West Valley Water District

Smart Water Conservation for Disadvantaged Communities
($300,000)

Applicant:

West Valley Water District

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Section D

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Section E: Technical Proposal

Executive Summary

Date: January 20, 2015
Applicant Name: West Valley Water District
City, County, State: Rialto, San Bernardino, California

The West Valley Water District (District) is implementing a pilot water use efficiency program through its Turf Replacement Program (TRP). The District would like to increase the pilot Turf Replacement program to all 20,000-service connections in the District at a future date. To achieve this goal, the District is creating a strategy, which will leverage state and federal funding to achieve the implementation. One of these strategies is to emphasize disadvantaged communities because of the set aside funding available for disadvantaged communities in California's Proposition 1.

The pilot TRP the District currently has in place provides residents a rebate of $5.00 per square foot for turf removal. The funding for this rebate is obtained from three sources. The first source is through the District's participation in the Water-Energy Community Action Network which is being funded by the California Department of Water Resources' Water-Energy grant. Through this grant, which was given to the Santa Ana Watershed Project Authority (SAWPA), has received funding of $195,000 for its Turf Replacement program. The matching funds are being provided by the San Bernardino Valley Municipal Water District and District reserves. The total amount for The District's Turf Replacement Program is up to $325,000. Based on the budget, the District is currently targeting up to 65 connections. The District would like to increase the pilot program using WaterSMART funding and plans on using its own non-federal match funding. As Proposition 1 funding becomes available, the District plans on applying for this funding as well to implement the TRP. The proposed pilot TRP, "Smart Water for Disadvantaged Communities" will target a total of 120,000 sq ft of turf removal.

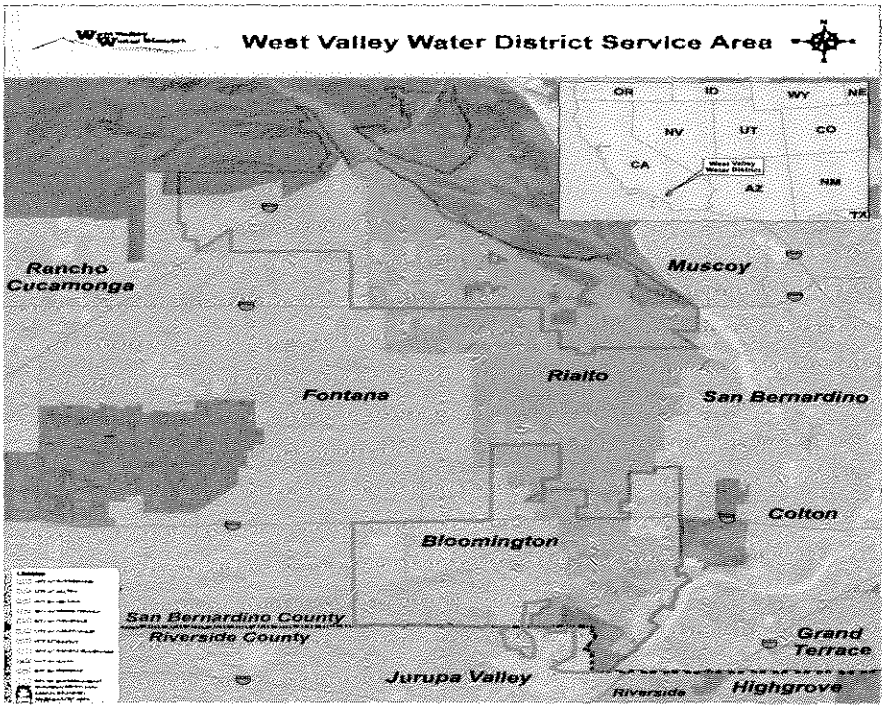
One of the challenges the District faces is its inability to meet its state mandated water conservation goals due to the lack of funding to expand the pilot Turf Replacement program. The pilot Turf Replacement Program helps reduce water consumption by as much as 16.5 acre-feet as the majority of Southern California residential water use is devoted to outdoor landscaping, most often consisting of large areas of turf that requires large amounts of water.

If the District was successful in obtaining funding from the WaterSMART program, it would be able to increase its pilot TRP to help meet the mandated goals which is has been unable to reach. West Valley has a large number of significant water users in the service area, some of them in the disadvantaged communities in the southern portion of the District's service area. Approximately 39.4% of the population within the District's service area meet the criteria for disadvantaged communities. Because of the set aside funding in Proposition 1 for Disadvantaged Communities (DAC), the strategy is to

increase implementation of the program in this area with the overall goals of implementing a TRP throughout the service area. The District expects this to be a two-year project starting October 2016. The project is not located on a federal facility.

Background Data

The District traces its history to February 28, 1962 when the San Bernardino County Water District consolidated three mutual water companies to increased efficiency in their operations. This consolidation brought historic water rights dating back to 1897. During the early years of operation, the District supplied mostly agricultural water to the area. As the area urbanized, the District acquired other water systems. The District now owns and operates 6has 6treatment plants, 360 miles of pipeline, 25 reservoirs, 23 well and 20,000 service connections. The District serves drinking water to 66,000 residents in four cities and two counties.



As applicable, describe the source of water supply, the water rights involved, current water uses (e.g., agricultural, municipal, domestic, or industrial), the number of water users served, and the current and projected water demand. Also, identify potential shortfalls in water supply. If water is primarily used for irrigation, describe major crops and total acres served.

