# Section 319 Nonpoint Source Control Program

# Watershed Project Final Report

DRAFT
COMMENTS RETURNED TO BENITA.

*Willow Creek Project*

By
Uinta County Conservation District
Benita Gustafson, District Manager

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This project was conducted with the United States Environmental Protection Agency, Region VII

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## Executive Summary

The Willow Creek Project is complete with all Goals being met and all monies appropriated being spent with no surplus. Uinta County Conservation District (UCCD) administered the project. A Coordinated Resource Management (CRM) team made the project a success. The CRM steering committee was comprised of local landowners, permittees, representatives from the Forest Service, the Bureau of Land Management, Wyoming Game and Fish Department, The Natural Resources Conservation Service, the UCCD supervisors and employees.

Tours and field trips were conducted. Meetings were held with the public and various organizations to give information and receive input for the project. The Forest Service obtained labor from the Uinta County jail to build fence. Landowners volunteered to repair stock water ponds and construct new ones. Volunteers aided in the planting of trees and plants in the riparian areas. Uinta County repaired roads and crossings.

Sediment and water quality/quantity was sampled and analyzed by Craig Thompson, hydrologist. Best Management Practices (BMPs) were implemented by local landowners and a detailed map of the Willow Creek watershed was compiled. Extensive work with the landowners and other agencies involved implemented grazing management plans. Riparian areas were replanted as well as study of fish population by Wyoming Game and Fish Department, which is on going. Existing stock watering ponds were repaired and new ones built. With upland wildlife and stock water ponds in place, fences were constructed in the riparian areas to further protect the plant communities and establish stock rotation practices.

Snow fences were strategically placed to trap winter snow fall and fill the upland stock water ponds.

The scientific data does not represent the only benefits that were gained by the Willow Creek Project. Monitoring will continue in the future to analyze the results of the improvements made.

## Introduction

Runoff from the Uinta Mountains provides a reliable source of water for many of the streams in Southwestern Wyoming. Unfortunately, some of the streams and their watersheds are experiencing erosion and sediment problems from vehicle traffic, recreational use, logging, grazing, irrigation return flows, riparian zone deterioration and bank destabilization.

Recently, the Uinta County Conservation District reviewed computerized historical water quality data available from the Wyoming Water Resources Center at the University of Wyoming. The review revealed elevated sediment levels in a number of locations. Historic data indicate the streams typically pick up sediment in the upper most reaches of the upper tributaries of the Smith's Fork in late 1970's and early 1980's, was 33.5 mg/l (n=34) compared to 801 mg/l on the Smith's Fork main stem (n=41).

Biologists from the Wyoming Game and Fish Department and Utah State University have done considerable work in the upper Smith's Fork watershed which includes Willow Creek, the West Fork of Smith's Fork and East Fork of the Smith's Fork (Figure 1 in appendix). They contend that elevated sediment levels are having an impact on the production of the Colorado River cutthroat trout in those streams.

## Project Needs

The Colorado River cutthroat trout, a candidate for the threatened species list, is native to Uinta County. Historically the Colorado River cutthroat trout, in the upper tributaries of the Smith's Fork, survived periods of low flow by congregating in pools. Due to extensive irrigation withdrawals from the Smith's Fork, that river no longer contains enough water to offer a place of refuge during low flows. Therefore, the upper tributaries have become especially important but may not be providing the quality of water they could be providing. In Willow Creek, for example, production of the Colorado River cutthroat trout has in general declined in recent years. In addition to water quality, other factors may be responsible for the decline. For example, in the upper reaches the decline may be due partly to the loss of beaver habitat. A Wyoming Game and Fish Department catch and release program may also be having an impact on some sections of the creek.

**Trout Population Data From Willow Creek**

(Data provided by Wyoming Game and Fish Department, See Figure 2 for locations)

| Location | Map # | Date | #/Mile | Lbs./Acre |
|---|---|---|---|---|
| Middle Station | 6 | 1978 | N/A | 10.6 |
| Lower Station | 5 | 1978 | N/A | 11.4 |
| | | | | |
| Upper Station | 7 | 1987 | 742 | 27.8 |
| Middle Station | 6 | 1987 | 137 | 11.0 |
| Lower Station | 5 | 1987 | 75 | 3.0 |
| | | | | |
| Upper Station | 7 | 1990 | 381 | 9.3 |

*TABLE 3*

To deal with these problems, the Uinta County Conservation District has received a Section 319 Non Point Source Water Pollution Grant from Environmental Protection Agency (EPA) through the Wyoming Department of Environmental Quality (DEQ). This Project Implementation Plan (PIP) outlines how Best Management Practices (BMPs) will be applied to the Willow Creek watershed. While Willow Creek will be the focus of management activities, water quality and fish production monitoring will take place in the three watersheds: Willow Creek, the West Fork of the Smith's Fork, and East Fork of the Smith's Fork. The West Fork and East Fork will be monitored to examine the need for expanding BMPs to those areas in the future.

## Description of Streams

About 20 miles in length, Willow Creek flows north out of the Uinta Mountains and converges with the West and East Forks of the Smith's Fork to form the Smith's Fork River near Robertson (Figure 1). The Willow Creek watershed covers 20,000 acres in southern Uinta County. The headwaters are located near the state line (about 1,000 acres are located in Utah). The West Fork and East Fork watersheds each cover about 35,000 acres with slightly more than half located in Utah.

Willow Creek and the West Fork are free flowing streams. Flow in the East Fork is controlled by the State Line Reservoir, located just inside the Utah State Line. There is only one USGS surface water gauging station. It is located four miles north of the state line on the East Fork (Figure 1).

The Wyoming Department of Environmental Quality (base on a scale of 1 to 4 with 1 having the best water quality) classifies Willow Creek as a Class 2 waterway. It is rated 5 by Wyoming Game and Fish Department (based on a scale of 1 to 5 with 1 having the best trout fishery). The East and West Forks and the Smith's Fork River are rated Class 2 by DEQ and are rated a Class 3 by Wyoming Game and Fish Department.

## Watershed Description

The three watersheds contain a mixture of federal, state and private land. In the Willow Creek watershed ownership is approximately 1% state, 17% Forest Service, 32% BLM and 50% private. Land ownership in the West Fork watershed is approximately 1% state, 80% Forest Service, 6% BLM and 13% private. About 90% of land in the East Fork watershed is owned by the Forest Service and 10% is private. In addition, there is one square mile of state land.

Surface elevations vary from 7000 ft. to 9000 ft. in the Willow Creek watershed and from 7000 ft. to 12,000 ft. in the West Fork and East Fork watersheds. Commensurate with the elevation change, topography varies from steep in the upper watersheds to almost flat in the lower areas. Most of the upper watershed areas are heavily forested with recent, but not current, clear-cuts. In contrast, most of the lower areas are privately owned and dominated by sagebrush, grassland and irrigated cropland.

Riparian areas in all three watersheds appear to have receded in size. In the Willow Creek watershed, Wyoming Game and Fish Department records indicate remnants of old beaver dams and dead, or dying, willow and shrub species.

Each of the watersheds contain a number of improved dirt or gravel roads which cross the streams at several locations, becoming a likely source of sediment.

There are no urban areas or mining activities in any of the three watersheds.

## Description of Problem

Elevated sediment levels have been recorded in the Smith's Fork River and its tributaries. Typically, sediment concentrations increase as the stream moves from higher to lower elevations. Stream bank destabilization and watershed runoff is likely sources of sediment.

According to Wyoming Game and Fish Department surveys, sediment and riparian zone damage is impacting the fishery in Willow Creek. Erosion has contributed silt to the stream substrate (a sand and gravel substrate is preferred for spawning), and remnants of dead trees indicate a historically greater abundance. Through the years, the stream has changed from one with many pools and substantial woody cover to one that has fewer pools and less woody cover. Biologists contend that fewer pools; less shade cover and the deteriorating spawning substrates are limiting the population of Colorado River cutthroat trout. Local citizens believe that forest management policies, loss of beaver habitat, fishing pressure and drought are also having an impact.

