Gary Woodard - Water Resources Consulting

Incentivizing the Removal of Backyard Pools

Tucson AMA
Cover Page
**Program/Project Title:** Encouraging swimming pool removals through education, outreach, and rebates  
**Brief Description:** Previous research has shown that large numbers of owners of older homes have unwanted backyard pools, but lack information on how to remove them, the costs of removal, and the costs incurred by keeping their pool. This project will address these barriers to pool removal by developing a set of complementary tools, including an interactive website, print and digital products, media publicity, homeowner workshops, and a rebate program. These tools will be deployed and advertised by partnering municipal water providers to remove the barriers to pool removal. Water savings will be measured using both econometric and engineering approaches.

**Type of Program or Project:**
- ☒ Water Innovation & Technology  
- ☒ Infrastructure Water Efficiency  
- ☒ Ecological Enhancement  
- ☒ Public Outreach & Engagement

**Your level of commitment to maintenance of project benefits and capital improvements:**
- ☒ < 5 years  
- ☒ 5-10 years  
- ☒ 11-15 years  
- ☒ 16-20 years

**Applicant Information:**
- **Name/Organization:** Gary Woodard, Water Res Consulting  
- **Address:** 1415 East Lind Road  
- **City:** Tucson  
- **State:** AZ  
- **ZIP Code:** 85719  
- **Phone:** 520-850-4249  
- **Tax ID No.:**

**AMA:**
- ☒ Phoenix  
- ☒ Tucson  
- ☒ Prescott  
- ☒ Pinal  
- ☒ Santa Cruz

If the project is located outside of an AMA, it is not eligible for funding.

**Contact Person:**
- **Name:** Gary Woodard  
- **Title:** Principal  
- **Phone:** 520-850-4249  
- **e-mail:** Gary@GaryWoodard.com

**Does this project meet any of our priority criteria? If so, which?**
- ☒ Additional contribution  
- ☒ Innovative qualities  
- ☒ Demonstrate high impact  
- ☒ Demonstrate multiple benefits

**Water Management Assistance Program Grant Amount Requested:**
- **$64,440**

**Additional Contribution Obtained and Secured:**
- **Applicant/Agency/Organization:**
  1. Applicant: n/a  
  2. Tucson Water: 25,000 + in kind  
  3. Oro Valley Water: In kind

**Total:** 25,000 + in kind

Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The ADWR Director may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.

**Name of Applicant / Authorized Representative:** Gary Woodard for Water Resources Consulting  
**Title:** Principal

**Telephone Number:** 520-850-4249  
**Signature:**  
**Date Signed:** 13 February 2020
Project Map
APPENDIX 1. PROJECT MAP

The project will be located entirely within municipal water services areas in the Tucson Active Management Area. See map below.

The locations of houses where pools will be removed are currently unknown. As per ADWR instructions, the GIS coordinates of the office of Water Resources Consulting are provided here:

Office coordinates: 32° 16’ 1.11” N, 110° 56’ 58.26” W
Executive Summary
A series of domestic water demand studies in the Tucson and Phoenix AMAs by Woodard documents the steep decline in popularity of backyard swimming pools since the peak pool era of the 1970s and 1980s. A surprise finding based on remote sensing was the rate of pool removals, many of which are not reported to the county assessor. This triggered two additional studies in the TAMA, one which documented trends and patterns in pool removals, as well as carefully estimated pool-related water use. Econometric analysis and engineering estimates both showed that backyard pools use on average nearly 30,000 gallons of water per year, not counting those with significant leaks. Given that over 20% of single family residents in the TAMA have pools, this represents nearly 5,000 AFY of demand.

A second study examining pools and artificial turf included a survey of homeowners that confirmed that many older pools are rarely or never used, and are unwanted. It also revealed that annual costs of maintaining a pool typically are in the $1,500 - $2,000 range, much more than most home owners estimated. This underestimate apparently is due to pool costs being fragmented (water, sewer, electricity, chemicals, repairs and maintenance); some pool costs, such as impacts on property taxes and homeowner insurance, are all but invisible. Homeowners who had removed a pool cited several non-pecuniary benefits, including freeing up time and backyard space for other activities, removing a risk to children and pets, and conserving water and energy.

Three methods of pool removal were documented, with the most common costing between $3,000 and $4,000. Homeowners who had removed a pool and those who no longer wanted their pool both reported similar barriers to pool removal – lack of information on both the costs of maintaining an unwanted pool, and on options and costs for removing the pool. These barriers to pool removal, which currently are not addressed by TAMA municipal water providers, are targeted by this project.

