

UTAH NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY
**WATER
QUALITY**

Fiscal
Year
2016

ANNUAL REPORT

ACKNOWLEDGEMENTS

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Cover Photo: San Pitch River Restoration Project. Implemented in FY-2016 with State NPS Funding

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UTAH NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

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INTRODUCTION AND PROGRAM OVERVIEW

This report fulfills the requirements of Section 319(m)(1) of the federal Clean Water Act of 1987. The Utah Department of Environmental Quality's Division of Water Quality annually prepares this report to inform the public, the U.S. Congress and the U.S. Environmental Protection Agency (EPA) on the state's progress in the area of nonpoint source water pollution abatement. Although this report should not be considered a complete account of all nonpoint source activities, it describes the most important features of Utah's program.

The mission of the Utah Nonpoint Source Pollution Management Program is to support the environmental protection goals of the state as described in Utah Administrative Code R317-2, in part to: 1) eliminate pollution which creates hazards to the public health; 2) to protect, maintain, and improve the quality of the waters of the state for public water supplies, species protection and propagation and for other designated uses; and 3) to provide for the prevention, abatement and control of new or existing sources of polluted runoff. The Utah NPS Management Program works to achieve these goals by working in concert with numerous local, state and federal agencies and private parties pursuant to the Utah NPS Pollution Management Plan.

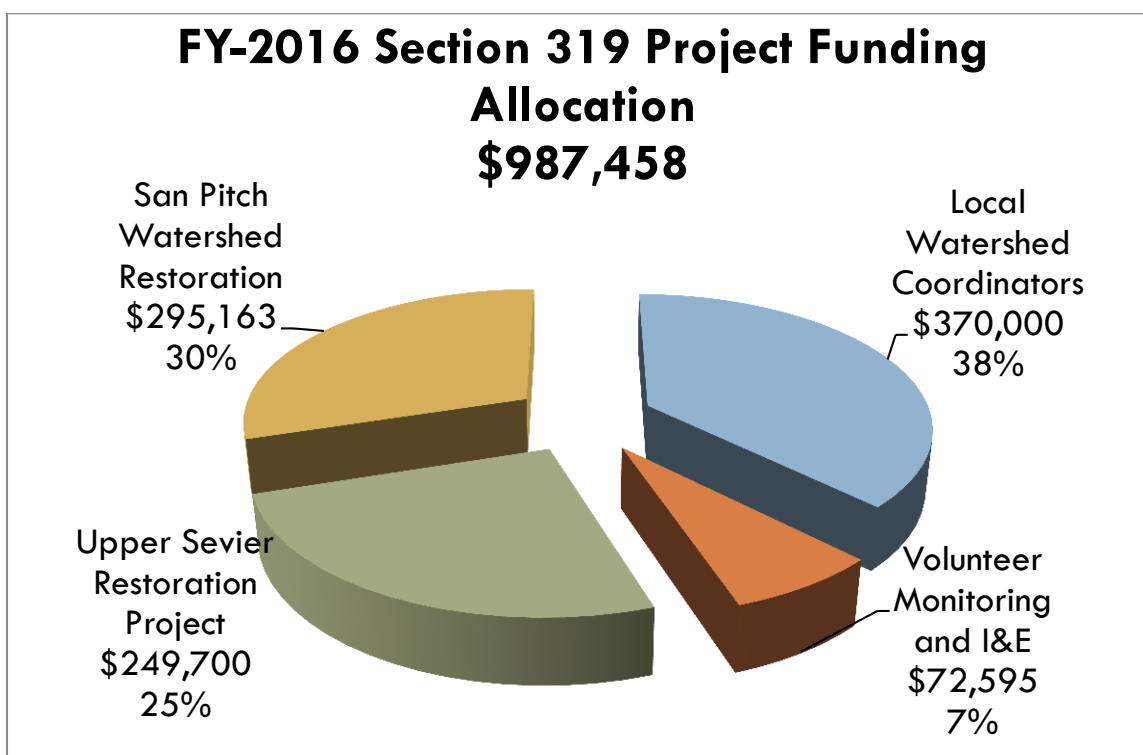
Nonpoint source pollution refers to diffuse pollutants that when added together from an entire watershed can significantly impact water quality in streams, lakes and reservoirs. Nonpoint source (NPS) pollution is diffuse, coming from land runoff, percolation, precipitation or atmospheric deposition. Precipitation washes pollutants from the air and land and into our streams, lakes, reservoirs and groundwater. Such pollutants can include sediment, nutrients, pathogens (bacteria and viruses), toxic chemicals, pesticides, oil, grease, salts and heavy metals. In Utah, our most common problems are nutrients, pathogens, metals, sediment, and salts. These pollutants alter the chemical, physical and biological integrity of the water and can impair their designated beneficial uses. Most waterbodies are listed on the State's 303(d) List of Impaired Waters because of nonpoint source pollution. Some of the common sources of NPS pollution include agricultural activities, runoff from paved surfaces, mining and timber operations, recreational activities, onsite septic systems, construction, stream/riparian habitat degradation and natural sources.

GRANT MANAGEMENT AND PROGRAM ADMINISTRATION

In Fiscal Year 2016 (FY-16) the Utah NPS program received \$1,428,000 in Federal Section 319(h) funds. Of these funds, \$440,542 was used for program related staffing and support, while the remaining \$987,458 was dedicated to 4 project grants. This was a 3% Increase from the year before. The amount of funding allocated to the Performance Partnership Grant (PPG), which is used for staffing and support, was also reduced increasing the amount of funding dedicated to project implementation by \$107,937 in FY-2016.

Section 319(h) funds are distributed at the local level to help address water quality issues contributing to nonpoint source pollution. Recipients of these funds can include local governments, watershed groups and individual cooperators. The projects selected for funding in FY-16 include the statewide volunteer monitoring program, support of local watershed coordinators, and on-the-ground implementation grants in the Upper Sevier and San Pitch Watersheds (See figure 1).

Figure 1



In addition to the FY-16 Section 319 funds, Utah continues to manage five other federal 319 grant awards which have been partially or completely expended. Table 1 summarizes grant awards by year and the approximate percentage that has been expended in each grant. The FY-2011 grant has been closed out. However \$8,180 remained unspent and had to be returned to EPA due to the sub recipient's inability to spend out the project funding in a timely manner.

Table 1

Section 319(h) Nonpoint Source Funding Project Allocations				
Federal Fiscal Year	Grant Award	Expenditures in FY-2016	Total Expenditures	Percent Expended
FY-11	\$832,921	\$54,814	\$824,741	99%
FY-12	\$830,800	\$128,491	\$768,782	93%
FY-13	\$861,621	\$136,380	\$830,008	96%
FY-14	\$893,621	\$194,247	\$528,925	59%
FY-15	\$879,521	\$483,881	\$483,881	55%
FY-16	\$987,458	\$0	\$0	0%
Total	\$5,285,942	\$997,813	\$3,436,337	65%

STAFFING AND SUPPORT

In FY-16 the Division of Water Quality devoted 4.85 FTEs to the NPS Pollution Management Program that are funded 60% with 319 funds and 40% state revenue. This is a reduction of 1.35 FTE from the previous year. Table 2 shows the positions and FTEs funded by the Division of Water Quality using Section 319 funds.

Table 2

PERSONNEL (# FTE's)	SALARY	Benefits	FTE	TOTAL EXPENSES	STATE (40%)	EPA 319 (60%)
Program Coordinator	\$63,225	\$40,427	1	\$103,651	\$41,460	\$62,191
Environmental Scientist	\$67,672	\$42,126	0.5	\$54,899	\$21,960	\$32,939
Environmental Scientist	\$64,665	\$26,470	0.4	\$36,454	\$14,582	\$21,872
Environmental Scientist	\$64,665	\$40,985	1.0	\$105,651	\$42,260	\$63,390
Environmental Scientist	\$63,225	\$40,427	0.2	\$20,730	\$8,292	\$12,438
Environmental Scientist	\$69,551	\$42,881	0.25	\$28,108	\$11,243	\$16,865
Environmental Scientist	\$60,782	\$39,479	0.3	\$30,078	\$12,031	\$18,047
Watershed Section Manager	\$77,548	\$45,983	0.6	\$74,119	\$29,647	\$44,471
Administrative Services Manager	\$55,666	\$33,457	0.25	\$22,281	\$8,912	\$13,368
Assistant Division Director	\$87,926	\$46,781	0.25	\$33,677	\$13,471	\$20,206
Division Director	\$116,448	\$57,046	0.10	\$17,349	\$6,940	\$10,410
TOTAL 4.85 FTEs	\$791,373	\$456,062	4.85	\$526,996	\$210,799	\$316,198
SUPPORT						
Travel				\$15,000	\$6,000	\$9,000
Current Expenses				\$129,000	\$51,600	\$77,400
Indirect Costs				\$63,240	\$25,296	\$37,944
Total Support				\$207,240	\$82,896	\$124,344
Total Staffing and Support				\$734,236	\$293,694	\$440,541

FY-16 ACCOMPLISHMENTS AND MILESTONES

FY-16 Accomplishments

- Utah closed out the FY-10 Section 319 Grant, and all information has been entered into the Grants Reporting and Tracking System (GRTS)
- Water Quality Task Force meetings were held on October 7th, 2015, January 7th, 2016, and April 6th, 2016.
- The annual agency coordination meeting was held on March 2nd, 2016. This meeting allowed partner agencies the opportunity to give a 15 minute presentation highlighting the NPS pollution issues their agencies are currently addressing.
- The Utah Watershed Coordinating Council (UWCC) met 3 times during FY-16 including a conservation planning workshop with various agency partners that was held in Logan, Utah in July.
- Two success stories were submitted to EPA for approval, highlighting the environmental benefits of NPS project work for Strawberry Reservoir and a WQ-10 success story was submitted to EPA for the Fremont River.
- A Federal Consistency Review was conducted with the Division of Water Quality and the Forest Service in the Fish Lake National Forest on October 5th-6th, 2016.
- The Utah Division of Water Quality and the Environmental Protection Agency participated in a project evaluation tour in the Bear River, Strawberry, Tibble Fork, and San Pitch Watersheds on September 19th-21st, 2016.
- The Utah Division of Water Quality and the Natural Resource Conservation Service worked together to identify three 12 Digit HUCs in the Upper Sevier and Wallsburg Watersheds in which the National Water Quality Initiative funding will be spent.
- The State NPS MOU has been finalized and is currently out for signatures for the participating agencies. It should be completed by December 2016
- Fremont River success story approved by EPA and posted on the epa.gov website.

Annual Milestones

To help the State of Utah gauge the success of the Statewide Nonpoint Source Management Program the State has developed annual milestones. These milestones are based on the five objectives of the Statewide NPS Management Program identified in the Management Plan. These objectives and milestones are as follows:

Objective 1: Environmental Protection

Annual Milestones

- Number of TMDLs completed.
- Number of TMDLs initiated during the state fiscal year.
- Number of nine element watershed based plans developed.
- Number of nine element watershed based plans initiated during the state fiscal year.
- Number of projects dedicated to the protection of threatened waterbodies identified in Utah's 303(d) list.
- Number of projects focused on groundwater protection throughout the state.

Objective 2: Improve Program Efficiency and Effectiveness through Reporting and Evaluation.

Annual Milestones

- Total number of stream miles restored (beginning 2013)
- Total estimated load reductions (P,N,TSS) in project areas (beginning 2013)
- Number of final project reports submitted (beginning 2013)
- Number of 319 grants currently open during the fiscal year
- Amount of unexpended funds in each open 319 grant
- Number of success stories submitted to EPA for approval showing the environmental benefits of completed NPS projects

Objective 3: Improve Public Participation and Understanding of NPS Issues.

Annual Milestones

- Number of participants involved in the Statewide Volunteer Monitoring Program
- Number of I&E projects implemented with Section 319 and State NPS Funding
- Updates made to the State NPS Program Website

Objective 4: Improve Data Collection and Management

Annual Milestones

- Track updates made to enhance NPS monitoring in the Division of Water Quality's annual monitoring strategy
- Number of Sampling Analysis Plans developed
- Track status and updates of Utah's AWQMS database
- Report on water quality data uploaded to the EPA WQX database

Objective 5: Improve Coordination of Governmental and Private Sectors

Annual Milestones

- Hold annual NPS Management Program coordination meetings
- Conduct annual consistency reviews with state and federal agencies
- Number of Water Quality Task Force meetings held during the fiscal year
- Amount of funding used to leverage 319 funding throughout the state. This funding can include program funding from UDAF, UDEQ, UDWR, USDA, and other state, federal, and local agencies

For a complete report of how these annual milestones were met in FY-16, refer to Table H in the appendices.

