OCWC Settlers Rest Stormwater Pilot Project

Awarded an ADEQ Water Quality Improvement Grant - Cycle 15

November 1, 2014 - October 31, 2015

Located in the Oak Creek Watershed, the Settlers Rest Stormwater Pilot Project introduces the Sedona community to Green Infrastructure Best Management Practices for watershed residents and property owners to look into helping them understand how to reduce E. coli loads possibly entering into Oak Creek from private drainages including their own. Secondarily, we will increase watershed stewardship among target audiences in the Sedona area of the Oak Creek watershed through their encouraged adoption of water-slowing practices implemented on their own properties. The education and outreach component will encourage this by demonstrating to area visitors, students, residents and communities how to better care for their drainage ways and be more responsible for household effluent as well as slow the flow and/or retain stormwater on their property. This grant application is focused on providing regionally specific best management practices (BMPs) outlined in the Oak Creek Watershed Improvement Plan (OCWIP). The Oak Creek Watershed Council (OCWC), along with other community organizations and community citizens, are working together to mitigate stormwater related impacts on Oak Creek and nearby properties through awareness and education of non-point source pollution impacts. The collaborative efforts are focused on teaching approachable strategies toward reducing sediment transport, flooding, E. coli bacteria and other run-off pollution impacts, as well as offer hands-on experience for residents, students and learning institutions to integrate into their curriculum & properties, while demonstrating real-world examples of BMP strategies.

Desired Outcomes

The Settlers Rest Stormwater Pilot Project is a multi-property, community-driven, drainage mitigation project intending to resolve sediment flows and flooding issues on the lowest property in the project area, while piloting the adoption of water-slowing practices across private drainages in the community at large, and ideally the watershed, mitigating non-point source pollutants that would otherwise eventually flow into Oak Creek. This community project area is isolated in its drainage topology with no influent from sources beyond participating properties and ideal as a private drainage community-scale pilot demonstration in Sedona. Settlers Rest was also identified as an ideal stormwater pilot project through City of Sedona City Engineer Charles Mosely, who supports stormwater E. coli mitigation on private lands. According to area residents, they regularly collect pet waste due to horse riders venturing around the wide drainage area found between buildings, and neighboring hospitality business guests use the open drainage ways to relieve their pets. The area that drains into this wash is approximately 1.5 square miles. and this particular area drains into the Carroll Canyon Wash. This area was also identified to allow for the community to determine direct results from the implementations of a diversity of retention techniques in demonstrated both repetitive and independent installations.

Flooding of the lowest property at 60 Table Top Road occurs with nearly every storm event affecting the area. This property drains quickly into the Carroll Canyon drainage way, which carries with the water a high volume of dissolved nutrients, sediment and E. coli bacteria, along with other into nonpoint source pollutants, and shortly thereafter empties most of west Sedona's stormwater into Oak Creek. In other words, we want to show area residents how they can each positively affect their own property by slowing down stormwater as well as how their cumulative efforts will help the health of Oak Creek. We can leverage the small cost of this project and its various outcomes into bigger "savings" of E. coli load reduction in Oak Creek on a city-wide basis with a side benefit of reducing water consumption and energy used in pumping groundwater, while simultaneously teaching better stewardship of the watershed.

Water Sampling would continue at previously established locations in the watershed and would be extended/modified to ensure coverage of any areas where load reduction data will be needed to monitor effectiveness of the planned project in this grant. The Settlers Rest Stormwater Pilot Project has the following desired outcomes for each phase: 1. Initial Planning: Conduct site visits, outline the scope of work, and prepare designs. 2. RFP Process: Initiate a Request for Proposals and evaluate needs for contracting, personnel, and volunteer inputs. 3. Permissions: Obtain necessary permits and clearances. 4. Project Construction: Construct project while monitoring quality of work and costs. 5. Project Completion: Inspect, monitor and report on completed project.