The District has multiple water supply sources including groundwater, local canyon runoff from Lytle Creek and Imported State Water Project water delivered through the San Gabriel Feeder from the San Bernardino Valley Municipal Water District (SBVMWD). The District currently provides drinking water to customers in portions of Rialto, Colton, Fontana, Bloomington, and portions of the unincorporated area of San Bernardino County, and a portion of the city of Jurupa Valley in Riverside County. The District's mission is to provide a reliable, safe drinking water supply to meet our customers' present and future needs at a reasonable cost and to promote water-use efficiency and conservation.

The Oliver P. Roemer Water Filtration Facility treats the local surface water and State Water Project water at its 14.4 million gallons per day (mgd) facility in the Districts upper system. The facility utilizes a direct filtration treatment system consisting of rapid mix, clarification with coagulation, flocculation, dual-media filtration and disinfection.

Groundwater supply for the District is pumped from five groundwater basins including, the Lytle Creek Basin, Bunker Hill Basin, Rialto Basin, North Riverside Basin and the Chino Basin. Over the years, the Districts supply of groundwater has served as the predominant water supply.

Lytle Creek Basin

The District's water rights in the Lytle Creek Basin are limited to 12,105 gallons per minute (gpm) if they are diverting their full allotment (2,290 gpm) of surface flow from Lytle Creek. If flows from the Creek are low and the District is receiving a portion of their allotment, they can pump the difference from the wells to a combined maximum of 14,395 gpm from the basin, depending on how much water is available to pump and how much water is available to divert from Lytle Creek. The District has no restrictions on how much it can pump and serve within the Lytle Creek Region. The well supply sources in Lytle Creek Basin fluctuate greatly in wet and dry seasons as evidenced by the water level records and could affect the District's supply ability.

Rialto Basin

When the basin is not subject to restrictions by the adjudication, the District has unlimited extraction rights. During drought conditions when the adjudication is in effect, the extraction right ranges from 6,134 af/yr during drought periods to 3,067 af/yr in the most severe drought periods.

North Riverside Basin

The District has unrestricted water rights in the North Riverside Basin and plans to drill future wells in this basin.

Chino Basin

The District's water rights in the Chino Basin are limited to approximately 1,000 af/yr without incurring replenishment costs.

Bunker Hill Basin

The District has unrestricted water rights in the Bunker Hill Basin, but has restrictions on pumping and exporting from certain areas of the basin as is defined in the 1924 Judgment for the Lytle Creek Region and as defined in a City of San Bernardino Municipal Water Department's Basin Management Ordinance. This ordinance restricts the location of new wells and amounts of overall pumping from the Bunker Hill Basin within the area defined by the Management Ordinance.

In addition to the Districts' own wells, the District and the City of Rialto by agreement with the SBVMWD, have renewed a contract for a project to pump groundwater from the Bunker Hill Basin through a 48-inch diameter pipeline known as the Base Line Feeder. The agreement requires that SBVMWD provide a supply up to 5,000 af/yr to the District. Additional agreements in the future may provide for more purchased water from SBVMWD or the City of San Bernardino or the District could drill additional wells to meet ultimate water demand.

Some of the basins utilized by the District have water quality problems. Water quality issues are constantly evolving. The District will continue to take action to protect and treat supplies when needed, but it is well recognized that water quality treatment can have significant costs.

There are approximately 20,500 active service connections within the District with the majority being single family residential units. The remainder of the connections is a mix of commercial, industrial and landscape irrigation. Very little water is agricultural usage. The Districts 2012 Water Master Plan projects that the ultimate water usage at buildout will be 55,704 acre feet per year.

In addition, describe the applicant's water delivery system as appropriate. For agricultural systems, please include the miles of canals, miles of laterals, and existing irrigation improvements (e.g., type, miles, and acres). For municipal systems, please include the number of connections and/or number of water users served and any other relevant information describing the system.

The District serves customers in the Cities of Rialto, Fontana, Colton, Jurupa Valley (Riverside County) and unincorporated areas of San Bernardino County. The water distribution system includes eight pressure zones which are divided into a north (upper) and south (lower) system with the City of Rialto serving the area in between.

These eight pressure zones serve elevations from 920 to 2,267 feet above sea level. This vast change in elevation has required the District to construct facilities that can boost water supplies to reservoirs in those upper pressure zones. The District has also designed

the system to allow water to be dropped down to lower pressure zones, thus providing the District with operational flexibility.

The storage capacity for each pressure zone is designed for the sum of one day demand during peak day flow for operational storage, plus the required storage for fire flow. For pressure zones 4, 5, 6 and 7, additional pumping storage equal to one average day demand of the upper zones is provided for each of these zones.

The water distribution system consists of approximately 360 miles of pipeline, some of which have been in service for 70 years. These pipelines range in diameter from 2-inch to 48-inch. The pipeline materials include cement-mortar lined steel, cast iron, asbestos cement, riveted steel, welded steel and PVC.

There are approximately 20,500 service connections feeding residential, commercial, industrial, and landscape customers. Over 90% of the connections served are single-family residential units followed by commercial connections at 3%. The Districts 2012 Water Master Plan projects that the ultimate water usage at build out will be 55,704 acre feet per year.

Technical Project Description

The District wants to provide an opportunity to all the residents in the future will participate in the Turf Replacement Program. The District plans to start with a pilot program and then go into full implementation District wide. The Pilot program that the District is implementing uses the Santa Ana River Watershed Basin Plan written by SAWPA and funded by Reclamation as a guideline to program development and implementation strategies. This plan highlights the specific needs of disadvantaged communities. The pilot expansion proposed by The District would implement the specific recommendations such as direct communication with the residents of disadvantaged communities to implement the TRP to assist in reducing water consumption. The Development phase of the pilot will consist of compiling water use data from the District to be able to target the largest water users in the area.

