# Targeted Watershed Improvement Plan Grant Final Application

**Arizona Department of Environmental Quality**
**Water Quality Improvement Grant Program**
**Grant Application Form**

**Project Description** –Formation of a Local Watershed Improvement Council to develop and implement a Watershed Improvement Plan to address impairment due to *E coli* on the San Pedro River from the mouth of the Babocomari River to Dragoon Wash near St David, Arizona.

**Authorizing Agency -** Name of person, agency, company, tribal authority who is applying for the grant.

**Name: Coronado Resource Conservation & Development Area, Inc**

**Address: 656 N Bisbee Ave**
**Willcox, AZ 85643**

**Authorized Agency Contact** – Person who will accept responsibility for the terms and conditions of the Grant Agreement. This person must sign the signature page.

**Name: Gerald Lindsey**
**Title: Director**
**Phone: 520-384-2229 x 123**
**E-mail: sam@vtc.net**
**Fax: 520-384-2735**

**Project Manager –** Person who will have the day-to-day knowledge of the project and should be contacted if clarification is required.

**Name: Rachel Thomas**
**Address: 656 N Bisbee Ave**

**Title: Project Manager**
**Phone: 520-384-2229 x 123**
**E-mail: badgerall@earthlink.net**
**Fax: 520-384-2735**

**Project Period**

**[X] 2 years [ ] Greater than two years (please include justification)**

**Project Costs**

**Funds Requested (max 60%): $ 265,551.00**
**Matching Funds (min 40%): $ 187,800.00**
**Total Project Costs: $ 453,351.00**

**Are you or your organization currently debarred, suspended or otherwise lawfully prohibited from any public procurement activity? [ ] Yes [X] No**

**Authority Signature Page**

The undersigned hereby offers and agrees to perform in compliance with all terms, conditions, specifications, and scope in this grant application. Signature certifies understanding and compliance with the application attached hereto. ADEQ may approve the grant application and modifications to scope, methodology, and schedule, final projects, and/or budget.

Authorized Signature _____ Date _____

Printed Name : Gerald Lindsey

Title : Director

Company/Agency/Tribal Authority: _Coronado Resource Conservation & Development Area

This Grant Application Form must be signed by the individual legally authorized to act on behalf of the applicant in conducting all official business relating to the project. Signing this form and submitting a grant application package, certifies that the applicant has authority to enter into the agreement, accept funding, and fulfill the terms of the proposed project if approved. Applicant is required to read the Water Quality Improvement Grant Agreement Terms and Conditions and be legally authorized to enter into an agreement with ADEQ.

## Final Application

### I. Desired Outcomes

The following are desired outcomes of this project:

1. Improve local understanding of Water Quality issues, monitoring, prevention and remediation methods.
2. Development a Watershed Improvement Council that will be the local group to guide the project process.
3. Development of a long term monitoring strategy
4. Assessment of the water quality in the targeted reach of the San Pedro River
5. Evaluation of the river conditions and training provided to local residents on how to improve and maintain desired water quality.
6. Development of a Water Quality Improvement plan
7. Implement practices that will lead to the desired improvement in water quality in the targeted area**.**
8. Contributions toward delisting of targeted stream segment

### II. Pollutants of Concern

**The pollutant of concern is the pathogen *Escherichia coli* . as documented on ADEQ's 303d list.**

### III. Background Information

**RESOURCES:**

The Arizona Department of Environmental Quality (ADEQ) sampling program has documented the presence of exceedences of the pathogen *Escherichia coli* in samples from the San Pedro River at various sites between the mouth of the Babocomari River to Dragoon Wash over a period of eleven years. These sites were monitored using ADEQ monitoring protocol and let to the assessment as "Impaired" for this reach of the river. This is documented in Arizona's Integrated Assessment 305(b) and ADEQ's 303(d) lists.

These lists have been used as a justification for information compiled by the Arizona NEMO program in their Watershed Based Plan for the Upper San Pedro Watershed. The NEMO Watershed Based Plan for this area provides an excellent resource to build on as we move forward to local area detailed assessment, sampling, planning and implementation of practices that will address the impairment.

The US Department of Agriculture has recently completed the Cooperative Soil Survey for the area. This will be used as a resource and also as a teaching tool as we move forward. The soil survey gives information on types of soils in the area and their suitability for various uses and erosion potential which plays a key role in non point source pollution.

*E. coli* is a type of bacteria that lives in the intestines of humans and other animals. The majority of types are harmless however there are types of E. coli that are toxic some causing diarrhea and the worst type capable of causing kidney failure and even death. The fact that sampling over time has indicated the presence of E. coli, it justifies further study to determine type and source. Due to the large geographic area involved and a pathogen, it is imperative that residents of the watershed be involved in the project from the onset and assume responsibility for watershed health at the close of the project.

**POTENTIAL SOURCES OR CONTRIBUTING FACTORS:**

The project area is largely rural with a mixture of land uses on erosive, alluvial soils.

a. **AGRICULTURE:** The majority of the area adjacent to the river is contained within the Bureau of Land Management's National Conservation Area which excludes grazing. However livestock grazing is a practice on the Babacomari Ranch on the Babocomari River above Huachuca City and there are trespass cattle that get into the river on occasion. The St David community area has crop production and small livestock operations

b. **URBAN:** Huachuca City is a small to medium sized community with sewer ponds adjacent to the Babocomari River and scattered private septic tanks in the outlying areas. The Town of Tombstone is located on the Babocomari River/Walnut Gulch, and should also be assessed for impact to the stream. The other community is St David and it lies right on the river at the northern most border of the targeted project area. All of these communities will be evaluated for contributing factors during the assessment phase of the project.

c. **RECREATION:** The San Pedro in this area is used for recreation by hikers and off road vehicles which have the potential to contribute to E coli contamination.

d. **OTHER:** The San Pedro River is a corridor for human traffic moving into the United States from Mexico. There are extensive areas littered with garbage left by humans as they traveled north. In addition to the human travel and transient occupancy in the river bed, larger storm events that cause river flow can move human waste north from Canana in Mexico potentially into this reach of the river. This poses a real concern as untreated human waste may have the opportunity to reach large stretches of the river.

## IV. Location and Land Ownership

**City/Town:** Multiple (St David, Huachuca City and Tombstone in area)
**County:** Cochise
**Greater Watershed - 8 digit Hydrologic Unit Code (HUC):** 15050202
**Land Ownership:** Federal, city, state, private

**V. Scope and scale of watershed**

Define the scope and scale of the watershed that your project will be addressing. Include a map that clearly shows the boundaries of the watershed of concern, and its location in relation to known water quality impairments as well as the greater watershed.