Background Information

The Oak Creek Watershed Improvement Plan (OCWIP) was submitted to ADEQ in September, 2012 and later approved. The following are extracts from the OCWIP: Pollutant of Concern Oak Creek is not attaining water quality standards for E. coli because for many years water samples have repeatedly exceeded the state water quality standard single sample maximum of 235 colony-forming units per 100 milliliters (235 cfu/100ml) for full body contact. The purpose of the Oak Creek Watershed Improvement Plan is to identify sources that contribute to E. coli impairment/standards exceedances and recommend actions to reduce human- and wildlife related contamination so that the creek may attain the water quality standard. (OCWIP, Page 1)

Evidence of Impairment Repeated exceedance of the E. coli standard in Oak Creek lead Arizona Department of Environmental Quality (ADEQ) to list Oak Creek as an impaired water and to develop a Total Maximum Daily Load (TMDL) as described below (ADEQ 2010). Seasonal deterioration in bacteriological water quality, due to impacts attributed to fecal pollution, has been observed in Oak Creek since 1973 (Obr et al. 1978). Subsequently, numerous studies and monitoring efforts have confirmed the results of the initial study and discovered the predominant mechanisms by which E. coli enters the water column (Jackson 1981, Rose et al. 1987, Hansen and White 1992, Southam et al. 2000) (Table 1). Water quality is impaired during periods of peak recreational use (summer months and especially holiday

weekends) (Figure 4), which is to say that concentrations of E. coli exceed the water quality standard for the designated uses of full body contact (swimming). This is partly due to recreationalists as a source of fecal bacteria, but largely due to the disturbance of stream sediments by swimmers and waders as well by increased streamflow during storm events. (OCWIP, Page 6) The presence of E. coli in stream water is a concern because it is an indicator of the likely presence of fecal contamination. When surface waters contain fecal contaminants, people can come in contact with pathogens such as Cryptosporidium spp., Giardia spp., Shigella spp., norovirus and E. coli 0517:H7 when recreating in the stream, which may cause human health problems that include skin, ear, eye, gastrointestinal, urinary tract, respiratory, neurologic and wound infections. (OCWIP, Page 12) Abstract Previous research and monitoring in Oak Creek have found Escherichia coli (E. coli) bacteria concentrations exceeding Arizona Water Quality Standard for full body contact of 235 colony forming units per 100 ml water. Efforts have been made to try to reduce human-caused sources of E. coli, yet E. coli exceedances remain a problem especially where there is concentrated recreation in the creek, such as at Slide Rock State Park, and during storm events that deliver additional E. coli to the creek.

The Oak Creek Watershed Council conducted a field investigation during summer 2011 to try to identify E. coli source areas. Water samples were collected repeatedly before and during summer monsoon at several locations along the entire stream length, from tributary flow, and from springs that discharge to Oak Creek. All samples were tested for E. coli bacteria. Some of these samples were also tested for turbidity and nutrient concentrations. A limited number of samples were tested to determine the presence of human, bovine and dog DNA. Results showed that E. coli exceedances were greatest in and below the City of Sedona with very few exceedances in Oak Creek Canyon. Exceedances often corresponded with storm flow events, were strongly related to turbidity, and may sometimes be associated with septic leakage, especially from larger commercial systems, that may be intercepted by groundwater and transported through spring discharge to the creek. The findings of the 2011 investigation support earlier studies some of which call for investigation of sediment E. coli reservoirs because they appear to be a primary means by which E. coli causes exceedances when reservoirs are disturbed either by recreation activity or turbulence caused by storm events.

A series of best management practices projects regarding recreational, agricultural, residential and commercial activities in the watershed is recommended, as are continued investigations into potential contaminant pathways including septic system leakage, dog feces concentrations, and sediment reservoir development and disturbance with emphasis on tracking and reducing sediment sources as a means of reducing the E. coli bacteria that are harbored in sediment.