SUMMARY OF ACTIVE UTAH 319(H) GRANTS DURING FY-16

For an entire summary of active Utah 319(h) projects see Tables A, B, & C in the appendices.

WATERSHED BASED PLANS/ TMDLS

Section 303(d) of the federal Clean Water Act (CWA) requires states to develop and submit for approval a list of impaired waters every two years. This is referred to as the 303(d) list. The most recent version of the 303(d) list approved by EPA for the State of Utah was issued in 2014. Waterbodies listed as impaired require additional study to determine the sources of impairment, and if appropriate, have a Total Maximum Daily Load (TMDL) determination made for the pollutant of concern. The 2016 Integrated report has been submitted to EPA for approval on December 7, 2016. Currently the State of Utah is implementing 63 TMDLs. Additionally, a comprehensive tracking tool for TMDLs and waterbody assessments has been provided by EPA that will assist in accurately reporting the status of completed TMDLs. The Division of Water Quality has also prioritized the waterbodies listed on the 303(d) list of impaired waterbodies to determine where efforts should be focused to develop TMDLs and implement watershed plans. For a list of all TMDLs and Watershed Plans the State of Utah is currently implementing see Tables D and E in the Appendices

PROJECT PROPOSALS APPROVED FOR FUNDING DURING FY- 16 SOLICITATION PROCESS

Due to the high demand for 319(h) funds the State of Utah has required that entities applying for funding submit pre-proposals to the State for review. 77 NPS pre-proposals totaling over \$4 million were accepted from the middle of April to the first of June for the 2016 fiscal year. These pre-proposals were reviewed by the Utah Division of Water Quality using a project selection ranking criterion developed by the Water Quality Task Force. Once the proposals were ranked they were reviewed by a subcommittee of the Water Quality Task Force, and the final grant awards were determined. Of the proposals received, 4 projects were selected for funding with Section 319 funds. The Upper Sevier and San Pitch River Watersheds received the majority of project funds available, since they were the targeted basins in FY-16. The local watershed coordinators and an information and education grant to USU, including the volunteer monitoring program, were also funded (Table 3). The projects that were not selected for funding with Section 319 funds were then considered for funding with State NPS funding.

Table 3

**2016 Project Implementation Plans (PIPs) for CWA Section 319 Funding
(Prepared June 30th, 2016)**

<u>Proposal Title</u>	<u>Allocation</u>
1. USU Volunteer Monitoring and I&E	\$ 72,595
2. Local Watershed Coordinators	\$ 370,000
3. Upper Sevier Restoration Project	\$ 249,700
4. San Pitch River Restoration Project	\$ 295,163
Total	\$ 987,458

NPS PROGRAM STRATEGIC APPROACH

To be eligible for funding, NPS projects must be located on a waterbody, or be tributary to a waterbody, identified on the 303(d) list of impaired waterbodies. A current watershed plan should also be in place which covers all nine elements required in an EPA approved watershed based plan. Using a targeted basin approach allows watershed planners time to develop watershed plans between funding cycles. To help facilitate the development of watershed plans and identify sources of pollutant loading, the Utah Division of Water Quality conducts annual intensive monitoring runs two years before funding is scheduled to be received by the targeted basin.

TARGETED BASIN APPROACH

The State of Utah uses a targeted basin approach to reduce nonpoint source pollution. FY-16 represents the 7th year of implementing the targeted basin approach (see Table 4). This approach allows the state to focus implementation efforts on a specific watershed and will promote effective implementation of TMDLs and watershed plans.

The Sevier/ Cedar/ Beaver Basin obtained the majority of the 319 funds allocated for BMP implementation, and will also receive an additional \$150,000 in State Nonpoint Source funds in FY-17 if the need is present.

Table 4

Basin Priority Funding Schedule											
Watershed	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1) Jordan/ Utah Lake											
(2) Colorado River											
(3) Sevier, Cedar- Beaver											
(4) Bear River											
(5) Weber River											
(6) Uinta Basin											

UTAH STATE NPS FUNDING

The Utah Division of Water Quality uses funds generated from interest earnings on loans awarded by the Utah Water Quality Board to address NPS issues. Individuals, businesses, private entities, associations, and government agencies are eligible to receive these grants. Much like Section 319(h) funds, all project proposals received are ranked and prioritized. The highest priority projects are those that address a critical water quality need, human health concerns, and would not be economically feasible without the grant. In FY-16, 33 projects were funded using State Nonpoint Source grants, totaling \$987,462. In addition to these projects an additional \$12,538 was reserved for on-site septic system projects that may arise during the year. For a complete summary of FY-16 funded projects see Table F in the appendices.

PROGRAM MATCH STATUS

The 319(h) federal money received by the State requires a 40% non-federal match for both the staffing and support funds used by DEQ and the dollars allocated for projects. Most of the match for projects is provided at the local level by individual producers and landowners. The DWQ provides State NPS funds as match to selected 319 projects to provide an additional incentive to implement BMPs.

There are several state and local programs which have been very helpful in generating match for the 319 projects. The Division of Wildlife Resources manages several state grant programs, which include Habitat Council funds, Blue Ribbon Fishery program, and Watershed Restoration Initiative funding. These funds are dedicated to the improvement of wildlife habitat on public and private lands, while improving water quality. Table 5 shows the match associated with the projects FY-2016 State NPS and Section 319 grants that were funded. Of the NPS grants that were funded, \$5,631,010 in match will be generated from other programs, or landowner match. This equates to almost a 3:1 ratio of NPS grant to partner funding.

The Utah Conservation Commission manages the Agriculture Resource Development Loan Program (ARDL), which in recent years has been expanded to include water quality improvement projects on farms and ranches. The Grazing Improvement Program (GIP) at the Utah Department of Agriculture and Food also provides state revenue to improve management of upland and riparian areas throughout the state. All of the programs mentioned above have provided match for 319 revenues in jointly funded projects. These state programs are tremendous assets to the improvement of water quality in this state.

The Department of Environmental Quality provides state revenue to match the staffing and support 319(h) funds that are part of the Performance Partnership Grant (PPG). The Utah Association of Conservation Districts also tracks all match accruals through projects managed by the local Conservation Districts via an annual contract.

Table 5

Funding Source	Match Amount
NRCS	\$3,445,775
Cooperator Match	\$1,455,170
Utah Department of Natural Resources	\$166,122
U.S. Fish and Wildlife Service	\$36,063
Universities	\$66,634
UDAF	\$7,000
Other	\$454,246
Total	\$5,631,010

INTEGRATING WATERSHEDS AND NPS FUNDING (BASIN WIDE SUMMARY)

Watershed coordinators have proven to be very effective at helping implement water quality projects on the ground. Local watershed coordinators develop relationships with landowners and educate them on the benefits of installing Best Management Practices (BMPs). They also oversee all project planning,

design, project implementation, and reporting. They help organize and facilitate meetings for local watershed groups involved in watershed planning and in the project solicitation and selection process.

Southeastern Colorado River Watershed- Arne Hultquist

Currently there's only one formal local watershed group in Grand and San Juan counties. It is the Moab Area Watershed Partnership (MAWP) and it has been in existence a little over 5 ½ years. In November 2014 the MAWP completed its first version of the Management Plan. The San Juan Conservation District has been holding meetings for development of a Watershed Management Plan for a large portion of San Juan County. That plan should be completed this coming fiscal year.

The MAWP watershed did not receive funding for new projects this year. There was one project funded in San Juan County this year. It is removal of an old Redd Ranches animal husbandry operation located on La Sal Creek. The project includes replacement of the animal husbandry operation corrals and infrastructure on an upland site. The Grand Conservation District and San Juan Conservation District appreciate the funding and are looking forward to submitting several very good projects next year.

The projects completed this year include the USU Rain Water Harvesting, the Placer Creek Watershed Restoration, and the Mill Creek Signage projects. The final reports for the 2013 USFS Spring Development, the Placer Creek Watershed Restoration, and the Mill Creek Signage projects were completed this year. The final report for the USU Rain Water Harvesting project is forthcoming.

The Local watershed Coordinator continues to implement the FY-2015 Castle Creek and Spanish Valley Section 319 Project Implementation Plans (PIPs), and the implementation work should be completed according to the scheduled milestone tables found in those PIPs.

Cedar/Beaver

In FY-2016 the local watershed coordinator in the Cedar Beaver Watershed took a job with the NRCS, and it was determined that the position would not be refilled. Instead this position will be moved to the Utah lake/Provo River Watershed in FY-2017.

The project work that was taking place in the North Fork of the Virgin River will be managed by the Upper Sevier Watershed Coordinator with assistance from our partners. The project work on Pinto Creek will be managed by our partners, and additional funding will be awarded to sub recipients as requested.

Jordan River Watershed- Marian Rice

Over the past twelve months, the Salt Lake County Watershed Planning and Restoration Program of Salt Lake County has engaged in several restoration and planning efforts, aimed towards achieving TMDL and Salt Lake County's Water Quality Stewardship Plan's goals.

Murray/Taylorsville Jordan River Restoration

5200 S through 4800 S on the Jordan River. Working with partners Murray City, Taylorsville City, Utah Division of Forestry Fire and State Lands and Salt Lake County Parks, Salt Lake County Watershed Planning and Restoration has begun work on restoring 3,100 feet of Jordan River Bank. 200 riparian sod mats and 2,000 bare root stock rhizomatous grasses have been planted to date. Weed control measures including phragmites spray and cutting has been ongoing since August 2015. 1,200 trees and shrubs were planted on September 15th through December 15th 2015. Major construction activities at the next bend upstream (south) of the Little Cottonwood confluence area is slated for this fall.

Jordan River Channel Repair at Winchester St.

In cooperation with the state of Utah Division of Forestry, Fire and State Lands and Murray City, Watershed personnel have designed and installed a design focused on Natural Channel Design concepts and recontoured the Jordan River channel. This includes four rock cross vanes to drop the river the necessary 10 feet. Design work began summer 2015 with construction activities concluding in mid-September 2015. All plantings including 1000+ container plants and over 2500 live stakes were installed fall 2015. The warranty period on these plants is set to expire September 15, 2016. 250 peachleaf willows were planted in spring 2016 to replace obvious dead plants as part of that warranty.

Bingham Creek

UACD was unable to obtain landowner permission to proceed with the project. As a result this project has been shelved until the UACD is able to get permission to proceed.

Jordan River at 1700 South

The Jordan River Channel Realignment Project is an Ecosystem Restoration Project designed to implement a priority TMDL. It will reconstruct over 740 lineal feet of Jordan River Channel using bioengineering techniques and Natural Channel Design. It includes design, permitting, construction and monitoring costs.

2015 Salt Lake County Integrated Watershed Plan (IWP)

In late 2014 Salt Lake County began a 6-year update to the 2009 Salt Lake Countywide Water Quality Stewardship Plan (WQSP). The name was changed to Integrated Watershed Plan (IWP) to better reflect the two key components of the plan: 1) will contain all elements required per §208 of the CWA and 2) will contain the minimum nine elements of a watershed plan per §208 of the CWA. The final draft of the 2015 IWP will be out for public comment and stakeholder comment through September 2, 2016. We expect to incorporate comments and bring the final plan to Salt Lake County Council for a Resolution of Approval in late September. Development of interactive online maps to accompany the printed plan comprises the final phase of the project; expected completion November 2016.

Education and Outreach (Ongoing)

The County continues the outreach campaign to educate the public on watershed issues in the Jordan River Watershed. This is accomplished using an interactive booth with fun and educational tools and activities. Events include but not limited to: Salt Lake Countywide Watershed Symposium, various public fairs, multiple local events, Jordan River Watershed Council meetings, STEM outreach events with school districts across the county and the Hogle Zoo Water Quality Fair.

Stream Care Guide—A Handbook for Residents of Salt Lake County (2010-2015)

Developed a 57-page booklet intended to inform streamside residents and property owners on how they can help protect the health of our streams and creeks. Topics include general information about watersheds and stream ecosystems, as well as stewardship tips and practices that residents can utilize in their own backyards. We plan to reprint additional copies of the guide in 2016.

Stream Stability Analysis (2014-2016)

Salt Lake County has begun analyzing the stability of our waterways as a follow up to our 2006 analysis. We are using the Rosgen Level III analysis in tandem with Phankuch methodology. This will allow us to focus priority restoration in the most compromised areas when the data is combined with our water quality analysis. Priority for future project applications for funding will be given to impaired waterways targeting the uppermost reaches where stability and water quality data indicate issues.

Watershed Watch Newsletter (Ongoing)

An informational newsletter that is distributed throughout the Jordan River Watershed. Published twice annually, in Spring and Fall. SLCo distributed the Spring 2016 issue and planning for the Fall 2016 issue has begun.