This project will address impairment due to E coli in the reach of the San Pedro River from the mouth of the Babocomari River to Dragoon Wash near St David, Arizona. The project will use DNA genotyping analysis to determine the source of contamination and will address practices within the 50,000 acre contributing watershed that may be factors. A NEMO map of the watershed is attached that outlines the boundaries of the watershed we will be working in.

- Human impacts on the watershed that may be contributing factors include, recreation, livestock, human migrant traffic, housing/septic adjacent to the area. Potential "human impact areas" that will be reviewed are:
  a) Huachuca City, Tombstone, Fairbank, Curtiss and St David for community and private septic systems that may be factors. These are identified on attached map.
  b) Local data on human traffic camp sites in the river (trash dumps)
  c) Recreation sites along the river, typical camping areas, access sites to the river.
- Agricultural area: a) The majority of the targeted area is within the Bureau of Land Management's National Conservation Area (NCA) that is excluded from livestock grazing but may have impacts due to trespass cattle. NCA boundary is in yellow on map. The WIC will work with the Bureau of Land Management and local ranchers to identify areas known for trespass cattle b)To obtain a comprehensive assessment, the project will address the extent of the contribution from the Babocomari River, a major tributary that has livestock grazing as a practice within the watershed c) The St David area has small farms with irrigated pasture, crop production and housing along the river that may also be impacting the water quality.

Provide the HUC associated with the project area. Projects should ideally focus on 10 or 12 digit HUCs, although slightly larger or smaller drainages may be feasible dependent upon the project.

**HUC 1505020207 (See NEMO Watershed Plan Map attached)**

**V. Scope of Work**

a. Describe the overall approach that will be taken to complete Phase I of the WIP project.

**Phase 1 is the planning process that will involve forming partnerships with local units of gover**nment and citizens. The initial steps will involve educating the communities on non point source pollution, including E. coli and the potential impacts on human and wildlife health. A Watershed Improvement Council (WIC) will be formed to direct the assessment and planning process. The WIC will be made up of volunteers and technical support personnel with the goal of identifying potential sources of E coli, evaluating suitability of sampling sites and developing potential strategies to address practices that may be contributing to E. coli loading of the river. We will work closely in partnership with the NEMO program for NPS modeling to provide usable information for the WIC and citizens. They will also serve as a resource for training local volunteers on sampling methods, data analysis and watershed characterization processes. Local citizens, including those serving on the WIC may need to be educated on non point source pollution relating to E coli and other contaminants to enable them to provide quality input to the planning process. The WIC will work together with technical support to address the following topic areas: Education & Outreach, Monitoring, Technical Implementation & Management.

To effectively guide the planning process with the goal of implementing non point source pollution control practices, additional data must be gathered that will detail the extent of the problem and identify sources. Methods of gathering that data is detailed in section V but primarily, an assessment utilizing NEMO support will be conducted of current biological and ecological conditions noting current management practices or potential impacts.

A detailed sampling plan will be developed that will guide the implementation and quality of that portion of the project. We will utilize assistance from the Master Watershed Steward Program to train volunteers to gather data, sample water and monitor river and environmental conditions (such as rainfall, human, livestock and wildlife traffic). A local laboratory will be set up to handle, test and manage samples and transport them to Dr Channah Rock, U of A for DNA genotype testing to determine sources. Once data is collected, the WIC can focus on planning Best Management Practices with the goal of mitigating pollution through implementation that is the focus of Phase 2.

**Phase 2 is the "on the ground" implementation phase of the project**

Until all the needed partnerships within the local watershed are formed, and detailed information is gathered on sources of pollutants, types of practices to be implemented can only be estimated. With the current limited information, the following are potential practices that could be included in the implementation (WIP) plan:

a) Livestock fencing to exclude trespass cattle from the river – funding sources-project funds from this grant, NRCS-EQIP funds, and local contributions of labor and services
b) Private and Municipal septic -Plan and recommendations on methods and sources for assistance in planning, design and funding
c) Human traffic- Volunteer clean up of known camp sites, work with US Border patrol to grant access to patrol those areas
d) Recreation- plan to limit access for off road vehicles and camping in the river
e) Farming- any sources here might be identified and be able to use funding from this grant for practices such as stormwater runoff control (grade stabilization structures)

b. What permits, if any, will need to be obtained in order to complete this project?

No permits will be required for the initial phase of this project as it focuses on information/education, partnership building, assessment and planning.
Phase II is the implementation phase and **may** need the following permits (dependant upon practice and location:

a) BLM- Allotment permit modification (includes NEPA, Cultural Clearance)
b) State land – Permit to place improvements on grazing land
c) County floodplain permit
d) Any applicable city ordinances or permit requirements
e) Access agreements from landowners for sampling

**VI. Survey Methods**

***All surveys will be conducted with input from partners on the Watershed Improvement Council and technical support from partner organizations and agencies.***

a) Initial characterization of the watershed – Existing NEMO information provides an excellent foundation for this project. They have characterized runoff patterns, land use and multiple other factors influencing the watershed. This will use a "boots on the ground" approach to gather new data and build on existing NEMO information. Local landowners that have lived in the area can add a historical perspective as well as input on current factors and practices that may be impacting water quality.
b) Non Point Source (NPS) Modeling of watershed- assistance to be provided by NEMO
c) Social and educational needs survey- We will operate initially on the assumption that we will need to build a knowledge base in the population about the "impaired" status of the river, build trust and recruit involvement. The San Pedro is a highly visible river, with landowners being subject to a lot of controversy over water quality and quantity, threatened and endangered species, and grazing and farming restrictions over the past ten years. The first challenge will be to build trust. Some of that has been done prior to this application but this will be a project that MUST be locally driven with technical assistance from agency partners. Information on the social climate, landowner attitude and change thereof will be gathered through the initial information workshops as we move toward developing the WIC. From there we can move toward assessment of how they obtain information and level of involvement they are interested in having, the key stakeholders in the area. After the initial stages, all information will be shared in a public workshop setting where we can provide education on methods and techniques on water quality improvement and management and share project progress as well as gather community input (use these jointly as "listening sessions".
d) Monitoring- Sampling of water for quality. Volunteers will be trained through the Master Watershed Program and in conjunction with NEMO and the University of Arizona to conduct on the ground sampling that will include the samples to be tested for water quality and monitoring of site conditions ie. Recording rainfall, intensity of runoff events, new erosion sites or other potential threats to water quality. Samples to be DNA genotyped for E coli will be stabilized in the local laboratory and transported to Dr Channah Rock at the University of Arizona for testing.

e) Data analysis- The WIC Coordinator and WIC with technical assistance from NEMO and ADEQ will analyze the data and use it to moderate and develop the Water Quality Improvement Plan which will include implementation activities.
f) Feasibility of practices- site suitability. After the WIC is formed, monitoring conducted and data gathered, potential practices for the implementation phase will emerge. The WIC will be able to identify some of the areas and types of practices that might be suitable or barriers to practice implementation in them. Technical expertise from the Cochise County Engineer and Health Department Director as well as the Natural Resources Conservation Service can provide valuable input into the site suitability for various practices as well as input on design and potential funding sources to augment implementation.