Potential Future Projects Stormwater issues are the third priority category. Tremendous amounts of sediment and E. coli were detected in stormwater in Sedona's washes, and E. coli concentrations in Oak Creek indicate the Sedona washes are probably the biggest sources of sediment and E. coli to the creek during storm events. To what extent these pollutants arise due to natural geology and wildlife fecal sources or are due to recreational activities and the feces of pets and humans is uncertain. Observation of heavy deposits of dog feces along trails in and around Sedona suggests that pet feces are a significant source, but DNA testing of stormflow

was inconclusive, probably due to lack of sensitivity of the test or due to sampling or analysis error, since all test results were negative. The projects in this category are aimed at continued and expanded monitoring of E. coli, human DNA, erosion and sedimentation in the catchment areas of Sedona's washes both in and outside city limits. Monitoring findings will guide focused efforts to decrease E. coli and sediment sources. Working with neighborhood groups will help facilitate community involvement and proactive solutions. Physical improvements will include erosion control work, and the installation and maintenance of dog waste stations to the extent that funding allows. Partners will work together with the U.S. Forest Service to seek permits and cooperative agreements for these activities. (OCWIP, Page 50) Data showing sediment issues in proposed pilot project areas, as well as E. coli data, are stated generally in the OCWIP.

Settlers Rest is located in the Carroll Canyon area (see photos attached) mentioned frequently in the OCWIP, and the KSB property (see photos attached) is in Juniper Hills which drains into Oak Creek just downstream from Tlaquepaque which is also in the OCWIP. Specific references to stormwater sediment and E. coli issues in Sedona can be found on the following pages in the OCWIP: Pages 25 - 28, Chapter 2 - Watershed Investigation, Field Survey methods & findings, Water Quality Monitoring methods and focus. Note on Page 25: "Stormwater sites were selected in the Sedona urban area to evaluate the degree to which stormwater delivers E. coli to Oak Creek." Page 26, Figure 9, Monitoring locations in Sedona. Page 27, Sampling locations, Stormwater (bottom) M47 - Tlaquepaque Bridge and M26 - Carroll Canyon, Shelby Road etc. Page 28, Focus site F1, Concentrated dog-walking area. Pages 33 - 36: Page 33 bottom, 34 top, reference to sediment in Carroll Canyon: "Because E. coli is strongly correlated with sediment in the creek but not with sediment in the tributary washes, it appears that the washes, rather than harboring sediment reservoirs themselves, simply provide the raw materials (sediment & E. coli) for the E. coli sediment reservoirs in the creek." Page 35, paragraph 23. Page 36, Table 8, Other sites that tested positive for human DNA…Sedona area. Pages 45 - 47, Focus 2: Stormwater delivery of E. coli to Oak Creek: Page 47 top.. "Stormwater in the Sedona area was sampled on three occasions and found to have very high concentrations of E. coli. Sedona washes sampled August 1st (2011) had E. coli concentrations ranging from 110.3 to >2419.2 cfu/100 ml with an average >879.3 cfu/100 ml." "A concerted effort should be made within Sedona to identify stormwater pollution sources and ameliorate them. OCWC will need to work closely with the City of Sedona, Coconino National Forest and other interested parties to address this concern." Also page 47, second paragraph, general comparison of Sedona upstream to Sedona downstream. Pages 50, Potential Future Projects (also see above): "Tremendous amounts of sediment and E. coli were detected in stormwater in Sedona's washes, and E. coli concentrations in Oak Creek indicate the Sedona washes are probably the biggest sources of sediment and E. coli to the creek during storm events." Page 51, top: "Outreach related to stormwater can be informed by results from additional stormwater monitoring described above."

Scope of Work

The scope of work for the projects in this grant application will target goals of reducing E. coli bacteria in Oak Creek as outlined and prioritized in the Oak Creek Watershed Improvement Plan (OCWIP). The primary education and outreach components focus on building community awareness of stormwater issues and education around water quality, extending the project findings to a greater audience beyond on-site project participants. The scope of work for the Settlers Rest community stormwater amelioration project will target goals of reducing E. coli bacteria in Oak Creek as outlined and prioritized in the Oak Creek Watershed Improvement Plan (OCWIP). A diversity of Green Infrastructure (GI) construction techniques will be utilized in the implementation of BMP's, focusing on building community awareness of stormwater issues around the project's varying environmental conditions.

