



Watershed Based Plan (WBP)

For: The Campomocho/Sacaton Watershed
A sub watershed of the Willcox Playa in Southeastern Arizona

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I. General Watershed Description

The Campomocho/Sacaton watershed is a sub watershed of the Willcox Playa, which is within the San Pedro-Willcox Playa-Rio Yaqui Watershed. The Campomocho-Sacaton Sub-watershed encompasses 42,000 acres about 7 miles north of the City of Willcox, Arizona. A multi-partner local watershed group identified this area as a high priority focus area for the improvement of watershed health. The area falls almost entirely within the ranch boundaries of the Hook Open A Ranch and Redtail Ranch. The watershed planning area includes Gillman Canyon, Apache Canyon, Reservoir Canyon, Sacaton Wash, an unnamed drainage we are referring to as Big Draw, and Campomocho Draw. Most of the planning area falls within Townships 11 and 12 south, and Ranges 24 and 25 east. The primary land use is rangeland. Just outside the area are several rural residences and farms. Approximate land ownership in the watershed is 83 percent State land, 7 percent private land, and 10 percent Forest Service land. The area ranges from about 6,800 feet in elevation in upper forest portion, to about 4,200 feet in elevation in lower portion near the Sulphur Springs Valley. Slopes range from about 25 percent in the steep upper portion of the watershed to 1 percent slope in the relatively flat lower portion.

Soils and vegetation vary greatly within the planning area. Soils are generally shallow on the upper portion of the area and deep on the lower portion. Soil textures range mostly from moderately fine to fine throughout the area. The predominant soils in the watershed are Signal gravelly loam, Pima silt loam, Grabe gravelly loam, Tubac gravelly loam, and Tubac gravelly sandy loam. Average annual precipitation is 12 to 15 inches in the watershed. Vegetation consists primarily of native grasses, shrubs, and forbs on most of the watershed. Mesquite has increased on the lower portion of the watershed and along drainages. Primary ecological sites in the area are Clayey Hills, Clay Loam Upland, Loamy Upland, and Volcanic Hills.

Within the 42,000 acre planning area, the group has designated an area about 13,000 acres in size to begin implementation of watershed treatments. This area includes the watersheds of Sacaton Wash and Big Draw. Initial treatment of this area has been partially funded by a 319h grant. The Campomocho Draw area, approximately 10,000 acres, has been identified as the next highest priority area for watershed treatment in the future.

II. Public Outreach & Government Involvement

Public outreach is a key factor in addressing the issues involved in this watershed on a long-term basis. The formation of a local watershed group and the development of strategies to address issues came as a result of local concern. The public will be kept informed through the following methods.

- a. Open invitations to attend watershed group meetings
- b. Presentations at the Willcox-San Simon Natural Resource Conservation District meetings
- c. Presentations to the Willcox City Council.
- d. The Coronado RC&D and Willcox-San Simon NRCD newsletters
- e. News releases in the local paper
- f. Two on site field days

Several local landowners and the Willcox-San Simon NRCD, submitted a request to the NRCS to assist with a watershed planning effort. An initial planning meeting was held in March 2001 to identify problems and discuss the need for a watershed plan. Attendees included NRCS, Coronado RC&D, Willcox-San Simon NRCD, Cochise County, Arizona State Land Dept., UofA Cooperative Extension, Arizona Game & Fish Dept., and ranchers Jack Kortsen (Hook Open A Ranch) and Dan Skinner (Redtail Ranch). Other organizations now involved with the project include the City of Willcox, El Paso Natural Gas, and the Forest Service.

The group decided to form a watershed advisory group to move forward with development of a watershed plan and pursue funding to implement a project. Dan Skinner was elected Chairman and Dave Matthews, NRCS was selected as Project Manager.