**Abbreviated Monitoring Plan for San Pedro Targeted Watershed Project**

1. Background and monitoring objectives
    a. Pollutant of concern: *Escherichia coli*
    b. Monitoring outcomes:
        1. Presence (or lack of presence) of E coli
        2. Concentration and DNA genotype of E coli present
        3. Potential sources for any E coli detected

    c. General methods of data analyses:
        i. Comparison to: historic data, a pristine site in a matched watershed
        ii. Comparison of upstream/downstream, or before/after at "key sites"
        iii. Statistical method
        iv. Comparison to visual analysis and/or observations by local community members and WIC in relation to activities that may have impacted sample sets. (rainfall, streamflow events, human activity (recreation, migrant traffic) livestock access)

2. Parameters and measurements

**A) Laboratory and Field Measurements to be collected:**

1.Sample collection for Bacteroides and E.coli tests from multiple locations on the San Pedro River from a location at the USGS gauging station on the Babocomari to Dragoon Wash to determine contamination resulting from cattle, wildlife and from human activities. Due to the fact that the San Pedro water flow is inconsistent, monitoring volunteers will be recruited from areas as close to the monitoring sites as possible. This will enable volunteers to respond rapidly to rainfall/runoff/river flow events, and gather the samples. This will allow us to capture data for each rainfall event even if not all of the areas of the watershed receive enough rainfall for a water flow event. Volunteers will be recruited and trained with sampling and monitoring to begin in the winter of 2010

2. Sample collection for Bacteroides and E. coli testing in areas that may have contamination originating from septic tanks. Areas surrounding rural communities within the area have residential septic tanks that may be contributing factors to contamination. Sampling sites will be located within the river if upland conditions exist within ¼ mile that may indicate potential contamination.

3. Other sampling and tests will be conducted to support scientific analysis of Bacteroides and E. coli samples, including flow, turbidity, temperature, specific conductivity and pH.

**Methodology factors:**

These and all other sampling and measurements will be conducted through access granted by landowners. Where that access is not given, horses or ATV's will be used from other sites to gain access to the river. All field testing will also be supported by field observation notes on such factors as hydrologic changes, unusual geologic features, observable signs of human and animal activity and other land use observations. Such observations will be tracked as comments on the data spreadsheets. The same discipline will apply with any equipment issues.

On each event of monitoring, the Project Coordinator will complete a Rapid Assessment Method Survey Form.

The primary objective of the sample testing under this project is to identify the sources of E. coli wherever it is found at exceedance levels. Bracketing practices, based on both known and newly observed sites of animal and human waste exposure, will help refine test results. The genetic typing to be performed by Dr. Channah Rock will differentiate among three categories of E. coli: human, bovine and other animal. Tests for Bacteroides, also performed by Dr. Rock, will add further data confirming human DNA in exceedances of E. coli.

Analysis:

Dr. Rock's testing will use microbial detection methodologies and molecular source tracking, in conjunction with microbial genotyping techniques. The following table (Table 1.) depicts the study organisms and in-organic parameters.

TABLE 1. Study Parameters

| | Sample Parameters | |
|---|---|---|
| | Bacteria | Escherichia coli |
| | | Bacteroides |
| | Other | Turbidity |
| | | pH |
| | | Temperature |
| | | Specific Conductivity |

Sample Collection and Processing

Samples for microbial assays will be collected and filtered using ten-liter and 250-ml polypropylene containers. Additional samples may be collected during extreme high flow conditions, should those occur, in order to better understand the impacts of additional agricultural/urban land runoff to the river. The filtered samples will be packed with gel refrigerant ice pack and will be transported to the Water Quality Laboratory at the Maricopa Agricultural Center, Maricopa, AZ. The samples will be processed within 48 hours. Turbidity, pH, temperature, and specific conductivity will be measured during sample collection in the field.

Analysis Methodology

E. coli Collection and Confirmation

Water samples will be analyzed for E. coli using the enzyme substrate coliform test according to Standard Methods for Examination of Water and Wastewater, 20$^{th}$ edition SM9223b.

On each sampling date, ten colonies presumptive each for E. coli will be collected and archived for confirmatory analysis. This extra step is necessary for accurate analysis of environmental samples with high backgrounds of bacterial contamination and humic acids, variations in pH, and/or low buffering capacity, each of which has been shown to increase levels of false positive rates for microbiological media. E. coli confirmation will be performed by PCR, using primers specific for the sfmD gene encoding a putative outer membrane export protein common to all known E. coli. Upon visualization of the PCR product, presence of a DNA fragment of 106 bp will indicate positivity for E. coli.

Bacteroides Genotyping

In recent studies, the human-specific HF183 Bacteroides 16S rRNA genetic marker has been used to effectively detect human fecal pollution in water environments (Seurinck et al 2005). The Bacteriodes 16S rRNA genetic marker has been detected widely across the United States and has also been detected in river waters in New Zealand. By using host specific Bacteroides primers, our research team has been able to differentiate human fecal pollution from other animal sources such as dogs, horses and fish.

To detect and differentiate Bacteroides species from environmental water samples, 100ml's of each water sample will be filtered using the membrane filter technique. Total DNA extraction from water (directly from the filters) will be performed using the QIAamp DNA Stool Mini Kit (QIAGEN, West Susses, UK) according to manufacturer's instructions. Conventional Polymerase Chain Reaction will then be carried out using the Bacteroides specific primers. Positive PCR samples will be further analyzed using Quantitative Real Time PCR using primers and probes specifically designed in our laboratory in order to verify whether the sequence of the human-specific Bacteroides genetic marker is found in the environmental samples.

Chemical Analysis

Chemical analysis will consist of salinity by electrical conductivity (EPA method 120.1), turbidity by turbidometer, and temperature and pH by electrode.

Flow measurements

Three USGS water gauging stations will initially be used to provide flow measurements when samples are collected, and project staff will also have instruments to obtain flow measurements at the sampling sites.

09471380 Upper Babocomari near Huachuca City

09471400 Babocomari near Tombstone

09471550 San Pedro River near Tombstone

b. **Reasoning for choosing parameters:**

Because ADEQ's ambient monitoring to date has not included all known potential sites of E. coli contamination, but does establish that exceedances occur, this project will test for E. coli at numerous locations in the targeted reach of the San Pedro River and relevant tributaries. Sites will be chosen based upon modeling developed by NEMO and based upon their background research and from input from WIC members based upon their experience, knowledge of the river and practices observed. This will include historical knowledge of existing septic sites, common trespass cattle and human areas and other practices or factors that may be an influence. The San Pedro is not consistently navigable by water craft so samples will be gathered utilizing horseback, ATV and foot travel to reach the site. All observed livestock and wildlife watering sites and recreation sites will be targeted for this general sampling. The goal is to identify these sites prior to implementation of the sampling plan but with the knowledge that other sites may need to be added as more knowledge is gained and the sampling progresses. Sites previously sampled by ADEQ will be included.