Outreach and education components serve the overall objective to raise the bar on residents' sense of environmental responsibility through continued education and outreach, including effective use of media outlets, with emphasis on reducing/eliminating E. coli bacteria in Oak Creek, and the mitigation of non-point source pollutants on private properties and along shared private drainages.

Adding small-scale Green Infrastructure (GI) sediment retention and other implements across this site will help to prevent the transportation of E. coli bacteria, and the sediment that may host it, from flowing into nearby Oak Creek. These GI practices encourage water infiltration, photodegradation and phytoremediation of nonpoint source pollutants after storm events, while demonstrating to residents in the City how to better care for their drainage ways and household effluent.

As the Settlers Rest community component is intended to be a neighborhood-scale stormwater pilot project, eligible properties will contribute in labor and costs. Participants in this project would also contribute to their property's BMP selections, design and implementation. Household watershed impacts would be accounted for with a capacity adequate for detaining a portion of first flows from one and two year storm events. Grant staff will provide sufficient community outreach, administration, oversight, and effective monitoring to see that the structures are constructed to detain first flush storm water allowing for the reduction of E. coli bacteria in the stormwater.

Technical expertise will be provided by: Ryan Matson, Project Manager; Kurt Harris, Consulting Engineer; and City of Sedona engineering staff. Other expertise will be sought as the need arises. Additional educational programing includes boots-on-the-ground field trips with grade-school science students. It has been developed as a follow up to a similar program in the OCWIP, OCOG 2013 grant & EDOG 2014 grant.

Participating students will be taught good watershed stewardship including the effects of stormwater pollution, and will join in field trips to sample water, test water quality and composition, pick up dog feces and trash in areas across the watershed, and explore ways to make a positive impact in their homes and throughout their lives. OCWC has a team of trained educators and presenters who will participate in the education program with students, adults

and community groups, utilizing the Oak Creek Watershed Terrain Model and state science standards based curriculum. Publicity of these projects will be diversified and the students encouraged to involve their families in their course curriculum. In partnership with Red Rock State Park, the Verde NRCD, and area school districts, students may enjoy the facilities of the state park while focusing on bioregional water quality and quantity issues through the lens of stormwater, and learn how they might better care for these precious water resources.

The scope of work for the stormwater education and outreach components of this grant includes, but is not limited to, the following:

· Community presentations will be planned that will engage the public in all aspects of stormwater mitigation in partnership with the City.

· Collaboration would occur between OCWC and City of Sedona staff regarding a stormwater management campaign.

· Sedona-area students participating in science curriculum regarding water quality will also integrate Green Infrastructure and become familiar with the specific implemented mitigation approaches demonstrated within the Settlers Rest community stormwater amelioration project.

· The Green Affinity Business Group within the Sedona Chamber of Commerce will be asked to support stormwater mitigation initiatives and create a plan for its members.

· Friends of Oak Creek, OCWC members and volunteers will participate in specific outreach presentations to residents in the Settlers Rest area, as well as other communities and HOAs across Sedona.

Water Sampling would continue at previously established locations in the Sedona area and would be extended/modified to ensure coverage of any areas where load reduction data will be needed to monitor effectiveness of the planned stormwater pilot project in this grant.