The District has partnered with other agencies to access funding to implement a TRP with an emphasis in disadvantaged communities. In December, 2014, the District partnered with the Santa Ana Watershed Project Authority (SAWPA) on a Water-Energy grant opportunity though the California Department of Water Resources (DWR). The application was for a watershed wide water conservation program, which included turf removal as a component in addition to installing water saving devices indoors. The District was selected as a partner because of the disadvantaged communities in the service area and its historical partnerships with SAWPA.

The District wants to implement a TRP District wide to company with the State of California's Emergency Drought legislation and the 20X20 goals utilizing both state and

federal funding. Because of the opportunity in Proposition 1 for disadvantaged communities, this pilot will leverage any WaterSMART funding with Prop 1 state funds so to implement the project goals. The focus of the pilot project is to help the District achieve its goal of leveraging federal funding with state funding (from Prop 1) to implement the District wide project. The pilot project serves as a plan development process using the Santa Ana Watershed Basin Plan as the planning guide.

The District recognizes the importance of this program and the opportunity to engage a population, which has historically not engaged with the District. With the limited funding from SAWPA, along with additional funding from San Bernardino Valley Municipal Water District and its own funding, the District will only be able to reach up to 65 dwelling units. In order to expand on the program, the district is looking to target 120,000 acre-feet for the pilot TRP. The district is looking to WaterSMART funding to expand the pilot program with the goal of full implementation of the TRP to all 20,000 services connections.

The process by which the District will implement the "Smart Water Conservation for Disadvantaged Communities" is as follows:

Implementation Process:

The District will hire an outreach contractor specialized in disadvantaged communities will identify the top 250 water using customers in order to get to the targeted 120,000 sq. ft. of turf removal. The contractor will encourage as many residents to participate in the water conservation program as possible so that the targeted 120,000 sq. ft. goal is met. The contractor will have the residents to sign a waiver of liability form and a form that will explain the program details and the responsibilities of both parties. Once the residents have filled out the necessary paperwork, the outreach contractor will send a list of residents who have signed up to participate in the program to the district. The district will ensure that all the paperwork is filled out correctly. Collateral materials, which will be used for the outreach, will be in both English and Spanish. The residents who will qualify for the program will be the top 60 sites, which have the largest amount of turf in place. District staff will verify this. In the future, participants who do not qualify for this pilot, they will be put on a list, which will be used as future funding becomes available.

Landscape Pre-Assessment and Landscape design:

Once a customer is qualified and approved for participation the District will send out an RFP for a landscaper contractor according to District policies. Once the District has hired the landscape contractor, they will make a pre-assessment via a site visit. Photographs will document the site and field notes to ensure that the property has turf and has an automatized irrigation system. The contractor will show the homeowner several potential landscape designs (which were pre-determined in concert with the district) and a selection will be made.

A week time period will be given to the resident to decide on the landscape design they want. At this point, the homeowner will sign all necessary consent and educational forms. There will not be any work started until the forms are signed.

Turf Removal:

If possible, the turf will be killed in an ecologically sustainable manner. This process will be highlighted in the RFP for Drought Tolerant Landscaping Services. Once the turf is dead, then there will be a waiting period so that any weed seed left behind will sprout and then the area will be re-sprayed to ensure that the turf is completely removed from the area.

Planting the Design:

The landscape contractor will implement the agreed upon drought tolerant landscape as determined by the landscape contractor and remove any overhead sprinkler heads and replace them with drip irrigation systems. The planting will provide 50% plant cover at maturity. The remainder of the area will consist of mulch. Photo documentation will be provided.

Post Planting Monitoring:

One week after planting, The District and the landscape designer will conduct a site inspection. A month later another inspection will occur to ensure that the plants are doing well. The final inspection will be conducted at 3 months to ensure that the project is maintained and the plants thrive. Throughout the process, the outreach specialist will be available to answer any questions or address any concerns the residents may have. The outreach specialist will be bilingual.

V.A.2 Evaluation Criteria A: Water Conservation

Subcriterion No. A. 1: Quantifiable Water Savings –

6. Landscape Irrigation Measures:

The district is currently implementing a pilot TRP that will be expand to residential and commercial customers. These measures include removing the water guzzling turf and replacing it with drought tolerant plant matter, which will provide 50% coverage.

Description of amount of water saved:

The total amount of water saved will be 16.5 ac ft. This will result from the removal of 120,000 sq ft of turf.

Turf Removal

(i) How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions and supporting data.

Average annual water savings estimates were based on the anticipated 120 single-family residences removing 1,000 square feet of turf per residence. A report prepared by the California Urban Water Council in March 2015 demonstrated that turf in the Inland Empire region of southern California requires approximately 45 gallons per square of turf annually for survival. The report is attached for reference. As a comparison, the Municipal Water District of Orange County uses the 44 gallons per square foot water consumption rate for turf. The calculation of annual water savings is shown below:

Total Sq.Ft. Replaced	Gallons Saved per Square Foot	Total Gallons Saved Per Year	Total Acre Feet Saved Per Year	% of Total Water Supply
120,000	45	5,400,000	16.5	0.09

(ii) What is the total surface area of turf to be removed and what is the estimated average annual turf consumption use rate per unit area?

The total surface area of turf to be removed is 120,000 square feet. The turf consumption use rate per unit area is 45 gallons per square foot per year.

Total AF Saved/Yr = (120,000 sf x 45 gallons/sf) x (1 Ft^3 /7.48 gallons) x (1 Ac-Ft/43,560 ft^2)

Total AF Saved/Yr = 5,400,000 gallons x (0.1337 Ft^3 /gallons) x (0.000023 Ac-Ft/ ft^2)

Total AF Saved/Yr = 16.5 Acre-Feet

(iii) Was historical water consumption data evaluated to estimate average annual turf consumptive use per unit area? If so, did the evaluation include a weather adjustment component?