3. Sites

a. Criteria to select sites

i. Use of *key sites* where deterioration is apparent and progress can be measured. Key sites will be based upon the following information and conditions:

- All ADEQ samplings sites that have been used in the past will be key sites
- USGS Gauging station on the Babocomari River because it is at a land use change from ranching to residential
- Mouth of the Babocomari as it is the southern point of the targeted watershed area "impaired segment"
- Fairbank to assess impacts from Tombstone
- Curtiss/St David area where agricultural practices change from grazing to cropland
- Any and all known recreation sites, livestock and wildlife watering sites
- Locally known areas that may be identified as areas of impact.

ii. Access

- Access agreements will be obtained from the Bureau of Land Management for access to the National Conservation Area and all private landowners in the area. If private landowners do not grant access, alternative sites may need to be selected or river areas accessed from up or down stream locations.

iii. Flow conditions that affect site selection

- Flow conditions may have the impact of moving contaminants from one area to another. Since the San Pedro normally experiences low flows, NEMO modeling and watershed characterization will need to be used to assess the impact of flow conditions on site selection.

iv. Past exceedances of surface water standards

- All ADEQ sampling sites previously used will be key sites for this project.

b. Map of area with overlay of project implementations and monitoring sites.
*Implementation sites are only estimates at this time. Monitoring sites are also preliminary. NEMO and ADEQ technical assistance will be used to evaluate potential sites for final selection.*

- Babocomari River USGS gauging station- Upstream of Huachuca City will determine if any livestock influence is coming off of ranching in that area. (Babacomari Ranch currently excludes cattle from the riparian area and River.)
- Mouth of Babocomari River (Fairbank vicinity) – Determine if there is an influence from Huachuca City or Tombstone areas
- Curtiss- Northern boundary of the San Pedro National Riparian Conservation Area that has a grazing restriction
- St David Bridge- Northern boundary of the project area. May have multiple influences- livestock, septic and/or recreation.

4. Schedule

a. Monitoring will occur:

i. Before and after the project

ii. On a seasonal basis to capture summer monsoon and winter rainfall

iii. A select number of sites will be monitored during rainfall events as they may be related to conditions such as rainfall on the watershed in Mexico or in areas of the watershed with little cover. Accessibility and safety will be considered for each of the individual sites in relation to stream flow events. In some cases it may be necessary to wait until flow stabilizes before sampling.

iv. Estimated time for the project to improve water quality

This is a two year project on a large watershed. It is estimated that water quality could be improved one year after recreation and livestock control practices are implemented with human impacts due to septic systems and border influences taking longer.

iii. If pollutants are associated with certain conditions or seasons, how will monitoring be scheduled to capture such events? (Consider safety issues, flow, rain events, end of summer)

5. Protocols, Equipment, and Training
   a. Reference protocol to be used for collecting data ( see information outline in the previous section
   b. The following equipment and resources will be needed to implement this plan:
      - Transportation: Vehicle, horses, ATV's (use will be donated by partners)
      - Laboratory space and equipment (space donated, equipment and supplies included in project budget)
      - Staff: Project coordinator, field technician and clerical support
   c. Resources and support already available (existing experience, equipment, etc.)
      - Technical expertise and support from: ADEQ, NEMO, NRCS, County Health Department and Engineer

**VII. Watershed Improvement Council**

a. The Watershed Improvement Council (WIC) is an integral part of the watershed planning process. What groups or individuals will be represented on the WIC for this project?
Identify represented groups and members, and whether or not they are confirmed to participate.

**The following groups and individuals have committed to being part of the WIC:**
**Cochise County Supervisors and Health Department**
**Hereford Natural Resource Conservation District**
**San Pedro Natural Resource Conservation District**
**Upper San Pedro Partnership**
**Babacomari Ranch**
**Audubon Research Ranch**
**Bureau of Land Management**
****** University of Arizona and NEMO program have committed technical guidance and assistance to the project**
****** Hereford Natural Resource Conservation District Director Mike Hayhurst is a retired teacher from the Tombstone High School with a degree in chemistry. He lives in the Huachuca City area and ranches there. He is very familiar with the targeted reach of the San Pedro River and will be an integral part of this project, providing input on sampling sites, management practices and local contacts.**
**Other individuals and groups that will be included but have not committed yet:**
**Community of St David**
**Town of Huachuca City**
**Fred Kartchner Farms**
**G Monzingo, Rancher**
**B Barnes, Farmer**
**Other farmers and ranchers along the river**

b. Describe how the WIC will function and what its duties will be.

**The Watershed Improvement Council -** The role and responsibility of the Watershed Improvement Council is to direct the gathering of information, the planning process and evaluate and prioritize the recommended projects.
We will employ a variety of techniques to identify and include the critical stakeholders. The Coronado RC&D has a strong network of support through membership made up of delegates from all of the counties, cities, towns, conservation districts and tribes in the fives southeast counties of Arizona. The organization has an established working relationship with a majority of the local, state, and Federal agencies in our area. We will prepare an invitation to participate and an outline of the program's activities and benefits. Any targeted individuals or entities who do not respond, will be contacted in person.

Other critical Stakeholders, such as livestock producers, other landowners along the river, or landowners who may be identified as having a possible contributing situation such as inappropriate septic systems, will also be approached one-on-one. If necessary, we will include a trusted neighbor, or a land-management agency person who they trust. Financial situations and elevated concerns about property rights make this a sensitive situation that must be handled carefully.

The WIC coordinator will make presentations at targeted organization's meetings, including, local cattle growers meetings, NRCD meetings, social service clubs such as Rotary and Lion's clubs, and sportsman's clubs. This will serve to recruit input and support for the WIC and keep the public informed as the project progresses. Press releases will be placed in local newspapers Sierra Vista Herald and San Pedro News Sun on a quarterly basis to disseminate information.

An outreach plan will be developed outlining all proposed activities and submitted to ADEQ for approval.

Once the WIC is formed and assembled with the critical stakeholders, we will determine optimum meeting dates, times and locations, and how to distribute information to absent members. We will decide who is needed to make decisions and provide resources, and ensure all views are represented.

