

**ARIZONA GAME AND FISH DEPARTMENT  
HABITAT PARTNERSHIP PROGRAM  
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

**PROJECT INFORMATION**

<b>Project Title:</b> Tusayan Pipeline and catchment	<b>Project No.</b> 07-219
<b>Region/GMU:</b> Region II, GMU 9	<b>HPC:</b> Flagstaff/Williams
<b>Project Type:</b> Water development and delivery system	
<p><b>Project Description:</b> This project is part of an ongoing effort to provide reliable water for wildlife in Unit 9. Last year, we funded the rebuild of 10 old catchments, 2 of which will be connected to this pipeline.</p> <p>This proposal covers the installation of 12 miles of pipeline and the construction of the catchment at the end of the system. Three other catchments are ready for connection to the pipeline and 2 more will be connected in the future. Water will be drawn from a storage pond below the Tusayan Wastewater Treatment Plant and pumped to the 6 catchments along the system.</p>	
<b>Wildlife Species to Benefit:</b> Elk, mule deer	
<b>Possible Funding Partners:</b>	
<b>Implementation Schedule:</b> Beginning: April, 2008 Completed: November, 2008	

**PROJECT FUNDING**

<b>SBG Funds Requested:</b> \$ 110,000
<b>Cost Share Funds:</b> \$ \$155,000
<b>Total Project Costs:</b> \$ 165,000

**PARTICIPANT INFORMATION**

<b>Applicant:</b> David Rigo, Unit 9 Wildlife Manager, John Goodwin, Region II LRP Coordinator (please print) <b>Telephone:</b> (928) 774-5045	<b>Address:</b> Region II Arizona Game and Fish Dept. 3500 S. Lake Mary Rd. Flagstaff, AZ. 86001
<b>AGFD Contact and Phone No.</b> (If applicant is not AGFD personnel)	
<b>Coordinated with:</b> Joe Currie, Ed Jahrke, G.M. Merrill, Larry Phoenix, Richard Miller	<b>Date:</b> Sept. 1, 2007
<b>Applicant's signature:</b> John G. Goodwin, Jr.	<b>Date:</b> Sept. 1, 2007

**SEND COMPLETED APPLICATIONS TO:  
Game Branch**

2221 W. Greenway Rd.  
Phoenix, AZ 85023  
mdisney@azgfd.gov

**NEED STATEMENT/PROBLEM ANALYSIS:**

Unit 9 has no perennial water sources. All water comes from rain/snow collected in earthen tanks or wildlife water catchments. Due to porous soil conditions, many of the earthen tanks fail to collect much water and then lose it to infiltration. Many of the older water catchments were built with small water collection and storage systems. Therefore, during dry years, the Department has struggled to haul sufficient water to provide for the needs of wildlife. This has been a biological problem, a financial burden and a strain on Department personnel and equipment.

In 2006, the Region developed a plan for resolving these problems; the plan included (1) installing a pipeline to distribute water west of Tusayan, (2) increasing the storage capacity and water collection capabilities of existing catchments, (3) building new catchments to improve water distribution and (4) sealing earthen tanks with bentonite to improve their water retention capability.

In 2006, SBG, RMEF and AES funds were allocated to rebuild 10 old catchments. To date, 7 have been rebuilt (from 2000 gallon storage to + 20,000 gallon storage) and are providing water to wildlife; 2 are under reconstruction and the last will likely be relocated, pending the decision in the NEPA document the Forest Service is preparing.

This SBG proposal will help fund the next part of the plan – the pipeline, which will provide water to 6 catchment locations. Two of the 6 have been rebuilt from the 2006 funds, one other is already functional and this proposal will help fund the catchment located at the end of the pipeline system (the last 2 catchments will be connected later). RMEF has paid for the archaeological clearances for the pipeline and associated catchments and is partially funding the NEPA process for these actions. The Forest Service is reviewing the final draft of the NEPA and will sign the decision memo in October, 2007.

AGFD engineer G.M. Merrill has reviewed the pipeline proposal and developed specifications for the pipeline and pump system. Water will be drawn from a pond below the Tusayan Wastewater treatment plant (pond is on Plant property and on Forest Service land). The pond receives runoff water from the Coconino Wash and excess treated water from the plant. The pond is estimated to hold approximately 10,000,000 gallons; we anticipate using < 200,000 gallons annually and will draw part of that during the spring when the pond is typically overflowing.

Most of the catchments fed by the system will have approximately 7,000 gallons of storage and will be refilled as needed. The last catchment on the system will be built to hold + 20,000 gallons. In dry years, this will allow AGFD to draw water from this location for transport to other AGFD catchments farther west. This will greatly reduce haul costs and personnel time. The pipeline can then refill the last catchment as needed.

The pipeline will require about 12 miles of pipe to be installed. HDPE pipe will be used because it has been found to be highly resistant to freezing, punctures, deterioration or damage from vehicle or animal traffic. Approximately ½ of the pipeline will be buried along the part of the route with deep soils; where rocky conditions prevent digging, the pipe will be laid on the ground surface.