The proposed tasks and deliverables will meet the need for information on both the pecuniary and non-pecuniary benefits of pool removal, and the pros and cons and typical costs of various pool removal options. They will also provide guidance for selecting a contractor to remove a pool, or for a DIY approach. The information will be distributed through several complementary means, including a website that provides general and user-specific information. Other forms of communication and education will include a PDF pool removal guide, water bill notices, targeted emails and mailings, articles in various publications, and possibly a PSA or YouTube video. The proposer’s experience in developing and delivering workshops on harvesting rainwater and gray water will be utilized to develop a free workshop offered through UA Extension for those interested in removing their pool. A modest rebate is intended to pique interest and drive pool owners to the website and other information sources. The rebate also is necessary to document pool removals and water savings, which will be estimated using both statistical and engineering approaches.
Project Overview
3. PROJECT OVERVIEW

The Problem addressed by this proposal is a lack of information and guidance for homeowners across the TAMA who are interested in removing unwanted pools. A series of domestic water demand studies in the Tucson and Phoenix AMAs by Woodard documents the steep decline in popularity of backyard swimming pools since the peak pool era of the 1970s and 1980s. A surprise finding based on remote sensing was the rate of pool removals, many of which are not reported to the county assessor. This triggered two additional studies in the TAMA, one which documented trends and patterns in pool removals, as well as carefully estimating pool-related water uses. Econometric analysis and engineering estimates both showed that backyard pools use on average nearly 30,000 gallons of water per year, not counting those with significant leaks. Given that over 20% of single family residents in the TAMA have a backyard pool, this represents nearly 5,000 AFY of demand.

A second study examining pools and artificial turf included a survey of homeowners that confirmed that many older pools are rarely or never used and are unwanted. It also revealed that annual costs of maintaining a pool are in the $1,500 - $2,000 range, much more than most homeowners estimated. This underestimate apparently is due to pool costs being fragmented (water, sewer, electricity, chemicals, repairs and maintenance) and some, such as impacts on property taxes and homeowner insurance, are all but invisible. Homeowners who had removed a pool cited several non-pecuniary benefits, including freeing up time and backyard space for other activities, removing a risk to children and pets, and conserving water and energy.

Three methods of pool removal were documented, with the most common costing between $3,000 and $4,000. Homeowners who had removed a pool and those who no longer wanted their pool both reported similar barriers to pool removal – lack of information on both the costs of maintaining an unwanted pool, and on options and costs for removing the pool. These are the barriers to pool removal, which currently are not addressed by TAMA water providers, are targeted by this project.
Among those surveyed with older homes and a pool, a striking percentage reported little to no pool use. Many of these expressed interest in learning more about pool removal, or an outright desire to remove the pool. This suggests pent-up demand for pool removals. Another subtle barrier to pool removal is the low profile of companies that perform pool removals. Swimming pool companies appear loath to advertise the fact that they remove a lot of pools; pool excavators may have similar concerns. General excavators appear to view pool removals as a minor business opportunity. One benefit of this project may be to highlight the pool removal business and raise its profile.

**Groundwater will be conserved** by meeting homeowners’ needs for information on both the pecuniary and non-pecuniary benefits of pool removal, and the pros and cons and typical costs of various pool removal options. They will also provide guidance for selecting a contractor to remove a pool, or for a DIY approach. The information will be distributed through several complementary means, including a website that provides general and user-specific information. Other forms of communication and education will include a PDF pool removal guide, water bill notices, targeted emails and mailings, articles in various publications, and possibly a PSA or YouTube video. The proposer’s experience in developing and delivering workshops on harvesting rainwater and gray water will be utilized in developing a free workshop through UA Extension for those interested in removing their pool.

The modest offered rebate is intended to pique interest and drive pool owners to the website and other information sources. The rebate also is necessary to identify homes where pool removals occur, which is necessary to estimate water savings. Both statistical and engineering approaches will be used. The statistical approach is based on billed water usage before and after pool removal. The engineering approach rests on previous research on net pool evaporation as a function of pool area and the amount of water used to back-flush the various types of pool filters. On average, previous research showed that removing a pool reduced outdoor consumptive use by about 30,000 gallons per year per pool removed, not counting leaks. Older pools, and those that are rarely used, are more likely to have significant leaks, which can drive the average water usage up by 20%. The project budget includes 400 rebates, which suggests average water savings of 12 million gallons per year, or 37AFY, not including leaks. We anticipate the total
number of pool removals will exceed the number of rebates, as the information will make it easier for those whose water providers do not offer the rebate to remove an unwanted pool.