The District will be using historical data to identify the top 200 users to target the 60 users for the pilot.

(iv) Will site audits be performed before applicants are accepted into the program?

Yes. The individual applicants that request participation in the TRP will have a pre-construction inspection and post-construction inspection by District staff to validate actual turf quantity removed prior to rebate issuance to customer.

(v) How will actual water savings be verified upon completion of the project?

The District customer's water consumption is calculated on a monthly basis through its metering program. A comparison of pre turf removal and post turf removal water consumption can be determined with historical water use data maintained by the District's customer billing department.

Subcriterion No. A.2: Percentage of Total Supply

Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet. Please use the following formula:

$$\frac{\text{Estimated Amount of Water Conserved – See Section ii above.}}{\text{Average annual Water Supply}}$$

V.A. 2 Evaluation Criterion B: Energy-Water Nexus

See below for detailed calculation.

Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

Subcriterion No. B2: Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water management project.

Energy efficiency will be improved as a result of the project. When fully implemented, the estimated water savings is approximately 16.5 acre-feet of water per year. Based on the results of the pilot, the District plans on doing a full scale implantation allowing all residents to participate in the future. On average, water is produced (pumped) from a well and boosted one additional time in the distribution system, both requiring significant inputs of power. An analysis was conducted to estimate the power cost reduction in kilowatt hours saved as a result of the water savings utilizing the District's most utilized well and pump station.

Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If justifiable energy savings are respected to result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

Please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements?

District Well No. 2 is a 300 horsepower driven well, is the most utilized groundwater production well in the system and contains well head treatment system for the removal of the natural contaminant, Arsenic. Therefore, the power required for this well includes the power to effectively boost the water through the treatment train. As mentioned previously, water is boosted in the system at least one more time prior to delivery to District customers. Booster Pump 3A-1 is a 200 horsepower booster pump and located in one of the most utilized pump stations in the District's distribution system and was also selected for the analysis.

Reducing demands by 16.5 acre-feet will result in approximately 65 hours less run time per year for Well No. 2 resulting in a 13,570 less kilowatt-hours (Kwh) reduction. For Booster Pump 3A-1, this reduction results in approximately 22 hours less run time per year resulting in a 3,630 Kwh reduction.

The savings estimate is predicated on the annual water savings of 16.5 acre-feet per year. The total estimated annual power cost savings for both District Well No. 2 and Booster Pump 3A-1 is $2,235.00.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

The energy savings estimate is based upon an alternate site of origin, but is representative of typical District operations. The district utilizes annual SCE testing on the wells and pump stations to determine the percent efficiency each piece of equipment is operating as well as the cost per kilowatt hour to pump an acre-feet of water. The calculations are shown below and also contained in the attached spreadsheet.

Does the calculation include the energy required to treat the water?

Yes, District Well No. 2 contains arsenic in the raw water and requires treatment prior to delivery into the distribution system. Therefore the horsepower required to operate District Well No. 2 is necessary for wellhead treatment.

Well No. 2 Energy Calculation

Pre-Turf Removal:

Q = 1,379 gallons per minute (gpm) = 6.1 AF per Day = 2,224.5 AF per year (Assuming 24/7 operations)

Kilowatt Hours of Power Required to Pump 2,224.5 AF = 819 KWH/AF x 2,224.5 AF = 1,821,866 KWH (Based on SCE Annual Testing)

Annual Cost = $0.13/KWH x 1,821,866 KWH = $236,842.50

Post Turf Removal:

Q = 1,379 gallons per minute (gpm) = 6.1 AF per Day = 2,224.5 AF per year (Assuming 24/7 operations)

Annual Quantity of Water Pumped after Turf Removal = 2224.5 AF – 16.5 AF = 2,208 AF

Kilowatt Hours of Power Required to Pump 2,208 AF = 819 KWH/AF x 2,208 AF = 1,808,352 KWH (Based on SCE Annual Testing)

Annual Cost = $0.13/KWH x 1,808,352 KWH = $235,085.76

Cost Differential = $236,842.50 - $235,085.76 = $1,756.74

Pump Station 3A-1 Energy Calculation

Pre-Turf Removal:

Q = 4,199 gallons per minute (gpm) = 18.6 AF per Day = 6,789 AF per year (Assuming 24/7 operations)

Kilowatt Hours of Power Required to Pump 2,224.5 AF = 219 KWH/AF x 6,789 AF = 1,486,791 KWH (Based on SCE Annual Testing)

Annual Cost = $0.13/KWH x 1,486,791 KWH = $193,282

Post Turf Removal:

Q = 4,199 gallons per minute (gpm) = 18.6 AF per Day = 6,789 AF per year (Assuming 24/7 operations)

Annual Quantity of Water Pumped after Turf Removal = 6,789 AF – 16.5 AF = 6,772.5 AF

Power Required to Pump 6,772.5 AF = 219 KWH/AF x 6,772.5 AF = 1,483,177.5 KWH (Based on SCE Annual Testing)

Annual Cost = $0.13/KWH x 1,483,177.5 KWH = $192,813

Cost Differential = $193,282 - $192,813 = $469

Will the project result in reduced vehicle miles driven, in turn reducing carbon emissions? Please provide supporting details and calculations. Describe any renewable energy components that will result in minimal energy savings/production (e.g. installing small-scale solar as part of the SCADA system).

Reduced vehicle miles is not anticipated.

V.A.3 Evaluation Criterion C: Benefits to Endangered Species

The plant matter used in the project will be drought tolerant. When possible, plant matter that is not only drought tolerant but also beneficial to pollinators who are potentially endangered such as the Monarch Butterfly, will be installed. Recently there have been calls to list the Monarch Butterfly as an Endangered Species and this project would help create habitat for this critically important pollinator in an urban area. In addition, by planting drought tolerant and native plants, the district will be reducing the impact of run off and over irrigation as less water will be used. This will result in a positive benefit to endangered species.

