



- Status of In-Region Groundwater

### Summary

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In 2007, Metropolitan published the Groundwater Assessment Study Report in collaboration with member agencies and groundwater basin managers. In 2011, staff prepared a board report to provide an update on regional groundwater conditions. This update reflects conditions through December 2014 and is based on data provided by groundwater basin managers.

Groundwater storage levels in the region have dropped more than 1 million acre-feet (MAF) since 2005. Storage levels in key groundwater basins are nearing or have exceeded low levels reached in 1977. Groundwater production has remained relatively constant despite a substantial decrease in groundwater recharge compared to the baseline period (1986-2005). Average precipitation in the region decreased during the 10-year period from 2005 through 2014 (current period). This rainfall deficit has resulted in reduced recharge of stormwater. Use of imported water for groundwater recharge has also declined in recent years, and has largely been replaced with greater recharge of recycled water. Expansion of recycled water recharge has buffered the region from more severe declines in groundwater supplies. Groundwater supply managers are responding to these drought conditions with changes to groundwater management and investments in local supplies and groundwater facilities.

### Purpose

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Provide updated information to the Board on regional groundwater conditions

### Detailed Report

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#### Regional Overview

This board report provides an update on the condition of groundwater basins at the end of 2014 and reviews trends by looking back over the past ten years.

In 2007, Metropolitan published the Groundwater Assessment Study Report (Report) in collaboration with member agencies and groundwater basin managers. The Report assembled published information for a twenty year period from 1986 through 2005 (baseline period) to provide an overview of groundwater basins and a regional status report for the basins in Metropolitan's service area. Data in the Report indicate that in 2005 there was 3.8 million acre-feet (AF) of available groundwater storage space throughout the service area that could be used if constraints could be overcome.

The region experienced water supply shortages from 2007 through 2010 due to drought and operational restrictions in the Sacramento-San Joaquin Bay Delta. Metropolitan implemented a Level 2 Water Supply Allocation from July 2009 through April 2011 to help manage through these conditions. By late 2010, water stored in groundwater basins had declined by nearly 850,000 AF. In 2011, statewide precipitation was above normal resulting in improved water supply conditions. By October 2011, groundwater storage had recovered by 550,000 AF. Before full recovery of storage to 2005 levels could be achieved, the region again experienced significant drought during the period from 2012 to the present. Groundwater storage has declined by about 1 million AF by December 2014 as compared to storage reported in 2005. Storage levels in key groundwater basins are currently approaching or have exceeded low levels reached in 1977.

The long-term regional average groundwater production for the baseline period is about 1.5 million AF per year. The long-term regional average annual precipitation is about 15.2 inches. Since 2005, conditions have been drier than normal, resulting in a cumulative 44 inches of precipitation below what would have been expected over the ten year period. These dry conditions have reduced the amount of water that was recharged into groundwater basins during this period.

Recharge of groundwater basins occurs through both passive and active means. Passive recharge occurs naturally through percolation of precipitation and is largely dependent on precipitation in a given year. Active

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recharge uses manmade investments to capture storm, recycled and imported water supplies. Due to drought, active recharge of stormwater is down a cumulative 555,000 AF since 2005. Imported water recharge has also declined in recent years with a cumulative reduction of 610,000 AF. These reductions have been somewhat offset by a cumulative increase in recharge of recycled water of 550,000 AF since 2005. The combined impact of these figures is that cumulative active recharge into regional groundwater basins has dropped by about 615,000 AF since 2005.

Drought also reduces passive recharge (natural infiltration of rainfall) of the groundwater basins. Passive recharge has declined by a cumulative 400,000 AF since 2005. Groundwater basin data indicate the combined impact of reduced active and passive recharge has resulted in a decline of regional groundwater storage levels of about 1 million AF since 2005.

### **Response to Drought**

Groundwater supply managers have responded to the impacts of these recent droughts. Substantial investments in groundwater management and development of local supplies and facilities have accelerated. The following examples illustrate the range of investment types occurring throughout Metropolitan's service area.

- Amended judgments have been approved and implemented in Central, West Coast, Main San Gabriel and Hemet-San Jacinto basins. The amendments significantly enhance institutional provisions for storage and increase capability to store water for dry years.
- Groundwater management plans have been completed in Arlington and Riverside basins.
- Construction of the Calleguas Salinity Management Project is underway. This project is a regional pipeline to convey brine from groundwater desalting facilities to allow increased use of local groundwater supplies and recycled water.
- Construction of the expansion of the Groundwater Replenishment System (GWRS) in Orange County Basin is underway and will increase recharge of highly treated recycled water from 72,000 to 100,000 AF per year.
- Increased drilling of new municipal water supply wells to replace older wells and allow increased use of groundwater rights has accelerated.
- Los Angeles and the Los Angeles County Flood Control District have repaired and enhanced Tujunga Dam for increased stormwater capture for groundwater recharge.
- The Army Corps of Engineers has granted temporary deviations from its flood control manuals to allow increased retention of stormwater for subsequent groundwater recharge.
- The Los Angeles Regional Water Quality Control Board has approved amendments to recycled water permits allowing longer averaging periods and greater percentages of recycled water to be recharged.
- Seawater barriers in Orange and Los Angeles counties are quickly transitioning to 100 percent recycled water use.
- Use of recycled water for groundwater recharge is growing in many basins throughout the service area.

### **Summary**

In summary, groundwater recharge has dropped in the last ten years due to drought conditions. Drops in recharge of stormwater and imported supplies have been somewhat offset by increases in recharge of recycled water. During this period, regional groundwater production has remained relatively stable, helping to buffer the region from drought impacts. The net impact of stable production with reduced recharge has been a reduction in groundwater storage levels throughout the region. The cumulative loss in groundwater storage

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since 2005 is about 1 million acre-feet. As of the end of 2014, storage in key groundwater basins is nearing or has exceeded low levels reached in 1977. In response to these conditions, groundwater agencies throughout the region are focusing investments on improvements that can help basins withstand future drought periods.