Two graduate students, Dona Horan and Bob Black, from Utah State University recently completed two studies on Willow Creek and the West Fork. Preliminary findings indicate that these streams, including Archie Creek, a tributary to the West Fork are being impacted by sediment resulting in a high percentage of fine materials in the spawning substrate. This, plus fewer pools and reduced vegetation along the streams and higher water temperature, appears to be limiting trout populations.

During late June 1994, temperature fluctuations were high in Willow Creek. In one section of stream, temperatures changed from 8.5°C at 8 a.m. to 22.5°C at 7 p.m.[1] The upper lethal temperature for cutthroat trout is 23°C.

Game and Fish biologists and the Utah State graduate students contend that a number of things could be done to reduce the sediment concentration and substantially improve the fish production in the upper tributaries of the Smith's Fork River. Watershed management practices are needed to reduce erosion. Riparian zone management is needed to stabilize stream banks, improve shade cover and enhance beaver habitat. Instream habitat improvements, such as wood structures, are needed to add pools and/or increase pool depth.

## Project goals and objectives

### Project Goals

Goal 1: Improve the quality of water in Willow Creek.
Goal 2: Increase the production of Colorado River Cutthroat Trout in Willow Creek.
Goal 3: Monitor East and West Forks to explore the need to expand the project into those areas.

### Project Activities

#### Objectives and Tasks

**Objective #1:** Administer the project in a manner that will met DEQ requirements and foster community support

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[1] Willow Creek, Uinta Mountains Stream Survey Report, Dona Horan, Fisheries Co-op Education Student, September 22, 1994.

**Task#1: Administer the project**

Products: project coordination, fund management, quarterly and annual reports, etc.

Cost: $12,000

**Task #2: Steering Committees, Information and Education**

Establish a steering committee and initiate an information and education program

Products: Project Brochures, newsletters, watershed tours for the public, television and/or radio promotions, high school student assistance, education materials for the steering committee, steering committee field trips, development of demonstration areas.

Cost: $5,000

Objective #2: By September 30, 1998, reduce mean annual sediment concentration in Willow Creek by 50% compared to baseline sediment data to be collected in 1995 and early 1996, and increase the production (lbs./acre) of Colorado River cutthroat trout 50% compared to 1987 numbers.

**Task #3 District BMP assistance:** Compile detailed map of Willow Creek watershed, work extensively with landowners to promote BMP and provide implementation assistance.

Products: Maps, BMP promotion

Cost: $20,833

**Task #4 Grazing Management:** Provide financial assistance for the management of livestock and wildlife grazing in the Willow Creek watershed. Also, work with federal officials and/or landowners to develop new or enhance existing range improvement.

Products: grazing management plans, fence, gates, fence and gate management/maintenance, livestock rotation, supplemental feeding/salting sites, range improvements.

Cost: $51,000

**Task #5 – Livestock/wildlife watering:** Promote the development of watering sites to distribute grazing pressure and reduce impact on riparian areas.

Products: stock water ponds, pipelines, wells, small dams, spring development, water gaps.

Cost: $8,000

**Task #6 Hydrological Modification: Promote** stream modification practices to reduce instream erosion and to enhance fish habitat. The appropriate permits will be obtained.

Products: Structural stream bank stabilization, vegetative stream bank stabilization, channel restoration, vortex rock weirs, rock drop structures, small sediment ponds, fish habitat improvement, grade stabilization.

Cost: $25,000

**Task #7 Riparian Enhancement:** Promote erosion control and fish habitat enhancement, including shade enhancement.

Products: willow plantings, tree plantings, grass seeding/management, beaver management, spring protection/management.

Cost: $13,000

**Task #8 Road Management:** Promote management/maintenance of roads to reduce sediment input to Willow Creek.

Products: replace/improve road crossings, temporary road removal/closure, improve culvert placement/sizing, improve road/slope design, riprap, and gabion structures.

Cost: $14,000

## Milestones and status

The Project as propose will last three years with an anticipated starting date of August 1, 1995 (see Milestone Chart). BMPs will first be applied in the fall of 1995 and continue through July 1998. A final report will be submitted upon completion on September 30, 1998.

## Supplemental information

### Coordination Plan

The Uinta County Conservation District sponsors the project. The district will coordinate the project and be responsible for its outcome.

Project coordination is vitally important because the Willow Creek watershed includes lands owned by private individuals and public lands managed by the Forest Service, the Bureau of Land Management and the State of Wyoming. In addition to landowners, a number of organizations and individuals have a potential interest in the project including the Wyoming Game and Fish Department and sportsmen's clubs.

To achieve coordination and communication among these diverse interests, the district has formed a steering committee. The steering committee consists of three landowners, a Forest Service employee, a BLM employee, a Game & Fish employee, and four local science teachers (others may be added at a later time). The duties of the steering committee will be to 1) keep the project focused on improving water quality and fish production; 2) promote BMPs; 3) prioritize requests for BMPs; 4) explain the project to interested parties and 5) help assess the success of the project.

The District recognizes that 319 funds should not be used to supplant other federal funds. In order to reduce supplanting and replication of effort, relevant federal agencies will be closely involved with the project. Use of land management funds available through these agencies will be promoted when available.

The issue of spending 319 funds on federal land is of special concern. The District recognizes that nonfederal dollars must be used to match 319 funds. Therefore, 319 expenditures on federal land will be limited to situations where a nonfederal match can be obtained. For example, a grazing leasee may be willing donate the labor to install a fence or a local sportsman's club may be willing to provide the labor to install a culvert.

## Evaluation and Monitoring

### Monitoring Strategy

Monitoring during and upon completion of the project is very important. Monitoring during the project will provide information needed to fine-tune the implementation plan. Monitoring at the end of the project is necessary to evaluate overall success. Monitoring will focus on sediment, water quality, fish production, macro invertebrate analysis, BMP maintenance and the project's impact on grazing use.

In addition, salinity levels will be monitored. Salinity levels in the Colorado River Basin have been a concern for many years. High levels of total dissolved solids in the lower Colorado River, in the United States and Mexico, prompted Congress to pass the Colorado River Basin Salinity Control Act (P.L.98-569, as amended in 1984). While salinity does not appear to be a problem in the Upper Smith's Fork, this area is part of the Colorado River Basin. Therefore, salinity levels will be carefully monitored during this project.

**Objective #3**: Monitor water quality and quantity as well as fish production and macro invertebrate composition in the Smith's Fork, Willow Creek and the East and Forks (Figure 2). Monitor BMP effectiveness and establish photo points in the Willow Creek watershed.

**Task #9 Contract Trainer:** A contractor will be hired to train District personnel to collect water quality samples, flow data, macro invertebrate samples and substrate data. Subsequent to the training, District permanent and temporary personnel will be responsible for all monitoring activities.

