report identifies and describes the processes by which water demand projections for the proposed Village 9 project will be fully included in the water demand and supply forecasts of the Urban Water Management Plans and other water resources planning documents of the Water Authority and Metropolitan. Water supplies necessary to serve the demands of the proposed Village 9 project, along with existing and other projected future users, as well as the actions necessary and status to develop these supplies, have been identified in the Village 9 project WSA&V Report and will be included in the future water supply planning documents of the Water Authority and Metropolitan.

This WSA&V Report includes, among other information, an identification of existing water supply entitlements, water rights, water service contracts, water supply projects, or agreements relevant to the identified water supply needs for the proposed Village 9 project. The WSA&V Report demonstrates and documents that sufficient water supplies are planned for and are intended to be available over a 20-year planning horizon, under normal conditions and in single and multiple dry years to meet the projected demand of the proposed Village 9 project and the existing and other planned development projects to be served by the Otay WD.

Table 8 presents the forecasted balance of water demands and required supplies for the Otay WD service area under average or normal year conditions.

Table 8
Projected Balance of Water Supplies and Demands
Normal Year Conditions (acre feet)

Description	FY 2010	FY 2015	FY 2020	FY 2025	FY 2030
Water Authority Supply	45,772	52,349	59,799	66,560	75,108
Recycled Water Supply	4,040	4,684	5,430	6,294	7,297
Groundwater Supply	0	0	0	0	0
Total Required Supply	**49,812**	**57,033**	**65,229**	**72,854**	**82,405**
Total Projected Demand	**49,812**	**57,033**	**65,229**	**72,854**	**82,405**
Supply Deficit	**0**	**0**	**0**	**0**	**0**

Table 9 presents the forecasted balance of water demands and required supplies for the Otay WD service area under average or normal year conditions. The OWD 2005 UWMP demand projection for FY 2010 of 49,812 acre feet is substantially higher than the actual demand for that fiscal year. The total actual demand for FY 2010 was 36,500 acre feet. The demand for FY 2010 is 6,500 acre feet lower than the peak demand of FY 2006 of 43,000 acre feet. The drop in demand is a result of the unit price of water, the conservation efforts of users as a result of the prolonged drought, and the economy.

Table 9
Projected Balance of Water Supplies and Demands
Single Dry Year Conditions (acre feet)

Description	FY 2010	FY 2015	FY 2020	FY 2025	FY 2030
Water Authority Supply	49,259	56,341	64,365	71,660	80,876
Recycled Water Supply	4,040	4,684	5,430	6,294	7,297
Groundwater Supply	0	0	0	0	0
Total Required Supply	**53,299**	**61,025**	**69,795**	**77,954**	**88,173**
Total Projected Demand	**53,299**	**61,025**	**69,795**	**77,954**	**88,173**
Supply Deficit	**0**	**0**	**0**	**0**	**0**

Dry year demands assumed to generate a 7% increase in demand over normal conditions for each year in addition to new demand growth.

Table 10 presents the forecasted balance of water demands and supplies for the Otay WD service area under multiple dry year conditions for the five year period ending in 2015. Multiple dry year conditions for periods ending 2020, 2025, and 2030 are provided in the Otay WD 2005 UWMP.

Table 10
Projected Balance of Water Supplies and Demands
Multiple Dry Year Conditions (acre feet)

Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Water Authority Supply	50,675	52,091	53,509	54,925	56,341
Recycled Water Supply	4,169	4,298	4,426	4,555	4,684
Groundwater Supply	0	0	0	0	0
Total Required Supply	**54,844**	**56,389**	**57,935**	**59,480**	**61,025**
Total Projected Demand	**54,844**	**56,389**	**57,935**	**59,480**	**61,025**
Supply Deficit	**0**	**0**	**0**	**0**	**0**

Dry year demands assumed to generate a 7% increase in demand over normal conditions for each year in addition to new demand growth.

The projected potable demand and supply requirements shown the Tables 8, 9, and 10 are from the Otay WD 2005 UWMP. Hot, dry weather may generate urban water demands that are about 7 percent greater than normal. This percentage was utilized to generate the dry year demands shown in Tables 9 and 10. The recycled water supplies are assumed to experience no reduction in a dry year.

This WSA&V Report demonstrates and verifies that sufficient water supplies are planned for and are intended to be acquired as well as the actions necessary and status to develop these supplies are documented to meet projected water demands of the Village 9 project and the existing and other reasonably foreseeable planned development projects within the Otay WD for a 20-year planning horizon, in normal and in single and multiple dry years.

