

4.5 WATER SUPPLY

This section addresses the project's impact to available water supplies.

4.5.1 Setting

a. Water Supply. Pasadena Water and Power (PWP) is the water supply service provider to City of Pasadena residents and businesses, as well as to a limited number of customers within adjacent unincorporated areas. PWP provides approximately 37,094 acre-feet per year (AFY) of potable water (based on the average PWP total production over the last 10 years). According to the City's 2005 Urban Water Management Plan, Pasadena's water supply is drawn from a variety of sources, including groundwater, local surface water, and imported water. Additional water supplies are also available through short-term water exchanges with neighboring agencies. PWP attempts to maximize its groundwater use each year and then use imported water to meet remaining demand. PWP obtains approximately 40 percent of its annual water supply from groundwater and the remaining 60 percent is purchased from the Metropolitan Water District (MWD). MWD obtains its supply from two sources of imported water: the Colorado River Aqueduct and the State Water Project (PWP 2005).

PWP also diverts surface water runoff from two streams that flow within its service area: up to 25 cubic feet per second from Arroyo Seco, which lies on the northwest side of the City; and up to 8.9 cubic feet per second from Eaton Canyon, which lies in the eastern portion of the City. Although this water can be treated and used directly, PWP currently diverts and spreads the water in spreading basins where it percolates into the ground and recharges the aquifer (PWP 2005).

Groundwater production is obtained from the Raymond Basin, a large aquifer that underlies the City and surrounding region. It has a groundwater production of approximately 30,000 AFY and has potential to store large amounts of imported water for drought purposes (up to 16 times the amount of water consumed by residents living over the Basin).¹ The Raymond Basin is adjudicated and under the judgment the City of Pasadena has the right to 12,807 AFY with additional pumping rights each year based on spreading surface water diversions in the Arroyo Seco and Eaton Canyon. Spreading credits vary from year to year, but on average PWP has received 4,128 AFY in credits since 1994. Thus, on an average year, PWP has the right to pump about 16,935 AFY from the Raymond Basin. PWP is currently operating seven wells with a combined capacity of 15,200 AFY (PWP 2005).

In 2007, a study commissioned by the Raymond Basin Management Board (Watermaster) showed that in certain areas of the Raymond Basin, groundwater production is greater than net recharge, which has led to decreases in groundwater levels and increased depth-to-pumping. The study's findings led the Watermaster to adopt a resolution, in March of 2009, to reduce Pasadena's pumping allocation in the Pasadena subarea of the Raymond Basin. Pasadena's rights will be reduced by five percent a year to a total of 30 percent within six years. The first reduction of 417 AF went into effect on July 1, 2009.

¹ City of Pasadena, 2005 Urban Water Management Plan, Page 1 December 2005.



In 2009, PWP supplied a total of 32,800 AF, of which 19,883 AF were from imported water and 11,910 AF were from groundwater with approximately 1,007 AF from local water exchanges. Water use in PWP’s service area is approximately two-thirds residential and one-third commercial/industrial. Total system per capita water use (excluding agricultural water use) averages 170 gallons per day (GPD). There were approximately 37,232 active connections in 2009. Since 1990, new connections have been added at a rate of approximately 0.15 percent per year. However, demand for water has remained relatively constant with the implementation of water efficiency improvements.

Current and projected water use within PWP’s service area is shown in Table 4.5-1. Table 4.5-1 shows water usage projected for normal years and single dry years from 2010 through 2030.

**Table 4.5-1
PWP Service Area Normal and Single Dry Year Supply and Demand
(Acre-Feet/Year)**

| | 2010 | 2015 | 2020 | 2025 | 2030 |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|
| Normal Year ¹ | | | | | |
| Supply | 39,957 | 41,291 | 42,624 | 43,959 | 45,293 |
| Demand | 39,957 | 41,291 | 42,624 | 43,959 | 45,293 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| Single Dry Year | | | | | |
| Supply | 32,318 | 32,318 | 32,318 | 32,318 | 32,318 |
| Demand | 33,963 | 35,097 | 36,230 | 37,365 | 38,497 |
| Difference | (1,645) | (2,779) | (3,912) | (5,047) | (6,179) |

Source: PWP 2005 UWMP.