**Project effectiveness will be measured** by a number of metrics, including:
- Rebates awarded and engineering estimates of water savings
- Pre- and post-removal billing data and statistical estimates of water savings
- Website analytics that track various aspects of website usage
- Demand for various print and electronic materials on pool removal
- Numbers of water bill notices and targeted emails sent to customers
- Number of newspaper articles generated

**Management goals** as laid out in the TAMA’s current groundwater management plan include enhanced conservation efforts, reduced outdoor demand, and reduced groundwater pumping and/or increased recharge of CAP water. Eliminating evaporation, filter back-flushing, and leaks from unwanted swimming pools furthers each of these goals.

**Project benefits will accrue** to hundreds of owners of unwanted pools, as well as to their water providers. Letters of support from two local water providers, Tucson Water and Oro Valley Water, are attached. These two providers account for over 80% of residential water customers in the TAMA. Other municipal providers will be invited to participate. The project may also benefit pool owners indirectly by raising the profile of the pool removal industry. Other project benefits, such as reduced groundwater pumping and energy demand, will benefit wider constituencies.

**The project leverages** the previous research done on pool removals in the TAMA, thereby reducing the costs of information gathering and content development. Basic information already exists on the various categories of pool ownership costs. Some information also exists on the three types of pool removal and their relative popularity and costs. In addition, cost sharing is being provided by Tucson Water in the amount of $25,000 plus graphic artist time. Also, the administrative costs of offering the workshop will be greatly reduced through cooperation with Pima County Extension’s popular SmartScape program.
Long-term effectiveness of the project requires current data on utility rates, property tax factors, and pool-related costs. The website will be designed to facilitate data updates and long-term hosting. We have budgeted for three years starting in late 2020, but the costs are relatively modest and may be covered in the future by some water provider(s). The workshop is being incorporated into Pima County Extension’s SmartScape workshop program for homeowners, which is funded by Tucson Water. This dramatically reduces administrative costs and raises the profile of the pool removal workshops. Given the modest marginal cost of $375 per workshop, it is likely that if the workshop is deemed a success, it will continue to be offered.

This project could be duplicated in the Phoenix AMA, which has roughly five times the number of backyard pools. There have been preliminary discussions with Scottsdale, which has a modest pool removal rebate, about potentially leveraging the website and other material to benefit their customers. The website will be designed for easy expansion into other AMAs and to work for many municipal water providers.
Scope of Work
4. SCOPE OF WORK
This project is divided into six main tasks. Each is described below, along with deliverables.

Task 1. Develop website content and calculator on benefits of pool removal
The purpose of this task is to inform pool owners about the total costs of pool ownership.

Consultants will gather, organize, illustrate and present in the Pool Removal website
information on all monetary benefits of pool removal, including reduction or elimination of:
- Water and sewer bills
- Electric bills for pool pump and energy used to heat the pool, if any
- Chemicals, pool filter media, and pool maintenance company charges
- Property taxes and homeowner’s insurance
- Repairs and non-routine maintenance

The website cost calculator will let users estimate their particular pool ownership costs by
inputting information on their water provider, whether they are on sewer or septic, type of pool
pump and filtration system, pool area, county appraiser zone, etc. The site will also personalize
information on the costs of various pool removal approaches.

Homeowners who have removed a pool describe several non-monetary benefits of pool removal,
including freeing up backyard space, removing pool fencing, eliminating time spent on pool
maintenance, conserving water and energy, and removing an “attractive nuisance”, thereby
making the yard safer for children and pets. The website will make users aware of these possible
benefits as well.

Gary Woodard will be responsible for gathering and organizing the content and beta testing;
Tim Valenzuela will be responsible for creating the website and programming the interactive
costs calculator.
**Task deliverable** consists of the functioning website and underlying databases, text, and graphics.

**Deliverable will be complete** 4 months after project start.

**Task 2: Develop website content and calculator on pool removal options and costs**

The purpose of this task is to educate owners of unwanted pools about the various options for pool removal and their relative costs.

Consultants will gather, organize, and present information in the website on the three degrees of pool removal – quick fill, demo & fill, and exhume – along with costs ranges, and advantages and disadvantages of each. Photos and diagrams will be used to illustrate the three processes. The website will invite users to answer basic questions in order to narrow down removal options and better estimate a cost range. This portion of the website will also include information on the types of companies that perform pool removals and general guidance on selecting one.

**Gary Woodard will be responsible** for gathering and organizing the content and beta testing; **Tim Valenzuela will be responsible** for creating the website, soliciting feedback from testing, and modifying the site accordingly.

**Task deliverable** consists of the functioning website and underlying databases and graphics.

**Deliverable will be complete** 5 months after project start.

**Task 3: Provide website hosting and content management and maintenance**

The purpose of this task is to ensure a long-term reliable platform for the website, along with easy content management and data updates. The website will be designed to be portable and expandable. The budget includes funds for three years of hosting and related expenses.