Watershed Group Composition

Dan Skinner, Chairman	Owner	Red Tail Ranch, Willcox, AZ
Dave Matthews, Project Manager	L. Dist. Conservationist	NRCS, Willcox, AZ
Jack Kortsen,	Owner	Hook Open A Ranch, Willcox, AZ
Larry Rains	City Manager	City of Willcox, AZ
Frank Gonzales	Public Works Dir.	City of Willcox, AZ
Lyle Rolston,	Range Specialist	Arizona State Land Dept.
John Holcomb	Owner	Apple Annies, Willcox, AZ
Kim McReynolds	Extension Agent	University of Arizona
Allon Owen	Floodplain Engineer	Cochise County, Bisbee, AZ
Les Thompson	County Supervisor	Cochise County, Bisbee, AZ
Roger Bethel	Construction Mgr.	Cochise County, Bisbee, AZ
Karen Riggs	Contract Engineer	Cochise County, Bisbee, AZ
Al Skinner	Ranch manager	Red Tail Ranch, Willcox, AZ
Philip Baca	Operations Mgr.	El Paso Natural Gas, Tucson, AZ
Joe Hall	Wildlife Manager	Arizona Game & Fish Dept.
Donna Matthews	RC&D Coordinator	NRCS, Willcox, AZ
Kim Webb	Program Manager	Coronado RC&D, Willcox, AZ
Jim Riggs	Supervisor	Willcox-San Simon NRCD
Sandy Cooke	Supervisor	Willcox-San Simon NRCD

ADEQ will provide support and technical expertise to the local watershed group. Dan Skinner, Redtail Ranch is serving as watershed group chairman for 2001-2002. Elections will be held from within the group in 2003.

Additional meetings and field visits were conducted to identify the planning area, discuss problems and opportunities, describe objectives, review the resource inventory previously conducted by NRCS, develop conservation alternatives, make initial decisions, and apply for 319h grant funding. In May 2001, a 319h Water Quality Improvement grant application developed by the Coronado RC&D was submitted to request funding for a watershed restoration project. In July 2001, the Arizona Department of Environmental Quality notified the group that the grant for \$300,000 was approved. Total cost of the project including matching funds is estimated at about \$596,000.

III. Monitoring & Evaluation Activities

At this time, the only monitoring that is occurring is associated with the Water Quality Improvement Grant. The following parameters are being monitored to evaluate the effectiveness of Best Management Practices as part of the project.

1. Vegetative monitoring transects
Permanent transects will be installed to monitor change in watershed conditions over time. These transects can provide information on frequency, cover and species composition.

2. Rain gauges
Permanent gauges will be installed at two of the transect points to record precipitation on the watershed.
3. Photo points
Photos will be used as a permanent visual record of conditions and changes on the watershed.
4. Measurement bars
Marked bars will be installed along side structures to monitor sediment being captured.
5. Wildlife surveys
The Arizona Game & Fish Department will monitor wildlife populations in the watershed through annual counts and evaluate habitat conditions.

Monitoring will continue at least ten years after project implementation to determine the long term effectiveness of the treatments applied.

IV. Water Quality Problems

A. Assessment

Problems and opportunities were discussed at the April 12, 2001 watershed group meeting. Previous resource inventories and studies have identified several problems within the planning area. The problems include excessive soil erosion, poor soil condition, lack of vegetative cover, excessive water runoff and flooding, sedimentation, impaired surface water quality, reduced forage production, low plant diversity, impaired wildlife habitat, flood damages, and human health and safety concerns.

State and private lands on the Hook Open A Ranch and Redtail Ranch were inventoried by NRCS for range condition in 1995. According to NRCS range inventory information about 5 percent of the watershed is in excellent condition, 20 percent in good condition, 28 percent in fair condition, and 47 percent in poor condition. In general, range trend at the time of the inventory was determined to be static on Hook Open A Ranch and slightly improving on the Redtail Ranch. Permanent range monitoring transects were established in 1995 on both ranches. These transects have been regularly monitored since they were installed. Two additional transects were installed in October 2001.