Watershed Symposium

A Symposium to bring together watershed professionals, students, advocates and the interested public. Planning for the 2016 Symposium is underway, which is scheduled for November 15-16, 2016. In 2016, in honor of the 10th anniversary of the Symposium, we are expanding the program beyond the two-day conference. On Tuesday, November 15, we will co-host a film screening with the Utah Film Center. This evening community event will be held at the Salt Lake City Public Library. We're also partnering with the Jordan River Commission and Nature Works Alliance to co-host a full-day workshop in conjunction with the Watershed Symposium. To be held on Friday, November 18, the "Green Infrastructure: Putting It To Work" workshop will give participants the tools to implement green infrastructure—beyond the basics—through on-the-ground case studies and experiences from communities across the Wasatch Front, and the globe.

Emigration Creek TMDL (Ongoing)

Salt Lake County continues to collaborate with DWQ on the Emigration Creek TMDL for *E.coli*. A Synoptic Study occurred in 2011 and 2012 to help identify the source of the *E.coli* and both an *Optical Brightener* and *Caffeine Study* were performed in 2014 to determine the source is anthropogenic. The EID was recently completed a feasibility study on four options to address the failing septic systems. The consulting firm Aqua is the lead on this study and has completed the final draft. Once comments have been received they will distribute the final study. In addition, the EID has proposed using a cluster septic system to help with the failing septic systems along the creek.

Trash Boom for Jordan River (2013-2016)

Salt Lake County has proposed a trash boom for the lower Jordan River. Coordination with stakeholders continues and includes: Jordan River Commission, Legacy Preserve, The Nature Conservancy, Friends of the Great Salt Lake, Utah Forest Fire & State Lands, North Salt Lake City, Davis County, Salt Lake City, and the interested public. Design is in the 90% phase, which accommodates boater access and trash collection staging. The process of easements for construction and maintenance access is ongoing. All permits have been obtained. The county is looking into other ROW options in hopes construction can proceed. Currently the project is waiting on ROW and will proceed once the Nature Conservancy takes over the Legacy Nature Preserve

Millcreek Cutthroat Trout (2013-2016)

Salt Lake County is a stakeholder in the USFS Bonneville Cutthroat Trout introduction into Millcreek. This project will continue through 2016 and consist of eliminating all non-native species of fish from the upper Millcreek Watershed. The first phase of the project began in September 2013 with the removal of all fish from headwaters down to Elbow Fork. A second removal event occurred in September 2014 followed by the reintroduction of native Bonneville Cutthroat. Culvert replacement was completed in the winter however work still continues. Salt Lake County personnel designed and installed a new section of Millcreek channel at Log Haven. This channel section was 40 feet in length, consisted of two cross vanes and multiple bioengineering treatments. Final install took place June 13, 2016.

Mountain Accord Environmental Dashboard (2016-2017)

The Dashboard is a tool for decision makers to track the Central Wasatch's environmental health and evaluate impacts in future planning discussions. It is the intention of the Mountain Accord that the Dashboard is a legacy project and will be updated on a regular basis. It is scientifically based, data rich, and technically credible. The Dashboard compiles data currently collected throughout the Central Wasatch Mountains in a way that provides a picture of the complete health of the mountain range, as well as a mechanism for measuring the health moving forward. Phase II of the Dashboard includes an online connection for people interested in tracking the progress of the key indicators. The project is currently in the development of the dashboard framework phase.

E.coli MST Source Identification and Education & Outreach Project (2017-2020)

Identify sources of *E.coli* along impaired waterbodies via Microbial Source Tracking (MST) technology. Also includes education and outreach to residents. The project is currently in the pre-planning phase and is scheduled to start in 2017.

Jordan River Interpretive Signage (2016-2017)

SLCo Watershed obtained a funding from the Jordan River Large Grants fund—as offered by the Jordan River Commission and administered by Forestry Fire and State Lands—to develop and install six interpretive signage at our restoration project sites along the Jordan River. The projects targeted include: Murray Taylorsville River Restoration, Walden Park, Winchester Park, and 12600 South at Jordan River Rotary Park. The grant required a 75% match.

Water Quality Monitoring (Ongoing)

Salt Lake County collects monthly water quality data for over 50 sites throughout Salt Lake County. Parameters include: *E. coli*, fecal coliform, DO, pH, TSS, Conductivity and temperature.

Weber River Watershed-Andy Pappas

The Upper Weber Watershed Coordinator was able to complete several projects in FY-2016 that had been in the planning phase for the past few years. He was also able to identify additional projects that will help improve water quality throughout the watershed.

Upper Weber Watershed:

Morgan Fencing

This project is located in Enterprise, Utah; Morgan Ranching LLC is a 3rd generation family cow/calf, and crop operation in Morgan County. The operation consists of 600 pairs of cows and 900 acres of cropland. Historically, the operation used some of their cropland acres for calving grounds in the early spring. However, due to growing development pressure near their historic calving ground, they have decided to move the location of their calving grounds to another area of the operation. A primary constraint of this new calving area is its proximity to a spring fed slough that drains into the main stem of the Weber River. The Morgan family is concerned about nutrients from their cows entering the slough and eventually entering the Weber River.

Although the impacts are seasonal the cows are concentrated and are on the calving ground for about six weeks. The cows are moved out of the calving ground as soon as they calve. The proposed project will be the installation of fence along the banks of the slough to protect the water from contamination and

nutrient loading. The landowner will install fence on both sides of the slough to create a riparian buffer area that will also mitigate runoff from the adjacent agricultural fields. Since the water in the slough is the only source of water for the livestock in the area the project will also install watering troughs to eliminate the need for the cows to get water out of the slough.

Lost Creek

This project is located approximately .75 miles downstream of Lost Creek Reservoir. This project seeks to address approximately 420 linear feet of actively eroding streambank. Due to high flows during the spring of 2011, erosion continues to remove valuable pasture land and threaten other riparian vegetation. This project will stabilize actively eroding streambanks to allow riparian vegetation to re-establish and create a viable riparian ecosystem.

The project also addresses grazing management and livestock watering areas. To protect areas where banks have been stabilized, 1 mile of fencing was installed with designated watering areas. The fence that was installed was wildlife friendly, and allows the deer and elk access to the river.

Wanship Stream Bank Stabilization

This project consists of 300 linear feet of actively eroding streambank. Without stabilization, these banks will continue to input sediment into the stream. After stabilization is complete fencing and a riparian buffer will be established to continue to protect streambank stability. Upstream a hardened watering area will be installed.

Weber River Feedlot

This project was a feedlot located on the main stem of the Weber River, upstream of Rockport reservoir. The purpose of the project was to reduce the amount of animal waste entering an irrigation ditch that passed through the feedlot, which runs into the Weber River. In order to reduce animal waste from entering the ditch, the lessee installed water troughs, and fenced livestock off the ditch. Another issue was when the animal waste melted in the spring, runoff would enter into the ditch. A 16 inch pipe was installed and the ditch was routed through it. The land was then leveled above the pipeline. This required 240 feet of pipe.

East Canyon Watershed

East Canyon Creek Project

The East Canyon project entails the stabilization and restoration of approximately 750 linear feet of stream bank and establishment of the associated riparian corridor using bioengineering techniques as well as limited structural implementations.

Richins Brothers

The Lower East Canyon Creek Stream Bank Stabilization and water development project addresses active stream bank erosion and channel instability along approximately 550 linear feet of East Canyon Creek, just upstream of the reservoir. This project will consist of two phases, one dealing with stream bank erosion, and the other with allowing livestock watering options located away from the reservoir to decrease livestock pressures in and around the reservoir.

The stream bank stabilization phase of the project entails addressing actively eroding shear banks along outside bends of East Canyon Creek. Bioengineering techniques with limited structures have been proposed and the producer is in agreement with using the least invasive, most cost effective methods to mitigate the problem. The suite of proposed stabilization practices includes geotextile wrapped soil lifts,

willow waddles, coconut coir rolls, and bank shaping with erosion control fabric. These installations will be protected from livestock grazing with an exclusionary fence that will separate the newly established riparian corridor from the agricultural field.

The second phase of the project will be developing 2-3 water sources away from the reservoir in order to allow livestock to graze without having to return to the reservoir for water. This phase of the project is anticipated to be in cooperation with the NRCS sage grouse initiative funding. An application is currently awaiting review and ranking per the NRCS's funding cycle.

In addition to project implementation, the local watershed coordinator continues to facilitate meeting of several watershed groups in the Weber Watershed, collect water quality data showing water quality improvements, and oversees the development of the North Fork of Chalk Creek Watershed plan.

Middle and Lower Bear River Watershed- Malgorzata (Margie) Rycewicz-Borecki

In FY-2016 a new watershed coordinator was hired in the Bear River Watershed. Much of her first few months consisted of attending various trainings and becoming familiar with the water quality issues in the Bear River Watershed. The coordinator was hired during the application process for the targeted watershed funding that will be awarded to the Bear River Watershed in FY-2017.

Watershed Planning

The Coordinator has played an integral part in the watershed planning efforts that are required in order to be eligible for Section 319 funding. The coordinator has overseen the development of the Mantua/Maple Creek watershed plan, as well as the watershed plan for the Logan River. These plans have been submitted to DEQ, and are currently awaiting approval from EPA.

Project Implementation

The Bear River Watershed Coordinator will be overseeing several projects in the Bear River Watershed. These projects include:

Logan River – Stewart Nature Park

The Stewart Nature Park project is a collaboration between Logan City, the Logan River Task Force, and the Blacksmith Fork Conservation District. This project was planned in response to the eroding banks along the southern bank of the Logan River. Terraced benches will increase the 2-year floodplain area and provide excellent riparian habitat along this portion of the river. Stewart Nature Park is located in a dense urban residential neighborhood and will act as a demonstration area for urban riverbank management options to decrease erosion. A design was completed under the direction of Logan City by BioWest Inc. and Allred Restoration. The project is scheduled to begin in mid-October 2016. Trees and shrubs will be planted during fall 2016 and/or spring 2017 to ensure growth and vitality. This project received \$80,000 in NPS funds, and is 15% complete. All of the land moving, and most of the planting will be completed within the next 6 months, and any remaining planting will occur in the spring of next year.

Logan River – 100 East Residential Properties

Three large parcels of residential property located east of 100 East, border over 1000 feet of the Logan River's southern edge. Eroding banks, unstable overhanging tree limbs, and water access destabilization are the primary concerns in this area. Two of the three landowners have committed to participate in a project, to clear dead/unstable trees, stabilize the water access area, improve riparian vegetation, and stabilize the streambank. \$50,000 was awarded to this project from the 2017 EPA 319 funds. Finalized plans will be completed shortly, and construction is scheduled to begin in 2017. This project is 10% complete.

Logan River – Rendezvous Park and Golf Course

The slope of the Logan River dramatically decreases within the Golf Course and Rendezvous Park section of the river. Some sections of the river were straightened and dredged in the 1980's. The straightened river and decreased slope initiated a more dominant meander pattern, causing 500 feet of the river to abut highway 89/91, and cause considerable sediment deposition in the lower portion of this stretch. These issues have caused severe flood damage during larger storm events, resulting in great economic impairment and decreased water quality (increased sediment and nutrient levels). The goals of this large-scale project are to address sediment deposition, restore river meander, provide locations for sediment traps in the lower reach, and increase floodplain function by removing portions of dredge pile levees. Willard Bay Mitigation funds and Logan City match are allocated for the first phases of this project, and \$267,000 has been secured in EPA 319 funds. Design and engineering are in progress and permits will be sought shortly after designs are finalized, and construction is scheduled to begin during March 2017. This project is 5% complete.

Logan River – 1000 West Agricultural

Much of the lower section of Logan River flows through agricultural lands. This project flows through one and a half miles of pastureland from 1000 West to Trapper Park. The land is seasonally grazed, and numerous creeks and springs originate there. The main goals of this project are to address the eroding banks, and the associated sediment and phosphorous loading, improve riparian vegetation conditions, remove snags and dangerous overhanging trees, and reduce flooding potential of the river onto the fields. This project, which secured \$120,000 of EPA 319 funds, has also received NRCS EQIP funding, and will act as a demonstration area for riparian water quality project for other agricultural producers on the Logan River. This project is 20% complete.

Cub River – Cover Crops

This project along the Cub River provides an easily accessible 50-acre demonstration area to test appropriate cover crop seed mixes, planting schedules, and establishment procedures on irrigated and dry-farmed land in Cache Valley. Cover crops were planted after hay crop harvest (Aug 2016) and consisted of a 9 seed mixture. Termination is scheduled for spring 2017, prior to spring wheat planting. Cover crops will be planted again in fall 2017. Soil health, and runoff water quality are all expected to improve as a result. This project received \$13,590 in NPS funds, and is 10% complete. Soil monitoring and photo point documentation will begin this fall.