Product: Training
Cost: $5,000

**Task #10 Water Quality/Quantity Monitoring:**
Samples will be collected at four stations approximately 13 times per year (Figure 2). That samples will be analyzed for sediment, nitrate, total phosphorous, total dissolved solids, temperature and conductivity. Quantity of data collected at these same stations will allow calculations of loads and identification of quantity impacts. On the same dates, composite sediment samples will be collected from lower, middle and upper Willow Creek (Figure 2). In addition, the budget allows for a few sediment samples at random locations as needed.
Product: water quality/quantity data
Cost: 34,000 (this includes lab costs equipment, personnel and travel. See Exhibit B)

**Task #11: Fish population survey**
In 1995 and 1998, the Wyoming Game and Fish Department will complete a fish population/production survey at three locations on Willow Creek, at three locations on the West Fork, at three locations on the East Fork and at one location on the Smith's Fork (one of the sites will be on Gilbert Creek, a tributary to the East Fork and one site will be on Archie Creek, a tributary to the West Fork.
Product: Fish population/production data
Cost: 5,500.00

**Task #12 – Macro invertebrate/substrate monitoring:**
Each year, the District will collect macro invertebrate samples from 13 locations (Figure 2) and submit them to a lab for analysis. At these same sites, the District will perform a substrate analysis.
Product: macro invertebrate and substrate analysis
Cost: 9,500.00

**Task #13—BMP monitoring:**
The District will regularly monitor installed BMPs to insure that they are properly maintained and to assess their impacts on traditional uses such as grazing and recreation.
Products: BMP monitoring
Cost: 2,000.00

**Task #14 – Photo Points:**
The District will take photos from a number of points on Willow Creek and in the Willow Creek watershed in 1995 and from the same points in 1998. The photos will be used for before and after comparison.
Product: photos
Cost: $1,000.00

## Sampling Design

A before and after sampling design will be utilized. Baseline data will be collected in Willow Creek during 1995 and early 1996, before BMPs are implemented. Data will also be collected in 1996 and 1997 during the implementation of BMPs to fine-tune the implementation plan. Data collected in 1998 will be compared to baseline data to assess progress toward established objectives.

Throughout the project, data will be collected from the West and East Forks of the Smith's Fork River. These data will be used to do point-in-time comparisons between the three watersheds. This information will add confidence to the evaluation of the success of the project and will also be used to examine the possibility of expanding the project to these watersheds at a later date.

Monitoring site locations, sampling frequency and responsible party are identified in Table 2. Site locations are plotted on Figure 2.

## Monitoring Results

### Stream Chemical/Physical/Biological Monitoring

Craig Thompson, Associate Professor at Western Wyoming Community College, completed water sampling and testing, and photo taking. See Exhibit A.

#### Other Monitoring

Uinta County continues to manage the roads to and from Willow Creek.
Water containment pits have been cleaned

#### Quality Assurance Reporting

#### Recreation/Socio-Economic Evaluation

#### Recreation Impacts

Streams that should support a healthier and larger population of fish. Big game animals having more abundant habitat, therefore stabilizing wildlife populations

#### Social Impacts

More recreational areas for fishing and big game hunting were open with the improvement of fish population and riparian areas. Improved Range Management Practices have made the cohabitation of livestock and game more balanced.

#### Agency Participation

*Uinta County Conservation District (UCCD)*

- Site monitoring
- Project coordinator
- Water quality testing
- Financial management
- Housing and meals for laborers.

*BLM—NEPA analysis*

- Transects set: established three upland belt, two green lines, thirteen cages for monitoring and developed a use pattern map.
- Set goals and objectives for desired plant communities and management practices.
- Monitored sites
- Designed and approved projects and engineer pits.
- Approved management system proposals
- Performed soil studies
- Donated hardware for spring development

Wyoming State Forestry

- Built one mile of buck and pole fence using prison labor
- Designed a forest stewardship plan for private timber management and sale

*USFS*

- Built one mile buck and pole fence
- Provided bucks for one mile of fence
- Provided expertise in designing private forest management plan
- USFS fisheries biologist provided expertise on fisheries management
- Cooperated with and designed rotational grazing system
  Wyoming Game and Fish Department
- Provided studies on fisheries management, in particular the Colorado River cutthroat trout.
- Suggested fisheries management plan
- Input on game habitat – vegetation enhancement
  Utah Division of Wildlife Resources
- Toured CRM areas and suggested beneficial grass species

**Public Participation**

*Public Participation*

- Students volunteered to plant and build fences.
- Labor from the Uinta County jail was implemented by the Forest Service to build fences.
- Uinta County repaired and rebuilt roads and creek crossings.

*Permittees, Landowners and Ranchers*

- developed springs
- oversaw and manage spike application
- designed areas to be treated with spike
- built fences
- Oversaw stock pit restoration and construction
- developed management plan
- seeded stock pit areas, roads, embankments, clear cuts, select cuts, and barrow pits
- The landowners bentonited stock pits
- selected new pit locations and sought bids for stock pit construction
- Helped in conifer removal and designed erosion control measure and silt management traps.

*Utah Sportsman Association*

- Offered labor for thinning projects and vegetative enhancement programs to be used later.

*Louisiana Pacific*

- Road design
- Labor for seeding
- Erosion control
- Designs for silt management especially Colorado River cutthroat protection

- Resource management for timber

*Craig Thomson, Hydrologist and water quality specialist*

- Water testing

*Rocky Mountain Elk Foundation*

- Funding possibility to enhance vegetation (aspen restoration)

*Trout Unlimited*

- Possible funding for fisheries enhancement

## Photo Points

UCCD Willow Creek 5-30-96

UCCD Site 3 5-30-96

Willow Creek Site 32 7-11-96

Bothos Site 11 Upstream 8-15-96

Bothos Site 12 8-15 96

UCCD Site 1 8-21-96

Willow Creek Site 1 8-21-96

Willow Creek Site 2 8-21-96

Willow Creek Site 2 8-21-96

Willow Creek Site 3 8-21-96

Willow Creek Site 3 8-21-96

Willow Creek Site 4 8-21-96`

Willow Creek Substrate Site 2 10-10-96

West Fork of Smith's Fork 10-12-96

Willow Creek Site 4 11-07-97

Willow Creek Site 3 4-29-97

Willow Creek Bank Full State 4-29-97

Willow Creek Site 1 View Upstream 6-19-97

Willow Creek Site 1 View Downstream 6-19-97

Willow Creek Site 2 View Downstream 6-19-97

Willow Creek Site 2 View Upstream 6-19-97

Willow Creek Site 2 View Downstream 6-19-97

Willow Creek Site 3 View Upstream 6-19-97

Willow Creek Site 4 View Upstream 6-19-87

Willow Creek Site 4 View Downstream 6-19-97

Willow Creek Site 2 View Downstream 8-13-97

Willow Creek View above Site 3 8-13-97

Willow Creek Site 3 Fish Pool Down from Site 3 8-13-97

Willow Creek Fish Pool View from Opposite Bank 8-13-97

Willow Creek Site 1 Downstream 8-13-97

Willow Creek Site 2 View Upstream 8-19-97

Willow Creek Site 4 View Upstream 8-19-97

Willow Creek Site 1 View Upstream 8-24-98

Willow Creek Site 1 View Downstream 8-24-98

Willow Creek Site 2 View Upstream 8-24-98

Willow Creek Site 2 View Downstream 8-24-98

Willow Creek Site 3 View Downstream 8-24-98

Willow Creek Site 3 View Upstream 8-24-98

Willow Creek Site 4 View Upstream 8-24-98

Willow Creek Site 4 View Downstream 8-24-98

## Budget/Expenditures

### Budget for Individual tasks

| | |
|---|---|
| Administration | 12,000.00 |
| Steering Committee-Information and Education | 5000.00 |
| District BMP Assistance | 20,883.00 |
| Grazing Management | 51,000.00 |
| Livestock/Wildlife Watering | 8,000.00 |
| Hydrological Modification | 25,000.00 |
| Riparian Enhancement | 13,000.00 |
| Road Management | 14,000.00 |
| Contract Trainer | 5,000.00 |
| Water Quality/Quantity Monitoring | 34,000.00 |
| Fish Population Survey | 5,500.00 |
| Macro Invertebrate/Substrate Monitoring | 9,500.00 |
| BMP Monitoring | 2,000.00 |
| Photo Points | 1,000.00 |
| Total Budget for Individual Tasks | 205,833.00 |

### Section 319 Nonpoint Budget

| | |
|---|---|
| Personnel | 10,000.00 |
| Travel | 3,900.00 |
| Equipment | 5,000.00 |
| Supplies | 4,440.00 |
| Contractual | 77,160.00 |
| Construction | 23,000.00 |
| Total Section 319 Nonpoint Budget | 123,300.00 |

