

## Drought Impacts

This attachment explains the regional water management impacts due to the 2014 drought and any anticipated or projected impacts if drought or dry year conditions continue into 2015. The attachment also describes water conservation measures or restrictions that have been implemented as a result of the 2014 drought and planned or anticipated water conservation measures if drought or dry year conditions continue into 2015.

### Drought Impacts

The Antelope Valley Integrated Regional Water Management (IRWM) Region is home to 388,000 people with two medium-sized cities and dozens of agencies and districts responsible for the management of water resources to meet local demands. The Antelope Valley relies heavily on imported water from the State Water Project (SWP). This imported water is procured and managed primarily by Antelope Valley East Kern Water Agency (AVEK), but also by the Palmdale Water District (PWD) and the Littlerock Creek Irrigation District (LCID), and it is conveyed to contracting water supply agencies, such as the Los Angeles County Waterworks District No. 40 (District) and other retail water suppliers to meet the Region's demands. The District is the implementing agency for the single project included in this grant application proposal.

Imported water resources supply more than 50 percent of demands in the Region during an average water year with the rest being met by groundwater from the Antelope Valley Groundwater Basin, banked groundwater from AVEK's Water Supply Stabilization Project No. 2 (WSSP-2), surface water diversions from the Littlerock Creek Reservoir, and a small amount of recycled water. All of imported water supplies come from the SWP which has been greatly impacted this year by drought conditions. The Antelope Valley IRWM Plan 2013 Update assessed supplies in the Region for a single dry year assuming an 11 percent allocation of SWP deliveries and 23,000 acre-feet (AF) of withdrawal from the WSSP-2 groundwater bank, and the Plan indicated a mismatch of supply and demand of almost 40,000 AF. Actual allocations for 2014 so far are at 5 percent, which is less than half of the amount estimated in the IRWM Plan for a single dry year, indicating that water supply conditions may be worse in the Region than anticipated.

Given the long-standing tenuous nature of imported supplies, AVEK, the District, and other local suppliers have been at the forefront of both the development and implementation of programs and projects aimed at increasing the reliability of these supplies. Increases in regional imported surface storage capabilities and groundwater recharge, such as AVEK's WSSP-2, funded under Round 1 of the Proposition 84 grant program, have allowed regional water purveyors to take advantage of excess imported supply, when available, and store it for future use when supplies are limited. Demand management programs have also been widely implemented, resulting in average municipal use levels of about 199 gallons<sup>1</sup> per capita per day (gpcd).

The Antelope Valley Region experienced significant cutbacks to imported supplies in 2008-2010 as a result of both a protracted drought and newly-enforced environmental restrictions limiting SWP supplies from the Bay-Delta. The results of these still-recent drought conditions can be seen throughout the Region as implementation of local supply development projects increases, as well as conservation measures and restricted use ordinances. With only one wet year in 2011, the Region is in the middle of yet another multiple year drought. Conservation programs in the Region are currently in full implementation, with public outreach through advertisements, "reverse 911" calls, and water bill messages. Public education initiatives are also being conducted in schools, public meetings, and workshops that teach customers how to conserve more water and increase awareness of incentive opportunities such as "cash for grass" and water saving device rebates. Palmdale, Lancaster, and the District have all enacted voluntary measures to reduce usage in their

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<sup>1</sup> *Antelope Valley Integrated Regional Water Management Plan, 2013 update*: Page 3-11 – Average per capita water use 0.223 AFY/person

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service areas by 20 percent. Furthermore, in order to preserve water for domestic use, the District is encouraging the use of recycled water for construction projects and other appropriate uses.

Many of the strategic reliability measures implemented by AVEK, the District, PWD, and other local purveyors have helped to protect the Region from rationing and other severe conservation measures thus far. However, as the drought continues through the summer of 2014 and with SWP allocations held at only 5 percent, local and imported supply stores are being depleted at increasingly significant rates. For example, AVEK is expecting to use more than half of the cumulative 35,000 AF of regional imported storage in WSSP-2 by the end of 2014. Due to the emergency drought regulations adopted by the State Water Resources Control Board on July 15, 2014 and with the expectation that dry-weather conditions will persist this winter, the District is prepared to recall all existing construction meters and implement its Water Shortage Contingency Plan, resulting in water use restrictions and surcharges for customer use beyond 80 percent of baseline water usage. As a result of these conditions over the past several years, the Region has invested over \$200 million in water conservation, recycled water and groundwater projects to improve local supply reliability and has plans for an additional \$25 million in local supply reliability projects in the near future.

Given the Region's inland location, closed basin, and ecological resources, water shortages experienced here can create impacts with few solutions that can be immediately implemented to mitigate them. This has increased the immediacy of local resource development.