Source Documents

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Michael R. Welch, "Middle Sweetwater River System Study Alternatives Evaluation," May 1993.

Michael R. Welch, "Middle Sweetwater River Basin Conjunctive Use Alternatives," September 1994.

Geoscience Support Services, Inc., "Otay Mesa Lot 7 Well Investigation," May 2001.

Boyle Engineering Corporation, "Groundwater Treatment Feasibility Study Ranch del Ray Well Site," September 1996.

Agreement for the Purchase of Treated Water from the Otay Water Treatment Plant between the City of San Diego and the Otay Water District.

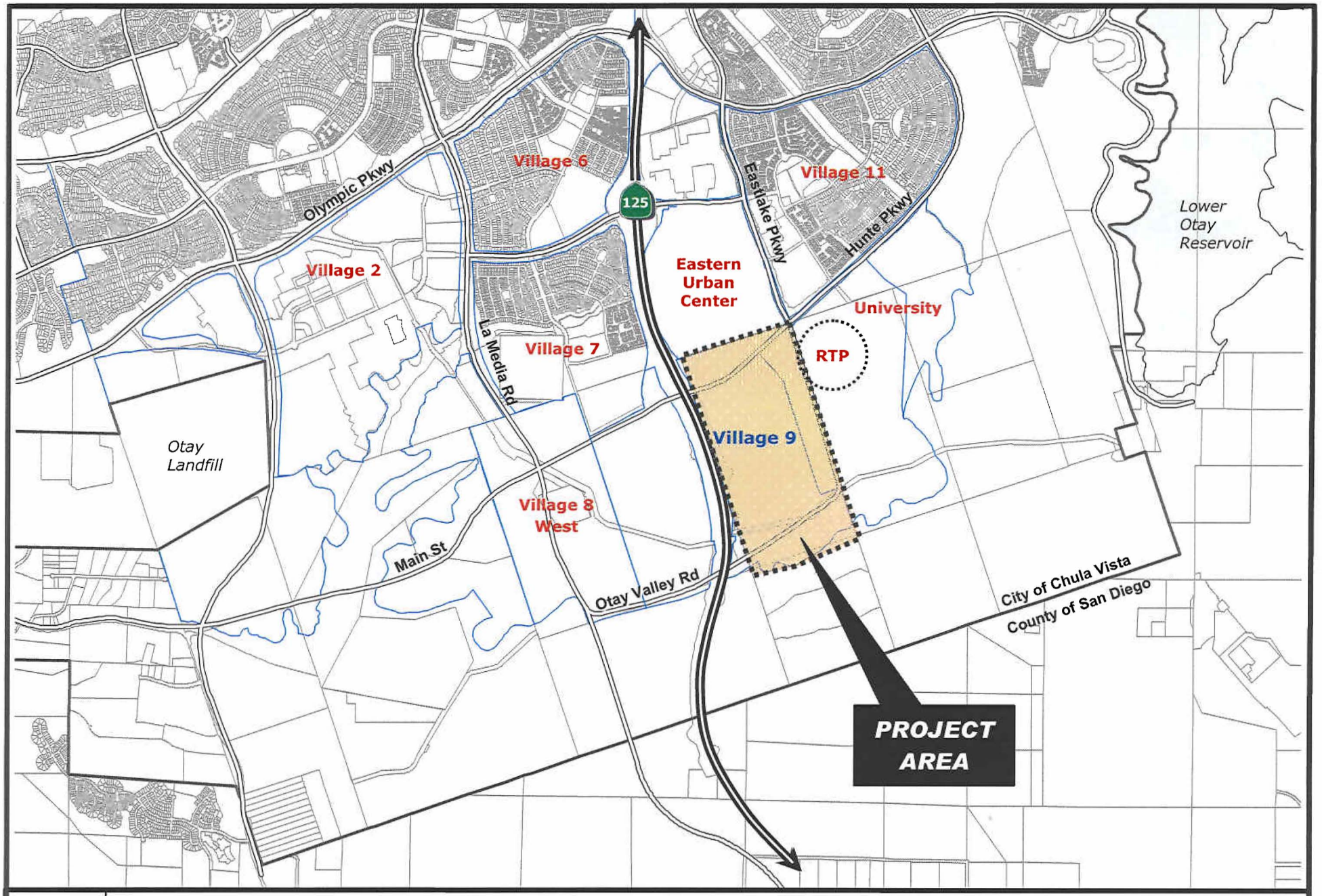
Agreement between the San Diego County Water Authority and Otay Water District regarding Implementation of the East County Regional Treated Water Improvement Program.