San Pitch Watershed- John Saunders

In FY-2016 a new watershed coordinator started in the San Pitch Watershed. The San Pitch Watershed is the Targeted watershed for 2016, so the majority of the watershed coordinator's time has been spent overseeing the implementation of projects that have been funded using Section 319 and State NPS funding.

Turpin/Cook – Stream Restoration

The Turpin Streambank project was the main focus for FY 2016. This project was implemented in the fall 2015 and is now 100% completed. Restoration efforts included 200 feet of treated bank consisting of: revetment, bank shaping, and vegetation establishment. This project was funded for a total of \$75,000.00 in State NPS funds. The project total cost was \$74,149.00 with matching funds of \$7,415.00.

Turpin – Stream Restoration

This project is downstream from the Turpin/Cook project and is an EQIP funded project. Implementation started in June 2016. This project includes revetment, bank shaping, and vegetation establishment. The project is 40% completed.

Bench LLC – Stream Restoration

This project began in September 2015 as a result of extreme streambank erosion, and consists of multiple phases. Phase I, which consisted of stream bank stabilization, is 90% completed; fencing and troughs remain unfinished and are planned to be completed in the coming months. This project was funded by NRCS EQIP Strategic Funding and FY 15 State NPS grant (\$45,000). Stream bank stabilization was completed by using bioengineering; conifer revetments and willow planting from cuttings, using excavators from outside of the river channel, slope back stream banks and place juniper trees in the toe of the banks. Rock barbs were also placed to help reduce erosion and to enhance aquatic habitat. Total length of stream bank protection for phase 1 was approximately 4,400 feet.

Coates – Irrigation and Stream Restoration

This project consists of 31 acres of pasture that are currently being flood irrigated. A Pivot irrigation system will be installed, reducing salt laden runoff from the field. 100% of this project was funded using State NPS funds totaling \$31,300. This project will begin in the spring of 2017

Parry – Irrigation and Stream Restoration

This project will convert 25 acres of pastures that are being flood irrigated to a pivot irrigation system. This project will use a combination of State NPS funding and EQIP funding from the NRCS. In addition to the irrigation project the landowner has also agreed to implement stream bank stabilization projects to help improve water quality in the San Pitch River.

Castleberry - Irrigation

This project will convert 45 acres of pasture that is being flood irrigated to a pressurized irrigation system. This project was funded with \$45,000.00 in State NPS funding. The project is 90% complete and should be completed by the end of the 2016 calendar year.

Sorenson/Castleberry – Stream Restoration

This project is utilizing EQIP and State NPS funding to reduce streambank erosion and restore habitat and the riparian area by installing revetments, rock barbs, reestablishing vegetation, and fencing animals from the riparian corridor. A grazing management plan is also being developed. This project is currently being designed and will be implemented in the fall of 2017.

Olsen – Irrigation and Stream Restoration

This project is utilizing State NPS funding and EQIP to improve irrigation efficiency and improve bank stability. This project is in the design stage, which includes minor revetments, plant and tree establishment,

and fencing. The irrigation system is planned to be installed in the fall 2016 and the riparian project should be implemented in fall 2017.

Carter – Feedlot and Stream Restoration

This project has been in the works for several years. This feedlot is right next to the San Pitch River and is runoff flows directly into the river. The streambanks along his property are also eroding at a high rate. The feedlot will be moved to a new location and the old feedlot will be used to store feed. Riparian work will also take place where necessary. This project will be funded using both State NPS and Section 319 grants. This project is scheduled to be initiated in the fall of 2017.

Beardall/Kelson – Stream Restoration

This cooperators main goal is to clean up the dead fall/garbage, prevent farther erosion, and create better habitat for wildlife on the San Pitch River. This is a standalone 319 project, there is plan to apply for the Invasive Species Mitigation grant for additional funding to help remove Russian olives from the project area. This project is in the beginning stages of the planning process.

Sweat – Stream Restoration

This project is located a few miles above Mt. Pleasant, and is another standalone 319 project totaling \$80,100. This project will be mostly bank shaping and planting vegetation. Implementation is scheduled for November 2016. The biggest challenge on this project so has been SHPO compliance. Cultural resources were done previously on the project but since it had change landowners and the previous survey was done so long ago, another clearance was required.

Cheney – Stream Restoration

This project consists of two different phases. One phase is being funded with EQIP funding, and the other is being funded using a State NPS grant. The focus of both phases is to reduce the erosion of the stream bank along the San Pitch River. NRCS engineers have completed the design for the EQIP project, and will commence as soon as a stream alteration permit is obtained.

Nuttall – Stream Restoration

This project is located in Milburn. The project is being funded by EQIP and will consist of streambank protection with bank shaping, revetment, rock barbs, and vegetative plantings. The design is being finalized currently, and the permits are being obtained.

Irons – Stream Restoration

This is a stand-alone 319 project for \$6,500.00. This project is in the planning stage will consist of streambank restoration, rock structures, bank shaping, and vegetative planting to prevent erosion.

Michael Larson – Pasture

This is a pasture improvement project that will be funded using Section 319 funds. This project will consist of reseeding and the installation of troughs and wells to help improve the health of the pasture and reduce erosion leaving the field. This project is still currently in the planning stage. The landowner would like to begin installing the BMPs in the fall of 2016. Total 319 funds contracted with this project are \$23,180.00.

Upper Sevier Watershed- Wally Dodds

In FY-2016 the Upper Sevier Watershed Coordinator assumed many responsibilities outside of his normally assigned basin. These responsibilities included the work that was being done by the Cedar/Beaver coordinator now that this position is vacant. These responsibilities included monitoring on the North Fork of the Virgin River, and working with local landowners to develop management plans and identify BMPs that can fix the E.coli impairment.

The Coordinator has also been working with producers on the Fremont River to complete the FY-2015 Section 319 grant that was awarded to the local conservation district. Two projects were completed on the Fremont River in FY-2016, and a final report is currently being written for that grant.

In addition to his new responsibilities the local watershed coordinator continues with his regular responsibilities in the Upper Sevier Watershed. Most of his time has been planning projects for the NRCS that are part of the National Water Quality Initiative (NWQI) Program. The watershed coordinator has also been heavily involved in developing a Sampling Analysis Plan (SAP) for the NWQI watershed. This SAP will be sent to NRCS for approval during FY-2017.

In addition to project implementation The Upper Sevier Watershed Coordinator continues to facilitate meetings for local watershed groups, conducts Information and Education projects, and is involved in collecting water quality data throughout the watershed.

NPS WATER QUALITY TASK FORCE

The mission of the Utah Water Quality Task Force is to facilitate coordinated and holistic management of Utah's watersheds for the protection and restoration of Utah's surface and ground waters.

The Utah Nonpoint Source (NPS) Program is administered by the Division of Water Quality (DWQ) of the Utah Department of Environmental Quality (DEQ) through the coordination and assistance of the Utah Water Quality Task Force, and its established ad hoc committees. The responsibility of the Utah Water Quality Task Force is to advise the DEQ in the holistic management of Utah's watersheds, with a focus on reduction of nonpoint source pollution. DEQ is responsible for the chairmanship of the Water Quality Task Force.

Specific functions of the Utah Water Quality Task Force include:

- Serve as a coordinating body for the review and direction of federal, state and local NPS management programs to assure that these programs are implemented consistent with the Utah Nonpoint Source Management Plan (approved by EPA in 2013 and as amended or revised);
- Promote and foster better alignment of relevant programs to assure efficient and effective watershed management efforts that improve water quality, in addition to other benefits;
- Provide a forum for the exchange of information on activities which reduce nonpoint source pollution;
- Provide a forum for discussing and implementing project monitoring (before and after)
- Provide a common storage area for all data collected
- Provide a forum for discussion and recommended resolutions to program conflicts;

- Work with partner agencies to coordinate the prioritization of watersheds for nonpoint source activities. Prioritization criteria should include local involvement (e.g. locally led watershed committees), effective use of partnerships, and evidence of leveraged sources of funding;
- Establish and implement a process for field inspections of nonpoint source mitigation activities on public and private lands to ensure that best management practices are installed and functioning as designed to protect water quality; and
- Serve as a coordinating body for outreach and education to increase public awareness regarding nonpoint source pollution management.

Specific Products of the Utah Water Quality Task Force include:

- The Annual Utah Nonpoint Source Program Report. This report is required by EPA, but is not restricted to 319 funded efforts. The report is prepared by DEQ in coordination with UDAF. The task force will assist in providing content, advice and review. The report will highlight the planning efforts, projects, and successes statewide that are possible with the broad coalition of partners encompassed in the Water Quality Task Force;
- Presentation of the Annual Utah Nonpoint Source Program Report each year to the Utah Water Quality Board and the Utah Conservation Commission.
- Organize a NPS Conference periodically to share information, highlight successes, and improve networking throughout the state and region.
- Provide annual water quality awards to individuals and organizations whose actions or products have protected water quality and exemplified good stewardship of our waters.
- Maintain an institutional repository (e.g. a web site) that includes originals or links to documents, reports, and minutes.

Membership:

The Task Force includes representation of those entities with programs that could potentially cause or mitigate nonpoint source water pollution. As new NPS program components are developed and implemented, additional entities will be invited to participate. Current invited members include:

Local Governments

U.S. Army Corps of Engineers, Planning Division
U.S. Department of Interior Bureau of Land Management
U.S. Department of Interior Bureau of Reclamation
U.S. Department of Interior National Park Service
U.S. Department of Agriculture Forest Service
U.S. Department of Agriculture Natural Resources Conservation Service
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey
Utah Association of Conservation Districts
Utah Department of Agriculture and Food
Utah Department of Environmental Quality
Utah Department of Natural Resources
Utah Department of Transportation
Utah Farm Bureau
Utah State University Cooperative Extension

School and Institutional Trust Lands Administration
League of Cities and Towns

GRANTS REPORTING AND TRACKING SYSTEM

The Section 319(h) Grant Reporting and Tracking System (GRTS) is a national database developed by EPA to track projects and activities funded with CWA Section 319(h) funds. The primary purpose of the database is to track project progress, accomplishments, funding information and environmental results using several nationally mandated information items that are reported to Congress annually by EPA. Information extracted from this system forms part of the justification to Congress for funding the Section 319 Program. EPA Region VIII uses GRTS to enable the States to electronically fulfill reporting requirements using the Project Evaluation Form and other attachment features in GRTS such as final reports, GIS maps or other project publications.

WATER QUALITY INFORMATION

SAMPLING AND ASSESSMENT ACTIVITIES

In 2010 the State of Utah began utilizing the targeted basin funding approach. There were several reasons that the Utah DWQ decided to utilize this approach, one of them being to better improve the monitoring of NPS projects that are being implemented in the state, and to concentrate the number of projects that would be implemented into a smaller area to make it easier to identify the benefits of the projects that would be implemented.

As part of this strategy the DWQ monitoring section agreed to do an intensive monitoring run within the selected watersheds where the majority of the funding would be spent, two years prior to the implementation of the projects identified in the grant work plan. Additional monitoring will occur two years after the projects have been monitored. This data can be used to help determine project effectiveness, as well as helping to update the watershed plan in that drainage.

Over the past six years DWQ has realized that, while the intensive monitoring schedule has been useful, it is necessary to collect data more frequently. Instead of monitoring individual projects, Sampling Analysis Plans (SAPs) are developed for the targeted areas where projects are being implemented. This monitoring includes chemical, physical, and biological monitoring. The frequency of this monitoring is determined by the protocol of each assessment type being done. Chemical samples are usually collected monthly at various sites throughout the watershed, and samples are collected at a minimum of 5 years after the project is completed. This has been very helpful during implementation to help identify additional pollution sources in the watershed, and identifying additional projects that are funded with State NPS funding.

In most cases the monitoring is conducted by local watershed coordinators. The Division of Water Quality has used State NPS funding to purchase the needed equipment to collect the samples, and continues to offer training as necessary to both the local watershed coordinators and our partners to verify that they can confidently and proficiently collect the needed data. The local watershed coordinators also use volunteers from the Utah Water Watch for safety reasons whenever possible when doing their monitoring runs.

The State of Utah is currently in the process of developing a statewide NPS monitoring program. The goal of this program is to identify all of the SAPs that will be implemented in the upcoming year, and

additional monitoring needs. These needs will then be developed into a statewide SAP showing the lab needs and costs associated with the monitoring of NPS projects. The DWQ monitoring section will then identify what sites will be collected by local watershed coordinators and partners. If monitoring is required where no local watershed coordinators or partners are available DWQ Monitoring staff will collect the data in that watershed. The first phase of the NPS monitoring program will be implemented during FY-2017.