Consultants will:

- Select a host server, register a domain name, root access, install the website
- Implement Google Maps interface for cost calculator
• Perform periodic data and content updates
• Implement analytics to track usage

Tim Valenzuela will be responsible for website hosting, content management and maintenance; Gary Woodard will be responsible for periodically monitoring website analytics.

Task deliverable consists of the completed website ready for public use.
Deliverable will be complete 7 months after project start.

Task 4: Develop educational & promotional materials

The purpose of this task is to develop materials to be used by water providers and others that describe the full costs of pool ownership, the non-pecuniary benefits of pool removal, and the various options for pool removal. The materials will also serve to inform pool owners about the rebate, and promote the website and pool removal workshops.

Consultants will work with a professional graphic artist to establish a consistent look and feel for the website, print materials, and media. Specific educational materials will include:
• Pool removal guide and water bill notices
• Targeted emails to customers
• Articles in print publications
• Development of PSA

Consultants will also work with PIOs at the water providers to generate stories with local news organizations.

Gary Woodard will be responsible for providing basic content and working with the graphic artist. He also will work to generate stories and other publicity.

Task deliverable consists of PDFs of the educational and promotional materials in PDF and other publishable formats.
Deliverable will be complete 6 months after project start.
Task 5: Develop workshop content & deliver workshop four times

The purpose of this task is to offer a series of two-hour workshops through Cooperative Extension for homeowners wanting to learn more about pool removals. This workshop will be incorporated into the SmartScape series of workshops that is funded by Tucson Water. Woodard currently teaches two SmartScape workshops and is developing a third. Like the others, this two-hour pool removal workshop will be offered on Saturdays at Pima County Extension’s facilities on Campbell Avenue south of River Road.

Educational researchers have described how different people learn through different modalities. Thus, an in-person workshop with ability to hear an instructor and ask questions is designed to complement the website, print publication, and other educational and outreach modes.

Consultant will:

- Develop Ppt, related workshop materials
- Assist Extension in administering the workshop
- Conduct 4 workshops, 2 hours each

The current plan is to offer the first workshop in late 2020 and three more times in the first half of 2021.

Gary Woodard will be responsible for developing the course and presenting it.

Task deliverable consists of the course curriculum in the form of a Powerpoint presentation and companion print materials as PDF files, plus the four workshops themselves.

Deliverable will be complete after the workshop is offered once in winter of 2020 and three times in spring of 2021.

Task 6: Award rebates for pool removals and estimate water savings

The purpose of this task is to motivate homeowners with unwanted pools to visit the website, sign up for the workshop, download the pool removal guide PDF, and otherwise further investigate the topic. The rebate also serves as a valuable metric of program success. It also
provides the addresses of residences who have removed pools, which is necessary for estimating water savings.

**Consultant will** administer the rebate program in coordination with water providers. Tucson Water plans to distribute rebates in the form of bill credits upon verification of pool removal. They will be reimbursed for these rebates from the project budget quarterly or semi-annually.

**Gary Woodard will be responsible** for oversight of the rebate program, gathering data on removed pools, and performing engineering and statistical analyses of water savings.

**Task deliverable** consists of a memo report and presentation to TAMA’s GUAC on the various program metrics, including water savings. **Deliverable will be complete** after the workshop is offered once in winter of 2020 and three times in spring of 2021.
Budget Breakdown
### APPENDIX 4: INCENTIVIZING THE REMOVAL OF BACKYARD POOLS