¹ Table 9-2 Projected Normal Year Supply and Demand Comparison. Projected supplies exceed demands; however, PWP will only take the amount of imported water necessary to serve projected demand. Additional water may be purchased by PWP at an increased rate; however PWP plans to get additional water from long term storage

PWP has contracted with MWD for deliveries under a purchase order arrangement (PWP 2005). Under the contract, MWD charges for water supply under a two-tiered rate structure. PWP has the right to purchase up to 90% of their initial base demand at Tier 1 rates. Initial base demand is calculated as the maximum firm demand for MWD water over a 10-year period since 1989. Tier 1 rates are set by MWD to recover its costs of maintaining a reliable supply. Any amount higher than 90% of base demand is charged at higher Tier 2 rates to encourage efficient utilization of local resources and include MWD's costs for developing additional supplies.

Multiple dry-year supply and demand scenarios for 2010 through 2030 are shown in Table 4.5-2. The City has a long-term storage program in the Raymond Basin and banks water within the basin for withdrawal during dry years when supplies are not sufficient to cover demands. Based on the supply and demand comparisons, PWP will have sufficient supply to meet the projected demand over the next twenty-five years (PWP 2005). Its ability to meet demands



**Table 4.5-2
PWP Service Area Multiple Dry Year Supply and Demand (Acre-Foot/Year)**

| 2011 through 2015 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|
| Supply | 40,224 | 40,491 | 36,861 | 31,665 | 34,294 |
| Demand | 40,224 | 40,491 | 40,757 | 34,870 | 35,097 |
| Difference | 0 | 0 | (3,896) | (3,205) | (803) |
| Pumped from Long Term Storage | 0 | 0 | 3,896 | 3,205 | 803 |
| Long Term Storage Balance | 24,221 | 24,221 | 20,325 | 17,120 | 16,137 |
| Annual Net Deficit | 0 | 0 | 0 | 0 | 0 |
| 2016 through 2020 | | | | | |
| | 2016 | 2017 | 2018 | 2019 | 2020 |
| Supply | 41,559 | 41,826 | 36,861 | 31,665 | 34,294 |
| Demand | 41,559 | 41,826 | 42,092 | 36,005 | 36,232 |
| Difference | 0 | 0 | (5,231) | (4,340) | (1,938) |
| Pumped from Long Term Storage | 0 | 0 | 5,231 | 4,340 | 1,938 |
| Long Term Storage Balance | 24,221 | 24,221 | 18,990 | 14,650 | 12,712 |
| Annual Net Deficit | 0 | 0 | 0 | 0 | 0 |
| 2021 through 2025 | | | | | |
| | 2021 | 2022 | 2023 | 2024 | 2025 |
| Supply | 42,891 | 43,158 | 36,861 | 31,665 | 34,294 |
| Demand | 42,891 | 43,158 | 43,424 | 43,691 | 43,957 |
| Difference | 0 | 0 | (6,563) | (5,472) | (3,070) |
| Pumped from Long Term Storage | 0 | 0 | 6,563 | 5,472 | 3,070 |
| Long Term Storage Balance | 24,221 | 24,221 | 17,658 | 12,186 | 9,116 |
| Annual Net Deficit | 0 | 0 | 0 | 0 | 0 |
| 2026 through 2030 | | | | | |
| | 2026 | 2027 | 2028 | 2029 | 2030 |
| Supply | 44,226 | 44,493 | 36,861 | 31,665 | 34,294 |
| Demand | 44,226 | 44,493 | 44,759 | 38,272 | 38,499 |
| Difference | 0 | 0 | (7,898) | (6,607) | (4,205) |
| Pumped from Long Term Storage | 0 | 0 | 7,898 | 6,607 | 4,205 |
| Long Term Storage Balance | 24,221 | 24,221 | 16,323 | 9,716 | 5,511 |
| Annual Net Deficit | 0 | 0 | 0 | 0 | 0 |