V.A.4 Evaluation Criterion D: Water Marketing

The District recharges groundwater in the Bunker Hill Basin as a joint participation, as shown in the Construction, Operation and Maintenance of the New Baseline Feeder Agreement May 2012. Pages 19-20 of the May 2012 Agreement shows the partnerships.

V.A.5 Evaluation Criterion E: Other Contributions to Water Supply Sustainability

The Inland Empire is one of the fastest growing regions in the State of California. It is anticipated that the County of San Bernardino will continue to grow and yet the water supply will not continue to increase proportionately. The "Smart Water for Disadvantaged Communities Turf Replacement Program" will help the region manage its water more efficiently lending itself to a more sustainable water supply for future use by the residents.

Subcriteria E.1 Addressing Adaptation Strategies in a WaterSMART Basin Study

In 2010, the Bureau of Reclamation (Reclamation) entered into an agreement with the Santa Ana Watershed Project Authority (SAWPA) to draft a Basin Study of the Santa Ana Watershed. The study was partially funded by a WaterSMART grant, with SAWPA providing state funding as the non-federal cost share. The basin study addressed various adaptation strategies including the need to increase a water use efficiency approach in order to continue to have a reliable supply of water for a rapidly growing Santa Ana Watershed. One key aspect of the basin study was a detailed review of the disadvantaged communities in the Santa Ana Watershed. The study, *Overview of Disadvantaged Communities and Native American Tribes within the Santa Ana River Watershed (*DAC/Tribal Study*)*, included interviews with numerous stakeholders in the Santa Ana Watershed who had daily interactions with disadvantaged communities. These stakeholders were not just public agencies but included the residents of the Santa Ana Watershed's disadvantaged communities. The study used the State of California's metric for defining a disadvantaged community as having 80% of the Median Household Income for the state of California. The study broke up the Santa Ana Watershed into 4 distinct regions; the San Bernardino region which is the location of The District, the Riverside Region, the Orange County Region and a small portion of Los Angeles County. The communities, which the study addressed, were in relatively close proximity to the Santa Ana River. The disadvantaged communities study emphasized direct engagement with the residents of disadvantaged communities. During the interview process, educating the residents of the disadvantaged communities about the importance of the Santa Ana River and its watershed, was a critical goal. Because one of the adaption strategies of the overall basin study was water reliability, the DAC/Tribal study took great pains to educate the residents about the importance of water use efficiency and the importance of the Santa Ana River in their daily lives. This proposal seeks to expand upon the groundwork laid by the DAC/Tribal study by directly engaging the residents of the District service area about water use efficiency. The Santa Ana River Watershed Basin study placed a high priority on stakeholder involvement and education and this project will readily fulfill this goal. The area of the proposed project, Bloomington, is within census tracts that meet the criteria for disadvantaged community status. During the process of signing up the residents of the project area to participate in the Turf Removal, they will be told about water use efficiency and how turf removal helps increase our water supply. The outreach process will be conducted in English and

Spanish in culturally appropriate ways, a goal that is emphasized in the DAC/Tribal study.

The Santa Ana River Watershed is home to one of the fastest growing regions in the United States. With such rapid growth, our water supply must be managed effectively to ensure a reliable source of water. By implementing this *Smart Water Conservation for Disadvantaged Communities,* the water guzzling turf will be replaced by drought tolerant landscaping as well as educating the residents on water use efficiency in a manner they can understand.

The District was a stakeholder who was interviewed in the DAC chapter of the Santa Ana River Basin Study. The District has been very involved in the disadvantaged communities work with SAWPA.

The District is acutely aware of the need for collaboration on water use efficiency in the Santa Ana Watershed. As part of the proposed project, the agency plans on continuing the outreach and education process in the disadvantaged communities in the service area. The District plans on expanding the outreach to the disadvantaged communities in the area to increase the awareness of their relationship to the Santa Ana River. During the basin study, the need for continual outreach and education to disadvantaged communities was noted. The District plans on expanding the outreach process to these communities, which was started in the Reclamation's basin study of the Santa Ana River Watershed.

Subcriterion E. 2: Expediting Future On-Farm Irrigation Improvements

The District is an urban water supplier and hence, does not provide on-farm irrigation.

Subcriterion E.3: Other Water Supply Sustainability Benefits

Projects may receive up to 14 points under this sub-criterion by thoroughly explaining additional project benefits, *not already described above.* Please provide sufficient explanation of additional expected project benefits and their significance. Additional project benefits may include, but are not limited to, the following:

Will the project make water available to alleviate water supply shortages resulting from drought?

The District is doing its part to avoid water supply shortages which result from the severe drought California is currently experiencing. The district participates in the regional water conservation program, iEfficient which is an outreach campaign to the Upper Santa Ana Watershed customers to encourage water conservation.

Explain in detail the existing or recent drought conditions in the project area.

California is in its 5th year of drought. The drought has created many hardships throughout the District's Service area such as historic low groundwater levels resulting in higher power costs passed on to its customers. Reliance on imported water has increased to keep the District's surface water treatment plant operating efficiently since local flows in Lytle Creek are extremely low due to the drought. In addition, reduction in state allocation, decrease in the groundwater basin, the District's inability to meet the 20x20 goals, as well as decreased financials which make it difficult to implement programs.

Describe the severity and duration of drought conditions in the project area.