### Non-federal budget

### Non-Federal Cash Match

| | |
|---|---|
| Personnel | 46,633.00 |
| Travel | 1,600.00 |
| Supplies | 100.00 |
| Contractual | 12,500.00 |
| Construction | 5,500.00 |
| Total Non-Federal Cash Match | 66,333.00 |

### Non-Federal In-Kind Match

| | |
|---|---|
| Personnel | 16,000.00 |
| Total Non-Federal Cash Match | 16,000.00 |

Total Non-Federal Budget $82,333.00

## Actual Expenses

### Administration-Task #1

| | | |
|---|---|---|
| 800 hours District Manager's time @$10/hr | 8,000.00 | |
| 400 hours District Supervisor's time @$10/hr | 4,000.00 | |
| Total Administration | | 12,000.00 |

## Steering Committee/Public Relations-Task #2

| | | |
|---|---|---|
| Brochures | 500.00 | |
| Signs | 500.00 | |
| Education materials for Steering Committee and district | 500.00 | |
| Field trip/conferences for Steering Committee | 1,500.00 | |
| Watershed tours for public | 500.00 | |
| Equipment for high school students | 300.00 | |
| Demo Site | 1,200.00 | |
| Total Steering Committee/Public Relations | | 5,000.00 |

## District Assistance Task #3

| | | |
|---|---|---|
| 1983 hours District Manager's time @$10/hr | 19,833.00 | |
| 4545 miles @ .22/mile | 1,000.00 | |
| Total District Assistance | | 20,833.00 |

## Best Management Practices (BMPs) – Task #4 through 8

| | | |
|---|---|---|
| BMPs | 111,000.00 | |
| Total BMPs | | 111,000.00 |

## Contract Trainer – Task #9

| | | |
|---|---|---|
| 140 hours @ $25/hr | 3,500.00 | |
| Per Diem = 15 days @ $60/day | 900.00 | |
| Travel @ .22/mile | 600.00 | |
| Total Contract Trainer | | 5,000.00 |

## Water Quality/Quantity Monitoring -- Task #10

| | | |
|---|---|---|
| Sediment, nitrate, total Phosphorous, total dissolved solids @$35/per sample | | |
| Full analysis @ 4 locations @ 44 dates @ $35/sample | 6,160.00 | |
| Sediment analysis @ 3 locations 44 dates @ 35/sample | 660.00 | |
| Miscellaneous sediment samples as needed | 1,000.00 | |
| Ice and shipping | 680.00 | |
| District manager's time 900 hours @ $10/hr | 9,000.00 | |
| Part-time assistants time 1428 hours @ $7/hr | 10,000.00 | |
| Travel 6,818 miles @ .22/mile | 1,500.00 | |
| Flow meter | 3,000.00 | |
| Sediment sampler | 400.00 | |
| Waders—2 Pair | 150.00 | |
| Conductivity meter | 400.00 | |
| GPS unit | 500.00 | |
| Coolers and sample bottles | 200.00 | |
| Miscellaneous Equipment | 350.00 | |
| Total Water Quality/Quantity Monitoring | | 34,000.00 |

**Fish Population Survey conducted by Wyoming Game and Fish Department – Task #11**

| | | |
|---|---|---|
| 10 sites at beginning of project and again at the end of the project | | |
| 275 man hours @ $20/hour | 5,500.00 | |
| Total Fish Population Survey | | 5,500.00 |

**Macro invertebrate/substrate Monitoring – Task #12**

| | | |
|---|---|---|
| 13 sites @ 4 dates = 52 samples @ $120/sample | 6,340.00 | |
| Supplies/shipping | 760.00 | |
| District manager's time @$10/hr. | 2,000.00 | |
| Travel @.22/mile | 400.00 | |
| Total Macro invertebrates/substrate monitoring | | 9,500.00 |

**BMP monitoring Task #13**

| | | |
|---|---|---|
| District Manager's Time @$10/hr. | 2,000.00 | |
| Total BMP monitoring | | 2,000.00 |

**Photo Points Task #14**

| | | |
|---|---|---|
| District manager's time @ $10/hr. | 800.00 | |
| Film/processing | 100.00 | |
| Travel @.22/mile | 100.00 | |
| Total Photo Points | | 1,000.00 |
| Total Expenditures | | 205,833.00 |

## List of Photo Points

Photo 1: Willow Creek Site 5-30-96 ..... 15
Photo 2: Willow Creek Site 3 5-30-96 ..... 15
Photo 3: Willow Creek Site 2 (7-11-96) ..... 15
Photo 4: Bothos Site 11 (8-15-96) ..... 15
Photo 5: Bothos Site 12 (8-15-96) ..... 15
Photo 6: Willow Creek Site 1 (8-21-96) ..... 15
Photo 7: Willow Creek Site 1 (8-21-96) ..... 15
Photo 8: Willow Creek Site 2 (8-21-96) ..... 15
Photo 9: Willow Creek Site 2 (8-21-96) ..... 15
Photo 10: Willow Creek Site 3 (8-21-96) ..... 16
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# Exhibit A

Willow Creek Project

Data Table

Water Sampling Results

Craig Thompson

Hydrologist and Associate Professor

Western Wyoming Community College

## Willow Creek Data

| Location | Date | Time | Temp oC | pH | Conductivity umhos/cm | DO mg/l | Total P mg/l | $NO_3$-N mg/l | TSS mg/l | TDS mg/l | Discharge $ft^3/s$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WCk #3 | 5/30/96 | 12:00 | 8.0 | 7.40 | 100 | 7.90 | 0.06 | 0.55 | 24.5 | 138.0 | 25.93 |
| WCk #4 | 5/30/96 | 13:45 | 7.0 | 6.90 | 240 | 7.75 | 0.07 | 0.49 | 41.5 | 177.0 | 20.14 |
| WCk #1 | 6/7/96 | 11:10 | 8.1 | 8.00 | 60 | 8.00 | 0.02 | 0.33 | 17.5 | 50.0 | 9.37 |
| WCk #2 | 6/7/96 | 14:15 | 16.0 | 8.10 | 120 | 7.40 | 0.01 | 1.22 | 26.5 | 114.0 | 6.35 |
| WCk #3 | 6/7/96 | 14:50 | 20.0 | 8.50 | 280 | 7.70 | 0.01 | 0.05 | 18.0 | 36.0 | 11.69 |
| WCK #4 | 6/7/96 | 17:00 | 20.0 | 8.20 | 220 | 7.30 | 0.01 | 0.27 | 28.0 | 126.0 | 11.21 |
| WCk #1 | 6/13/96 | 10:25 | 9.0 | 8.04 | 90 | 9.50 | 0.01 | 0.28 | 6.5 | 40.0 | 2.78 |
| WCk #2 | 6/13/96 | 12:00 | 15.0 | 8.60 | 172 | 7.80 | 0.01 | 0.29 | 5.0 | 70.0 | 2.40 |
| WCk #3 | 6/13/96 | 14:30 | 15.0 | 8.42 | 550 | 8.50 | 0.01 | 0.07 | 11.5 | 176.0 | 4.55 |
| WCk #4 | 6/13/96 | 15:20 | 15.0 | 8.50 | 330 | 8.40 | 0.01 | 0.29 | 9.0 | 185.0 | 6.38 |
| WCk #1 | 6/19/96 | 16:00 | 17.2 | 8.30 | 130 | 7.60 | 0.01 | 0.16 | 10.0 | 45.0 | 1.01 |
| WCk #2 | 6/19/96 | 14:15 | 19.0 | 8.74 | 165 | 7.60 | 0.01 | 0.19 | 6.5 | 70.0 | 1.06 |
| WCk #3 | 6/19/96 | 12:00 | 13.0 | 8.76 | 650 | 8.90 | 0.01 | 0.20 | 11.8 | 205.5 | 3.85 |
| WCk #4 | 6/19/96 | 10:30 | 12.5 | 8.84 | 432 | 8.45 | 0.01 | 0.10 | 11.0 | 254.5 | 3.68 |
| WCk #1 | 6/26/96 | 10:30 | 11.0 | 8.27 | 140 | 8.50 | 0.02 | 0.27 | 15.3 | 136.5 | 0.73 |
| WCk #2 | 6/26/96 | 12:25 | 16.5 | 8.57 | 179 | 8.00 | 0.00 | 0.37 | 7.3 | 156.0 | 0.81 |
| WCk #3 | 6/26/96 | 14:15 | 17.0 | 8.59 | 720 | 5.40 | 0.01 | 0.33 | 3.8 | 259.5 | 2.88 |
| WCk #4 | 6/26/96 | 15:20 | 18.0 | 8.99 | 720 | 8.00 | 0.01 | 0.28 | 3.5 | 269.4 | 3.13 |
| WCk #1 | 7/11/96 | 12:00 | 16 | 8.71 | 335 | 7.10 | 0.01 | 0.26 | 16.0 | 136.5 | 0.56 |
| WCk #2 | 7/11/96 | 13:30 | 21 | 8.72 | 340 | 6.70 | 0.00 | 0.46 | 7.8 | 178.0 | 0.54 |
| WCk #3 | 7/11/96 | 15:05 | 20 | 8.59 | 600 | 8.10 | 0.00 | 0.35 | 5.0 | 251.0 | 2.05 |
| WCk #4 | 7/11/96 | 16:15 | 23 | 8.71 | 1200 | 7.60 | 0.00 | 0.29 | 3.8 | 225.0 | 2.50 |