### Budget Breakdown & Narrative

#### Task Breakdown Sheet

<table>
<thead>
<tr>
<th>Task Number and Brief Description</th>
<th>Task 1: Develop website content and calculator on benefits of pool removal</th>
<th>Task 2: Develop website content and calculator on pool removal options &amp; costs</th>
<th>Task 3: Provide website hosting and content management and maintenance</th>
<th>Task 4: Develop educational and promotional materials</th>
<th>Task 5: Develop workshop content &amp; deliver workshop 4 times</th>
<th>Task 6: Award rebates for pool removals</th>
<th>Total</th>
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<tbody>
<tr>
<td>a. Personnel</td>
<td>$15,840</td>
<td>$11,520</td>
<td>$3,840</td>
<td>$7,680</td>
<td>$1,200</td>
<td>$600</td>
<td>$40,680</td>
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<td>b. Fringe Benefits</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
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<tr>
<td>c. Travel</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
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<td>$</td>
</tr>
<tr>
<td>d. Equipment</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>e. Supplies</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
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<td>f. Contractual</td>
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<td>$</td>
<td>$7,260</td>
<td>$</td>
<td>$1,500</td>
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<td>$8,760</td>
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<td>$</td>
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<td>h. Other</td>
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<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$40,000</td>
</tr>
<tr>
<td>i. Total Direct Charges</td>
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<td>$11,520</td>
<td>$11,100</td>
<td>$7,680</td>
<td>$2,700</td>
<td>$40,600</td>
<td>$89,440</td>
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<tr>
<td>j. Indirect Charges</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
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<td>$</td>
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<tr>
<td><strong>Total Project Budget</strong></td>
<td><strong>$15,840</strong></td>
<td><strong>$11,520</strong></td>
<td><strong>$11,100</strong></td>
<td><strong>$7,680</strong></td>
<td><strong>$2,700</strong></td>
<td><strong>$40,600</strong></td>
<td><strong>$89,440</strong></td>
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<td><strong>Additional Contributions</strong></td>
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<td><strong>10,000</strong></td>
<td><strong>5,000</strong></td>
<td><strong>in-kind</strong>*</td>
<td><strong>in-kind</strong>*</td>
<td><strong>in-kind</strong>*</td>
<td><strong>25,000</strong></td>
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<td><strong>Total ADWR Budget</strong></td>
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<td><strong>$1,520</strong></td>
<td><strong>$6,100</strong></td>
<td><strong>$7,680</strong></td>
<td><strong>$2,700</strong></td>
<td><strong>$40,600</strong></td>
<td><strong>$64,440</strong></td>
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*in-kind contributions include graphic artist for website design and print materials, workshop marketing, and rebate distribution
Budget Narrative
INCENTIVIZING THE REMOVAL OF BACKYARD POOLS
Submitted by Gary Woodard – Water Resources Consulting

5. BUDGET NARRATIVE

Note – Budget Breakdown Sheet is included as Appendix 4.

The proposed project will develop a variety of educational and promotional tools to assist homeowners with unwanted swimming pools learn about the costs and benefits of pool removal and removal options. The total budget is $89,440 plus various kinds of in-kind support from Tucson Water and Oro Valley Water. In addition, Tucson Water is providing $25,000 in direct support, reducing the requested award from ADWR to $64,440.

The total award will be spent on the six task areas as follows:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description of task activities, deliverables</th>
<th>Budget</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Task 1: Develop website content and calculator on benefits of pool removal</td>
<td>15,840</td>
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<tr>
<td>2</td>
<td>Task 2: Develop website content &amp; calculator on pool removal options &amp; costs</td>
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<tr>
<td>3</td>
<td>Task 3: Provide website hosting and content management and maintenance</td>
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<tr>
<td>4</td>
<td>Task 4: Develop educational &amp; promotional materials</td>
<td>7,680</td>
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<tr>
<td>5</td>
<td>Task 5: Develop workshop content &amp; deliver workshop four times</td>
<td>2,700</td>
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<tr>
<td>6</td>
<td>Task 6: Award rebates for pool removals</td>
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<td></td>
<td>Total Budget</td>
<td>89,440</td>
</tr>
<tr>
<td></td>
<td>Tucson Water Direct Contribution</td>
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<tr>
<td></td>
<td>Budget Request from ADWR</td>
<td>64,440</td>
</tr>
</tbody>
</table>

Detailed budget data for each task are provided below. *Note that this proposal includes no fringe benefits, travel, equipment, supplies, or construction. In addition, an indirect charge rate of zero is used.*
Detailed Budget, Task 1: Develop website content and calculator on benefits of pool removal

Task 1 will require an estimated 210 hours of labor at the rates indicated below.

<table>
<thead>
<tr>
<th>Task 1: Develop website content and calculator on benefits of pool removal</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.a Develop material on benefits of pool removal</td>
<td>GW</td>
<td>120</td>
<td>30</td>
<td>3,600</td>
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<tr>
<td>1.b Input tables for estimation of removal benefits</td>
<td>GW</td>
<td>120</td>
<td>24</td>
<td>2,880</td>
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<tr>
<td>1.c Develop material, non-financial benefits of removal</td>
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<td>60</td>
<td>24</td>
<td>1,440</td>
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<td>1.d Static content review, testing, and modifications</td>
<td>TV</td>
<td>60</td>
<td>48</td>
<td>2,880</td>
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<tr>
<td>1.e Interactive web content for specific removal benefits</td>
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<td>5,040</td>
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<td><strong>Task 1 Subtotal</strong></td>
<td></td>
<td></td>
<td><strong>210</strong></td>
<td><strong>15,840</strong></td>
</tr>
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</table>

*GW = Gary Woodard; TV = Tim Valenzuela

Detailed Budget, Task 2: Develop website content and calculator on pool removal options and costs

Task 2 will require an estimated 144 hours of labor at the rates indicated below.