The WIC Coordinator will facilitate the meetings, and determine any needs for training, and/or education. The coordinator will coordinate with Kristine Uhlman, Channah Rock and Candice Rupprecht to assist with the appropriate education on the following topics:

- Characteristics and possible sources of the E.coli
- Available monitoring data
- Impacts of the pollutant on wildlife, human and health
- Watershed conditions and site-specific information about possible sources of the E.coli
- Activities, conditions, and locations that contribute to the E.coli loadings
- Actions that may be currently in place to reduce the E.coli loadings

The work of the WIC will be focused in the following areas and will develop operational plans to meet project goals in each of these areas: Education and Outreach, Monitoring &Watershed Survey. The WIC coordinator will facilitate meetings in each of these topic areas, recruit appropriate technical assistance, develop action plans and oversee implementation of them.

- ***Education and Outreach Plan*** – This plan will identify education needs at the onset and as we progress, and provide outreach to the resources and community, as needed. The target audience may include organizations and individuals who live or own land in the area, have an interest in watersheds or water quality or are local government decision makers or members.
- ***Monitoring Plan***
  a) Watershed Survey – This will be a part of the monitoring plan and will focus on planning and implementing a watershed survey to identify areas that may require monitoring, such as recreation areas, septic systems, grazing areas, etc. The planning process will draw on expertise from agencies and individuals with land management, scientific or technical skills, such as engineers, environmentalists, hydrologists, biologists, health management professionals and geologists.
  b) Monitoring component will identify and provide the monitoring of the areas of concern. Monitoring may include, but not be limited to E.coli presence, E.coli DNA analysis, Flow Data, septic testing, and photo monitoring. Resource contacts may include those with scientific or technical skills, such as County Health Department staff, engineers, environmentalists, hydrologists, biologists, and geologists (private or agency personnel) in addition to assistance from ADEQ TMDL Department, Dr. Channah Rock, and Kristine Uhlman.

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- **BMP Implementation Plan**
  a) Technical Aspects: Will include recommendations for implementing Best Management Practices in response to the survey and monitoring results. Technical expertise will be gathered from the cadre of WIC members already identified plus the Cochise County Engineer and NRCS Conservationists, Engineers and technicians and US Fish & Wildlife biologists. Additonal input will be obtained from those with scientific or technical skills, such as engineers, environmentalists, hydrologists, biologists, and geologists that work for the BLM, as well as landowners, sub-watershed representatives, or other community members.
  b) Project Funding - Will identify and develop potential opportunities for restoration projects, and other mitigation measures, and identify the optimum funding sources. Expertise may be obtained from the following: those with project development and grant writing expertise such as local Small Business Administration Directors, watershed directors, local government project managers, engineers and financial personnel, and other community members.

**The Watershed Survey**

The watershed survey will utilize a number of individuals and organizations to focus the survey on the areas of the highest likelihood to contain pollutants.

**Survey Participants:**

- The WIC Coordinator
- Land Management Agency Personnel will have knowledge of the land use that may affect pollutant loading
- Cochise County Personnel will know the age and location of potential failing septic systems
- Local residents and the Bureau of Land Management and US Border Patrol will know the traditional peak recreation and migrant traffic use times and numbers on the river.

- Channah Rock will provide guidance on potential sites to be surveyed for pollutants
- NEMO will assist us with any modeling necessary to direct the surveys towards likely spots, and determine any potential reference sites that would determine target conditions.
- ADEQ or other experts

**Surveys will include:**

- **Recreation Sites -** Recreational users may be a source due to the lack of restroom facilities along the river. The San Pedro River has traditionally been utilized as a recreation destination. Hiking, bird watching, picnicking, and camping are some of the popular activities in the area. There are no developed restroom facilities anywhere near these popular areas.
- **Immigrant Traffic-** The San Pedro is a major corridor for illegal immigration moving from Mexico into the United States. Finding camping and staging sites is an ongoing activity of the US Border Patrol. They apprehend immigrants but the campsite is left behind. These campsites and traffic could contribute to human waste in the river.
- **Wildlife -** The Bureau of Land Management has indicated that wildlife may be a contributing factor in the National Conservation Area as population numbers have been increasing.
- **Livestock -** There are ranchers who may have cattle watering in or near the river. Some of these ranchers have been identified; however, there may be many more that we do not know about.
- **Septic Systems -** There may be outdated, poorly functioning septic systems that may be contributing to the E.coli exceedances. The county is rural in nature. Most waste disposal systems were installed many decades ago, and may have been installed by the landowner, long before any regulations existed. There may be as few as ten or as many as 50 homes that could be of concern. The community systems of Tombstone and Huachuca City are also adjacent to the river and will need to be included in the overall assessment of water quality.
- **Social Surveys -** Determine educational needs and priorities
- **Financial Surveys** – Determine sources of funding

**Analysis of Survey Data** - Analyze and interpret survey results. Organize and present data and information to the WIC, in open public meetings and the local media.
including:

- Findings at all surveyed sites compared to reference sites and conditions
- Determine potential project sites,
- Complete a cost/benefit analysis of each site, including
  - Cost
  - Complexity (permits, size, affected area, technical difficulty)
  - Effectiveness (past experience, estimated load reductions)
  - Longevity and maintenance
  - Land owners interest, commitment, and maintenance likelihood
  - Educational training or technical support needed
  - Availability of appropriate funding
- Prioritization of Projects, including recommendations for Best Management Practices

**The Watershed Improvement Plan** – The plan will be written by the WIC Coordinator, providing the Coordinator possesses the necessary background, education and technical expertise required. If it is determined that no local candidate has the required skills, then the WIC Coordinator will assist a qualified person from NEMO in the writing of the plan. This determination will be made with the full coordination and approval of ADEQ. Elements of the plan will include:

- Identification of pollution sources
- Pollutant location
- A description of actions to be taken to reduce pollutants at each site
- Estimated Load reductions
- Costs
- Possible source(s) of funding
- Technical assistance needed, and source(s)
- Schedule for implementation
- Commitment for maintenance
- Education and outreach strategy
- Evaluation and monitoring

**PHASE II – IMPLEMENTATION**

The implementation phase of this project will depend upon the information gathered in the first phase, analyzed and then put into the Water Quality Improvement Plan. It is the planned practices outlined in the WIP that will be addresses and are at this time assumptions and estimates based upon existing information and knowledge.

**The Best management Practices –** These may include all or some of the following, but may also include Best Management Practices not identified at this time.

Best Management Practices to be implemented if the E.coli source is determined to be human waste:

- Permanent restroom facilities
- Temporary or moveable restroom facilities
- Education and Outreach
- Repair or replacement of inappropriate septage disposal systems

Best Management Practices implemented if the E.coli source is determined to be domestic livestock:

- Controlling agricultural runoff
- Alternative watering sources
- Controlling animals in waterways
- Controlling cattle crossings
- Vegetation buffers
- Controlled grazing

To implement the Best Management Practices we may utilize the following sources:

- Funds allowed under this grant for non point source remediation practices
- NRCS funding for livestock and runoff control practices related to agriculture production
- Write Grants –Assist communities in seeking grant funding that will assist with implementing practices recommended in the WIP.
- Organize Volunteer Groups – Where applicable, work with local organizations and organize volunteer groups to implement projects or programs as recommended in the WIP.