Best Management Practices

The community stormwater amelioration project focus is to demonstrate an accessible diversity of Green Infrastructure BMPs to encourage the treatment of nonpoint source pollution within private properties in the Sedona area prior toothier discharging into drainage ways. These BMPs will be suitably exercised within the community, and collectively shown to mitigate stormwater contaminants within neighborhood drainages of various flow criteria, soil, slope and vegetation considerations. The community of Settlers Rest is in a semi-rural part of Sedona. The lowest property in the neighborhood is impacted by stormwater run-off from 35 neighboring properties; as such, it has had suffered repeated flood damage and erosion, which is then carried into Oak Creek. As there are a number of horses and household pets, along with wildlife, that frequent the open spaces of these drainage ways, there is a strong need to educate by example of what impacting property owners can do to mitigate the health risks caused by animal waste being carried into the Oak Creek waterway. Flooding of the lowest property at 60 Table Top Road occurs with nearly every storm event affecting the area. This property drains quickly into the Carroll Canyon drainage way, which carries with the water a high volume

of dissolved nutrients, sediment and E. coli bacteria, along with other into nonpoint source pollutants, and shortly thereafter empties most of west Sedona's stormwater into Oak Creek.

Without impeding high flow volumes, the general intent is to start at the top of this community's watershed, moving down property by property, collectively creating a series of retention basins and armored spillways. Where appropriate, native edibles, grasses and nitrogen fixers, wild flowers and other legumes will be planted for bioremediation and soil retention. Where appropriate, shallow basins will be formed and hand-lined with ~6" rip-rap as well as amended with mulch to help retain and clean the water. Other design aspects may also be entertained as participating neighbors learn how to implement GI's on their own properties, which would include silt fences, straw wattles, off-contour planting, and low-flow off-line swale strategies.

Water harvesting from building roofs into cisterns will be encouraged, as this decreases area stormwater flow volumes, provides water for landscapes at a later date, and reduces fresh-water irrigation demands on the aquifer. Residents will be urged to allow stormwater to infiltrate on their property. In addition, residents will be encouraged to collect animal waste and other non-point source pollutants from their property, prior to running off into the drainage way.

Expected Service Life of Project

Overall, this pilot project acts as a Runoff Management System, with an Expected Service Life of 15 years, and will display diverse mitigative aspects comprised of the BMPs listed in d. Runoff Management System has an ESL of 15 years, while Drainage Water Management and Water & Sediment Control Basins, 10 years.

Other site BMPs (and their service life in years) may include: Subsurface drain (20); sediment basin (20); structure for water control (20); seeding (re-vegetation) (15); roof runoff management (15); check dam (15); cistern (15); water harvesting catchment (10); two (2) stage ditches (10); vegetated swales (10); raingarden/biorention basin (8); native plant community restoration and management (5); outreach and education (5); mulching (1); grassed swale (0); filtration basin (0).

Long Term Maintenance

Initial project maintenance will be overseen by OCWC staff and volunteers, and will focus efforts on training property owners who participate in the project, emphasizing the nature of maintenance necessary for ongoing maintenance to be upheld by the property owners.

Education & Outreach

Outreach and education components will include publicity and education to other communities, neighborhood organizations and watershed residents in general through digital and print media. In the past, the Oak Creek Community Outreach Program (OCCOP) was set up to target