ASSESSMENT/INTEGRATED REPORT

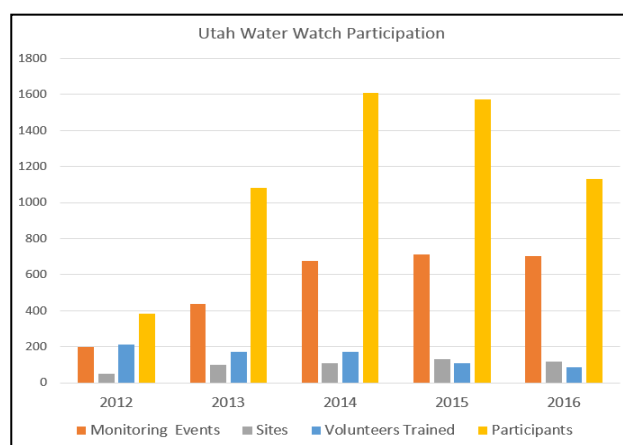
In FY-2016 the 2014 integrated report was approved by EPA, and the 2016 integrated report was initiated. The DWQ Assessment section has done a very good job of getting the integrated report schedule back on track, and the FY-2016 integrated report has been submitted and should be approved by EPA in early 2017.

VOLUNTEER MONITORING

Nancy Mesner (USU Water Quality Extension Educator) Ellen Bailey (USU Water Quality Extension Educator)

Utah State University Extension: Nancy Mesner (USU Water Quality Extension Specialist) and Ellen Bailey (USU Water Quality Extension Educator)

USU Water Quality Extension (USU WQE) continues to provide outreach activities and to develop water quality educational materials for Utah's statewide nonpoint source program. Each year we contact partners throughout Utah to assure that we are meeting ongoing and emerging needs. We use Utah 319 funding for some of our programming, but supplement these funds with other grants and USU resources. In this way, USU WQE provides a relevant and cost effective outreach program that reaches many different audiences with information on protecting and improving Utah's water quality. Below are several of our program highlights from this past year.



Utah Water Watch Citizen Monitoring

Our Utah Water Watch program continues to expand in response to new needs and opportunities. We continue to support and train entry level volunteers into our education – focused Tier 1 program. We have also pushed hard to increase participation in our Tier 2 program, which trains volunteers in more advanced methods and connects them with individual projects across the state. These Tier 2 volunteers comprised almost half of our new trained volunteers in 2016. These volunteers are now assisting in several watershed projects (see below), including help in calibrating high frequency monitoring stations, and collecting and analyzing *E coli* samples in coordination with UDWQ's monitoring efforts.



In 2016, the number of total participants statewide dropped slightly, although the program conducted the same number of monitoring events as in the previous 2 years. We anticipate all these numbers growing in the future as we merge Tier 1 monitoring more fully with our educational programs (see below) and as the value of Tier 2 volunteers becomes increasingly recognized by partners around the state.

We also re-energized our lake monitoring program this past year, largely in response to increasing concerns about *E. coli* and harmful algal blooms at recreation hotspots. In coordination with UDWQ, we have developed a volunteer monitoring strategy and protocols with the goal of expanding UWW efforts to all 2A lakes and reservoirs next year. We train volunteers on the IDEXX *E. coli* procedure. We have also begun training volunteers on identifying probable HAB blooms in the field, and in collection and lab identification of cyanobacteria using microscopes and other equipment being distributed around the state. UWW is also participating in the NOAA Phytoplankton Monitoring Network program which tracks marine and freshwater HABs throughout the country.



UWW continues to reach out to volunteers and other citizens through our newsletters, and other social media (Facebook, Twitter and Instagram). We participated in a statewide synoptic during Utah's Water Week, and had our first volunteer appreciation barbecue for volunteers centered in the Salt Lake City area. We will have more of these events in the future at other locations around the state.

A survey of volunteers conducted in late 2015 indicated that UWW Tier 1 monitoring efforts effectively engage citizens who want to learn more about and help protect a local water body. Interestingly, many of these monitors learn that their water bodies are less polluted than they feared – a message that we feel provides added incentive to protect these special places. Tier 2 volunteers also experience a deeper tie to their local watersheds, but also have the satisfaction of assisting in data collection that may be used for decision making and research.

THE AMBIENT WATER QUALITY MONITORING SYSTEM (AWQMS) DATABASE

The Ambient Water Quality Data Management System (AWQMS) has undergone several updates during the past year and is currently running AWQMS version 5.1. This database update has allowed UDWQ to sync our locally-stored data set to the EPA STORET data warehouse utilizing the WQX schema and allows UDWQ to maintain this data as current with an automated daily update feature. Built-in quality assurance tools will enhance our ability to maintain a quality data set going forward.

The UDWQ data review, data validation and verification process has continued to be streamlined during the year. The river and stream data collected during the 2015 water year has been imported and is currently available online. The data collected during the 2016 water year has been imported for samples collected through the end of June. Additionally, lakes and reservoirs data has been imported through the end of the June 2016 including the backlog of data collected between 2010 and the present.

Plans for the upcoming year include quality assurance reviews for imported data and streamlining the data import process to continue to provide quality data to our data users. Efficiency improvements will include electronic data collection tools and training other staff to perform data imports.

monthly. Additional data types will be updated in the AWQMS database including fish tissue and E. coli. We will also be evaluating new features available in the upcoming AWQMS version 5.5, including storage of continuous/time-series water quality data.

GROUND WATER PROTECTION

Ground water protection remains a priority in the State of Utah. In the past, various projects were funded using 319(h) funds to help analyze ground water around the state. Recently the State has noticed an increase in nutrients in various ground water sources. This monitoring will help assess the problem, and identify the sources of the contaminants. The Utah Division of Water Quality and the Division of Drinking Water will continue to fund monitoring and information and education programs around the state to identify groundwater issues, and educate the public on what they can do to protect groundwater in the State.

Over the years, several grants have been given to Utah State University to help educate septic owners on how they can properly maintain their septic systems to reduce pollutants from entering into groundwater. Technical service providers that commonly install and maintain those systems are also being trained on how to properly install and pump these systems. Currently there are two grants open that are focused on septic information and education.

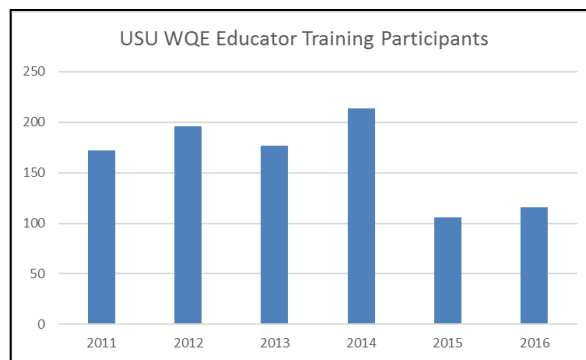
OUTREACH ACTIVITIES

Utah State University Extension- Nancy Mesner (USU Water Quality Extension Specialist)

Outreach Activities

Youth Outreach and Teacher Education

USU Water Quality Extension continues to provide youth and educator programs throughout the state. Programs provide hands-on activities, engaging youth in exploring water quality and their watersheds and are provided through a variety of water fairs, festivals, camps, and competitions. In total, USU WQE participated in or led 31 events in 11 counties, including several that we organized (the Bear River Celebration, an annual celebration attended by about 100s of families and Natural Resources Field Days, in which 2000 4th graders participated in high quality programs at a USFS campground).



We continue to directly provide educator training on the use of our different hands-on lessons and curricula. In 2016, USU WQE hosted or participated in 11 teacher workshops for 116 participants. This year, USU WQE also began merging Stream Side Science with Utah Water Watch, an easy pairing because Tier 1 activities and SSS curriculum have similar components and use the same monitoring techniques. Fourteen new educators participated in UWW this year.

We also encourage partners to use our material in their own programs, and in this way are expanding the reach and impact of these materials. (These numbers are not reflected in the graph above, which shows those programs that we actually taught.) We have created a website dedicated educators (<http://streamsidescience.usu.edu>) and will soon launch an upgraded version of this site with easier navigation and improved visibility on multiple platforms.



Support for Utah Watershed Coordinators

USU WQE continues to work closely with watershed coordinators across the state and with DWQ TMDL coordinators. One of our hourly workers staff members was a primary author on an update of Wide Hollow Watershed's CRMP. WQE workers have helped monitor for E coli and HABs in several northern Utah lakes. We have provided Tier 2 trainings and connected volunteers with projects in need of monitoring in most of the major watersheds across the state. These are highlighted in watershed specific bullets below.

Each year our program also participates in statewide and national meetings. We helped organize the recent NPS Monitoring Conference in Salt Lake City, including giving two talks and organizing a tour of volunteer monitoring activities. In addition, Nancy Mesner, Ellen Bailey and E li Robinson have all spoken at recent meetings (UWW statewide meeting in Logan and the Salt Lake Watershed Symposium in SLC).

This past year USU WQE has worked hard to coordinate monitoring and training activities in watersheds across the state. Some of these watershed specific efforts are summarized below:



Bear River Watershed – UWU WQE held a Tier 2 training in coordination with the new Watershed Coordinator Margie Borecki. A new volunteer from this training assisted with E. coli and MIMS monitoring in the summer. Using staff and volunteer assistance, USU WQE monitored four reservoirs for E. coli and HABs.



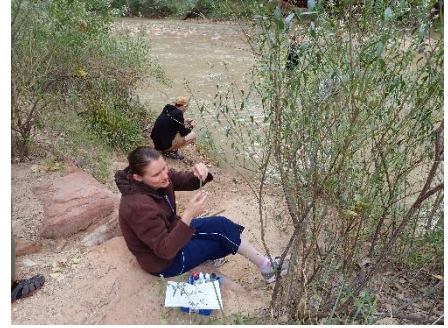
Weber River Watershed – USU WQE held a Tier 2 training and had an excellent turnout of 20 interested volunteers. There are plans for these new volunteers to assist with storm water monitoring near Park City. USU students and WQE staff also participated in SVAP monitoring on Chalk Creek. In addition, they are working with Weber State University to develop monitoring projects for the Weber River restoration involving local college and high school students.



Jordan River Watershed – USU WQE is working with Salt Lake City, Salt Lake County, Utah TMDL Coordinators and the Jordan River Commission to develop monitoring plans for Jordan River restoration projects. Monitoring, done by Tier 2 volunteers and community members, will

evaluate restoration effectiveness.

Sevier River Watershed – USU WQE held a spring Tier 2 training in Ephraim in coordination with a Snow College professor and John Saunders, the local watershed coordinator for the San Pitch Watershed. Through connections with Snow College, an intern has been monitoring salinity which has been a major concern for local agriculture. USU WQE has been in communication with Southern Utah University, Dedicated Hunters and current volunteers to assist with monitoring on Mammoth and Asay Creeks for Upper Sevier River Watershed Sampling and Analysis Plan.



Cedar/Beaver Watershed – USU WQE connected with Southern Utah University for future collaboration with students and the community. The university has particular interest in Coal Creek that runs through town.

Lower Colorado River Watershed – A UWW volunteer collected *E. coli* samples for several important reservoirs. In addition, we held a Tier 2 training with Dixie State University biology and physical department heads and students. The training resulted in several students interested to help out with *E. coli* sampling needs on the Virgin River.

Western Colorado River Watershed - A UWW volunteer has collected and analyzed monthly *E. coli* IDEXX samples on the Fremont River to help in the development of a TMDL. In addition, we have worked with the Grand Staircase Escalante Monument and the Escalante Watershed Partnership to improve data collection in the area. There are currently two sites monitored at the Tier 2 level through this partnership, in addition to several Tier 1 sites.

Southeast Colorado River Watershed - Support was provided for a local watershed coordinator, Arne Hultquist, to provide monitoring equipment and coordinate volunteer support.

Great Salt Lake Watershed – Few projects are ongoing in this area. Due to a suggestion from an EPA partner, USU WQE plans to hold a Tier 1 training near Tooele to strengthen citizens' understanding and connection to their local watershed.

Nutrient Management Producer Education- Rhonda Miller

Current efforts are focused on maintaining and expanding the Producer's Website and promoting the Critical Records of Animal Production (C.R.A.P.) app and the Critical Records of Production (C.R.O.P.) app. The Producer's Website provides "one-stop" shopping for producers by providing information on current regulations that impact agriculture in laymen's terms. The website also provides information on best management practices that help protect the environment. The C.R.A.P. app (available for iPhone and Android) assists producers in maintaining manure application and inspection records for their NMP. The C.R.O.P. app allows for easy recording of crop records, fertilizer and pesticide applications, and irrigation events. The information from the C.R.A.P. app and the C.R.O.P. app can also be downloaded into a spreadsheet that will help producers with their overall nutrient management. The spreadsheet is available on the Producer's Website.