Depending on the mix of local and imported supplies used by purveyors to meet demands, there are differences in the severity and type of impact experienced within the Region as a result of this latest drought. An overview of some of the regional and local drought impacts are provided below. It is expected that if dry year conditions continue into 2015, these impacts will amplify.

### **DROUGHT IMPACT: At Risk of Not Meeting Existing Drinking Water Demands**

Drought conditions have cut off the Region from one of its primary safe drinking water supplies, imported water from the SWP. Water supply for the Antelope Valley Region comes from the following sources: imported SWP water, local surface water runoff that is stored in Little Rock Reservoir, the Antelope Valley Groundwater Basin, recycled water, captured stormwater, and locally banked water. Typically, approximately 98 percent of demand is met utilizing imported water and groundwater. Local water agencies have limited access to imported water with 2014 SWP allocations at 5 percent (8,250 AF) and only 8,800 AF from 2013 SWP carryover. While the Antelope Valley typically relies on approximately 70,000 AFY to 95,000 AFY of SWP water, this year's lack of imported supply is resulting in sharply increased groundwater pumping and depletion of locally-banked water to provide over 50,000 AF that is typically imported. If dry weather conditions continue into 2015, several water agencies may not meet demands. Imported water supplies could be limited to the 2014 allocations (5 percent) or less and there will be no carryover from 2014, resulting in continued dependence on pumping groundwater from portions of the already over-drafted basin.

Drought conditions have also depleted the other main source of safe drinking water, groundwater from the Antelope Valley Groundwater Basin. Historic lows in precipitation have produced limited local surface supplies as well as reduced natural recharge. This has resulted in over-drafting of portions of the local groundwater basins and/or increasing dependence on imported supplies and depletion of banked water stores. USGS data from 1975 to 1998 show decreased groundwater levels of up to 66 feet as a result of increased groundwater pumping in certain portions of the basin. Recent declines over the past few years have also caused entrained air in the well pumps that deliver water. Entrained air causes aesthetic issues with customers.

Diminished SWP supplies and lowering groundwater levels have forced the Region to deplete its banked water supplies as well. AVEK's WSSP-2 groundwater bank had cumulatively stored approximately 35,000 AF

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of water since the project began in 2010. As a result of this year's drought, AVEK has increased pumping from the bank and has accelerated new well drilling projects. It is anticipated that 20,000 AF (57 percent of the total volume) will be withdrawn by the end of 2014 to support dry year demands. If drought conditions continue into 2015, the entire volume of banked water could be reduced to zero AF during the next year. The Project proposed in this application will pump groundwater from a portion of the Basin that is not experiencing overdraft.

Drought conditions have exacerbated other water supply issues related to blending for arsenic, a naturally-occurring constituent in many parts of the Region's groundwater basin. Currently, the District uses imported SWP water to blend with 15 wells, of which 11 wells produce water with arsenic levels that exceed the concentration limit. Without available SWP water for blending, these wells cannot be used to supply safe drinking water and the District anticipates taking 11 wells offline in 2015 if no blend water is available from the SWP. The District also anticipates that several groundwater wells may be taken offline as a result of the July 2014 established maximum contamination level (MCL) for hexavalent chromium of 0.010-milligram per liter, further limiting the Region's ability to extract groundwater.

Finally, drought conditions have depleted the Region's only source of local surface water, the Littlerock Reservoir, owned and operated by PWD. Current conditions indicate that minimum pool requirements for recreational use may not be met as early as September of 2014. These surface waters, though a small percentage of total supplies, are critical during times of extended drought because they constitute a local source of supply.

If current dry-weather conditions persist throughout the State, there is a risk that mandatory rationing measures will be required by early 2015.

### **DROUGHT IMPACT: At Risk of Not Meeting Existing Agricultural Water Demands**

Drought conditions have impacted the ability to provide agricultural users with adequate water supplies. Due to the drastic reduction in SWP deliveries to 5 percent of Table A amounts, AVEK was not able to deliver water to its agricultural users in 2014. As a result, these customers have had to rely entirely on groundwater pumped from the Basin, exacerbating overdraft in some portions of the Basin. The 60th Street West Wellhead Treatment Project proposed in this application will pump groundwater from a portion of the Basin that is not experiencing overdraft.

### **DROUGHT IMPACT: Drinking Water MCL Violations**

Drought conditions have reduced the District's ability to utilize blend water for arsenic management. SWP water is used at numerous locations for blending groundwater to meet arsenic MCLs. The District currently relies on SWP water for blending at 15 wells. With the extreme reduction in SWP deliveries, no water has been available for blending, causing groundwater from 11 of the 15 wells to not be utilized as they cannot be made to meet the arsenic MCL requirements. The 60th Street West Wellhead Treatment Project included in this Proposal will allow access to arsenic contaminated groundwater that will not require blending with imported supplies as arsenic treatment will be provided.