## Willow Creek Data

| Location | Date | Time | Temp oC | pH | Conductivity umhos/cm | DO mg/l | Total P mg/l | $NO_3$-N mg/l | TSS mg/l | TDS mg/l | Discharge $ft^3/s$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WCk #1 | 7/24/96 | 12:25 | 16.5 | 7.76 | 182 | 6.40 | 0.03 | 0.16 | 28.6 | 127.5 | 0.15 |
| WCk #2 | 7/24/96 | 14:15 | 23 | 8.83 | 240 | 6.00 | 0.01 | 0.21 | 4.5 | 131.0 | 0.39 |
| WCk #3 | 7/24/96 | 10:45 | 13.5 | 8.16 | 290 | 10.00 | 0.01 | 0.16 | 3.6 | 247.0 | 1.42 |
| WCk #4 | 7/24/96 | 15:45 | 24.5 | 8.64 | 750 | 6.25 | 0.01 | 0.16 | 4.7 | 218.0 | 1.55 |
| WCk #1 | 8/5/96 | 12:30 | 14 | 7.65 | 170 | 6.95 | 0.02 | 0.28 | 14.8 | 98.0 | 0.38 |
| WCk #2 | 8/5/96 | 14:00 | 19 | 8.48 | 220 | 6.30 | 0.01 | 0.29 | 0.3 | 104.0 | 0.38 |
| WCk #3 | 8/5/96 | 10:40 | 13 | 8.52 | 300 | 9.50 | 0.01 | 0.27 | 0.5 | 223.0 | 0.97 |
| WCk #4 | 8/5/96 | 15:30 | 21 | 8.20 | 350 | 7.30 | 0.01 | 0.19 | 2.0 | 187.0 | 1.66 |
| WCk #1 | 8/21/96 | 12:00 | 14.5 | 7.50 | 170 | 6.40 | 0.03 | 0.24 | 22.0 | 100.5 | 0.38 |
| WCk #2 | 8/21/96 | 13:30 | 19 | 8.23 | 215 | 6.50 | 0.01 | 0.19 | 4.5 | 137.0 | 0.28 |
| WCk #3 | 8/21/96 | 10:15 | 12 | 8.68 | 690 | 8.25 | 0.00 | 0.14 | 1.3 | 262.5 | 0.72 |
| WCk #4 | 8/21/96 | 14:45 | 21 | 8.52 | 620 | 8.52 | 0.02 | 0.25 | 4.0 | 226.0 | 0.61 |
| WCk #1 | 10/7/96 | 14:40 | 14 | 7.12 | 100 | 7.6 | 0.02 | 0.20 | 36.0 | 64 | 0.46 |
| WCk #2 | 10/7/96 | 15:20 | 17 | 7.75 | 200 | 8.1 | 0.01 | 0.19 | 8.0 | 152 | 0.40 |
| WCk #3 | 10/7/96 | 16:20 | 16 | 8.03 | 210 | 8 | 0.01 | 0.17 | 100.0 | 164 | 0.92 |
| WCk #4 | 10/7/96 | 17:20 | 17 | 7.96 | 710 | 8.2 | 0.01 | 0.26 | 68.0 | 268 | 2.22 |
| WCk #4 | 11/8/96 | 14:55 | 6 | 6.69 | 480 | 10.1 | 0.01 | 0.15 | 1.0 | 268 | 3.71 |
| WCk #4 | 2/22/97 | 15:00 | 0 | 7.9 | 390 | 6.2 | 0.171 | 0.29 | 181.8 | 364 | |
| WCk #4 | 3/21/97 | 17:47 | 4 | | | | 0.094 | 0.122 | 47.0 | 210 | 6.3 |
| WCK #4 | 4/23/97 | 10:30 | 1 | 8.03 | 425 | 10.2 | 0.067 | 0.241 | 34.5 | 248 | 5.21 |

## Willow Creek Data

| Location | Date | Time | Temp oC | pH | Conductivity umhos/cm | DO mg/l | Total P mg/l | $NO_3$-N mg/l | TSS mg/l | TDS mg/l | Discharge $ft^3/s$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WCk #3 | 4/26/97 | 12:30 | 6.5 | 7.87 | 335 | 10.5 | 0.043 | 0.2913 | 22.0 | 215 | 5.81 |
| WCk #4 | 4/26/97 | 10:30 | 5 | 7.93 | 510 | 5.5 | 0.033 | 0.4651 | 10.0 | 223 | 7.89 |
| WCk #3 | 4/29/97 | 11:00 | 3 | 7.93 | 345 | 5.5 | 0.066 | 2.258 | 63.0 | 190 | 19.02 |
| WCk #4 | 4/29/97 | 13:30 | 5 | 7.68 | 400 | 6.4 | 0.119 | 1.897 | | 233 | 19.94 |
| WCk #3 | 5/2/97 | 12:45 | 5 | 8.04 | 250 | 7 | 0.114 | 2.145 | 99.8 | 250 | 12.59 |
| WCk #4 | 5/2/97 | 10:30 | 0 | 7.75 | 312 | 5.6 | 0.059 | 2.483 | 55.5 | 284 | 11 |
| WCk #3 | 5/6/97 | 10:15 | 4 | 7.06 | 272 | 5 | 0.081 | 1.581 | 99.0 | 180 | 20.46 |
| WCk #4 | 5/6/97 | 12:00 | 7 | 7.46 | 320 | 8.25 | 0.115 | 1.603 | 172.5 | 160 | 21.67 |
| WCk #2 | 5/9/97 | 13:00 | 8 | 6.48 | 140 | 7.6 | 0.097 | 1.49 | 123.5 | 156 | 16.2 |
| WCk #3 | 5/9/97 | 14:50 | 12 | 7.87 | 250 | 8.4 | 0.057 | 1.49 | 82.5 | 116 | 22.76 |
| WCk #4 | 5/9/97 | 16:00 | 13 | 8.31 | 197 | 7.4 | 0.083 | 1.72 | 116.5 | 170 | 25.89 |
| WCk #3 | 5/19/97 | 10:45 | 5 | | 110 | 9 | 0.057 | | 87.0 | 128 | 30.91 |
| WCk #4 | 5/19/97 | 8:30 | 4 | 8.2 | 90 | 8.8 | 0.112 | | 114.5 | | 32.57 |
| WCk #2 | 5/27/97 | 13:20 | 9 | 6.03 | 180 | | 0.016 | | 12.5 | 64 | 6.32 |
| WCk #3 | 5/27/97 | 15:20 | 11.5 | 7.3 | 410 | | 0.017 | | 15.0 | 196 | 11.55 |
| WCk #4 | 5/27/97 | 16:40 | 13 | 8.3 | 395 | | 0.044 | | 19.5 | 220 | 10.27 |
| WCk #3 | 6/3/97 | 13:45 | 14 | 7.68 | 350 | 7.2 | | LT 0.10 | 54.0 | 132 | 8.11 |
| WCk #4 | 6/3/97 | 16:00 | 16 | 7.19 | 420 | | LT 0.005 | 0.18 | 40.0 | 100 | 10.03 |