STATE/LOCAL AGENCY CONTRIBUTIONS**Utah Division of Natural Resources- Alan Clark**

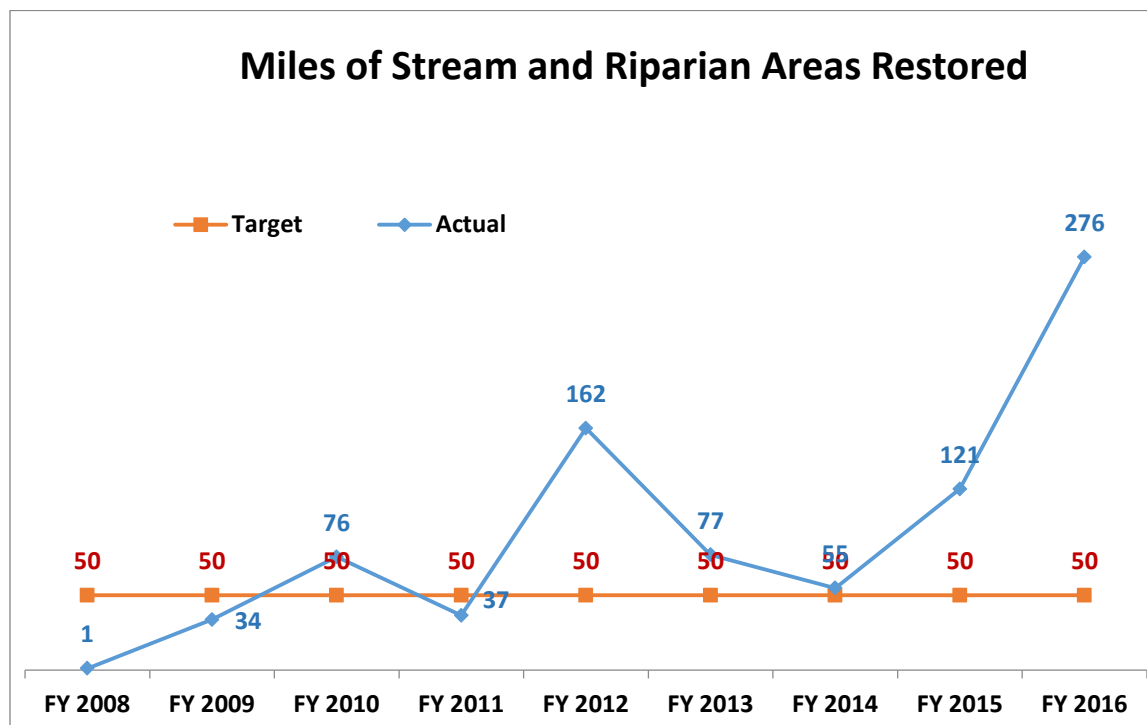
The Watershed Program in Department of Natural Resources focuses on protecting and enhancing core values for our present and future quality of life including watershed health and biological diversity (structure and function), water quality and yield, and opportunities for sustainable use.

This is accomplished through the Utah Watershed Restoration Initiative (WRI), a diverse partnership of state and federal agencies working together with non-governmental organizations, industry, private landowners, and local elected officials, coordinated by the Utah Department of Natural Resources. Locally led teams identify conservation issues and focus areas using existing plans to address needs at the landscape (watershed) level. Program partners then propose projects to address these needs and receive input from other partners. Projects are reviewed and ranked by the regional teams using a standardized scoring system and then are funded from a variety of sources and contributors.

In fiscal year 2016, the WRI partnership (87 partners participating) completed 127 projects restoring 79,000 acres of uplands and 276 miles of stream and riparian areas. Many of these projects are designed with the goal of improving water quality and quantity. For a full list of WRI projects completed go to: wri.utah.gov. Through the partnership effort, general funding (\$1.95 million) to the Watershed Program from the Legislature was successfully leveraged at over 8 to 1 in on-the-ground projects.

The long-term results from this effort will be reduced acres burned by wildfires and resulting fire suppression costs, reduced soil loss from erosion, reduced sedimentation and storage loss in reservoirs, improved water quality and yield, improved wildlife populations, reduced risk of additional federal listing of species under the Endangered Species Act, improved agricultural production, and resistance to invasive plant species.

Several research projects were completed or are underway evaluating the success of WRI projects. A project on BLM in southwestern Utah showed that the risk of wildfire starts from lightning was reduced by over 90% in areas where restoration projects were completed and suppression costs were also reduced. A large scale analysis of monitoring data following restoration projects at 3, 5, and 10 years post-project showed that success rate using the treatment methods employed by WRI have a much higher success rate in meeting project objectives than previously published studies in other parts of the West. We expect results from a project looking directly at water quality effects from WRI projects will be completed and published in FY2017. A long-term study to evaluate pinyon-juniper removal on ground water and water flow in streams is being initiated this year. Table 6 shows the miles of stream and riparian Areas Restored using WRI funding over the years.

Table 6

Utah Department of Agriculture and Food- Jay Olsen

The Utah Department of Agriculture and Food regularly collaborates with state and federal partners to assist agricultural producers to maintain viable and productive agricultural lands and to protect Utah's natural resources. A strong partnership provides technical and financial resource options to Utah's agriculture producer while promoting agricultural sustainability. A watershed approach is used to work cooperatively with private land owners to prepare conservation plans that will solve resource problems. Funding options are available from multiple state and federal programs. This year the Utah Department of Agriculture and Food contacted the Division of Wildlife Resources, requesting a list of priority areas with water quality concerns tied to agriculture. The list was evaluated in conjunction with the nutrient study area from the previous year and animal feeding operations. It was determined that three streams would be monitored for nutrients and E.coli this season. E.coli was added because of an increase listing of impaired waters due to E.coli. The Utah Department of Agriculture and Food followed the Division of Water Quality standard operation plan (SOP) for E.coli sampling and sampled the three streams monthly, during the recreation season. This data will be used to evaluate the impact livestock have on streams when grazing on range.

Utah Department of Agriculture and Food in conjunction with the Division of Water Quality organized an EPA Water Standards Training involving Region 8 EPA. The purpose of the training was to provide an increased understanding of federal and state regulations, bring different stakeholders groups together to discuss concerns dealing with implementation of the regulations and to network. The training was held December 5th thru the 7th at the Utah Department of Agriculture and Food office. 74 participants

signed up, representing Conservation Districts Supervisors and Planners, Natural Resource Conservation Service (NRCS), Environmental Group, Division of Wildlife Resource, Attorney General Office, Dairy Producers, Division of Water Quality, Department of Agriculture and Food, and Utah State Extension Service. UDAF plans on continuing to monitor projects affecting agriculture in the future to provide information to both producers and the public on what has been achieved by implementing best management projects. We also plan on continuing our education and outreach to producers and other stakeholders to benefit Utah's natural resources.

Utah Conservation Commission (UCC)

The UCC is authorized under [Title 4, Chapter 18 of the Utah Code](#). The act's Purpose Declaration states that "The Legislature finds and declares that the soil and water resources of this state constitute one of its basic assets and that the preservation of these resources requires planning and programs to ensure the development and utilization of these resources and to protect them from the adverse effects of wind and water erosion, sediment, and sediment related pollutants." With this in mind, the Legislature created in 1937 this unique state government entity and it has been active continually since, evolving to meet new environmental and social conditions. Today this [16 person board](#) strives to protect the natural resources within the state. Table J in the appendices shows a partial list of projects Conservation Districts accomplished this year, listed by zone.

Utah Agriculture Certificate of Environmental Stewardship (ACES)

The ACES assesses storage, handling and application of fertilizer, pesticides, fuels, and hazardous wastes. It also evaluates grazing management, soil erosion, cropping and irrigation systems, storage and application of manure, and other agricultural practices that may have an impact on our natural resources. Currently there are no facilities covered under the ACES program. One operation has requested an evaluation and is planning on working toward certification.

Utah Grazing Improvement Program (UGIP)

The Utah Grazing Improvement Program is a broad-based program focused on rangeland resource health. Its mission is to "improve the productivity, health and sustainability of our rangelands and watersheds." A keystone benefit is the reduction of NPS water pollution and the protection and improvement of water quality and habitat components.

A staff of Grazing Coordinators, located in six regions throughout the state, offers the livestock industry sound information and assistance regarding grazing issues. A main focus of the program is to invest in and help facilitate improved resource management. Grants are provided for projects that will enhance grazing management and rangeland resource health.

Agriculture Resource Development Loan Program (ARDL)

Projects eligible for Agriculture Resource Development Loans (ARDL) loans include animal waste management, water usage management (irrigation systems), rangeland improvement, on farm energy projects, wind erosion control, disaster mitigation and cleanup, water conveyance projects for both private individuals and canal companies, and providing crop storage facilities and other farm structures outlined in the ARDL Policy. These projects all have a direct impact on protecting our natural resources, preventing or reducing pollution both to water and air and in sustaining the economic viability in rural communities.

The Loan section has a second program, Rural Rehabilitation Loans. Its purpose is to finance land acquisitions for beginning farmers and rancher when conventional lending is not available. The program may also help farmers and ranchers with troubled debt that can be restructured through refinance of long term debt, with well secured, low cost financing.

The loan section also underwrites loans for the State Revolving Fund (SRF) under the Division of Water Quality financing projects that eliminate or reduce nonpoint source water pollution on privately owned lands. That program was recently expanded to include grants as well as loans. We also underwrite loans for the replacement of Petroleum Storage Tanks for the Department of Environmental Quality. This program is designed to assist owners and operators in rural Utah by upgrading, replacing, or closing existing underground tanks to comply with Federal regulations and to protect the environment.

Colorado River Basin Salinity Control Program

The State of Utah currently receives approximately \$1.5 million yearly from the Colorado River Basin States Salinity Control Forum to reduce salt that enters the Colorado River, which has increased significantly from the initial \$350,000 received in 1997. Most recently the funds have been used to pipe irrigation canals in Daggett and Duchesne counties. UDAF was approved by Reclamation to fund 2, canal to pipeline conversions, one project in Daggett and Uintah counties.

The irrigation projects installed through the salinity program are an economic benefit to agriculture in eastern Utah. The new irrigation systems increase watering efficiency, decrease water loss through seepage, and improve crop production and uniformity

Agriculture Sustainability Task Force

To better understand and address the role that agriculture plays in promoting Utah's security, economy, society, culture, and well-being, a Utah Agriculture Sustainability Task Force gathered and analyzed data and information to make recommendations to promote the sustainability of all types of agriculture. Eight major issues emerged:

1. Food Security
2. Invasive Species
3. Grazing Management
4. Immigration
5. Urban Agriculture
6. Agriculture Promotion and Profitability
7. Next Generation Farms
8. Irrigation Infrastructure

In order to address these issues, the Task Force developed a list of proposed actions which can be found at <http://ag.utah.gov/conservation-environmental.html> that state, local and federal governments and the private sector can implement. Ag sustainability and protection of natural resources go hand-in-hand.

Resource Assessments

Utah's local Conservation Districts are working in each County to prepare a county wide Resource Assessment to identify local resource concerns. In preparation for that effort, each county has prepared a list of priority resource concerns identified by the local work group, and has submitted those to UDAF.

Subsequently, UDAF has prepared a Statewide Resource Assessment which identifies all County priorities. The Resource Assessments will be one tool used to fund priority projects.

Information and Education

UDAF is willing to provide assistance to Utah agricultural groups, and fairly represent agricultural interests at the many committee meetings staff are involved with. Some of those committees include:

Utah Conservation Commission
Utah Association of Conservation Districts
Local Conservation Districts
Utah Water Quality Task Force
Utah Nutrient Core Team
Utah Animal Feed Operation Committee
Local Watershed Committees

UDAF works closely with Utah Legislators to make sure that agriculture is fairly considered in any legislation that is considered. We also maintain an up-to-date website (www.ag.utah.gov) that provides information to agriculture producers and the public.

Forestry, Fire and State Lands- Bill Zanotti

Timber Harvest:

Forestry, Fire and State Lands (FFSL) monitor timber harvesting on private and state lands within the State of Utah for the Department of Environmental Quality-Division of Water Quality. The overall goal of this monitoring evaluates the application of Utah's Forest Water Quality Guidelines (FWQG) that is in Utah's State Non-Point Pollution Prevention Plan. Protocols for conducting FWQG's monitoring have been developed for use by FFSL's service foresters.

During the SFY-2016, the following monitoring activities were completed:

- Processed 4 notifications to conduct timber harvesting activities
- Conducted 3 post-harvest inspections
- Conducted 6 pre/in progress inspections of timber harvesting activities

Forest Stewardship Plans:

Forestry, Fire and State Lands (FFSL) develop forest stewardship plans for private forested landowners and state agencies. The purpose for these plans is to encourage the long-term stewardship of important state and Private forest landscapes, by assisting landowners to more actively manage their forest and related resources. Well managed forest landscapes create a flow of public benefits such as air and water quality protection; while reducing and preventing soil erosion.