resident audiences on stormwater issues and OCWC plans on organizing community and HOA meetings using the OCCOP data in conjunction with the data from the Settlers Rest community stormwater amelioration project. Presentations will also include participation by Friends of Oak Creek volunteers utilizing the Oak Creek Watershed Terrain Model to provide supporting watershed education to residents, too. Collaboration in outreach will also be made with the City of Sedona staff, U.S. Forest Service, State Park Rangers, area school districts and other agencies as appropriate. The stormwater education component is a partnership with the City of Sedona as well as private property owners and has been a successful program to reduce E. coli loading by improving public and private access to pet waste stations as well as raising awareness about applicable statutes and/or ordinances, thus encouraging proper disposal of pet waste, and property improvements for stormwater mitigation. These components serve the overall objective to raise the bar on residents' sense of environmental responsibility through continued education and outreach, including effective use of media outlets, with emphasis on reducing/eliminating E. coli bacteria in Oak Creek, and the mitigation of non-point source pollutants on private properties and along shared private drainages. It also includes an education program with Grade 6, 7, 8 and 9 science students at West Sedona School and Big Park School , continuing as a follow up to a similar pilot program in the OCWIP grant, and also tailored is a similarly appropriate curriculum for Red Rock High School in Sedona to include aspects of Green Infrastructure and stormwater BMPs. Additionally, students may be taught good watershed stewardship and may participate in field trips to pick up dog feces and trash in priority locations in the watershed, and other water-related activities. The stormwater education & outreach components each have desired outcomes of reducing E. coli in Oak Creek and changing social attitudes and behavior through educating area visitors, students, residents and property owners about how to stop nonpoint source pollution on their properties and through changes in their personal choices. The Settlers Rest project will also be publicized to Sedona residents as well as the watershed community and highlighted in a tri-fold brochure plus a single informational handout. A special section of the OCWC website will be created to detail all the technical projects as well as stormwater issues and their effect on the pollution of Oak Creek. Community presentations will be made to describe GI BMPs and a campaign developed in collaboration with the city of Sedona to encourage residents to mitigate the runoff of stormwater on their own properties. The desired outcomes for the supporting education & outreach phases are: 1. Develop outreach plan and activity schedule. 2. Execution of outreach programs, continually gathering data necessary to evaluate effectiveness. 3. Effectiveness Analysis: Record and analyze public response. 4. Summarize the social, economic and environmental impacts; compare results to desired E. coli load reduction. 5. Community Process Publication: Make evaluative findings of activities and data publicly accessible. OCWC has a team of educators and presenters who will participate in the education program with students, adults and community groups utilizing the Oak Creek Watershed Terrain Model, and will take advantage of facilities at Red Rock State Park, which already sees around 1,200 students visiting annually. Students will have Green Infrastructure concepts and Low impact Development principles integrated into their storm water quality curriculum, primarily from the findings of the stormwater pilot project. Education and outreach for the Settlers Rest project, for instance, will include interpretive signs with details of the project as well as principles of Green Infrastructure water-harvesting as relates to E. coli

reduction into Oak Creek, and they will be placed as is most convenient for public access. Nearby residents, directly impacting the drainage way, will be introduced to the work being done in the Settlers Rest area and encouraged to mitigate animal waste and household effluents. Extended outreach efforts will include visual presentations on the process and findings of the pilot project, as well as tools and strategies toward private-property stormwater management and reducing nonpoint source pollutants. The OCCOP developed outdoor ethics messages and protocols that are summarized in a tri-fold brochure as well as watershed information and causes of E. coli pollution. The public is continually being given copies of the brochure and further marketing support is regularly released through media advertising, websites, watershed videos, news releases, media interviews and articles. The USFS, Arizona State Parks, City of Sedona, Sedona Chamber of Commerce and Tourism Bureau will also be supporting these projects with a total marketing and media commitment. increased media coverage will be given to promote the stormwater pilot project launched through this grant. The desired outcomes and behavioral changes associated with our education and outreach efforts will be to raise the bar on attitudes towards mitigating stormwater issues on individual properties and in communities. Taking responsibility for the environment while recreating or residing is a common theme that ties together our education and outreach efforts, especially with the younger audiences. Student curriculum will be in collaboration with other partners of the OCWC, focusing on the awareness and reduction of E. coli and its known sources through the lense of the Settlers Rest pilot project. Effectiveness will be measured in part by the support offered by civic leaders through community and parks/recreation plans and how well they are received by the community. At a project level, effectiveness will be measured by load reductions of E. coli (see Oak Creek Load Reduction (OCWIP) attached) through the sampling program and as outlined in the OCWIP. Data will also be collected and analyzed from both OCWC websites (Canyon site and main site) as well as our social media sites, especially Facebook.