<table>
<thead>
<tr>
<th>Task 2: Develop website content and calculator on pool removal options &amp; costs</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.a Develop material on pool removal options and costs</td>
<td>GW</td>
<td>120</td>
<td>48</td>
<td>5,760</td>
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<tr>
<td>2.b Produce illustrations of pool removal process</td>
<td>GW</td>
<td>60</td>
<td>24</td>
<td>1,440</td>
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<tr>
<td>2.c Content review, testing, and modifications</td>
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<td><strong>Task 2 Subtotal</strong></td>
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<td><strong>144</strong></td>
<td><strong>11,520</strong></td>
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</table>

*GW = Gary Woodard; TV = Tim Valenzuela
Detailed Budget, Task 3  Provide website hosting and content management and maintenance

Task 3 will require an estimated 64 hours of labor at the rates indicated below. In addition, there will be charges of $7,260 for web hosting, domain registration, server maintenance, and root access. These charges are sufficient to pay for server hosting and related expenses for a period of three years, commencing in late 2020.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.a</td>
<td>Select host server, domain name, root access, install</td>
<td>TV</td>
<td>60</td>
<td>12</td>
<td>720</td>
</tr>
<tr>
<td>3.b</td>
<td>Implement Google Maps interface</td>
<td>TV</td>
<td>60</td>
<td>30</td>
<td>1,800</td>
</tr>
<tr>
<td>3.c</td>
<td>Periodic data, content updates</td>
<td>TV</td>
<td>60</td>
<td>12</td>
<td>720</td>
</tr>
<tr>
<td>3.d</td>
<td>Implement analytics to track usage</td>
<td>TV</td>
<td>60</td>
<td>10</td>
<td>600</td>
</tr>
</tbody>
</table>

Contractual costs for web server, etc. for 3 years  

Task 3 Subtotal  

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>64</td>
<td>11,100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* TV = Tim Valenzuela

Detailed Budget, Task 4: Develop educational & promotional materials

Task 4 will require an estimated 80 hours of labor at the rates indicated below. In addition, graphic artist support will be contributed by Tucson Water.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.a</td>
<td>Develop pool removal guide and water bill notices</td>
<td>GW</td>
<td>120</td>
<td>32</td>
<td>3,840</td>
</tr>
<tr>
<td>4.b</td>
<td>Send targeted emails to customers</td>
<td>GW</td>
<td>120</td>
<td>16</td>
<td>1,920</td>
</tr>
<tr>
<td>4.c</td>
<td>Articles in print publications</td>
<td>GW</td>
<td>60</td>
<td>16</td>
<td>960</td>
</tr>
<tr>
<td>4.d</td>
<td>Development of PSA and/or YouTube video</td>
<td>GW</td>
<td>60</td>
<td>16</td>
<td>960</td>
</tr>
</tbody>
</table>

Task 4 Subtotal  

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>7,680</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*GW = Gary Woodard
Detailed Budget, Task 5: Develop workshop content and deliver workshop four times
Task 5 will require an estimated 50 hours of labor at the rates indicated below. In addition, graphic artists support will be contributed by Tucson Water.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.a</td>
<td>Develop Ppt, related course materials</td>
<td>GW</td>
<td>120</td>
<td>10</td>
<td>1,200</td>
</tr>
<tr>
<td>5.b</td>
<td>Administer, run course</td>
<td>Extension</td>
<td>30</td>
<td>12</td>
<td>360</td>
</tr>
<tr>
<td>5.c</td>
<td>Conduct 4 workshops, 2 hours each</td>
<td>Extension</td>
<td>80</td>
<td>8</td>
<td>640</td>
</tr>
<tr>
<td>5.d</td>
<td>Student support for 4 workshops, 5 hours each</td>
<td>Extension</td>
<td>25</td>
<td>20</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td><strong>Task 5 Subtotal</strong></td>
<td></td>
<td></td>
<td>50</td>
<td>2,700</td>
</tr>
</tbody>
</table>

*GW = Gary Woodard; Extension = UA Cooperative Extension, Pima County

Detailed Budget, Task 6: Award rebates for pool removals
Task 6 will require an estimated 10 hours of labor at the rates indicated below. In addition, 400 rebates at $100 each are budgeted.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Units</th>
<th>Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.a</td>
<td>Rebates</td>
<td>GW</td>
<td>100</td>
<td>400</td>
<td>40,000</td>
</tr>
<tr>
<td>6.b</td>
<td>Administer rebate program</td>
<td>GW</td>
<td>60</td>
<td>10</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td><strong>Task 6 Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
<td>40,600</td>
</tr>
</tbody>
</table>

*GW = Gary Woodard
**Additional Contributions**

Additional contributions from Tucson Water and Oro Valley Water are detailed in *Appendix 6*. Tucson Water, Oro Valley Water, and other participating municipal water providers will deliver information on pool removal and market the website and workshops through a combination of water bill notices, information posted on their water conservation websites, and possibly through targeted emails and/or direct mailings to new customers in older homes with pools.