Currently there are 95 active forest stewardship plans covering 289,322 acres. Plans typical cover a 10-year period before being updated.

During the SFY-2016:

- 11 plans were written covering 31,406 acres
- 11 plans covering 72,493 acres were randomly selected for monitoring to verify implementation

Utah Geologic Survey- Diane Menuz

The Utah Geological Survey (UGS) provides timely scientific information about Utah's geologic environment, resources, and hazards. The Groundwater & Paleontology Program (GW&P), one of five programs at the UGS, conducts detailed studies on groundwater and wetland resources. Three GW&P studies during the past year relate to nonpoint source issues: watershed-based wetland assessments, impact to groundwater in the Monroe area from septic systems and agriculture, and elevated arsenic concentrations in a public-supply well in Ephraim.

GW&P has conducted watershed-based probabilistic surveys of wetland health in the Weber River and Jordan River watersheds over the past three years. Survey data included water quality samples brought back to the Utah Public Health Laboratory for analysis and observations of potential indicators of water quality stress, including turbidity and nuisance algae. A functional checklist evaluating potential ability and opportunity to improve water quality was added to the protocol in the summer of 2016. In the Weber watershed, the study was divided into six different strata based on similar ecological and anthropological characteristics, including Great Salt Lake wetlands, Wasatch Front footslopes, mountain valleys, foothills, montane areas, and the Uintas. Wetlands in the footslopes had the most indicators of potentially problematic water quality, including high levels of ammonium, nitrate, and phosphorus, and the highest percent of sites with visual indicators of problematic algae and turbidity in the water column. Potential water quality stressors were evaluated within the entire hydrologic contributing area to a site as well as within 100 m buffers surrounding sites. Great Salt Lake and footslopes' wetland were most likely to receive potential water contaminants from distant stressors via streams and canals, including agricultural runoff (100% of sites in those two regions) and impervious surface runoff and point source discharge releases (88% of sites for each stressor). Agriculture runoff and impervious surface were also relatively common in mountain valleys. Livestock grazing was the most common potential water quality stressor within wetland buffers, found at 65% of sites, though usually rated as low impact. Grazing was most common in the footslopes, foothills, and montane areas and least common in the Uintas. Potential runoff from paved and dirt roads, residential development, dikes, and off-road vehicle tracks were each found at less than 20% of sites overall. More information about wetlands in the Weber River watershed can be found online at: <http://geology.utah.gov/resources/wetlands/wetlands-publications/#tab-id-2>. A final report for the Jordan River watershed study will be available in 2017.

GW&P has completed a study on the groundwater underlying and surrounding Monroe City, Sevier County. Nitrate-nitrogen concentrations in private wells north of Monroe historically have been consistently above background level of 3 mg/L, with some wells approaching the U.S. EPA's maximum contaminant level of 10 mg/L. GW&P designed and installed four new monitoring wells having screen intervals across the water table. Analysis of 22 water samples from these new wells and existing wells and surface-water sources detected nitrate concentration ranging from below detection levels to 12 mg/L, and measurable quantities of artificial sweeteners and caffeine. The presence of a compound found only in human food, coupled with the groundwater flow direction inferred from new water-level information, indicate that nitrate contamination northwest of town is contributed mostly by private septic tank-soil adsorption system discharge. Chloride-bromide concentration ratios and historical pesticide sampling were used to determine that the source of nitrate contamination south and west of town is more likely from agricultural sources, and nitrate in some areas of the basin is from mixed sources. The

primary benefits of this project include quantifying the extent and likely sources of nitrate contamination in groundwater to provide local regulatory and management personnel a scientific basis for future groundwater protection measures.

The City of Ephraim has a public-supply well with arsenic concentrations that vary and at times exceed the U.S. EPA water quality standard of 10 µg/L (MCL), especially during higher pumping rates. The well is used intermittently during peak demand periods, and the concentrations typically decrease when the well is not being actively pumped. The source of the arsenic is unknown. As part of an ongoing study, we selected 22 wells and 1 spring for sampling. The sites were sampled during autumn 2015 and one during spring 2016; water was analyzed for arsenic for all sites. Arsenic concentrations range from non-detect to an anomalous high of 224 µg/L with a median value of 3.3 µg/L. Arsenic is a constituent derived from some agricultural, industrial, and naturally occurring sources. Agricultural sources include older pesticides, especially those applied to orchards; arsenic has also been linked to poultry manure. Industrial sources of arsenic include waste-disposal sites, some glass and electronic products, and waste rock from mining operations. Naturally occurring sources include volcanic rocks and rocks containing sulfide ores. A recent study discusses arsenic associated with poultry litter. Arsenic is present in a feed additive, Roxarsone, to help prevent parasites and to aid in increasing weight gain. By design, the birds do not store the arsenic, with 90% excreted through their system to manure. The poultry industry is the dominant agricultural activity in the area. Ephraim City noted that arsenic increased as pumping duration increased. One potential explanation for an increase in arsenic concentration through pumping with time is that the cone of depression from the pumping well creates a desaturated zone around the well, exposing arsenic sulfides to air and oxidizing them. When the well shuts off, the area is resaturated and the oxidized arsenic is mobilized in the groundwater. However, more time-series arsenic measurements are needed to substantiate this hypothesis. Another hypothesis of higher arsenic concentrations may be related a bedrock source, although, further studies need to be completed in order to test this idea; if bedrock is a non-point source of arsenic, we would expect arsenic to have a more uniform or ubiquitous concentration levels since the Green River Formation, the likely bedrock formation the public-water supply well penetrates, is the most prevalent adjacent outcrop in the area. If the source of arsenic derives from this formation, nearby wells and springs would be expected to have concentrations above non-detect levels, and this is not the case.

Utah Division of Wildlife Resources- Don Wiley

Stream Restoration Training

The Utah Division of Wildlife Resources (UDWR) invested \$34,900 in Blue Ribbon Fisheries Advisory Council and Habitat Council funds to send a biologist from each region to stream restoration training during fiscal year 2016. Given the degradation of many instream and riparian habitats throughout Utah, the need for extensive stream restoration is apparent. Currently, the UDWR restoration biologists are working to address this need by implementing projects on streams and associated watersheds throughout Utah. With proper training, more balanced staffing, and an exchange of information among trained UDWR personnel, the number of stream restoration projects undertaken annually throughout Utah can be maintained.

Statewide Coordination

The UDWR Stream Team, made up of 15 stream restoration professionals in both the UDWR Aquatics and Habitat sections, met 3 times during FY 2016 to (1) track progress of ongoing stream restoration efforts, (2) plan and prioritize upcoming FY 2017 project implementation, (3) ensure that actions were scheduled to dovetail with existing partner efforts (e.g., the Utah Department of Environmental Quality (UDEQ) Targeted Watershed schedule), and (4) discuss partnership expansion with other entities

responsible for stream restoration and water quality actions statewide (e.g., Natural Resources Conservation Service [NRCS], Utah Department of Agriculture and Food [UDAF], and UDEQ).

Northern Region

East Canyon Creek - Mormon Flat - Beaver Dam Analogs

East Canyon Creek has experienced dramatic alterations over time. During the 1900's much of the stream was heavily grazed and treated with herbicides to remove willows that impacted ecological function. In addition, historical mining also impacted water quality by releasing large amounts of phosphorus through fine sedimentation. As the area developed, additional phosphorus-laden fine sediment has been released into the watershed along with significant changes in the hydrograph associated with development. Ultimately the sediments are stored in East Canyon Reservoir. The East Canyon Creek and Reservoir TMDL list East Canyon Creek as being impaired for dissolved oxygen. Many factors contribute to this impairment and they include large scale historical riparian vegetation removal, uncharacteristically low flows during the summer, and extensive habitat and channel degradation. During FY16, several Beaver Dam Analogs were installed. The installation of Beaver Dam Analogs should maintain or enhance floodplain connectivity to reduce stream energy and store fine sediment in the upper watershed and prevent it from being deposited into East Canyon Reservoir.

Restoring Water, Trout, Sage Grouse and Riparian Areas on Working Lands Using Beaver in Box Elder County - A Demonstration Project

Local extirpation of beavers from Basin Creek has led to a severe lack of stability of the stream channel. Moderate downcutting separating the stream from its floodplain has occurred in substantial lengths of this reach. A loss of a healthy riparian corridor and its associated vegetation is beginning to occur in the area of the downcut. Invasion of weeds is currently occurring and riparian vegetation is diminishing. Beavers were re-introduced to increase local aggradation of streambed allowing floodplain connectivity throughout the reach. Aggradation and damming should raise the level of the water table to increase mesic area providing forbs, willows, and grasses to reestablish a healthy riparian. In addition, it is anticipated that water quality will improve.

Northeastern Region

Seed stabilization below Cottonwood Reservoir

Canals that are used to move water from Bullock Reservoir to Pelican Lake contribute significant amounts of sediment. In FY2016, about 20 acres of privately owned property were seeded using a soil stabilizing mix in an ongoing effort to decrease sedimentation into Pelican Lake.

Meadow Creek Stream Restoration

In the Fall of 2013, severe flash flooding occurred in Meadow Creek. This stream holds a population of North Tawaputs Colorado River Cutthroat Trout (CRCT) and is a conservation population for this species. The creek was heavily damaged and several areas were impacted with head cutting, stream bank erosion and channel alteration. In addition, the buck/rail fence that was constructed to protect riparian area from cattle grazing was damaged. This project will be completed over a couple of years. In FY16, tamarisks were eliminated from major sections of the stream corridor and willows were planted along selected areas of the stream. Materials were secured and staged along the stream for ongoing stream and riparian habitat improvements in FY17.

Central Region

Jordan River Big Bend Restoration

Habitat improvements are a key goal of the project and phasing the project's construction will reduce potential impacts to the site's current wildlife population. Phasing the project will limit the amount of area that will be disturbed at any one time. Portions of the site will be left undisturbed during the initial phases of construction to provide habitat. This undisturbed area will include leaving existing Russian olives in place until the new native vegetation grows in to provide habitat for migratory song birds. The phased approach will also provide additional lead time for several aspects of the project that may take significant time to complete.

This phase was implemented in FY16 as a pilot riparian habitat tree and shrub planting. The results of the success of specific plant species will help guide the development of other plantings on the site. The design of these pilot plantings has been guided by previous work that has been completed on other restoration sites and by selecting plants that have been observed in native and undisturbed areas along the Jordan River. Twelve plant species have been selected based on their natural features in relation with the soils and groundwater on the Big Bend. Significant amounts of trash and debris along the Jordan River through the project reach was removed. This material had accumulated over time from agricultural/industrial uses, debris floating down the river and transient populations migrating through the site. Removing the material prior to planting of native species will reduce the impacts to the planted areas and allow for native vegetation to become established.

Tie Fork Stream Crossing

Soldier Creek is currently on the 303d list for impaired watersheds. The Soldier Creek Watershed Assessment completed by the Forest Service identified Tie Fork as a major contributor. A reduction in sediment from watershed enhancement projects would move the watershed toward desired conditions. The Soldier Creek Watershed Assessment and the TMDL study indicated that sediment from this road needs to be reduced by improving stream crossings or relocating the road out of the drainage bottom. During FY16, materials were purchased (roadbase, gravel, and rip rap) and a large culvert was placed at one road crossing in Tie Fork.

Wheeler Fire Rehab

The Wheeler Fire burned approximately 640 acres of land southwest of Deer Creek Reservoir. The majority of the fire burned on private property with only 160 burning on USFS property. The burn severity across most of the fire was low with the exception of approximately 220 acres. The severity was much higher in this area and will require seed application to help re-establish vegetation on those slopes. The high burn severity areas occurred on steep south facing slopes. With these conditions, revegetation will be slow and would most likely be cheatgrass dominated. Re-seeding these areas will help prevent the area from becoming weed infested and will slow down erosion on the steep slopes. The project area was seeded with a mix of grasses, forbs and shrubs. The majority of the area was seeded with a helicopter. The areas that were seeded were areas of high intensity burns and on steep rocky slopes. The other areas that were seeded were the fire lines and areas of high disturbance due to fire suppression activities.

Strawberry River

During FY16, over 2,440 feet of fabric was installed to reduce erosion and allow the riparian plant species to grow. In addition, weeds were sprayed and 6,800 willow container stock, 6,000 pole cuttings, 1,000 willow bundles, and 1,000 carex plugs were planted to improve water quality.