Community Involvement

The watershed community, including Sedona residents, has been involved in the development of the Oak Creek Watershed Improvement Plan (OCWIP) from its start date on October 1, 2009. We formed a Stakeholder Coalition at that time comprised of interested citizens with diverse backgrounds, and from that group a dozen were invited to become part of the Watershed Improvement Commission (WIC). Those same stakeholders are still a component of our database and regularly receive updates on the health of Oak Creek and the watershed. The WIC remains active and in the process of expanding to more than 20 members. In the past, an OCWIP Social Survey was sent out to over 1200 members of the community and we received about a 25% return. Those who replied were totally engaged in our queries and 95% of them were concerned in varying degrees about the health of Oak Creek. We feel the majority of this community is willing to make changes in their behavior outdoors, but just need education to help them make informed decisions. We will engage residents living in the vicinity of this technical project and encourage them to become involved. This project already involves a property owner (established community group) and its contributions will be very much hands-on. The outreach component for this technical project is an educational process designed to teach

residents how to take care of stormwater issues on their property utilizing GI best management practices. On a higher plain of outreach, we will publicize the stormwater pilot project to all Sedona residents through our media pool as well as the communication services offered by the city of Sedona. A customized group presentation will be developed, and public meetings will be held. We have a database of Home Owner Associations (HOAs) that will be contacted for smaller community presentations, too. A brochure will be developed focusing on stormwater pollution, the project areas and the BMP's utilized. Another component of the outreach effort is that of the Friends of Oak Creek volunteers, most of whom are city or watershed residents. FOC will actively engage the public through presentations at community events and special showings as well as community group meetings. Other marketing tools include banner ads in local media; flyers; cable/television interviews; radio PSAs; display boards, and the like, to name a few. The Oak Creek Ambassadors will be part the work plan and they will interact with residents of all ages. A science curriculum tailored toward Oak Creek area schools will be utilized, focusing on stormwater issues as part of the watershed education course. Special events, like World Water Day celebrations, will publicize the need for residents to pay attention to the runoff from their own property. Another important sector of our community is business owners. OCWC is an active member of the Sedona Chamber of Commerce and contributes to the Chamber's Green Business Affinity Group. Through the Chamber we have the ability and means to publicize all issues mentioned in the OCWIP and the OCCOP. During the development of the OCCOP, our task force identified no less than 34 audiences that basically comprise the majority of property owners and residents in the Oak Creek Watershed. These audiences are sectored by attitudes and behavior patterns; demographics; and occupation or links to certain activities and as can be seen Recreation and Stormwater Runoff include all the audiences in varying degrees. The common theme of all components in the Community Outreach Program is the pollution issues of Oak Creek. Our approach will vary with each audience but we will succeed in carrying the message to them. Finally, the City itself and the U.S. Forest service fill out the list of potentially engaged landowners. Our partnership with both will go a long way in urging others to act responsibly and reduce pollution in Oak Creek.

Key Personnel & Partnerships

This grant project builds upon a 21 year history begun by the Oak Creek Task Force, now the Oak Creek Watershed Council. Seven years ago the OCWC constructed the first roadside public bathrooms in Oak Creek Canyon funded by a 319 grant from ADEQ, and in September, 2012 developed the Oak Creek Watershed Improvement Plan (OCWIP) and the Oak Creek Community Outreach Program (OCCOP). Our group is currently working on the Education & Outreach Grant (EDOG) which is the second BMP implementation grant, and this current grant application is the third. The OCWC has a reputation for being a "can do" group and has 200 members including a core group of professionals with expertise in hydrology, geology, civil engineering, sustainable communities, marketing, public relations, civic administration, wildlife management, watershed restoration to name a few.

Other agencies and personnel supporting this grant:

- Oak Creek Watershed Council, Board of Directors
- Barry Allan, CEO, OCWC Board of Directors
- Gail Clement, R.G., Chair, OCWC Board of Directors
- Kurt Harris, P.E., CPESC,LEED, Past Chairman, OCWC Board of Directors
  - Kathy Dunham, Managing Director, Friends of Oak Creek
  - Watershed Improvement Commission (WIC)
  - Sharon Masek-Lopez, Principal Investigator, OCWIP
- Charles Mosley, P.E. MPA, Director of Public Works/City Engineer (Sedona)
  - Tim Ernster, City Manager, City of Sedona
  - Lee Luedeker, Wildlife Manager, AZG&F
- Amina Sena, District Hydrologist, USFS
  - Lynda Zanolli, Educator, Verde NRCD