**PROJECT OBJECTIVES:**

- (1) provide reliable water for wildlife at 6 catchments along the pipeline. The pipeline can easily refill these as needed with only one person needed to operate the system.**
- (2) Provide for water to be hauled from the last catchment to other sites to reduce haul costs and personnel time.**

**PROJECT STRATEGIES:**

- (1) install 12 miles of HDPE pipe.**
- (2) Install a 100 gallon/minute electric pump and small storage building on Forest Service land at the top of the system.**
- (3) Two catchments have already been rebuilt and are ready to be connected to the pipeline; a third catchment needed no rebuilding and is ready to be connected.**
- (4) Build a catchment with +20,000 gallons of storage at the end of the pipeline.**
- (5) As fund become available, build two more catchments to connect to the pipeline.**

**PROJECT LOCATION: GMU 9. Pipeline will start at the Tusayan Wastewater Treatment Plant (T30N, R2E, Sec. 23) and go west approximately 8 miles (T30N, R1E, Sec. 2), generally following the Coconino Wash. (see attached map).**

**LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):** Project will be on Kaibab National Forest land.

**IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?**

**HABITAT DESCRIPTION: Ponderosa pine transitioning to pinyon-juniper and sagebrush-grassland habitat.**

**ITEMIZED USE OF FUNDS:**

**SBG funds will be used to contract for the purchase and installation of 12 miles of HDPE pipe.**

**Matching funds consist of \$56,000 from RMEF to complete the pipeline installation (\$17,000) and construct the catchment at the end of the system (\$39,000). RMEF has paid \$18,000 for the archaeological clearances for the pipeline route and the associated catchments. RMEF has \$24,000 in an account to pay for the NEPA which will be completed in October, 2007. Volunteer labor and donated heavy equipment work worth \$5,000 will build the catchment at the end of the system. Two catchments, to be connected to the pipeline, have been rebuilt at a material cost of \$45,000 and a volunteer value of \$7,000. ( This is part of project 06-211 funded last year with \$130,000 from SBG, \$36,900 from Arizona Elk Society and \$239,930 from RMEF.)**

**LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:**

**Kaibab National Forest supports the project and has partially funded the NEPA and archaeological clearances for the project.**

**The South Grand Canyon Sanitary District Board supports the project but is not being asked to contribute to the project at this time. They have offered a site for a storage building and an electrical connection for the pump at the head of the pipeline.**

**RMEF will provide funds and labor. Several RMEF members in the construction business have offered to solicit discounted prices for the pipe and installation. AES may also contribute funds or labor.**

**PROJECT MONITORING PLAN:**

**The Unit 9 Wildlife Manager will monitor water levels in the catchments fed by the pipeline as part of his standard water catchment monitoring process.**

**PROJECT MAINTENANCE:**

**AGFD will own and maintain the system.**

**PROJECT COMPLETION REPORT TO BE FILED BY:**

**David Rigo, Unit 9 Wildlife Manager**

**WATER DEVELOPMENT PROJECTS (see attached worksheet):**

**TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):**

**ARIZONA GAME AND FISH DEPARTMENT**  
**WATER DEVELOPMENT WORKSHEET**

**PROJECT NAME:** Tusayan Pipeline and catchment \_\_\_\_\_

- 1) **Is the water development listed as a priority in the most recent “Wildlife Water Development Annual Implementation Schedule?”**  
Per agreement with Joe Currie, the pipeline and associated catchments will be added to the schedule at the water team meeting in September, 2007.
- 2) **Please list the Development Branch personnel and date coordinated with for this project.** Joe Currie, Ed Jahrke – ongoing discussions during the past two years. G.M. Merrill engineered the pipeline specifications in spring 2006. Gerry Wright inspected the system route in 2005.
- 3) **What is the estimated annual inches of precipitation for the area? (mark one)**  
\_\_\_2-4 \_\_\_4-6 \_\_\_6-8 \_\_\_8-10 \_\_\_10-12 \_\_\_12-14 X14-16 \_\_\_>16
- 4) **Is there a perennial water source available to big game within four miles of this project?**  
\_\_\_YES (please complete #5 below) XNO (skip #5 below)
- 5) **For the accessible, perennial water source nearest this project:**  
Name of water source:  
Type of water source (catchment, spring, dirt tank, etc.):  
Ownership of water source:  
Distance in miles from project:
- 6) **Is the target wildlife species a result of transplant efforts?** \_\_\_YES \_\_\_X\_NO
  - 7) **Please list any special land management status for the project site (i.e. Wilderness, National Park, National Monument, etc). If private land, list landowner.**  
  
**Kaibab National Forest land with no special status.**
- 8) **Please provide the following information about access to the proposed site:**  
Type of access (mark one): X2x4 vehicles X4x4 only \_\_\_foot only\*\*  
\*\*If foot access only: Distance in miles: Approx. hiking time:  
  
-- Does access to this site require crossing private or tribal lands? \_\_\_YES XNO  
  
-- Please describe any restrictions to public access: None
- 9) **Please list below (or on a separate sheet) the material type and dimensions of each component proposed to be added, modified, or repaired.**  
-12 miles of HDPE pipe of various diameters (1 1/2” to 3”) as specified by G.M. Merrill  
- 3 fiberglass storage tanks (3’ by 20’)

- 1 elk style drinker 3' deep
- 1 apron, gutter system 24'x96'
- 1 standard perimeter fence system (600')
- 1 enclosure fence surrounding the apron (approx. 260')
- PVC pipe, fittings, brass valves to plumb the catchment system

**10) Was a site visit completed?**  Yes  No

If Yes, please list personnel that attended and date.

Gerry Wright in 2005; John Goodwin 2005-07 and David Rigo 2007. USFS District Ranger Rick Stahn and numerous members of his staff 2006-07. Lyle Button and Clair Harris (RMEF) 2006-07.