Agreement between the San Diego County Water Authority and Otay Water District for Design, Construction, Operation, and Maintenance of the Otay 14 Flow Control Facility Modification.

Agreement between the Otay Water District and the City of San Diego for Purchase of Reclaimed Water from the South Bay Water Reclamation Plant.

Appendix A

Otay Ranch Village 9 Regional Location Map

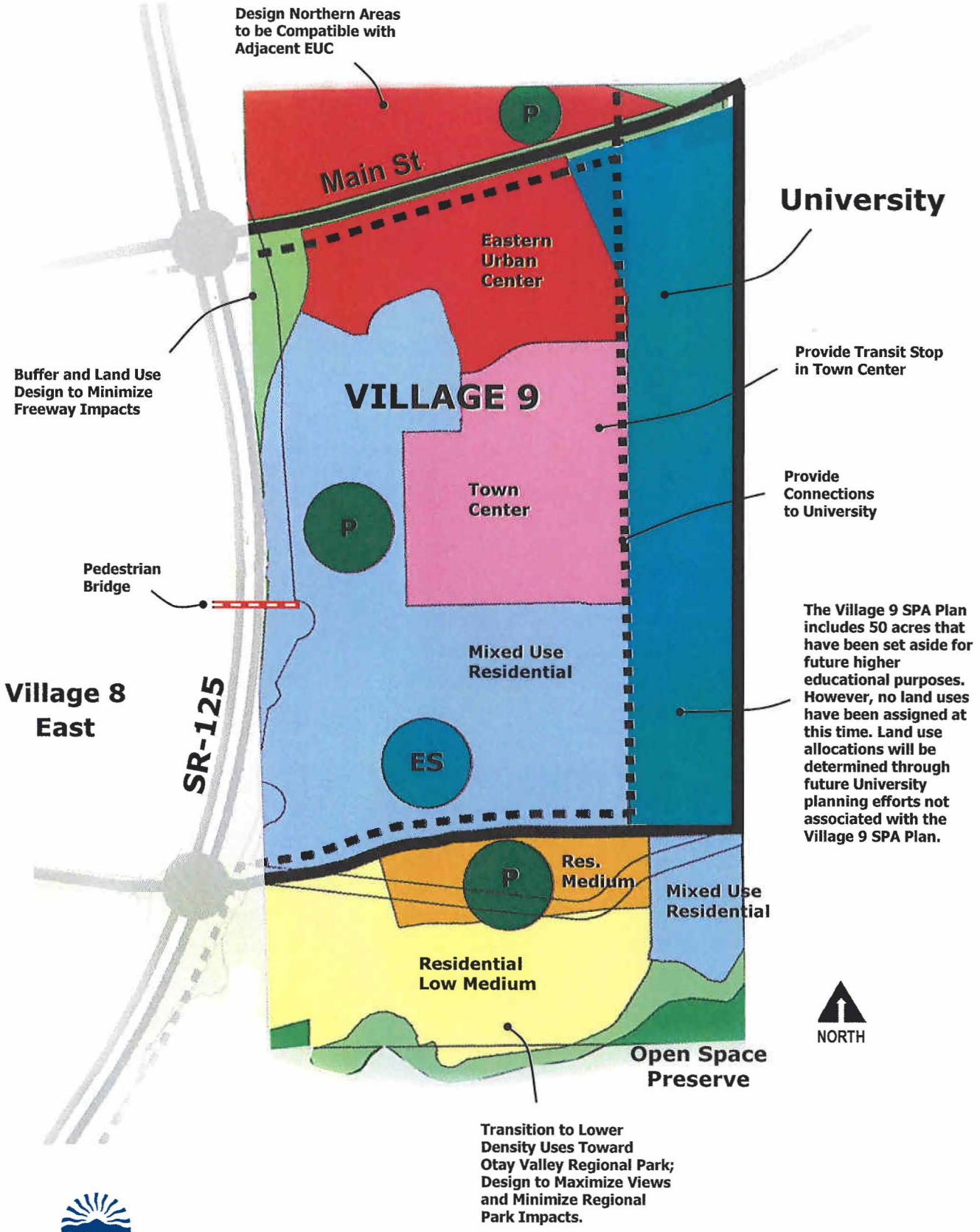


Otay Ranch Village Nine Location Map

Figure 1

Appendix B

Otay Ranch Village 9 Proposed Development Plan



CITY OF CHULA VISTA

Figure 2

Village Nine Proposed General Plan Land Use Map