B. Current Conditions

Due to recent prolonged drought in the area especially during 1999 and 2000, watershed conditions appear to have worsened. Much of the deterioration that has occurred has resulted in a loss of ground cover and increase in bare ground. At present, annual forbs have increased on the bare areas during times of adequate moisture. There has not yet been a large increase in shrubs and half-shrubs in the watershed. This should make reestablishment of perennial grasses more feasible, due to a lack of competition from woody species.

It is estimated that 100 acre-feet of sediment is produced from the watershed area each year. This sediment causes damage to rangeland, cropland, roads, and rural residences. Flooding occurs frequently even from small storm events. This has a negative impact on local u-pick businesses downstream of the watershed. It also presents a health and safety concern due to inundation of roads, and the invasion of rural septic systems and agricultural fields. During

large storm events, significant flood damage occurs to the City of Willcox and county residences.

Several opportunities exist to implement watershed treatments to improve resource conditions. Proposed conservation practices are discussed in more detail in the section on alternatives. The two ranchers and all land management agencies involved have an interest in working together to improve conditions in the Campomocho/Sacaton watershed area.

V. Action Plan & Goals

A. Objectives

The primary objective of the planning group and ranchers is to implement conservation practices that will improve watershed health, improve water quality, and reduce downstream flood damages. Objectives identified at the April 12, 2001 watershed meeting included reducing soil erosion, reducing water runoff, improving water quality, increasing ground cover, improving wildlife habitat, reducing negative economic impacts, and reducing health and safety hazards.

B. Estimated Load Reductions

The second phase of this comprehensive program targeted at improving watershed health will implement BMP's yielding the following estimated load reductions.

- Reduce sediment production from 30 acre feet/year to ~21 acre feet/year
- Installed Bmp's will reduce sediment load production by 75%

C. Alternatives

Potential alternatives for conservation treatment were discussed at all watershed group meetings. Decisions were made at the April 26, 2001 meeting to include the installation of about 11 new water and sediment basins and land ripping and range seeding on about 5,600 acres in the 319h grant proposal for the Sacaton/Big Draw portion of the watershed. Estimated cost of the water and sediment basins is \$200,000 and \$85,000 for the ripping and seeding. Land imprinting which involves pulling a large patterned roller over disturbed areas to improve seed/soil contact was also discussed at several of the meetings. After much consideration, it was decided imprinting would not be as effective as deep ripping on the fine textured soils in the watershed. However, land imprinting may be tried by the ranchers to determine the effectiveness of this treatment. Additional alternatives discussed include mulching and seeding, and mulching with animal impact. These alternatives were rejected due to the high cost per acre.

D. Best Management Practices (BMPs)

1. Sediment Practices

Potential conservation practices were identified for the entire watershed. It is estimated that about 45 new water and sediment basins are needed on the 42,000 acre watershed. There are several existing basin structures that could be upgraded and improved. Cochise County has agreed to perform some of the work on existing structures. The basin structures will serve to impound runoff and slowly release excessive water to reduce downstream flooding and excessive erosion. They will also impound sediment to improve water quality. The basins will also serve as a water source for livestock and wildlife. Estimated cost to install the 45 new structures is \$1.1 million.

2. Vegetation Recovery

Deep ripping and seeding is needed on an estimated 22,000 acres. It is planned to rip to a depth of about 30 inches, if possible. Two ripper shanks about 10 feet apart will be used. The area will be ripped on the contour on a 50-foot spacing. Ripping contours will be cut perpendicular to the normal sheet-flow grade of the soil surface slopes to reduce the impact of erosion and sediment transport across the transect areas. Only about 20 percent of the area will actually be disturbed. The 10-foot wide strips that are ripped will be seeded to appropriate native plant species. Seeded areas will be given two full growing seasons of rest from grazing. Estimated cost of the ripping and seeding is about \$300,000.

Grubbing and seeding is needed on about 940 acres of rangeland. Individual mesquite trees in upland areas away from drainages would likely be removed by mechanical treatment. Chemical treatment is also a possible alternative that may be attempted to eradicate brush species with the use of Roundup. The estimated cost to implement grubbing and seeding is \$100,000.