Source: 2005 UWMP, Tables 9-5, 9-6, 9-7, and 9-8.

during a multiple dry year period is based on the storage reserve it maintains in the Raymond Basin. During a time of drought, it can draw on this reserve to supplement its supply. In the



previous comparisons, the scenarios showed that the storage reserve would be drawn down over the course of a three year dry period. In the final multiple year analysis from 2026-2030, the LTS reached 5,511 AF. Thus, although there is enough projected supply and storage available under these scenarios, it is important that PWP take steps to boost its reserves. There are a number of critical actions that PWP has taken and is planning to take to provide additional assurance that it will be able to maintain deliveries:

- In the short term, PWP will restore four out-of-service wells into production by installing a perchlorate and volatile organic compound (VOC) treatment system.
- In the long term, PWP will maintain deliveries through aggressive conservation programs and the implementation of recycled water for irrigation purposes. To that end, conservation efforts resulted in an approximately 11.8% water use reduction city-wide in 2009, with continued similar conservation to date. Also, PWP plans to bring into production an additional five groundwater wells by installing another perchlorate treatment system.
- PWP will cooperate with the watershed planning efforts in the Arroyo Seco to develop the plan to increase the capacity of its spreading basins.

The comparisons in Table 4.5-1 and Table 4.5-2 are based on the assumption that MWD is forced to curtail its deliveries during a drought. MWD has performed its own multiple dry year analysis and has determined that it would be able to maintain deliveries to its member agencies even in the event of a historical multiple dry year period. Nonetheless, recently MWD has had to curtail base demand deliveries to member agencies, including Pasadena. This has not affected Pasadena's ability to fill demand. By taking the critical actions described herein, PWP has and will ensure that it can reliably maintain its own supply in the event that MWD experiences continued cutbacks, or delays in implementing its Integrated Resources Plan (IRP), as well as providing a buffer against uncertainty.

PWP Actions and Programs to Address Water Supply Issues. PWP has many options at hand to address potential water supply issues, arising from either a reduction in its MWD allocations or its ability to pump groundwater from the Pasadena subarea of the Raymond Basin.

In the past two years PWP has taken the following steps to update its approach to water supply issues:

Comprehensive Water Conservation Plan (CWCP). On April 13, 2009, the City Council adopted the CWCP.² As a long-term goal, the CWCP presupposes an initial target of reducing per-capita potable water consumption 10% by 2015 and 20% by 2020. Whereas PWP's past water conservation programs relied heavily on indoor efficiency, the CWCP reflects an emphasis on:

- Using price signals in rate design to encourage conservation;

² http://www.cityofpasadena.net/councilagendas/2009%20agendas/Apr_13_09/agendarecap.asp



- Increased emphasis on outdoor water efficiency; and
- Maximizing efficiencies related to new construction.

The CWCP includes six water conservation approaches that are being pursued simultaneously to meet the City's water conservation targets:

1. Implement Water Conservation Rate Design:
 - Modified block rate structure with higher cost tiers for high water use
 - Develop a budget-based water rate proposal
2. Adopt Sustainable Water Supply Ordinances:
 - Establish a Permanent Water Waste Prohibition Ordinance
 - Modify existing Water Shortage Ordinance
 - Adopt a Water Efficient Landscape Ordinance
 - Evaluate potential effectiveness of a Fixture Replacement on Resale Ordinance, and adopt, if appropriate
 - Review the Gray Water Systems and Storm Water Capture Ordinances and update or modify, as appropriate
 - Adopt appropriate water use limitations and mitigation measures associated with new development
3. Provide Incentives for Use of Water Efficient Technology and Practices:
 - Indoor fixture incentives
 - Irrigation technology incentives
 - Water-efficient landscape and turf replacement incentives
4. Provide Direct Installation and Distribution of Efficient Technologies;
5. Provide Water Use Audits; and
6. Provide Water Use Information, Education, and Outreach:
 - Usage data on bills
 - Appropriate water use standards or guidelines
 - Efficient indoor and outdoor water use practices.³

The City has increased water rates as envisioned by the CWCP, and as necessary for covering surcharges imposed by MWD on PWP whenever customers exceed MWD's new allocation targets.⁴ New rates took effect August 1, 2009, and two more step increases are planned to take place in 2010 and 2011. The efficacy of rates on water conservation are being evaluated continuously and adjusted as necessary.