The drought is in its 5th year. The impact the drought is having is on the region is significant due to the reliance on groundwater for 80% of the water supply. Yes. Over time it has been reduced. The calendar year 2015, State Water Project (SWP) water was 10%. Because there is no groundwater recharge in the Rialto/Colton and North Riverside Basins, which primarily serve the disadvantaged communities this creates an uncertainty in water supply in the region.

Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by drought.

The District is reliant upon the Rialto/Colton and North Riverside basins, which is experiencing record lows of groundwater supply. Restrictions on the amount of water the stipulated parties to the 1961 Decree are entitled to pump from the basin are outlined in the decree and is based on the average elevation of the spring-high water level of three index wells. The spring-high water level for the index wells in 2014/15 was 32-feet below elevation 969.7 feet above mean sea level and therefore the District's entitlement has been reduced by 32%.

Provide detailed explanation of how the proposed WaterSMART Grant project will improve the reliability of water supplies during times of drought.

The proposed WaterSMART grant project will significantly increase water supply in the area upon full implementation. Because the pilot program being proposed is in the plan development stage, the funding will create the 1st step in full implementation in all of the District service area.

Will the project make water available to address a specific concern? For example:

Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g. population growth)?

The proposed project will lessen heighten competition for water resources as the region and the District continues to grow. The Inland Empire is one of the fastest growing regions in the county. The District has projected growth up to 2% per year for an estimated number of connections at build out to be approximately 53,000. This proposed project creates a water management structure that is sustainable though decreased water use, which can increase water supply for future growth.

Describe how the water source that is the focus of this project (river, aquifer or other source of supply) is impacted by climate variation.

The groundwater basin has been severely impacted by the drought due to the impact on the State Water Project and the cut back in allocations.

Will the project make additional available for Indian tribes?

There are no tribes in the West Valley Service area.

Will the project make water available for rural or economically disadvantaged communities?

The proposed project will make more water available for economically disadvantaged communities by increasing the reliability of the water supply. Currently the District is reliant on groundwater for 80% of its water. With the severe drought California is experiencing, groundwater supplies are much scarcer and are quickly diminishing. Economically disadvantaged communities are especially vulnerable because they cannot afford more costly imported and treated water supplies.

Does the project promote and encourage collaboration among parties?

The proposed project is a collaborative project, which builds upon the collaboration currently in the region through the Santa Ana Watershed Project Authority (SAWPA) and the Water-Energy Community Action Network. The San Bernardino Municipal Water District (Valley District) is a partner. Valley District is a state water contractor which is a reclamation project. The District is an active member of this collaboration and this collaboration and wants to build on this through the proposed project.

Is there widespread support for the project?

Both our federal and state elected officials are supporting the project. In addition community groups also support the project.

What is the significance of the collaboration/support?

The significance of the collaboration and support is how a region which is experiencing severe drought is coming together to find a solution rather than engage in competition and conflict. Enhanced program development through increased funds to the District, as well as increased collaboration in the area, more partners.

Will the project help to prevent a water-related crisis or conflict?

If the drought continues, water will be more precious and conflict may occur because of the scarcity. This proposed project is the first step in full implementation of a water conservation program throughout the District's service area. The decrease in SWP allocation, has not allowed the District to meet its 20x20 goals, as well as the emergency drought legislation. WaterSMART will help the District meet these much needed goals.

Is there frequently tension or litigation over water in the basin?

The District, with the Cities of Rialto and Colton and the San Bernardino Valley Municipal Water District, are in litigation over the water supplies in the Rialto/Colton Basin. The City of Fontana is taking more than they are supposed to. TRP is the example for the area to increase conservation programs to manage the groundwater more effectively, which will help minimize these conflicts.

Is there the possibility of future water conservation improvements by other water users enhanced by the completion of this project?

The pilot project being proposed by the District will be expanded into full implementation which will increase future water conservation improvements by the residents of the entire District's service area and not just the residents in the pilot program. It will be the initial phase to future phases that will be offered to all of the District's customers.

Will the project increase awareness of water and/or energy conservation and efficiency efforts?

Will the project serve as an example of water and or energy conservation and efficiency within a community?

Yes. The customers will have greater awareness of the need for water use efficiency and the role that turf plays in outdoor water consumption. Because of the pilot's emphasis

engagement of the residents, there will be a greater awareness of the need to conserve water and make important lifestyle changes.

Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?

Yes, by increasing the TRP pilot program, this will increase the awareness of the need for water use efficiency on a regional level.

Does the project integrate water and energy components?

V.A. 6 Evaluation Criterion F: Implementation and Results

Subcriterion No. F1: Project Planning

Does the project have a Water Conservation Plan, System Optimization Reviews (SOR) and/or District or geographic area drought contingency plans in place? Does the project relate/have a nexus to an adaptation strategy developed as part of a WaterSMART Basin Study)? Please self-certify or provide copies of these plans where appropriate to verify such a plan is in place.

The project does have a nexus to multiple adopted studies, including the Integrated Regional Water Management Plan implemented in 2007 and recently updated in 2015. This program also fully supports objectives and strategies outlined in the BOR Basin Study for the Santa Ana River Watershed. The latest Regional Urban Water Management Plan (RUWMP) adopted in 2010 by a majority of retail agencies in the upper Santa Ana River Watershed requires all agencies to implement a full suite of strategies to enhance and preserve the watershed's water supplies, including implementation of water conservation measures. These are discussed individually below:

Provide the following information regarding project planning:

(1) Identify any District-wide or system wide planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Basin Study, drought contingency plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

Basin Technical Advisory Committee (BTAC):

The District is a regional partner and participates in the Basin Technical Advisory Committee (BTAC) administered by the regional water wholesale agency, SBVMWD. The BTAC was formed in response to the *2007 Integrated Regional Water Management Plan (IRWMP)* and is a committee dedicated to managing the

basin's water supply collaboratively among all retail agencies, (latest IRWMP plan updated and adopted in 2015). BTAC subcommittees, such as the Engineering Subcommittee and the Water Conservation Subcommittee compliment the BTAC by performing detailed technical work and studies required to implement water management strategies basin wide. The Chairman of the BTAC is Mr. Tom Crowley, General Manager of District and has served in this capacity since 2008. The Engineering Subcommittee Chairman is Mr. Matt Litchfield, Assistant General Manager of the District and has served in this capacity since 2008 as well.