All participating water providers will also distribute rebates to their customers upon verification of pool removal, either through checks or bill credits, to be reimbursed by the project up to the budgeted limit. Providers also will make available to the consultants billing records for the purpose of estimating water savings.

In addition, Tucson Water is providing $25,000 in direct support for the project, and in-kind support in the form of a graphic artist.
Additional Contribution Breakdown
APPENDIX 6

ADDITIONAL CONTRIBUTIONS BREAKDOWN AND LETTERS OF SUPPORT

In-kind Support, Participating Water Providers
Tucson Water, Oro Valley Water, and other participating municipal water providers will deliver information on pool removal and market the website and workshops through a combination of water bill notices, information on the water conservation areas of their utility websites, and possibly through targeted emails and/or mailings to new customers in older homes with pools.

All participating water providers will also distribute rebates to their customers upon verification of pool removal, either through checks or bill credits, to be reimbursed by the project up to the budgeted limit. Providers also will make available billing records for the purpose of estimating water savings.

Additional Support, Tucson Water
Tucson Water is providing $25,000 in direct support for the project. For budgetary purposes, these funds have been assigned to Task 1 ($10,000), Task 2 ($10,000), and Task 3 ($5,000). Additional in-kind support in the form of a graphic artist will contribute to Tasks 1 through 4.

Letters of Support
Letters of Support from Tucson Water and Oro Valley Water are appended below. The letter from Tucson Water contains the commitment of $25,000 in direct support.
February 13, 2020

Thomas Buschatzke, Director
Arizona Department of Water Resources
1100 W. Washington Street, Ste. 310
Phoenix, AZ 85007
C/O Melissa Sykes, Water Resources Specialist

SUBJECT: Tucson AMA swimming pool removal program

Dear Director Buschatzke:

The City of Tucson Water Department is in full support of this pool removal proposal that will create educational resources and pilot a rebate program for swimming pool removal in the Tucson AMA. This proposal builds on previous work that was funded by Tucson Water, in conjunction with CAP and ADWR, to better understand residential demand trends in our service area.

As the largest water provider in southern Arizona, Tucson Water delivers water to more than 730,000 customers, representing about 75% of the AMA population, which includes a significant amount of older housing stock. The findings from that study revealed that the popularity of swimming pools is declining and that many backyard pools installed during the peak pool era of the 1970s and 1980s are now considered unwanted by the homeowners that have to maintain these pools. This work revealed that the costs of pool ownership are fragmented, and generally invisible, so homeowners don’t know the full costs, and there is no information available on pool removal options for customers who no longer want a swimming pool. Additionally, the study found that on average, backyard swimming pools use just under 30,000 gallons of water annually, which represents a savings opportunity if customers do choose to remove their pools and replace with hardscape and/or desert-adapted vegetation.

Tucson Water supports the quality of life benefit that many families enjoy with a pool, however we recognize that customers who may no longer want a pool face several obstacles to removing pools. We believe that providing information on costs and options of removal, and customer incentives, can remove barriers to achieving water savings from landscape features that are no longer desired.

Although our utility does have a strong conservation program, we do not address swimming pools, other than as part of our residential water audits, which may identify pool-related leaks. At the conclusion of the pool study we identified that developing online educational materials on pool costs and removal options would be a great resource for our customers. To this end, Tucson Water is committing to $25,000 for the website development costs, in-kind support for a graphic artist and administrative time for rebate processing, and to market and promote the website, workshops, and related materials, like targeted mailings.
We are eager to support this project by working with the consultants and other local water providers to ensure that the website and supporting materials are useful for our customers. We have worked with the consultant on several projects previously and we are confident that the products developed will be well-executed and customer-friendly.

We are committed to sharing the resources developed for this project with our customers and to working with providers throughout the Tucson AMA to achieve measurable potable water through a reduction in outdoor, consumptive, water use. We believe this is an innovative approach to water and energy conservation and the long-term sustainability of our region's water resources. By providing consumer choices around pool costs and pool removal, a new approach to residential water conservation can be deployed in Tucson and, once proven, throughout Arizona.

Sincerely,

Timothy Tjionumure, P.E., ENV SP
Director
City of Tucson Water Department
Town of Oro Valley
Oro Valley Water Utility

Thomas Buschatzke, Director
Arizona Department of Water Resources
1100 W. Washington Street, Ste. 310
Phoenix, AZ 85007
C/O Melissa Sykes, Water Resources Specialist

February 10, 2020

SUBJECT: Tucson AMA pool removal program

Dear Director Buschatzke:

I write in support of the proposed effort to encourage the removal of unwanted residential swimming pools in the Tucson AMA. Previous research on residential demand has demonstrated the reduced popularity of backyard pools, but homeowners with unwanted pools face a number of obstacles to removing them. We believe that this program addresses those obstacles and will result in substantially more pools being removed.