**VIII. Community Involvement**

How will the community be involved in each of the major aspects of the project? Who makes up the community (who are the landowners/managers and other stakeholders)? Explain how they will be brought into the process and how they will participate in each of the methods identified in Part IV above.

A key to implementing this project is to have community involvement. Historic involvement with "government programs" along the San Pedro River have resulted in citizens getting the feeling that thing ie. Projects, programs etc. are "done to them" and that they have no voice.

We have already initiated the process of community involvement with seeking support for this project proposal and have obtained a cross section of community members, organizations and units of local government that have indicated support verbally and/or in writing. We will build on that involvement by:

a) Hold an initial information workshop that provides "hands on" training on water quality, water quality practices and introduces the project.
b) Develop a press release for the local papers: Sierra Vista, Benson, Tombstone and Bisbee
c) Develop fact sheets and information flyers and distribute them through mailings, meetings with local units of government and service organizations.
d) Community members will be recruited to serve on the WIC and participate in the development of an information/outreach plan.
e) Volunteer training and four additional community workshops will be open to all community members, providing them with information and opportunity to participate and provide feedback on the project.

**IX. Long-term Maintenance and Effectiveness Monitoring**

Practices implemented in Phase II must be maintained. Who will do this? Who will take on effectiveness monitoring responsibilities, and take measures to change things that aren't working?

Operation and Maintenance plans will be a part of the implementation plan and will outline what maintenance shall consist of, who will be responsible and how long they will be required to maintain the practice. On private land, any landowners receiving funds through this grant will be required to sign an Operation & Maintenance (O&M) agreement for the life of the practice with Coronado RC&D (agreement to be approved by ADEQ). Other sources of funding will have specific requirements relating to that source. The same procedure will apply if funds are provided to communities as part of this grant. Monitoring of the effectiveness of these practices will be included in the agreement.

Long Term Monitoring- This will be included in the O&M Agreement and will also rely on a cadre of volunteers trained as a part of this project and agencies cooperating with this project.

**X. Key Personnel**

The following is a list of roles that need to be taken on to successfully undertake the planning phase of WIP development. Please identify who will be filling each of these roles, and their relevant experience. *Note: one person may fulfill multiple duties. Additional information regarding implementation phase key personnel will be required by grantees following the completion of the planning phase.*

a. Project manager *(Responsible for making sure that the project is progressing in accordance with the approved scope of work and milestones, submitting quarterly and final reporting as well as budget and reimbursement request documents to ADEQ, providing additional load reduction and project information upon request, and serving as the day-to-day contact person regarding the project)*

**Rachel Thomas,** Coronado RC&D Director, handles financial management for Coronado RC&D, has 30 years of experience with the Department of Defense (retired from Fort Huachuca), managing operations, finances and records.

b. Planner/plan writer (*Responsibilities may include meeting facilitation, WIC coordination, plan writing, etc*)

WIC- Coordinator to be hired- A person will be hired with the following skills: Meeting facilitation, volunteer coordination, plan writing, project oversight, liaison between groups, technical knowledge of working landscapes.

c. Field surveying/monitoring *(Responsibilities may include volunteer coordination, developing monitoring plan and survey form development, and data interpretation)*

**Mike Hayhurst,** Hereford NRCD director, San Pedro Watershed Rancher, Retired Instructor, Tombstone High School, BS Chemistry, University of Arizona. Will provide significant guidance on River conditions, monitoring sites and quality control of the project.

**Donna Matthews,** NRCS, Coronado RC&D Coordinator, 16 years experience in working with local groups and grant funded projects. BS Degree Biology & Chemistry, MS Agriculture will provide oversight and guidance to project, serve as technical and outreach liaison for all aspects of the project.

**Vaira Harick,** Cochise County Health Department Director- Will provide assistance with data collection, project oversight, working with stakeholders, quality control and planning . The County Health Department will provide technical staff to assist with sampling.

**Dr. Channah Rock**, University of Arizona, NEMO Program to direct sampling plan development, and sampling training and quality control. Will be responsible for DNA genotyping of E coli in samples.

**George Monzingo**- Local Rancher, Curtiss Flats area- volunteer that will work with WIC to provide historic river knowledge and information and will assist with education and outreach. (Board Member San Pedro NRCD)

**Bob Barnes-**St David Area, Farmer/Rancher will assist with community outreach. (Board Member San Pedro NRCD)

d. BMP engineering/implementation expertise *(Responsibilities may include load reduction modeling, pre-implementation BMP design and site evaluation)*

- **David Clough**, Coronado RC&D, recently retired technician for the Natural Resources Conservation Service, 30 years experience in engineering and conservation and management practice planning, design and construction inspection for implementation.
- NRCS- Willcox, Douglas and Tucson Field Offices that provide technical service to portions of this watershed have standards and specifications for engineering and ecological practices that have been established over 75 years.
- **Dr Mary Nichols,** Watershed Engineer Agricultural Research Service, Tucson- Lead researcher for the Walnut Gulch Experimental Watershed. Will provide technical oversight, planning assistance and educational assistance on non point source pollution and watershed dynamics and processes.
- **Benny Youngs,** PE, Cochise County Engineer, will provide input and oversight for planning and design of BMPs.

e. Other key personnel and partnerships *(Please specify roles and associated duties)*

- **Kristine Uhlman,RG,** University of Arizona NEMO Coordinator – Technical assistance on planning, sampling and watershed characterization and modeling
- **Dr. Channah Rock,** University of Arizona - Sample analysis, DNA genotyping of E coli
- **Paul Brown,** BLM Manager, San Pedro National Riparian Area – Planning and oversight of BMPs
- **Candace Rupprecht,** State Coordinator, Master Watershed Steward Program- Will provide assistance in recruiting and training volunteers as well as putting together workshops for the public.

f. Qualifications

The Watershed Improvement Coordinator will be a key position to fill to implement this project. Qualifications sought for this position will be outstanding communication skills, a background in planning and project management, ability to work with diverse groups and recruit and manage volunteers. A technical background that provides sufficient understanding of watershed dynamics and land use practices will be considered a positive.

**XI. Conflict of Interest**

What steps will be taken to ensure that hiring/personnel selection practices are carried out without the existence or appearance of bias? Provide a statement of policy for hiring if possible.

A copy of the Coronado Resource Conservation & Development Conflict of Interest Policy is attached. This may be found in the organizations Policy & Procedure handbook 2009-2010. All board members file this disclosure form annually. (See Appendix)

**XII. Smart Growth Scorecard**

Is there a completed Smart Growth Scorecard for the municipality in which the project will take place? If so, please identify the community and Scorecard score below. If multiple completed Scorecards apply, the applicant may select the Scorecard with the highest score.