## Willow Creek Data

| Location | Date | Time | Temp oC | pH | Conductivity umhos/cm | DO mg/l | Total P mg/l | $NO_3$-N mg/l | TSS mg/l | TDS mg/l | Discharge $ft^3/s$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WCk #1 | 6/19/97 | 12:55 | 15 | 7.61 | 70 | 7.6 | 0.007 | LT 0.10 | 24.0 | 44 | 2.15 |
| WCk #2 | 6/19/97 | 14:55 | 20 | 7.14 | 82 | 7.4 | | 0.2 | 48.0 | 46 | 2.66 |
| WCk #3 | 6/19/97 | 17:30 | 20 | 8.6 | 150 | 10 | | 0.16 | 18.0 | 160 | 5.21 |
| WCk #4 | 6/19/97 | 16:30 | 22 | 8.57 | 100 | 8.6 | 0.007 | LT 0.10 | 42.0 | 152 | 5.51 |
| WCk #2 | 8/13/97 | 13:30 | 15 | 8.3 | 145 | 8 | 0.008 | 0.2 | 4.0 | 90 | 0.7 |
| WCk #3 | 8/13/97 | 10:00 | 16 | 9.2 | 165 | 7 | 0.01 | 0.23 | 3.0 | 22.8 | 1.53 |
| WCk #4 | 8/13/97 | 15:00 | 20 | 8.9 | 165 | 7 | 0.007 | 0.14 | 3.0 | 214 | 1.4 |
| WCk #4 | 8/13/97 | 15:00 | 20 | 8.9 | 165 | 7 | 0.007 | 0.14 | 3.0 | 214 | 1.4 |
| WCk #1 | 8/12/98 | 9:15 | 11 | 7.6 | 115 | 7 | LT 0.010 | LT 0.10 | 22.0 | 196 | 0.58 |
| WCk #3 | 8/12/98 | 7:15 | 8 | 7.56 | 140 | 8 | 0.013 | LT 0.10 | 6.0 | 346 | 3.83 |
| WCk #4 | 8/12/98 | 15:00 | 13 | 9.22 | 230 | 6.6 | 0.014 | LT 0.10 | 72.0 | 320 | |
| WCk #1 | 8/24/98 | 16:00 | 18 | 8.3 | 100 | 7.9 | LT 0.010 | LT 0.10 | 70.0 | 206 | 0.52 |
| WCk #2 | 8/24/98 | 17:45 | 20 | 7.83 | 140 | 7.4 | 0.01 | LT 0.10 | 72.0 | 376 | 0.56 |
| WCk #3 | 8/24/98 | 19:40 | 17 | 8:05 | 260 | 7.8 | 0.012 | LT 0.10 | 90.0 | 304 | 2.42 |
| WCk #4 | 8/24/98 | 19:00 | 18 | 7.95 | 230 | 7.5 | 0.029 | 0.23 | 73.0 | 310 | 2.43 |
| WCk #1 | 10/8/98 | 16:15 | 9 | 8.9 | 70 | METER | 0.043 | LT 0.10 | 68.0 | 148 | 0.95 |
| WCk #2 | 10/8/98 | 17:45 | 7 | 8.7 | 100 | METER | 0.01 | 0.1 | 67.0 | 170 | 0.91 |
| WCk #3 | 10/9/98 | 17:05 | 9 | 8.6 | 160 | METER | 0.067 | 0.46 | 34.0 | 247 | 2.8 |
| WCk #4 | 10/9/98 | 16:15 | 10 | 8.5 | 150 | METER | 0.029 | 0.14 | 28.0 | 260 | 3.18 |

# Exhibit B

Willow Creek Project

Budget

# PROJECT BUDGET SUMMARY

| PROJECT TASKS | 319 | SPONSOR CASH* | SPONSOR IN-KIND | SCS | ASCS | OTHER FEDERAL | DEQ CASH | DEQ IN-KIND | OTHER STATE | LAND OWNER CASH | LAND OWNER IN-KIND | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1: Administration | | $8,000 | $4,000 board's time | Office space | | | | | | | | $12,000 |
| 2: Steering Com./Information & Educ. | $5,000 | | | | | | | | | | | $5,000 |
| 3: District BMP Assistance | | $20,833 | | | | | | | | | | $20,833 |
| 4. Grazing Management | $35,000 | $5,000 | | | | | | | | | $11,000 | $51,000 |
| 5: Livestock Water | $6,000 | $1,000 | | | | | | | | | $1,000 | $8,000 |
| 6: Hydrological Modification | $20,000 | $5,000 | | | | | | | | | | $25,000 |
| 7: Riparian Enhancement | $10,000 | $3,000 | | | | | | | | | | $13,000 |
| 8: Road Management | $10,000 | $4,000 | | | | | | | | | | $14,000 |
| 9: Contract Trainer | $5,000 | | | | | | | | | | | $5,000 |
| 10: Water Quality/Quantity Monitoring | $25,000 | $9,000 | | | | | | | | | | $34,000 |
| 11: Fish Survey | | | | | | | | | $5,500 G&F | | | $5,500 |
| 12. Macro Invert./Substrate Monitoring | $7,500 | $2,000 | | | | | | | | | | $9,500 |
| 13: BMP Monitoring | | $2,000 | | | | | | | | | | $2,000 |
| 14. Photo Points | | $1,000 | | | | | | | | | | $1,000 |
| PROJECT TOTAL | $123,500 | $60,833 | $4,000 | | | | | | $5,500 | | $12,000 | $205,833 |

*$18,000 actual cash. The remainder is donated personnel time, travel, etc.

Task 1:Administration (not to exceed 10% of Total Project Costs)
Product: reports, accounting, etc.
Inclusive Dates: May, 1995 to December, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $8,000.00 | $4,000.00 | $12,000.00 | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | | 8,000.00 | $4,000.00 | $12,000.00 | |

Task 2: Steering Committee and Information and Education
Product: Brochures, tours, etc.
Inclusive Dates: May, 1995 to September, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | | | |
| Fringe | | | | | |
| Travel | $2,000.00 | | | 2,000.00 | |
| Equipment | | | | | |
| Supplies | $3,000.00 | | | 3,000.00 | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $5,000.00 | | | $5,000.00 | |

Task 3: District BMP Assistance
Product: plans
Inclusive Dates: May, 1995 to July, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $19,833.00 | | $19,833.00 | |
| Fringe | | | | | |
| Travel | | $1,000.00 | | $1,000.00 | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | | $20,833.00 | | $20,833.00 | |

Task 4: Grazing Management
Product: fence, livestock movement, etc.
Inclusive Dates: October, 1995 to July, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | $11,000.00 | $11,000.00 | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $15,000.00 | | | $15,000.00 | |
| Construction | $20,000.00 | $5,000.00 | | $25,000.00 | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $35,000.00 | $5,000.00 | $11,000.00 | $51,000.00 | |