Potential Seed Grasses

<u>Common Name</u>	<u>Scientific Name</u>
Arizona cottontop	Digitaria californica
Sideoats gramma	Bouteloua curtipendula
Blue gramma	Bouteloua gracilis
Yellow bluestem	Bothriochloa ischaemum
Green Sprangletop	Leptochloa dubia
Galleta	Pleuraphis jamesii

3. Management

The two ranchers have plans to implement additional conservation practices such as fencing and water development within the watershed. An NRCS Environmental Quality Incentive Program (EQIP) contract is in place on the Redtail Ranch to assist in implementation of these practices. Both ranchers are committed to grazing systems that include the rotation of livestock and planned periods of deferment for rangeland. Both ranches also have irrigated pastures available for their livestock during the summer growing season. This will allow for extensive summer rest on rangeland. This will enable perennial grasses to produce seed and increase the potential for establishment of new grasses. Areas that are seeded as a part of this project will be given at least two growing seasons of rest prior to grazing.

4. Cost

The total estimated cost of all planned treatments in the Campomoch/Sacaton Watershed is about \$1.6 million. However, there are many watershed and downstream benefits that can be realized from implementation of this project.

5. Maintenance and Repairs to Existing Structures in the Sacaton/Big Draw Portion

This is a *suggested* list of needed maintenance, repairs, and improvements to existing structures on the Big Draw and Sacaton portion of the watershed. As mentioned earlier, Cochise County will perform some of this work. Additional repairs may be implemented by the ranchers. Water rights for stock pond and spreader dike improvements will be obtained and secured through ADWR prior to on-the-ground work being performed.

- a. Pond – SE ¼, Section 25, T12S, R24E. (West Hollingsworth Tank)

Although this structure is functioning well, the north wing dike could be extended further north by approximately 200 feet to direct additional water into the pond. This would provide erosion control benefits for the existing TEP power transmission double lines and downstream reduction in flood damages. The site needs to be surveyed to ensure the dike extension is performed in the proper location in regards to the existing spillway location. The existing pond could be enhanced with the installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. Cochise County has no plans for improvements at this time.

- b. Pond – NE ¼, Section 25, T12S, R24E. (Hollingsworth Tank)
The existing dike and small impoundment would benefit from extending the dike to the SE about 100 feet. It also needs to be deepened and would be enhanced by the installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. Cochise County plans to deepen the reservoir and repair the existing dike.
- c. Pond – SW ¼, Section 19, T12S, R25E.
This existing small pond is in good condition and functioning well. However it would benefit from enlarging, installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. Cochise County plans to reinforce the wing dikes and correct the end alignment.
- d. Pond – SW ¼, Section 9, T12S, R25E.
This existing small pond is just upstream of the Redtail Ranch headquarters and is in good condition. However it would benefit from enlarging, installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. Cochise County has no plans for repairs.
- e. Pond – SW ¼, Section 10, T12S, R25E. (Twin Tanks)
This existing large pond is in good condition. However it would benefit from enlarging, installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. The emergency spillway inlet could be moved to the east about 200 feet to add to the detention capacity of the structure. There is some serious erosion occurring near the outlet of the emergency spillway. The ranchers may be able to address these erosion concerns. Cochise County has no plans for repairs to this structure.
- f. Pond – NW ¼, Section 3, T12S, R25E. (TK Tank)
This pond is breached and would benefit from complete reconstruction. Construction should occur after the planned detention basin in Section 34, T11S, R25E is installed. The reconstruction would include enlarging, installation of a frontal dike, inlet pipe, outlet pipe (principal spillway), and emergency spillway improvements. Cochise County plans to reconstruct the pond and spillway.
- g. Five spreader dikes – Sec. 18, T12S, R25E.
Three of these dikes are in need of minor repair. They are the three southernmost structures in the section. The large spreader in the NW ¼ of the section is breached and needs major repairs. These repairs should not occur until the planned detention basins upstream of this spreader are installed. The northernmost spreader dike in the NE ¼ of the section is in immediate danger of being breached. This structure would benefit

from immediate repairs. Cochise County plans to repair all of these spreader dike structures.