Water Waste Prohibition and Water Shortage Plan (WWP/WSP) Ordinance. Effective July 4, 2009, new water shortage procedures took effect in Pasadena through revisions to PMC Section 13.10. The revisions take a three-pronged approach to ensuring a more effective and meaningful response to the City's water supply challenges: (1) specific instances of conspicuous water waste will be prohibited permanently; (2) if the Council determines that a water shortage exists, additional restrictions will be invoked depending on which level of shortage is declared; and (3) warnings and fines will enforce the permanent water waste prohibitions and any

³ http://www.cityofpasadena.net/councilagendas/2009%20agendas/Apr_13_09/5D1.pdf

⁴ <http://ww3/waterandpower/YourWater/WaterRates/>



additional water shortage restrictions. On July 4, 2009, the following permanent prohibitions on water waste took effect and will apply to the project.

- No watering outdoors between 9 a.m. and 6 p.m. except with a hand-held container or hose with a shut-off nozzle, or for very short periods when adjusting a sprinkler system.
- No watering during periods of rain.
- No excessive water flow or runoff onto pavement, gutters or ditches from watering or irrigating landscapes or vegetation of any kind.
- No washing down paved surfaces unless for safety or sanitation, in which case a bucket, hose with a shut-off nozzle, cleaning machine that recycles water or low-volume/high-pressure water broom must be used.
- All property owners must fix leaks, breaks or malfunctions when they find them or within seven days of receiving a notice from PWP.
- Fountains and water features must have re-circulating water systems.
- Vehicles must be washed with hand-held buckets and/or hoses equipped with water shut-off nozzles (does not apply to commercial car washes).
- Restaurants may not serve drinking water unless by request and must use water-saving dish-wash spray valves.
- No installation of non-recirculating water systems at new commercial car washes and laundries. Effective July 1, 2010, all commercial car washes must have re-circulating water systems or secure city waivers.
- Hotels and motels must give guests the option to decline changing of daily bed linens and towels.
- No installation of single-pass cooling systems in buildings requesting new water service.

Water Efficient Landscape Ordinance. Pursuant to the requirements of Article 10.8 of the Government Code (“Water Conservation in Landscaping Act,” Govt. Code §§ 65591 et. seq.), on March 9, 2010 Pasadena’s City Council directed the preparation of a Water Efficient Landscape Ordinance, modeled after the Department of Water Resources model ordinance. The model ordinance limits irrigation of certain new and existing landscaped area to a calculated amount of water. This water limit is determined by a mathematical formula based on the size of the landscaped area, type of plant material, regional climate, and other variables. The ordinance is in effect.

Water Integrated Resource Plan. PWP recognizes the concern about current shortfalls in supply and predictions of long-term drought, and in early 2010 embarked on crafting a Water Integrated Resources Plan (WIRP). The WIRP will be Pasadena’s blueprint for ensuring reliable, cost-effective, and environmentally responsible water supply for the next twenty-five years. It will take into consideration available and alternative supplies, demand forecasts, climate change and conservation. This document is anticipated to be completed in late 2010/early 2011. It will form the basis for the 2010 Urban Water Management Plan due to the California Department of Water Resources by July 1, 2011 and will provide updated data listed in tables 4.5-1 and 4.5-2.



Urban Water Management Plan. The City is in the process of updating and revising its Urban Water Management Plan (“UWMP”) as required by state law. The City anticipates completing this update by April of 2011. The updated UWMP will take into account supply and demand matters of the recent past, as well as a forecast of supply and demand matters to come.