Task 5: Livestock/wildlife Watering
Product: ponds, wells, etc.
Inclusive Dates: October, 1995 to July, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | $1,000.00 | $1,000.00 | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $3,000.00 | $500.00 | | $3,500.00 | |
| Construction | $3,000.00 | $500.00 | | $3,500.00 | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $6,000.00 | $1,000.00 | $1,000.00 | $8,000.00 | |

Task 6: Hydrological Modification
Product: bank stabilization, weirs, etc.
Inclusive Dates: October, 1995 to July, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | | | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $20,000.00 | $5,000.00 | | $25,000.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $20,000.00 | $5,000.00 | | $25,000.00 | |

Task 13: BMP Monitoring
Product: assurance that BMPs are being maintained and effective
Inclusive Dates: October, 1995 to September, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $2,000.00 | | $2,000.00 | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | | $2,000.00 | | $2,000.00 | |

Task 14: Photo Points
Product: photos
Inclusive Dates: beginning and end of project

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $800.00 | | $800.00 | |
| Fringe | | | | | |
| Travel | | $100.00 | | $100.00 | |
| Equipment | | | | | |
| Supplies | | $100.00 | | $100.00 | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | | $1,000.00 | | $1,000.00 | |

Project Totals

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | $10,000.00 | $46,633.00 | $16,000.00 | $72,633.00 | |
| Fringe | | | | | |
| Travel | $3,900.00 | $1,600.00 | | $5,500.00 | |
| Equipment | $5,000.00 | | | $5,000.00 | |
| Supplies | $4,440.00 | $100.00 | | $4,540.00 | |
| Contractual | $77,160.00 | $12,500.00 | | $89,660.00 | |
| Construction | $23,000.00 | $5,500.00 | | $28,500.00 | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $123,500.00 | $66,333.00 | $16,000.00 | $205,833.00 | |

Task 7: Riparian Enhancement
Contractor: County etc.
Inclusive Dates: October. 1995 to July. 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | | | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $10.000.00 | $3.000.00 | | $13.000.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $10.000.00 | $3.000.00 | | $13.000.00 | |

Task 8: Road Management
Product: culverts, riprap, etc.
Inclusive Dates: October. 1995 to July. 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | | | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $10.000.00 | $4.000.00 | | $14.000.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $10.000.00 | $4.000.00 | | $14.000.00 | |

Task 9: Training Contractor
Product: training of district personnel
Inclusive Dates: May. 1995 to October. 1995

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | | | | |
| Fringe | | | | | |
| Travel | | | | | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | $5.000.00 | | | $5.000.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $5.000.00 | | | $5.000.00 | |

Task 10: Water Quality/Quantity Monitoring
Product: quality/quantity data
Inclusive Dates: May, 1995 to September, 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | $10,000.00 | $9,000.00 | | $19,000.00 | |
| Fringe | | | | | |
| Travel | $1,500.00 | | | $1,500.00 | |
| Equipment | $5,000.00 | | | $5,000.00 | |
| Supplies | $680.00 | | | $680.00 | |
| Contractual (lab) | $7,820.00 | | | $7,820.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $25,000.00 | $9,000.00 | | $34,000.00 | |

Task 11: Fish Population Survey
Product: data
Inclusive Dates: 1995 and 1998

| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $5,000.00 | | $5,000.00 | |
| Fringe | | | | | |
| Travel | | $500.00 | | $500.00 | |
| Equipment | | | | | |
| Supplies | | | | | |
| Contractual | | | | | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | | $5,500.00 | | $5,500.00 | |

Task 12: Macro Invertebrate and Substrate Monitoring
Product: data
Inclusive Dates: fall each year

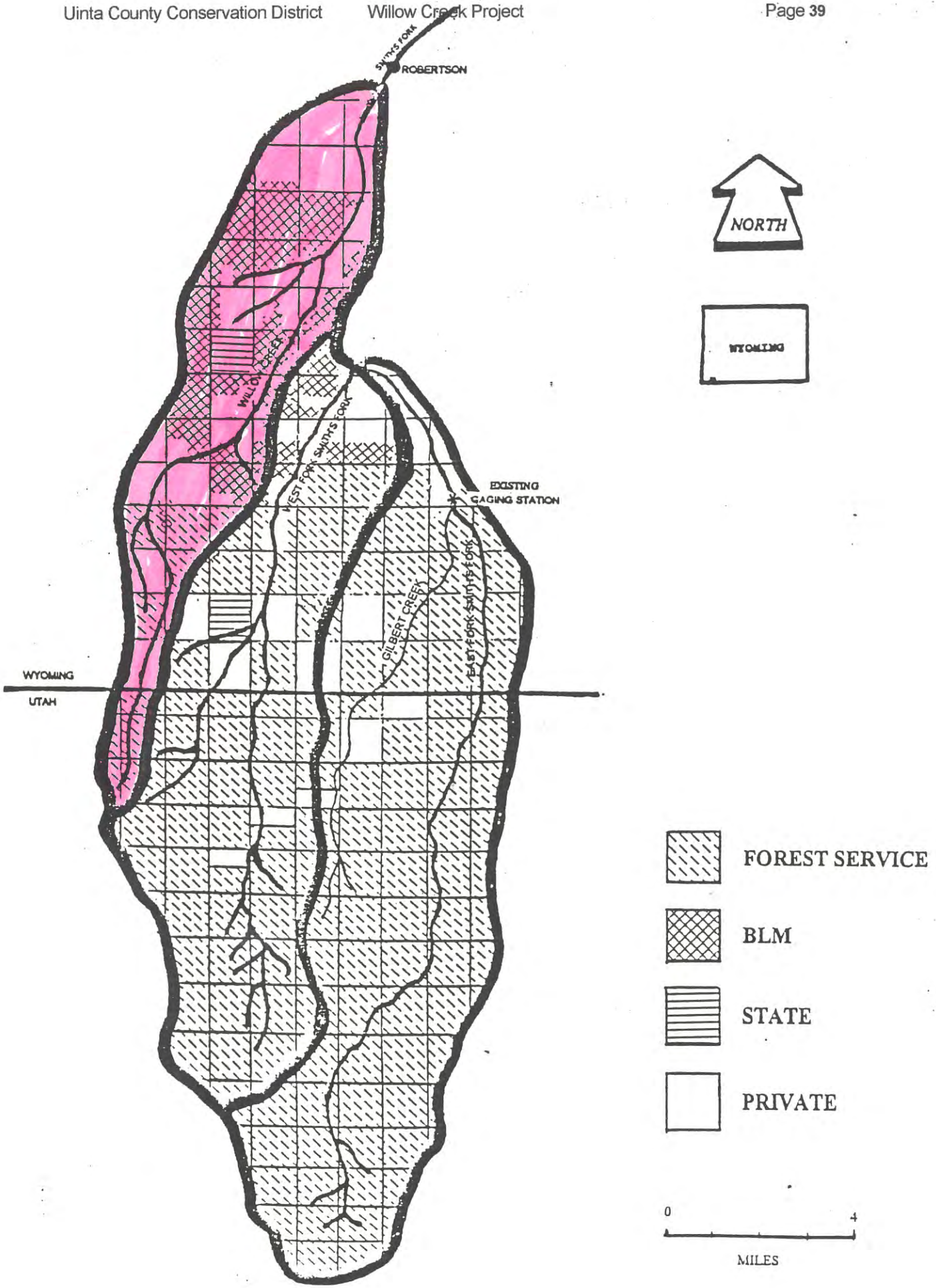
| Object Class | 319 Funds | Non-Federal Cash Match | Non-Federal In-Kind Match | Total | Other Federal Support |
|---|---|---|---|---|---|
| Personnel | | $2,000.00 | | $2,000.00 | |
| Fringe | | | | | |
| Travel | $400.00 | | | $400.00 | |
| Equipment | | | | | |
| Supplies | $760.00 | | | $760.00 | |
| Contractual (lab) | $6,340.00 | | | $6,340.00 | |
| Construction | | | | | |
| Other | | | | | |
| Indirect | | | | | |
| TOTAL | $7,500.00 | $2,000.00 | | $9,500.00 | |