This grant will be managed by Ryan Matson, B.Sc., Grants Director, OCWC Board of Directors, who was recently appointed to administer grants and is the Technical Manager in the current Cycle14 grant. Project management, planning and oversight, BMP design and implementation, site evaluation and graphic design will also be supervised by Matson, who has over 17 years of freelance development experience, working as a builder, contract web developer, technical writer and drafter for nonprofits and businesses. He has served as a director on neighborhood associations, coalitions, and nonprofit organizations. The Office of Sustainable Development in Portland, Oregon, awarded his student-based team a Green Investment Fund grant in 2005. He is currently the Executive Director of a nonprofit organization in Cornville with property on Lower Oak Creek, and also serves on the Board of Directors with Gardens for Humanity.

Technical Expertise

Consulting Engineer: Kurt Harris is a licensed professional civil engineer with a broad spectrum of environmental experience. His involvement may include concept planning through design, with specializing in permitting, construction management, maintenance, oversight and advice. His goals include directing Arizona towards leadership in soil conservation in arid climates, water reuse from rainwater harvesting or tertiary treated wastewater application. Harris has a BS in Geological Engineering at U of A in 1986 and following certificates: Certified Leadership in Energy, Environmental Design (LEED), March 30, 2009 Green Building Council Institute (GBCI) No. 10368136 Certified Erosion Control Coordinator 16-Hour AGC-ADOT, November 2008 Certified Professional Erosion Control Specialist (CPECS) Certified Maricopa Dust Control Coordinator Harris has over 25 years of environmental work experience. His professional career started in geotechnical and continued in the hazardous substance assessment and remediation field. His expertise in geology, hydrology, health and safety with construction management provided an international opportunity to work in New Zealand and Australia for over a year opening offices and training new hires. This followed by engineering review experience with ADEQ in Aquifer Protection Permitting, PE authority for ACOE 401 and drinking-wastewater. Kurt was a panel member on the On-Site Wastewater Advisory Council (OWAC). Marie McCormick, M.A. Sustainable Communities, has served as Associate

Director, Operations, for OCWC, and will apply her native plant and interpersonal communication skills to this grant as Field Operations Coordinator. McCormick's extensive experience in sustainable lifestyle and environmental methodologies will also be a plus to field projects.

Conflict of Interest

An open Request For Proposal (RFP) process will be pursued for grant contracts in excess of $2,500 as stated in Procurement Rules (for the spending of public monies), previously adopted by the OCWC Board of Directors for the OCWIP Grant. Also included is documentation to record potential Conflicts of Interest by members of the Board of Directors. Each contract will be approved by the OCWC Board of Directors prior to signing, as stated in the OCWC Bylaws. Selection of Contractors will be based upon the merit of each proposal including, but not limited to: cost effectiveness, timeliness, and quality of work. Individuals working on the grant will be retained as Independent Contractors under written agreement with the grantee. Oak Creek Watershed Council Statement of Policy for Hiring: Oak Creek Watershed Council does not and shall not discriminate on the basis of race, color, religion (creed), gender, gender expression, age, national origin (ancestry), disability, marital status, sexual orientation, or military status, in any of its activities or operations. These activities include, but are not limited to, hiring and firing of staff, selection of volunteers and vendors, and provision of services. We are committed to providing an inclusive and welcoming environment for all members of our staff, clients, volunteers, subcontractors, vendors, and clients. Oak Creek Watershed Council is an equal opportunity employer. We will not discriminate and will take affirmative action measures to ensure against discrimination in employment, recruitment, advertisements for employment, compensation, termination, upgrading, promotions, and other conditions of employment against any employee or job applicant on the bases of race, color, gender, national origin, age, religion, creed, disability, veteran's status, sexual orientation, gender identity or gender expression.