Other PWP Water Supply Management Projects. Just as MWD has done, PWP has maintained its supply reliability in the face of supply uncertainties in the past, and is actively managing its supplies to ensure the reliability for the future. As a primary example, the City maintains a contract with the City of Glendale for the provision of recycled water, and has the right to 6,000 AFY of recycled water from the Los Angeles/Glendale Water Reclamation Plant. The City has the right to take this allocation at a point of connection in Scholl Canyon, on the northwestern end of Pasadena. Although implementation of the pipe construction project to bring recycled water into Pasadena has been on hold since 1995, the City has already begun the work necessary to re-start implementation of that project. PWP is currently working on a feasibility study and seeking funding for construction implementation. As additional funding can be secured in the future, the City anticipates increasingly offsetting the use of potable water for landscaping with recycled water, thus leaving more potable water for other uses. Through these efforts, PWP anticipates serving demand in the City as forecast in the City’s General Plan and Urban Water Management Plan into the foreseeable future.

Metropolitan Water District (MWD). Since the City receives the majority (approximately 60%) of its water from MWD, the following is a general discussion of the reliability of the MWD supply. Over the past several decades MWD has demonstrated that it can adapt to continuous change and address legal and environmental uncertainties in supply by developing a diverse portfolio, setting supply targets, monitoring its progress on a regular basis and adapting its strategy to meet its targets.

Urban Water Management Plan. MWD has adopted its own Urban Water Management Plan (“UWMP,” 2005) in which it projects annual supplies and demand during single dry, multiple dry and normal years. As shown in Table 4.5-3, MWD supplies range from a high of about 3.3 million acre feet (MAF) to a low of 1.9 MAF acre feet, depending on the year and the scenario. In drought conditions, water supplies may be reduced as a result of reduced precipitation.

Table 4.5-3 presents the MWD demand and supply capabilities through the year 2030 under average year, single dry year and multiple dry year scenarios. The data shows that demand from MWD customers will be met under the three different scenarios through the year 2030 with surplus. Surplus ranges from a low of 240,000 AFY to 1,160,000 AFY.



**Table 4.5-3
MWD Supply and Demand (Acre-Feet/Year)**

| Scenario | 2010 | 2015 | 2020 | 2025 | 2030 |
|-------------------------------------|----------------|------------------|------------------|----------------|----------------|
| Multiple Dry Year | | | | | |
| Supply | 2,619,000 | 2,834,000 | 2,841,000 | 2,827,000 | 2,827,000 |
| Demand | 2,376,000 | 2,389,000 | 2,317,000 | 2,454,000 | 2,587,000 |
| Surplus (Supply less Demand) | 243,000 | 445,000 | 524,000 | 373,000 | 240,000 |
| Single Dry Year | | | | | |
| Supply | 3,151,000 | 3,356,000 | 3,309,000 | 3,252,000 | 3,203,000 |
| Demand | 3,320,000 | 2,196,000 | 2,229,000 | 2,358,000 | 2,487,000 |
| Surplus (Supply less Demand) | 831,000 | 1,160,000 | 1,080,000 | 894,000 | 716,000 |
| Average Year | | | | | |
| Supply | 2,668,000 | 2,600,000 | 2,654,000 | 2,654,000 | 2,654,000 |
| Demand | 2,036,000 | 1,947,000 | 1,983,000 | 2,110,000 | 2,246,000 |
| Surplus (Supply less Demand) | 632,000 | 653,000 | 671,000 | 544,000 | 408,000 |

Source: Metropolitan Water District Regional Urban Water Management Plan, November 2005, Tables II-7, II-8, and II-9. Demand represents FIRM demand, defined as full service demands (Tier I and Tier II) plus 70% of the Interim Agricultural Water Program.

In recent years MWD has taken numerous actions that seek to avoid or mitigate risks facing the Colorado River and State Water Project, the two primary sources of water supply to MWD. MWD also has several programs that address its overall supply reliability, summarized below. In sum, MWD has engaged in significant water supply projection and planning efforts, and continues to do so particularly over the past few years. Those efforts have included the water demands of the City’s service area as projected in the 2005 UWMP. MWD has consistently found that its existing water supplies, when managed according to its water resource plans, are and will be 100 percent reliable for at least a 20-year planning period.