VI. Implementation Schedule

Implementation of the Sacaton/Big Draw portion of the watershed plan is expected to begin in 2002. Engineering studies, practices designs, obtaining necessary permits, archeological clearances, etc. must be completed prior to construction. NRCS will conduct periodic construction checks to determine quality of installation and acceptance of work performed. Listed below is a projected timeline for project implementation and responsible parties.

In 2003, the group will meet and evaluate future watershed treatments. It has been initially decided the Campomocho Watershed will be the next watershed selected for treatment. Funding will be sought with the goal of installation of needed conservation practices beginning in the Campomocho Watershed in 2004. It is anticipated the Gillman, Apache, and Reservoir Canyon Watersheds will be selected for treatment in 2006 or 2007.

Implementation Schedule for Phase I Campomocho/Sacaton Runoff Control

Item	Start Date	End Date	Action	Lead Responsible Party
1	08/01/01	11/30/01	Develop Quality Assurance Plan	Donna Matthews
2	09/01/01	01/31/02	Complete engineering/hydrology study & designs	Karen Riggs/NRCS
3	09/01/01	01/31/02	Develop watershed plan	Dave Matthews
4	10/01/01	12/31/01	Install monitoring transects & devices	Rolston/Roberts/ McReynolds
5	01/01/02	01/31/02	Develop WRAS document	Donna Matthews
6	01/01/02	04/01/02	Obtain State Land improvement permits	Skinner/Kortsen/ Rolston
7	12/01/01	03/01/02	Conduct archeological clearances for basin structures	Rolston/Roberts
8	02/01/02	04/01/02	Repair existing structures	Cochise County
9	11/01/02	12/30/02	Conduct archeological clearances for ripping and seeding	Rolston/Roberts
10	04/01/02	01/15/03	Obtain water rights for structures	Skinner/Kortsen
11	04/01/03	04/30/03	Conduct contractor site showing	Karen Riggs/NRCS
12	05/01/03	06/30/03	Accept bids for construction	Donna Matthews

13	08/01/03	12/01/03	Construct basin structures	Contractor/El Paso Gas/Ranchers
14	10/01/02	11/30/02	Monitoring transect readings	Rolston/Roberts/McReynolds
15	02/01/03	06/01/03	Install ripping, grubbing, & seeding	Contractor/Ranchers
16	10/01/03	11/30/03	Monitoring transect readings	Rolston/Roberts/McReynolds

VII. Funding Strategy

A variety of potential funding sources will be sought to implement the goals of the group.

FUNDING SOURCE	AREA OF FOCUS
NRCS/ EQIP	Fencing and management practices
Heritage Funds	Wildlife Habitat improvement for antelope
International Arid Lands Consortium	Seed and seeding trials for rangeland reclamation
ARS	Research in rangeland trials
EPA/ADEQ 319	Sediment retention/runoff control
Southwest Strategy	Native seed trials

VIII. Other Studies and References Used

Flood Plain Management Study of Northern Sulphur Springs Valley/Willcox Area, USDA Soil Conservation Service (NRCS), 1992

Range Seeding and Brush Management on Arizona Rangelands, Cooperative Extension, University of Arizona, Gilbert L. Jordan, T81121.

Soil Survey of Willcox Area, Arizona, USDA Soil Conservation Service (NRCS), 1976

Soil Geomorphology Conference Willcox Area, Arizona, Proceedings, USDA Soil Conservation Service (NRCS), 1970.

Summary Comprehensive Plan City of Willcox, Arizona, I Dale DeSpain, 1970

Cochise County Comprehensive Planning Program Phase I, Wilsey & Ham, 1972

APPROVAL

The following have read and approved the Watershed Based Plan (WBP) for the Campomocho-Sacaton sub watershed of the Willcox Playa Watershed in Southeastern Arizona

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