**Cochise County completed 4/28/09**

## XIII. Work Plan Steps and Milestones

Develop a work plan with a series of steps and associated dates that are necessary to complete the plans. Each step must have a milestone that provides a description of what will be accomplished. For example, if the step is to establish Watershed Improvement Council, the milestone would be to bring together at least 10 people representing different groups that might be affected by plan implementation in the watershed and are committed to participating in plan development. A form is provided below. Pre-defined work plan steps identified in the form are mandatory and must be addressed.

| | WORK PLAN STEP | MILESTONE (determination of step success) | DATE TO COMPLETE | ASSOCIATED COSTS |
|---|---|---|---|---|
| 1 | Form WIC Council | Hire WIC Coordinator and Recruit 10 people representing different groups to serve | Oct. 1, 2010 | Grant: $10,465.00<br>Match: $ 0 |
| 2 | Approval of monitoring plan by ADEQ | Work with WIC to select sites, methods and develop into a monitoring plan and submit to ADEQ for approval. | Jan 1, 2011 | Grant: $10,805.00<br>Match: $ 1000.00 |
| 3 | Assemble existing monitoring data and background studies | Literature Search- Research and compile existing data from the area using both published and historic sources from local landowners and residents. Create reference "library/catalog" of information | | Grant: $ 3763.00<br>Match: $ 0 |
| 4 | Identify target areas for field surveys | Hold WIC meetings utilizing existing research, NEMO assistance and local resident information to identify target areas. | | Grant: $ 2,380.00<br>Match: $1,000.00 |
| 5 | Develop field survey methods and forms | Work with WIC members and technical advisors to develop survey methods and forms to be used. These will be assembled into a handbook to be used as the guide for sampling and quality control. Develop Sampling Plan | | Grant: $11,185.00<br>Match: $ 0 |
| 6 | Notify landowners and community about field survey | Hold 2 community workshops that will teach participants about non point source pollution, the project, methods and timeline (Displays, handouts & mailings will also be used | | Grant:<br>$ 24,605.00<br>Match: $1,500.00 |

| | | | | |
|---|---|---|---|---|
| **7** | **Implement physical watershed survey and monitoring** | **Train Watershed volunteers, conduct sampling in accordance with sampling plan, submit samples to Dr. Rock for DNA genotyping. Sampling will include water quality sampling, rainfall monitoring and condition surveys.** | | **Grant: $69,485.00 Match: $97,000.00** |
| **8** | **Develop social survey forms** | **The WIC will meet to develop tools for conducting the Social Survey** | | **Grant: $ 3,143.00 Match: $3,600.00** |
| **9** | **Implement social survey** | **Social survey will be conducted in conjunction with workshops, RC&D meetings, and WIC meetings.** | | **Grant: $3,605.00 Match: $3,600.00** |
| **10** | **Analyze survey results, evaluate alternatives, and set priorities** | **All results will be compiled and evaluated to determine suitability of Best Management Practices.** | | **Grant: $3,149.00 Match: $ 0** |
| **11** | **Estimate load reductions for priority projects** | **WIC Coordinator will work with ADEQ and other technical specialists to estimate load reductions and the WIC to use this information to prioritize practice implementation projects.** | | **Grant: $700.00 Match: $ 0** |
| **12** | **Submit draft WIP to ADEQ and stakeholders for review and comment** | **WIC Coordinator and WIC and support staff will work together to use information gathered to develop a WIP. A Community workshop and mailings will be used to get the WIP to stakeholders for review.** | | **Grant: $15,985.00 Match: $18,350.00** |
| **13** | **Submit final WIP to ADEQ for approval** | **After input has been gathered and revisions made to the WIP, the document will be finalized and submitted to ADEQ.** | | **Grant: $5,765.00 Match: $7,200.00** |
| **14** | **Submit plan for Phase II to ADEQ** | **The WIC will work with technical experts in engineering and water quality (County engineer, health department, NRCS) to develop a plan for practices.** | | **Grant: $17,380.00 Match: $16,250.00** |

| | | | | |
|---|---|---|---|---|
| **15** | **Conduct Phase II implementation** | **This is an estimate for cost and will depend upon the information gathered as to which practices are selected for implementation. These funds can only be used to implement non point source control so any point sources identified in the plan will not be funded for implementation under this project.** | | **Grant: $47,325.00 Match:$33,300.00** |
| **16** | **Conduct Phase II effectiveness monitoring** | **WIC coordinator and field technician will develop an effectiveness monitoring plan for each type of practice installed and conduct monitoring in accord with this plan. (Practices are dependant upon actions taken in task 15)** | | **Grant: $13,385.00 Match: $5,000.00** |
| **17** | **Submit final report to ADEQ** | **WIC Coordinator, staff, RC&D and WIC will work together to develop a final report** | | **Grant: $4,785.00 Match: $ 0** |
| | **Administration** | **Coronado RC&D will administer the grant funds, oversee operations and provide admin services such as bookkeeping and liability insurance. 10% of grant funds** | | **Grant: $24,141.00 Match: $ 0** |
| | **Project Totals:** | | | **Grant: $265,551.00 Match: $187,800.00** |

## XIV. Budget Form & Narrative

### XIV.1. Budget Narrative

Identify how costs were determined, including comparative quotes used to determine costs or worth where applicable, as well as sources of all project match (funding and in-kind). Adequate justification should be provided to show that the cost of implementing the project is reasonable for the benefits anticipated toward improving water quality.

**Sources of Budget information:**

Laboratory Costs for lab equipment and supplies was obtained from the Gila Watershed Partnership Targeted Watershed Project and reflect actual costs they incurred.

Lab Space- Rental rate based upon local rates for space available in Sierra Vista, Benson and Bisbee

Costs for labor were based upon Arizona Department of Labor rates and adjusted County (local) rates for comparable work. Also used the NRCS Volunteer general labor rate of $18.02. Clerical assistance rate based upon current RC&D clerk rate of pay which is compared each year to similar positions in the 5 county RC&D service region.

Equipment rental rates obtained from websites that lease equipment (RSC Rentals, CAT equipment)

Matching funds will come from the following sources:
Cochise County

- Laboratory space
- Technical oversight and supervision Health Department Director, County Engineer
- Travel, vehicle, support services as needed for workshops and monitoring

Local Volunteers and Services

- Mike Hayhurst, chemist, Hereford NRCD will volunteer time in multiple areas of the project planning, oversight, monitoring, training and outreach
- Services-Hayhurst and other local ranchers will donate the services of horses and ATV's for monitoring, mapping, river charachterization
- Services- local community will donate the use of meeting facilities and local accommodations for workshops and meetings.
- Volunteers will donate time and travel for meetings, workshops, monitoring

Cost/Benefit: It is difficult to quantify the cost benefit ratio of dealing with a pathogen that is a human health hazard. Although costly to initiate, the goal is to have a local community action team that will be informed and involved in the health of the river in terms of water quality and carefully guard it in the future. For truly agencies cannot come from the outside and get the job done if the locals have no investment, it must be a local effort to care for their watershed. If this protects human health for the long term, it is a worthwhile investment.