Like Pasadena, MWD must update its UWMP by April of 2011. Pasadena and all of MWD’s other member agencies collaborate with MWD and provide it with local water supply and demand data that form the basis for the supply/demand forecasts included in MWD’s UWMP. This collaborative process results in an UWMP that ties together the underlying data and assumptions of a wide region of water users and therefore provides reliable data on demand during normal and dry years.

Integrated Resources Plan. MWD’s 2004 Integrated Resources Plan Update (“2004 IRP”) discusses local water supply initiatives (e.g., local groundwater conjunctive use programs) and established a buffer supply to mitigate against the risks associated with implementation of local and imported water supply programs.⁵ The 2004 IRP noted that future water supply reliability depends not only upon actions by MWD to secure reliable imported supplies, but also further development of local projects by local agencies. MWD’s 2007 Integrated Water Resources Plan Implementation Report details the progress MWD has made toward implementing the targets

⁵ *Metropolitan Water District of Southern California, Integrated Resources Plan Update (2004).*



from the 2004 IRP, and demonstrates that the agency has continued to react aggressively to address challenges facing water resources.⁶ By amending existing strategies, MWD has made significant progress in most resource areas toward meeting the IRP targets.

MWD is in the process of updating its 2004 IRP.⁷ The updated IRP will address existing and new challenges, such as various pieces of litigation regarding water supply and climate change, and will identify a water planning strategy through 2030.⁸

Water Surplus and Drought Management Plan (“WSDM”). In 1999, MWD incorporated the water shortage contingency analysis that is required as part of any urban water management plan into a separate, more detailed plan, called the WSDM. That plan provides policy guidance to manage MWD’s supplies and achieve the goals laid out in the agency’s IRP. The WSDM also “identifies the expected sequence of resource management actions that [MWD] will execute during surpluses and shortages to minimize the probability of severe shortages and eliminate the possibility of extreme shortages and shortages allocations.”⁹ MWD’s ten-year WSDM categorizes its ability to deliver water to its customers by distinguishing between surpluses, shortages, severe shortages and extreme shortages.¹⁰ The WSDM’s integration of management actions taken during times of surplus and shortages reflects MWD’s belief that these actions are interrelated.

Recent State Legislation. In addition to MWD’s efforts to ensure reliable water supply for its customers including the City of Pasadena, the State of California is working on water supply reliability issues. On November 4, 2009, the California Legislature passed a comprehensive bill package that addresses the Delta ecosystem and provides for a reliable water supply for California. These bills, known as the Delta Package, are made up of four policy bills and one water bond measure. The package establishes a Delta Stewardship Council, sets ambitious water conservation policy, ensures better groundwater monitoring, and provides funds for the State Water Resources Control Board for increased enforcement of illegal water diversions. The proposed bond will fund, with local cost-sharing, drought relief, water supply reliability, Delta sustainability, statewide water system operational improvements, conservation and watershed protection, groundwater protection, and water recycling and water conservation programs.¹¹ The bond measure is expected to go to voters at the end of 2010.

4.5.2 Impact Analysis

a. Methodology and Significance Thresholds. There would be a significant impact if the PWP could not supply water for the proposed project. In accordance with the *CEQA Guidelines*, a project would result in a significant impact if it would:

- *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a*

⁶ Metropolitan Water District of Southern California, 2007 Integrated Water Resources Implementation Report (2007).

⁷ <http://www.mwdh2o.com/mwdh2o/pages/yourwater/irp/index.html>

⁸ *Id.* at 1-3

⁹ MWD 2005 UWMP. at II-15.

¹⁰ *Id.* at II-16.

¹¹ <http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/Delta/index.html>



- lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);*
- *Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;*
 - *Fail to have sufficient water supplies available to serve the project from existing entitlements and resources, or if new or expanding entitlements are needed.*

In addition, the City has two water conservation goals related to the Urban Environmental Accords and the Governor's 20% by 2020 reduction. The City actively seeks to reduce potable water consumption by 10% by the year 2015 and to further decrease consumption by an additional 5% by the year 2020 consistent with the Governor's 20% by 2020 reduction. Therefore, a project is required to conserve a minimum of 20% on potable water in order for its impacts to be considered less than significant.

b. Project Impacts and Mitigation Measures.