# Exhibit C

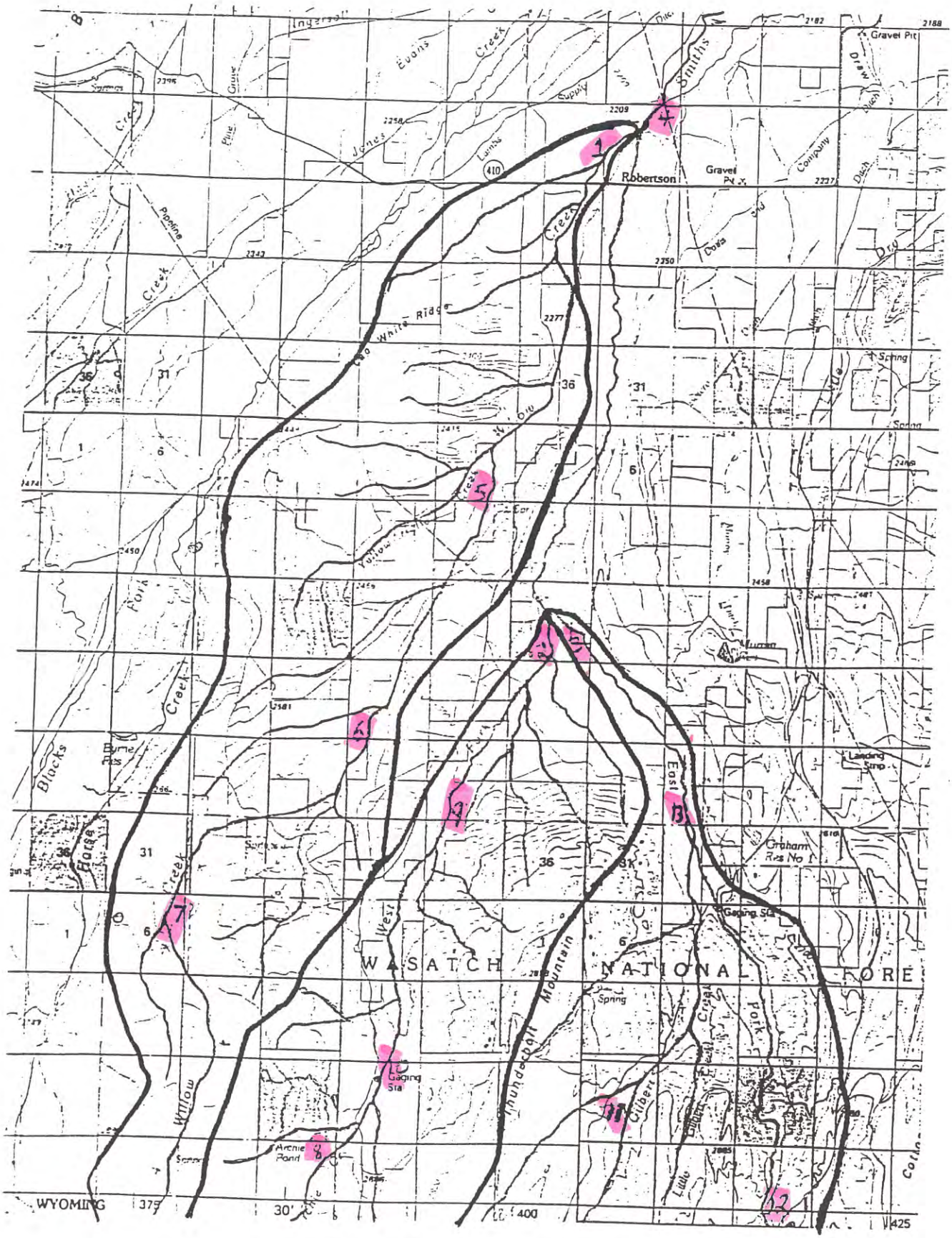
Willow Creek Maps

# FIGURE 1: UPPER SMITH'S FORK WATERSHED





# FIGURE 2: MONITORING SITE LOCATIONS




1→13 Approximate location of monitoring site
Green = Forest Service
Gold = Bureau of Land Management
Blue = State of Wyoming
White = Private

# Exhibit D

Milestones

## MILESTONE TABLE FOR THE WILLOW CREEK WATERSHED PROJECT

| TASK/RESPONSIBLE ORGANIZATION | OUTPUT | FY 95 | | | | | | FY 96 | | | | | | FY 97 | | | | | | FY 98 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | O & N | D & J | F & M | A & M | J & J | A & S | O & N | D & J | F & M | A & M | J & J | A & S | O & N | D & J | F & M | A & M | J & A | A & S | O & N | D & J | F & M | A & M | J & J | A & S |
| 1: Administration/District | Reports, accounting, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 2: Steering Com. & I & E/District | Brochures, tours, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 3: BMP Assist./District | Plans, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 4: Grazing Mgmt./District | Fence, livestock move., etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 5: Livestock Water/District | Ponds, wells, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 6: Hydrological Mod./District | Bank stabilization, weirs, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 7: Riparian Enhance./District | Trees, grass, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 8: Road Mgmt./District | Culverts, riprap, etc. | | | | | | | | | | | | | | | | | | | | | | | | |
| 9: Contract Trainer/District | Training | | | | | | | | | | | | | | | | | | | | | | | | |
| 10: Water Monitoring/District | Quality/quantity data | | | | | | | | | | | | | | | | | | | | | | | | |
| 11: Fish Survey/Game & Fish | Fish population data | | | | | | | | | | | | | | | | | | | | | | | | |
| 12: Invert./Substrate Mon./District | Invertebrate/substrate data | | | | | | | | | | | | | | | | | | | | | | | | |
| 13: BMP Monitoring/District | BMP monitoring | | | | | | | | | | | | | | | | | | | | | | | | |
| 14: Photo Points/District | Photos | | | | | | | | | | | | | | | | | | | | | | | | |

## TABLE 2: MONITORING SITE LOCATIONS, SAMPLE FREQUENCY AND RESPONSIBLE PARTY (SEE MAP FOR SITE LOCATIONS).

| SITE# | LOCATION | DATA | # OF SAMPLES | RESPONSIBLE PARTY |
|---|---|---|---|---|
| 1 | MOUTH WILLOW CR | WATER QUALITY[a] | 13 PER YEAR[b] | DISTRICT MANAGER/ASSIST. |
| | | WATER QUANTITY | 13 PER YEAR[b] | DISTRICT MANAGER/ASSIST. |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 2 | MOUTH WEST FORK | WATER QUALITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | WATER QUANTITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 3 | MOUTH EAST FORK | WATER QUALITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | WATER QUANTITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 4 | SMITH'S FORK | WATER QUALITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | WATER QUANTITY | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | FISH | BEGIN/END | GAME & FISH |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 5[c] | LOWER WILLOW CR | SEDIMENT | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | FISH | BEGIN/END | GAME & FISH |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 6[c] | MIDDLE WILLOW CR | SEDIMENT | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | FISH | BEGIN/END | GAME & FISH |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 7[c] | UPPER WILLOW CR | SEDIMENT | 13 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | FISH | BEGIN/END | GAME & FISH |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| | | PHOTO | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |
| 8→13[c] | WEST/EAST FORKS[c] | FISH | BEGIN/END | GAME & FISH |
| | | SUBSTRATE/INVERT. | 1 PER YEAR | DISTRICT MANAGER/ASSIST. |

[a]sediment, nitrate, total phosphorous, total dissolved solids, conductivity, temperature

[b]Tentative Sample Dates:

Dec., Jan. or Feb., 1 sample
March, 1 sample
April, 2 samples
May, 3 samples
June, 2 samples
July, 2 samples
Aug., 1 sample
Sep., Oct. or Nov., 1 sample

[c]approximate location