### **DROUGHT IMPACT: Groundwater Basin Overdraft**

Drought conditions have exacerbated existing difficulties with groundwater basin over-draft in some portions of the basin. Groundwater extraction in the Antelope Valley has exceeded the estimated natural recharge of the Basin since the 1920's with groundwater levels declining by more than 200 feet in some areas and by at least 100 feet in most of the Antelope Valley Region. Water table depressions are most evident between the cities of Lancaster and Palmdale where the majority of municipal groundwater pumping occurs. The 60th Street West Wellhead Treatment Project lies outside this depression zone in an area where little pumping

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occurs due to arsenic levels being too high to blend down to regulatory requirements. The Project will open up a new local water source that will not contribute to depletion of groundwater in the principal pumping areas that are affected by overdraft. The 60th Street West Wellhead Treatment Project proposed in this application will pump groundwater from a portion of the Basin that is not experiencing overdraft.

## Conservation Measures

Given the long-standing tenuous nature of imported supplies and the Region's heavy reliance on such supplies, the Antelope Valley Region has been at the forefront of the development and implementation of demand management/water use efficiency (WUE) programs that have resulted in average municipal use levels (of about 199 gpcd)<sup>2</sup> when compared to other Regions in Southern California and throughout the state.

The impacts from the previous drought of 2008-2010 and the combined SWP system cutbacks due to new environmental restrictions prompted water purveyors to implement water conservation plans in order to offset demands on imported water. Purveyors developed and implemented expanded voluntary conservation programs across the Region.

SB7x7 requirements also set water use targets for water purveyors within the Antelope Valley Region with the 2010 Urban Water Management Plans (UWMPs) completed by AVEK and all retail providers. The targeted 20 percent reduction in demand would result in almost 36,000 AFY of additional supply for the Region. The UWMPs articulated what type of demand management measures that each water purveyor would be using to help meet reduction targets as well as water shortage contingency plans in case supplies were becoming insufficient to meet demands. As a result, there had already been a great deal of conservation savings generated within the Region in advance of the 2014 drought. Several noteworthy conservation measures from Antelope Valley water purveyors are summarized below.

**Antelope Valley East Kern Water Agency:** As an imported water wholesaler for the Region, AVEK relies on local water retailers to develop and implement water conservation plans. AVEK is implementing conservation measures in order to decrease demand on supplies they do not have. The agency is promoting a series of free *Smart Landscape Water Use* workshops sponsored by Antelope Valley Water Partners and hosted at Antelope Valley College, as well as investigating methods to enhance current water conservation programs for water retailers through partnering agreements and financial incentives. In addition, AVEK is exploring other avenues to expand the water conservation programs to smaller water retailers served by AVEK through financial incentives.

**Los Angeles County Waterworks District No. 40:** The District ordinarily promotes the implementation of water conservation measures, provides conservation tips, and offers incentive programs such as "cash for grass" and water saving device rebates for clothes washers as well as sprinkler controllers and nozzles. With the current drought conditions, it has been even more important to increase awareness of these initiatives to aid in water use reduction. The District is currently advertising on billboards, bus tails, and the radio; distributing pledge cards and flyers; and providing "reverse 911" calls, and water bill messages. Additional public outreach and community education is taking place through public meetings and workshops for children and adults. The District has requested a voluntary 20 percent reduction through its "20 ways in 20 days" which it rolled out through Twitter and its website. Additionally, the District has instituted mandatory restrictions on potable water use for new construction projects. Instead of permitting temporary construction meters, the District is encouraging new projects to use recycled water as an alternative for construction purposes.

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<sup>2</sup> *Antelope Valley Integrated Regional Water Management Plan, 2013 update:* Page 3-11 – Average per capita water use 0.223 AFY/person

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If drought conditions continue or worsen, the District is prepared to recall all existing construction meters and implement mandatory restrictions through its Water Shortage Contingency Plan.

**Palmdale Water District:** As a result of the 2014 drought PWD has strengthened their water savings initiatives and campaigns. The center of the PWD website home page advertises the Governor's Drought Declaration, and asks "what does a 20 percent reduction in water use look like?" PWD's water conservation program includes rebates on for high efficiency toilets, washing machines, matched precipitation rotators, and smart controllers for irrigation. Other programs include their cash for grass program, workshops on water efficient landscaping, and water savings tips. A big push in PWD's water conservation program has been their public education campaign through their website, public tours and presentations, and their water conservation mascot for children, "Aquadog".

In reaction to the drought, PWD's Board approved a resolution echoing the governor's 20 percent voluntary conservation and due to the emergency drought regulations adopted by the State Water Resources Control Board on July 15, 2014; and the Board will be recommending a new resolution to make it mandatory. PWD plans to make use of the prohibitions outlined in their Urban Water Management Plan.