

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

PROJECT INFORMATION	
Project Title: Evaporation control structures	Project No.07-416
Region/GMU: 41, 40A, 40B, 41, 42, 43B, 44B, 44A	HPC: Southwest Arizona HPC
Project Type: Water Development improvement	
Project Description: Increase efficiency of open water systems (potholes and walk-in troughs) by reducing evaporation.	
Wildlife Species to Benefit: Bighorn sheep, Mule deer, White-tailed deer	
Possible Funding Partners: ADBSS	
Implementation Schedule: Beginning: January 1, 2008 Completed: December 31, 2010	
PROJECT FUNDING	
SBG Funds Requested: \$15,000	
Cost Share Funds: \$	
Total Project Costs: \$15,000	
PARTICIPANT INFORMATION	
Applicant: John Hervert (please print) Telephone:	Address: 9140 E. 28 th Street, Yuma AZ. 85365
AGFD Contact and Phone No. (If applicant is not AGFD personnel)	
Coordinated with: Ed Jahrke	Date: 8-27-07
Applicant's signature:	Date:

SEND COMPLETED APPLICATIONS TO:

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

NEED STATEMENT/PROBLEM ANALYSIS:

Water loss due to evaporation from open potholes and walk-in troughs amounts to thousands of gallons per year. Water hauling may be avoided if we can reduce evaporative water loss from developments. On average,

10mm per day is lost to evaporation from an open water system during the summer months. Ring tank catchments in Region IV were fitted with Hypolon covers in the early 1990's. Water hauling to these catchments was substantially reduced as a result of this modification. We intend to construct evaporation barriers made of Hypolon and a flexible floating material (a solar blanket). Each floating barrier will be specifically sized (shape and area) for each water development. Evaporation will be reduced directly proportional to the area covered by each barrier. Experimental test have demonstrated the effectiveness of this type of barrier. We have documented a near 100% reduction in evaporative water loss, proportional to the size of the barrier and the surface area being covered.

PROJECT OBJECTIVES:

Reduce evaporative water loss from 24 water developments located in Units 41, 40A, 40B, 41, 42, 43B, 44B, 44A. The following developments will be fitted with a floating barrier: Grey, Triple Eye, Sheep Mountain, Cipriano, Mohawk #1, Betty Lou, Anvil, Arch, Silver Queen, Nugget, Signal, Mineral Hill, Snake Bit, Granite Wash #2, Juniper, Holt's Hole, Trigo, Hunts, Chocolate, Dripping Spring, Black Mesa, Hummingbird, Mohave Tank, and Gravel Pit. Our investment of \$15,000 will be recouped if water hauling to four of these waters is avoided by increasing water retention efficiency of these tanks.

PROJECT STRATEGIES:

Floating barriers will be constructed for each water development (troughs and potholes) using Hypolon as the outer protective material, coupled to floating solar blanket material. Aluminum rivets will be used to couple the two materials together. A helicopter will be used to fly personnel and materials to remote waters not located in wilderness. Waters located in wilderness will be hiked to and all materials packed in. Water quality will be improved through reduction of bee drowning and the associated accumulation of high amounts of organic matter (dead bees). Floating barriers will provide a platform for bees to drink from and to remove themselves from the open water. Walk-in troughs can accumulate large amounts of organic material over the course of several years. If not cleaned out, the organic material can cause plumbing from the storage tanks to become obstructed, particularly during water hauling if the water is dumped directly in the trough.

PROJECT LOCATION: Region IV

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name): BLM, BMGR.

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

HABITAT DESCRIPTION:

Sonoran Desertscrub, Arizona Upland Subdivision.

ITEMIZED USE OF FUNDS:

Hypolon, solar blanket materials and aluminum rivets: \$10,000.
Helicopter cost: \$5,000

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

YVR&GC volunteers will be asked to assist with construction of barriers. ADBSS will be asked to assist with hiking in materials for wilderness waters.

PROJECT MONITORING PLAN:

Each completed project will be monitored following the Region IV maintenance protocol. Each system will be checked one or more times during the cool season (Nov. through March) and on a monthly basis thereafter.

PROJECT MAINTENANCE:

Each system will require minimal maintenance once completed. We expect the likelihood of water hauling to be reduced after the system fills with rainwater. The durability of the covers will be monitored periodically to assess potential design flaws, particularly for those systems where high-energy flows are expected to occur.

PROJECT COMPLETION REPORT TO BE FILED BY: John Hervert

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: ___ Evaporation control structures _____

- 1) **Is the water development listed as a priority in the most recent “Wildlife Water Development Annual Implementation Schedule?” Many of the waters listed for improvement have a history of water hauling, at least occasionally. Some of the waters are listed for redevelopment.**
- 2) **Please list the Development Branch personnel and date coordinated with for this project. Ed Jahrke, 8-27-07.**
- 3) **What is the estimated annual inches of precipitation for the area? (mark one)**
___2-4 ___x_4-6 ___6-8 ___8-10 ___10-12 ___12-14 ___14-16 ___>16
- 4) **Is there a perennial water source available to big game within four miles of this project?**
___YES (please complete #5 below) ___NO (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 ___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. BLM, Non wilderness and wilderness, and BMGR lands.**
- 8) **Please provide the following information about access to the proposed site:**
Type of access (mark one): ___2x4 vehicles ___4x4 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 ___NO

-- Please describe any restrictions to public access:
- 9) **Please list below (or on a separate sheet) the material type and dimensions of each component proposed to be added, modified, or repaired.**

Hypolon; solar blanket, aluminum rivets.

10) **Was a site visit completed?** X Yes ___No

If Yes, please list personnel that attended and date. I have been to all of these sites.