Oro Valley’s housing stock includes many older homes with unused and unwanted swimming pools. Our current conservation program does not address swimming pools, other than as part of our residential water audit program, which may identify pool-related leaks. We also currently lack educational materials or other guidance for homeowners wishing to remove a pool. The proposed website, printed materials, bill stuffers, rebates, and workshops will eliminate this deficiency.

We are prepared to support this project by working with the consultants and other local water providers to assure that the website and supporting materials meet our customer’s needs. Once complete, we will make our customers aware of the website, other educational materials, workshops, and rebate offers through bill stuffers, newsletter, and other means. This project has great potential to not only benefit our customers by reducing their outdoor water use, but it also helps to preserves our potable water resources, reduces the utility’s energy use and provides the Water Utility with another valuable tool to provide positive conservation messaging to ensure our communities long term sustainability.

If you have any questions please feel free to contact me at (520) 229-5010.

Sincerely,

[Signature]

Peter A. Abraham P.E.
Town of Oro Valley Water Utility Director

Oro Valley, it’s in our nature.
11000 N. La Cafiada Drive Oro Valley, Arizona 85737
www.orovalleyaz.gov | phone: (520) 229-5000 | fax: (520) 229-5029
Supplemental Information:

Evidence of Physical and Legal Availability of Water
Evidence of Physical and Legal Availability of Water
For Incentivizing the Removal of Backyard Pools

This project does not require any available water. Therefore, this form is not applicable.
Evidence of Control and Tenure of Land
Evidence of Control and Tenure of Land
For Incentivizing the Removal of Backyard Pools

This project does not require any control or tenure of land. Therefore, this form is not applicable.
State Historic Preservation Office (SHPO) Review Form
APPENDIX 5

STATE HISTORIC PRESERVATION OFFICE
Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 et seq, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that recipients of state funds are required to comply with this law throughout the project period. All projects that affect the ground-surface that are funded by AWPF require SHPO clearance, including those on private and federal lands.

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information MUST be submitted with each application for funding assistance:

- A completed copy of this form, and
- A United States Geological Survey (USGS) 7.5-minute map
- A copy of the cultural resources survey report if a survey of the property has been conducted, and
- A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.

NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA), OR

- A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: ADWR WMAP Conservation Grants, FY2020

2. Project Title: Incentivizing the Removal of Backyard Pools

3. Applicant Name and Address: Gary Woodard, 1415 E. Lind Road, Tucson, AZ 85719

4. Current Landowner/Manager(s): N/A

5. Project Location, including Township, Range, Section: N/A

6. Total Project Area in Acres (or total miles if trail): N/A

7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground?
   □ YES  ☒ NO

8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: Information on benefits, costs, and approaches to removing an unwanted backyard swimming pool will be provided to municipal water customers through bill inserts, a website, print materials, and workshops. Based on this information, some pool owners will elect to remove or fill in swimming pools in their backyards.
9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to document condition: We have no way or knowing how many water customers will be motivated to remove backyard pools, or where they are located. We will not be directly involved in these pool removals, which will be scattered across the metropolitan area.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area? ☑ YES ☑ NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist? ☑ YES ☑ NO ☑ UNKNOWN

   If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO.

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? ☑ YES ☑ NO

   If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? ☑ YES ☑ NO

   If YES, name of the district:

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

Feb. 14, 2020
Gary C. Woodard
Applicant Signature /Date Applicant Printed Name

FOR SHPO USE ONLY

SHPO Finding:

☐ Funding this project will not affect historic properties.
☐ Survey necessary – further GRANTS/SHP consultation required (grant funds will not be released until consultation has been completed)
☐ Cultural resources present – further GRANTS/SHP consultation required (grant funds will not be released until consultation has been completed)

SHPO Comments:

For State Historic Preservation Office: Date:
Application Checklist
ARIZONA DEPARTMENT OF WATER RESOURCES
WMAP Groundwater Conservation Grant Application Checklist

☒ Project Proposal
  ☒ Cover Letter
  ☒ Executive Summary
  ☒ Project Overview
  ☒ Scope of Work
  ☒ Budget Breakdown & Narrative
  ☒ Additional Contribution Breakdown (if applicable)
  ☒ Project Map

☒ Supplemental Information
  ☒ Evidence of physical and legal availability of water
  ☒ Evidence of Control and Tenure of Land
  ☒ State Historic Preservation Office Review Form