Impact W-1 **The proposed project would generate increased demand for water. The PWP would be able to supply the projected demand based on existing entitlements provided that the proposed project incorporates conservation. Therefore, impacts to water supply would be Class II, significant but mitigable.**

The proposed project would involve development of up to 42,118 square feet (sf) of new church support uses and 45 residential units for senior citizens under Scenario 1, or would involve development of up to 55,118 sf of new church support uses under Scenario 2 with a youth recreation building. Project water demand is shown in Table 4.5-4.

The proposed project would utilize a net increase of 15,462 gallons of potable water per day under Scenario 1 senior residential, and would use a net increase of 5,512 gallons of potable water per day under Scenario 2 youth recreation.

The proposed project would result in a net increase in demand of 17.3 AFY under Scenario 1 with 45 residential units for senior citizens, or would result in a net increase in demand of 6.2 AFY under Scenario 2 Youth Recreation. These estimates represent standard water consumption rates absent water conservation techniques. As indicated earlier in this section, water supplies face challenges from drought, climate change, and pumping restrictions. Both MWD and the City include conservation as a portion of the future strategy to ensure that water supplies are maximized, while consumer demand is minimized. Future supplies are adequate to meet demands through a 20-year planning horizon with implementation of conservation and groundwater recharge programs both locally and regionally. Nevertheless, absent measures to ensure a minimum 20% water conservation rate as compared to normal baseline usage as required by the City, water supply impacts would be potentially significant.



**Table 4.5-4
 Estimated Net Increase in Project Water Demand**

| Use | Quantity | Demand Factor ¹ | Demand Gallons/Day | Demand Acre Feet/Year ² |
|-------------------------------|-----------|----------------------------|--------------------|------------------------------------|
| Scenario 1 | | | | |
| Church Support Uses | 42,118 sf | 0.10 | 4,212 | 4.7 |
| Senior Residential Apartments | 45 units | 250 | 11,250 | 12.6 |
| Total | | | 15,462 | 17.3 |
| Scenario 2 | | | | |
| Church Support Uses | 55,118 sf | 0.10 | 5,512 | 6.2 |
| Total | | | 5,512 | 6.2 |

¹ City of Pasadena Generation Rates Spreadsheet, derived from Orange County Sanitation District Rates (units are gallons/day/square foot for institutional uses and gallons/day per unit for residential uses)

² One Acre-Foot = 325,851.429 gallons

Mitigation Measures. The City requires that projects conserve at least 20% on potable water to be considered less than significant. The following mitigation measure is required.

W-1 Water Efficiency. In accordance with LEED NC prerequisites, the applicant shall employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.

Significance After Mitigation. Implementation of Mitigation Measure W-1 would result in a 20% reduction of water usage over normal baseline usage. This measure would achieve project consistency with the City’s goal of increasing water conservation by 20% by 2020. The project’s impact to water service would be less than significant with implementation of Mitigation Measure W-1.

c. Cumulative Impacts. The proposed development, in conjunction planned and pending development, including 1,833 residences and just over 1 million square feet of non-residential development (see Table 3-1 in Section 3.0, *Environmental Setting*) would create additional demand for water. Using the City’s standard generation rates, and assuming that the non-residential uses are composed of 30% office, 30% specialty retail, 30% institutional, and 10%



restaurant, cumulative development would demand about 458,000 gallons/day or about 513 acre-feet/year. However, as indicated earlier in this section and in tables 4.5-1 through 4.5-3, water supplies are adequate over a 20-year planning horizon in single dry year, multiple dry year and average years to serve projected development increases. It is noted that there may be periods when local and regional plans to curtail water usage are implemented to offset reduced supplies during shortage periods. However, these conservation programs in addition to plans and policies at the regional and local level, in addition to development of additional diversified supplies are part of the evolving strategy to continue meeting increasing water demands in the future. Provided that all new developments implement conservation in accordance with the 20% by 2020 City Goal, cumulative impacts to water service would not be significant.