## XIV.2. Budget Form

Clearly delineate costs to be met by the grant and matching funds distribution. A budget form is provided below. Applicants are encouraged to provide as much detail as possible. You may add lines and cost categories as needed.

| GRANT FUNDS REQUESTED (60% of total cost maximum) | | |
|---|---|---|
| **Line Item** | **FUNDS** | **Additional Description and Comments** |
| **Admin. Costs (10% maximum)** | | |
| Project Management Personnel | | Compensation for time spent preparing reports, budgets, and reimbursement requests as well as conducting duties required under the grant agreement terms and conditions |
| Office space | | Space usage, utilities |
| Materials | | Materials required for preparing reports, budgets, and reimbursement requests as well as conducting duties required under the grant agreement terms and conditions |
| Overhead | $24,141.00 | Includes: liability insurance, general office supplies, bookkeeper, computer time, board time for project oversight and other general services not direct charged to grant. |
| | | |
| **SUBTOTAL:** | **$24,141.00** | |
| **Salaries (Non-administrative)** | | |
| **WIC Coordinator** | $104,000.00 | Professional that will be hired to oversee all implementation aspects of the project |
| **Field Survey Technician** | $25,800.00 | |
| **Clerical** | $26,820.00 | |
| **SUBTOTAL:** | **$156,620.00** | |
| **Preliminary Field Work** | | |
| **Mapping** | | Costs for this item is primarily labor and travel and is included in line item salary and travel |
| **Survey forms** | | Costs for this item is primarily labor and travel and is included in line item salary and travel |
| **Monitoring plan development** | | Costs for this item is primarily labor and travel and is included in line item salary and travel |
| **Document prep** | | Costs for this item is primarily labor and travel and is included in line item salary and travel |
| **Supplies** | $2900.00 | Supplies included here are all those needed for WIC operation and NOT included with Lab and sampling costs. |
| **SUBTOTAL:** | **$2900.00** | |
| **Meetings and Training** | | |
| **Community/ WIC and Volunteer training** | $10,000.00 | We will use a workshop format to train WIC members, volunteers and the Community. We will hire a consultant that provides training on various aspects of non point source pollution control and have 5 workshops. |
| **Printing & copies** | $5,600.00 | |
| **SUBTOTAL:** | **$15,600.00** | |
| **Field Work** (physical and social surveys, monitoring, etc) | | |
| **Travel/transportation** | $8,990.00 | Travel for surveys and implementation of project |
| **Lab costs** | | |
| **Equipment** | $14,000.00 | Costs taken from Gila Watershed Partnership set up cost list |
| **Supplies** | $600.00 | Petri dishes, containers, coolers, reagents, lab log |
| **Field Equipment** | 3600.00 | Computer, software, printer, 2 GPS Units |
| **Field Supplies** | $600.00 | Safety kits, gloves, field kits, boots, sampling supplies |
| **SUBTOTAL:** | **$27,790.00** | |
| **Media & Outreach** | | |
| **Postage** | $1700.00 | Postage for mailing outreach materials plus shipping of samples and reports |
| **Web maintenance** | $3500.00 | Cost for set up for the website and maintenance for duration of project |
| | | |
| **SUBTOTAL:** | **$5200.00** | |
| **Phase II BMP Implementation & Effectiveness Monitoring (20 to 30% maximum) Details to be specified upon completion of Phase I.** | | |
| **BMP Materials** | $33,300.00 | This includes material estimate only, salary and travel necessary to implement BMPS are on those line items. When included, the costs represent 23% of the total funds requested. |
| **SUBTOTAL:** | **$33,300.00** | |
| **Other (Specify)** | | |
| | | |
| **SUBTOTAL:** | | |
| **Total Grant Funds** | **$265,551.00** | |
| | | |

| MATCHING FUNDS (40% of total cost minimum) | | |
|---|---|---|
| | **FUNDS** | **Description and Comments** |
| **Admin. Costs (10% maximum)** | | |
| | | |
| | | |
| **SUBTOTAL:** | | |
| **Salaries (Non-administrative)** | | |
| **Technical Oversight** | $32,500.00 | Cochise County Health Department Director @ $65?hr |
| **Hereford NRCD** | $32,500.00 | Chemist, Field Specialist @ $65/hr |
| **Engineering Oversight** | $7,200.00 | Cochise County Engineer @ $90/hr |
| **SUBTOTAL:** | **$72,700.00** | |
| **Preliminary Field Work** | | |
| **Volunteer labor** | $ 3,600.00 | Project plan development 10 vol 20 hr ea @ $18 |
| | | |
| **SUBTOTAL:** | **$3,600.00** | |
| **Meetings and Training** | | |
| **Volunteers** | $7,200.00 | Set up WIC Participate in training & data analysis 20 vol @ 20 hr ea x $18 |
| | | |
| **SUBTOTAL:** | **$7,200.00** | |
| **Field Work** (physical and social surveys, monitoring, etc) | | |
| **Volunteer** | $28,800.00 | Monitoring and surveys, data analysis 20 vol x 80 hr ea @ $18/hr |
| **Laboratory space** | $27,600.00 | Cochise County donation 23 months @ $1200/mo including utilities |
| **SUBTOTAL:** | **$56,400.00** | |
| **Media & Outreach** | | |
| **Services** | $1,500.00 | Local arrangements 5 workshops (meeting rooms, field sites, accommodations) |
| | | Volunteer labor for outreach efforts |
| **SUBTOTAL:** | **$1,500.00** | |
| **Phase II BMP Implementation & Effectiveness Monitoring (20 to 30% maximum) Details to be specified upon completion of Phase I.** | | |
| **Practice Installation** | $33,300.00 | All labor, equipment, small supplies and tools for practice installation |
| **Monitoring** | 5,000.00 | Includes time, travel costs, supplies to monitor before and after conditions of BMP installation |
| **SUBTOTAL:** | **$38,300.00** | |
| **Other (Specify)** | | |
| **Travel** | $2500.00 | Field sampling oversight and meetings- volunteer travel, |
| **Services** | $5,600.00 | Horses and ATV (donations of use for field sampling, mapping, river charachterization) |
| **SUBTOTAL:** | **$8,100.00** | |
| **Sub-totals** | **$187,800.00** | |