Integrated Regional Water Management Plan (IRWMP):

Keeping the Region's unique issues and challenges in mind, the BTAC developed a number of water management strategies to help them reach their goals and objectives. These strategies, listed below, intentionally align with the resource management strategies (RMS) listed in the California Water Plan and reflect the unique aspects of the Region's water resources. Water Resource Management Strategies outlined in the 2015 IRWMP are as follows and strategies related to this grant are **highlighted** for convenience:

1. Continue Basin Management in the San Bernardino Basin Area
2. Continue Forest Management
3. Continue Hazardous Fuels Reduction in the Forest
4. Coordinate Land Use Planning and Management with Water Resources Management
5. Develop Basin Management in Yucaipa Basin
6. Develop Desalination
7. Develop Watershed Management Projects and Programs
8. Improve Drinking Water Treatment and Distribution
9. Identify Corridors for Species
10. Identify Projects that Increase Recharge
11. Identify Projects that Increase Surface Water and Groundwater Storage Inside and Outside the Region
12. Identify Water Transfer Opportunities
13. Implement Agricultural Lands Stewardship
14. Implement Agricultural Water Use Efficiency
15. Implement Pollution Prevention Measures
16. Implement System Reoperation
17. **Implement Urban Water Use Efficiency**
18. Improve Supply Conveyance – Delta
19. Improve Supply Conveyance – Regional/ Local
20. Incorporate Environmental Opportunities and Constraints into the Design Process for Facilities
21. Incorporate Opportunities to Improve Habitat and Increase Recreation and Public Access During the Facilities Design Process
22. Increase Recycled Water Use

23. Increase Stormwater Capture
24. Maintain and Improve Water-Dependent Recreation
25. Manage High Groundwater Potential
26. Manage Urban Runoff
27. Match Water Quality to Use
28. Monitor Consumer Confidence Reports
29. Operate Existing Facilities to Increase Recharge
30. Optimize Wet Year Storage and Dry Year Pumping (Conjunctive Management & Groundwater)
31. **Participate in the SAWPA Basin Management Task Force**
32. Protect Recharge Areas
33. **Provide Economic Incentives**
34. Remediate Groundwater Contamination Plumes
35. Restore Ecosystems
36. Review DACs Every 5 Years
37. Support the Bay Delta Conservation Plan

One of the principal objectives and strategies of the 2015 IRWMP is to improve water supply reliability by implementing multiple water conservation measures. As a result of this major objective, the BTAC formed the Water Conservation Subcommittee which promptly implemented the iEfficient campaign in response to the ongoing drought in 2014. The outreach program has been a success and has won numerous awards. The same subcommittee has developed and implemented numerous outreach and water saving strategies including a Proposition 84 grant that included funding for turf removal for large commercial developments. This grant application and its intent for turf removal, especially in disadvantaged communities, fully supports the objectives and strategies as outlined in the 2013 IRWMP. The IRWMP is attached for reference.

Regional Urban Water Management Plan (2010)

The Regional Urban Water Management Plan (RUWMP) is a tool that provides a summary of anticipated supplies and demands for the years 2010 to 2035. This document was prepared for the following agencies within the San Bernardino Valley Municipal Water District service area:

1. San Bernardino Valley Municipal Water District (wholesale water agency)
2. East Valley Water District
3. City of Loma Linda
4. City of Redlands
5. City of San Bernardino Municipal Water Department
6. **West Valley Water District**
7. Yucaipa Valley Water District
8. City of Colton Figure

The RUWMP was prepared consistent with the Urban Water Management Plan Act (Act), the Water Conservation Act of 2009 (SBX7-7) and the Department of Water

Resources (DWR) Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan including the Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (DWR 2011). The RUWMP is currently being updated for submittal to the DWR in 2016.

Urban Water Management Plan Requirements

The Urban Water Management Plan Act requires evaluation of the following:

1. Whether supplies will be sufficient to meet demands during the following hydrologic year types
    a. Normal/average year;
    b. Single dry year;
    c. Multiple dry year sequence;
    d. **Existing baseline water use in terms of gallons per capita per day (GPCD) (applies only to retail water suppliers);**
    e. **Targets for future water use consistent with the Water Conservation Act of 2009 (SBX7-7) which seeks a 20 percent reduction in per capita water use by 2020;**
    f. **Demand Management Measures (DMMs) implemented or planned for implementation as well as the methods proposed for achieving future water use targets;**
    g. **Water shortage contingency planning**; and
    h. Notification and coordination with other water agencies, land use entities, and the community.

The 2010 RUWMP is attached for reference. Chapter 11 addresses RUWMP DMM's directly related to the District.

<u>The District Water Supply Contingency Plan:</u>

The District also has a Water Supply Contingency Plan under Article 24 of its water services rules and regulations and is attached for reference. This contingency plan was a requirement of the Urban Water Management Planning Act and outlines specific steps the District would implement long term during normal hydrologic periods to reduce water usage as well as during drought emergencies. One of the long term strategies implemented was a robust indoor and outdoor rebate programs for District customers (WaterFit Program) including a turf rebate program component. Copies of the current rebate programs are attached as reference. This grant would fund additional turf removal efforts in disadvantaged areas of the District's service area.

Describe how the project conforms to and meets the goals of any applicable planning efforts and identify and aspect of the project that implements a feature of an existing water plan (s).

The District has implemented a Turf Replacement Rebate Program as part of its WaterFit program to increase water conservation awareness and to implement the DMM's outlined in the 2010 RUWMP. The Grant would supplement this existing program and would be available to customers located within the DAC sphere.

Subcriterion No. F.2: Readiness to Proceed

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones and dates. Please explain any permits that will be required along with the process for obtaining such permits. Identify and describe any engineering or design work performed specifically in support of the proposed project.

Turf Replacement Rebate Program

Schedule:

1. Start Date: October 1, 2016
2. Duration: 1 year
3. End Date: September 30, 2018

Implementation Plan:

1. Up to $1 per square foot, up to $1000, for the replacement of current turf with a water efficient landscape.
2. Customer MUST have pre-inspection and approval before removing turf.
3. Customer MUST submit a landscape sketch/design of all proposed conversion landscape areas at the time of pre-inspection approval.
4. Projects MUST be a minimum of 1000 square feet and completed within 6 months of approval date.
5. Conversion areas must contain enough vegetation to create at least 33% living plant cover once the plants are fully grown.
6. All plants being installed must be listed on the Inland Empire Garden Friendly Plant list available at www.watersavinggardenfriendly.com website.
7. Removal and replacement of turf must comply with customers' city and county landscape ordinances.
8. Water efficient landscape products are at the desire of the customer such as rock, pebble, mulch, groundcover, drought tolerant plants with drip irrigation and synthetic turf.
9. The conversion area must be completely covered by a layer permeable to air and water. Common materials include rock, bark, un-grouted flagstone or pavers and artificial turf manufactured to be permeable. Concrete or other impermeable treatments do not qualify.

Customer MUST fill out a W-9 Form if requesting a check in the amount of $1,000 and may be considered taxable income.

Subcrtierion No. F.3z; Performance Measures

Provide a brief summary describing the performance measures that will be used to quantify actual benefits upon completion of the project (e.g. water saved, marketed or better managed or energy saved). For more information calculating performance measure, see Section VIII.A.1 FY2016 WaterSMART Water and Energy Efficiency Grants: Performance Measures.

Average annual water savings estimates were based on the anticipated 120 single family residences removing 1,000 square feet of turf per residence. A report prepared by the California Urban Water Council in March 2015 demonstrated that turf in the Inland Empire region of southern California requires approximately 45 gallons per square of turf annually for survival. The report is attached for reference. As a comparison, the Municipal Water District of Orange County uses the 44 gallons per square foot water consumption rate for turf. The calculation of annual water savings is shown below:

Total Sq.Ft. Replaced	Gallons Saved per Square Foot	Total Gallons Saved Per Year	Total Acre Feet Saved Per Year	% of Total Water Supply
120,000	45	5,400,000	16.57	0.09

The individual applicants that request participation in the TRP will have a pre-construction inspection and post-construction inspection by District staff to validate actual turf quantity removed prior to rebate issuance to customer.

The District customer's water consumption is calculated on a monthly basis through its metering program. A comparison of pre turf removal and post turf removal water consumption can be determined with historical water use data maintained by the District's customer billing department.

Subcriterion No. F.4: Reasonableness of Costs

Please include information related to the total project cost, annual acre-feet conserved, energy capacity or other project benefits and the expected life of the improvement(s).

For all projects involving physical improvements, specify the expected life of the improvements in number of years and provide support for the expectation (e.g.; manufacturer's guarantee, industry accepted life-expectancy, description of corrosion mitigation for ferrous pipe and fittings, etc.) Failure to provide this information may result in a reduced score for this section.

The total project costs are anticipated to be $600,000.00. This is composed of the $300,000 grant and $300,000 matching funds requirement from the District. The project,

when fully implemented, is expected to have a design life of 30 years, assuming that customers do not re-install turf after it has been removed. The annual water savings is

Funding Sources	Funding Amount

estimated to be 16.57 acre-feet for a total project water savings of approximately 497 acre-feet over the 30 year project life span. Calculations supporting these numbers are attached for reference.

In addition to actual water savings, reduced pumping costs are realized when demands are reduced on the water distribution system. The annual pumping (power) costs are estimated to be reduced by $2,234 as a result of the reduced water demands. Present value of the power savings over the life of the project is estimated to be approximately $67,000. Calculations supporting these numbers are attached for reference.

V.A.7 Evaluation Criterion G: Additional Non-federal Funding

State the percentage of non-federal funding provided
50% is provided of non-federal funding

V.A. 8 Evaluation Criterion H: Connection to Reclamation Project Activities

How is the proposed project connected to Reclamation project activities?
The project will lower the amount of State Water Project Water used which is a Reclamation project.

Does the applicant receive Reclamation project water?

Yes, through the SWP.

Is the project on Reclamation project lands or involving Reclamation facilities?

The project involves lessening the importation of State Water Project Water through the San Bernardino Valley Municipal Water District which is a CalFed partner.

Is the project in the same basin as a Reclamation project or activity?

The project is in the Santa Ana River Watershed basin study which was done by the Santa Ana Watershed Project Authority and funded by Reclamation
Will the proposed work contribute water to a basin where a Reclamation project is located?

Yes the project will contribute water to the Santa Ana River Watershed where a basin study funded by Reclamation has been done.

Will the project help Reclamation meet trust responsibilities to Tribes?

No.

Non-Federal entities	
West Valley Water District	$300,000
Requested Reclamation Funding	$300,000
TOTAL	$600,000

Table 1. —Summary of non-Federal and Federal Funding Sources