Southeastern Region

Whiskey Creek Stream Restoration

The Whiskey Creek drainage affects water quality in Eccles Creek, which is the receiving stream, and Mud Creek and Scofield Reservoir further downstream. Eccles Creek is protected as a drinking water source and a cold water fishery. Scofield Reservoir has been listed as an impaired water body for phosphorus and dissolved oxygen. Phosphorus may adhere to soil particles in suspension or be in solution in the water. Total phosphorus was measured in Whiskey Creek during a single summer precipitation event at 8.3 mg/L. The upper reaches of Whiskey Creek and surrounding slopes were surface coal mined in 2001-2003. Canyon slopes were logged in 2008 - 2010. Excessive sediment being contributed to Eccles Creek from erosion of the Whiskey Creek Channel was partially controlled by mine reclamation work at the head of the canyon completed in 2001 and 2012. However, there remained an area outside of the mining permit boundary that is contributing large amounts of sediment to Eccles Creek. In particular, a culvert placed at a road crossing has become clogged with sediment, forcing the Whiskey Creek flows to leave the channel and run down the road in eroded gullies. During FY16, a blocked culvert in Whiskey Creek was removed and an armored swale was created. Water bars were installed along a 0.25 mile steep length of logging road and drop structures above and below the swale will capture sediment and reduce stream velocity. The completion of this project will reduce additional contributions of suspended solids to Eccles Creek.

Eccles Creek Culvert Removal

About 400 feet of culvert pipe was buried and Eccles Creek, a tributary to Mud Creek and Scofield Reservoir was restored to a natural condition on top of the culvert. This project will add about 1.5 miles of habitat for native cutthroat trout. This project will help reduce erosion from high velocity flows that were once in the culvert. Reducing erosion will help reduce phosphorus loading in Scofield Reservoir that has been identified in the Scofield Reservoir TMDL.

Helper City Revitalization Phase II

The second phase of this project removed the abandoned diversion structure upstream of Janet Street. Two natural boulder grade control structures replaced the removed steel pile-on. These structures were hydraulically designed specifically to pass bluehead sucker. The structures were designed to meet maximum vertical distances between upstream and downstream water-surface elevation of one foot to facilitate fish passage. The construction also provides a holding pool between the two instream structures. Phase II of the Helper City Revitalization Project accomplished the following restoration work laid out in the Helper City River Revitalization Concept Study: Remove one grade control/diversion structure to improve fish passage, remove 0.1 acres of invasive species, staking of native willows and reseeded disturbed lands, improve 200 linear feet of bank stabilization and flood protection, restore 100 linear feet of streamback, and restore 0.15 acres of in-channel aquatic habitat, and restore 0.15 acres of instream channel habitat.

Gordon Creek Erosion Stabilization

The Gordon Creek Wash has been eroding for years, but erosion has increased significantly due to the 2012 Seeley Wildfire. Gordon Creek Wash is severely entrenched and has 20-30 foot dirt walls. Every rain event large chunks of the bank fall (5-6 feet) into the wash. In FY16, heavy equipment was used to excavate a new channel and build the new erosion control structures. In addition, container stock trees were planted in the back fill area and seeded with an upland seed mix.

Farm Creek - Post Fire Seeding

A small fire in the area burnt cottonwoods that are essential to a healthy riparian system. As part of this project, the Utah Division of Forestry, Fire and State Lands and Grand County sprayed re-sprouting tamarisk. The UDWR and volunteers used harrows and a broadcast seeder to spread the seed and incorporate into the soil. The removal of tamarisk and proper management should result in healthy riparian area that will assist with improvement of water quality.

McMillan Spring Phase III

Pinyon-juniper were removed within the project area to reduce a high risk fire condition to a properly-functioning condition with a natural fire regime. Following the removal of pinyon-juniper, the area was aerial seeded to increase forb diversity. This project should increase the watershed health by removing encroaching pinyon and juniper out of the under-story of the ponderosa pine. Areas dominated by pinyon-juniper produce limited understory vegetation and the bare soil interspaces are prone to soil loss by erosion. Herbaceous vegetation is important in impeding overland flow and is effective at reducing soil erosion. Both the potential increase in herbaceous vegetation and the masticated tree material should help stabilize the soils by reducing erosion and protect the water quality throughout the watershed.

South Bookcliffs Vegetation Improvement (Hay) Phase III

The sagebrush habitat on the South Bookcliffs is becoming degraded due to encroaching pinyon and juniper. Areas where trees have become dominant, they have out competed understory species for light, moisture, and nutrients. This eventually results in a loss of many understory species. The lack of understory species will deplete the native seedbank, increase soil erosion, and increases non-native weed invasion (cheatgrass). Excessive fuel build up can result in catastrophic wildfires, which further degrades the habitat and increases the likelihood of cheatgrass expansion. Removing some of the pinyon and juniper and seeding with perennial species can improve the degraded sagebrush communities. It will ensure the seedbank maintains desirable species, reduces the chances of catastrophic wildfires, and decrease the risk of weed invasion. During FY16, a bullhog was used to masticate juniper and pinyon trees. The project area was seeded with grasses, forbs, and shrubs.

Southern Region*Pine Lake Fencing - Coop project with Dixie National Forest to keep livestock off Pine Lake Shoreline*

Pine Lake, located on the Dixie National Forest near Bryce Canyon National Park, is a very popular fishing, camping and outdoor recreation area with an adjacent Forest Service campground, restrooms and ATV services. The UDWR owns the dam and water stored in Pine Lake and operates the area under a Special Use Permit with the Dixie National Forest. The UDWR operates and maintains a diversion structure on Clay Creek that diverts water via a buried pipeline into Pine Lake, which keeps the lake full, creates water circulation and helps reduce winter kill of trout in the lake. The diversion grate often clogs with rock, gravel and debris, preventing water flowing into Pine Lake. The diversion pipeline runs along Clay Creek and over to the lake. The stream bank has eroded and exposed a 40 feet long section of plastic pipeline that could easily be damaged in a flood event. The diversion structure needs some modifications and improvements to prevent clogging of the grate and rock needs to be installed along the stream bank to prevent damage to the pipeline. Around 1998, in cooperation with the Dixie NF, the DWR constructed a three rail and barbed wire fence surrounding all of Pine Lake. The main purpose of the fence was to prevent livestock from grazing adjacent to the lake to protect the riparian zone. The fence has had maintenance completed over the years, but lately livestock are finding their way inside the fence enclosure and cannot be kept out. The fence was repaired in FY16. The upgraded fencing will

prevent livestock grazing around the shore of Pine Lake. In addition, a two rail lodge pole fence was constructed to discourage ATV use in an effort to protect stream and meadow habitats.

Otter Creek Riparian Fencing

There is a Division of Water Quality TMDL for the watershed and this project will contribute to improving water quality in Otter Creek and downstream in Otter Creek Reservoir. The riparian zone is part of the surrounding 12,600 acre South Narrows Allotment with 706 AUMs. The allotment is currently being grazed from Oct 1 thru June 30 (winter/spring allotment). The riparian zone receives substantial grazing pressure from cattle during the season of use. Little herbaceous height remains at the end of the grazing period. There are very few willows and other woody riparian species present along the stream, which historically would have occurred. Grasses and sedges do well in the stream bottoms because no or little grazing occurs from July 1 - Dec 1 of each year, however, aquatic and riparian habitats are considered to be in only fair condition and could be greatly improved with over-hanging woody vegetation (willows), more stable undercut banks, woody debris and reduced bank trampling and nutrient inputs from livestock. During FY16 about 19,000 feet of fence along 1.7 miles of Otter Creek was completed fencing in about 60 acres of riparian habitat.

Southern Region Riparian Restoration

Beavers have been removed from many drainages and watersheds where they have historically occurred. Beavers contribute important benefits to watersheds such as recharging and raising ground water tables, improving riparian vegetation, expanding wetlands, slowing flood waters, reducing erosion, improving water quality, providing habitat for aquatic species and other wildlife, and providing more biodiversity to the landscape. During FY16, beavers were relocated to Chalk Creek, Moseman Lake, Chriss Lake, and Shingle Creek.

Planting riparian trees and shrubs

One key factor to stream enhancement projects being successful is establishing woody riparian vegetation. Woody riparian vegetation helps to stabilize stream banks, create in-stream habitat, provide food sources for fish and wildlife, as well as providing other benefits for birds and wildlife species. Stream enhancement projects are typically planted the spring after completion, but often success is lower than desired and additional plantings are needed to achieve desired vegetation density and diversity. A lack of manpower and time to adequately plant everywhere, low precipitation, improper planting, and other factors cause less than desirable establishment of riparian trees and shrubs. Numerous stream enhancement projects have been completed within the southern region over the past decade. All of these projects have been reseeded and had many hours spent planting woody riparian vegetation. However, there are always areas that need additional planting of willows and other woody riparian plant species to continue improvement of aquatic and riparian habitat. There are also other areas along streams where the BLM, USFS, or private landowners have removed livestock that would benefit from planting riparian vegetation. In FY16, planting additional riparian trees and shrubs occurred on sections of the Sevier River near Hatch, East for Sevier River in Kingston Canyon, Otter Creek above Angle, and the Beaver River below Minersville Reservoir. Maintaining healthy riparian areas would help to achieve water quality and beneficial use goals cited in the Otter Creek – East Fork Sevier TMDL Study.

Lower Beaver River Restoration Project

The lower Beaver River is a very popular recreation area for fishing, camping, hunting, wildlife viewing, and picnicking, especially for local residents. Additionally, the BLM is developing the area as a destination recreation area with vaulted toilets, parking areas, picnic tables, dispersed camping and

hiking trails. However, invasive tamarisk and Russian olive dominate the river corridor. Overgrazing has caused the stream banks to be characterized by vertical, eroding, and bare dirt. The poor habitat is currently thought to be the limiting factor for trout in the stream. Improving the aquatic and riparian habitats would help trout survive and provide improved recreation opportunities for the public.

During FY16, heavy equipment was used to haul rock, install rock and log structures in the stream, slope streambanks and remove pile Russian olive and tamarisk trees. Bare root tree, shrubs, and willow stakes were planted along the stream and any remaining or resprouting Russian olive and tamarisk trees were chemically treated. In addition, a fence was constructed around the project area.

Solitude Fire Revegetation Project

The Solitude Fire burned in the Summer of 2015. It was started by a lightning strike on July 17, 2015. This burn was monitored for several weeks by the Fillmore Forest Service Office. The area of burn was high elevation of mixed conifers, mountain brush, seral aspen, oak brush and mountain sagebrush communities. In cooperation with the USFS, the UDWR assisted with the reseeding following the fire. This should minimize the domination of noxious weed species in the area and reduce erosion by stabilizing the soil with perennial grass, forbs, and shrubs.

North Canyon Revegetation Project

Prior to this project, mature stands of Pinyon-Juniper trees were present with little to no grass or forb understory. Removal of these trees will allow for increased understory of grass and forb development, that will benefit wintering deer and elk in the area and also livestock utilization, improving watershed range conditions reduce soil erosion and increased forage carrying capacity. This area was chained previously and is becoming very thick a late phase II to early phase III type pinyon-juniper stand. During FY 16, two (2) D-8 cats to pulled an Ely anchor chain on the first pass and on the second pass a smooth anchor chain was used. In between chaining, the project was aerial seeded with a mixture of grasses and forbs. By establishing healthy rangeland conditions, soil erosion will be reduced.

FEDERAL AGENCY CONTRIBUTIONS

The original MOUs between the Department of Environmental Quality and the Forest Service and the Bureau of Land Management were executed in 1992. These MOUs have been reviewed and were revised in 2009. In FY-2015 these agencies began reviewing this MOU and a newly updated MOU is anticipated to be in place by the spring of 2017. The following entities will be part of the newly revised MOU: Forest Service, Bureau of Land Management, National Park Service, Utah Department of Agriculture and Food, Division of Forestry, Fire and State Lands, Utah Division of Wildlife, and DEQ – Division of Water Quality. The MOU is to be reviewed and updated as needed every 5 years.

Natural Resources Conservation Service- Norm Evenstad

NRCS employees work in partnership with land users to conserve natural resource on private lands. These employees are distributed among 26 field offices and 2 area offices that cover the state of Utah. The individual field offices are managed by District Conservationists who may cover multiple offices. NRCS employees along with Utah Association of Conservation District (UACD) employees report progress on activities in the USDA-NRCS performance results system, which is the basis for the following information.

Financial and technical assistance was provided to land owners, sponsors & managers in Utah during FY2016 through the various USDA-NRCS programs. One Comprehensive Nutrient Management Plan (CNMP) was written in FY2016.

Non-Point Source/Water Quality related practices:

The results shown in the table G in the appendices shows all the conservation practices planned and applied during fiscal year 2016. A number of the practices listed have direct & indirect water quality benefits, that as a whole, can show overall positive benefits for surface and ground water quality.

NRCS Water Quality Initiative (NWQI) 2016

The NRCS National Water Quality Initiative (WQI) establishes priority watersheds nationwide to help farmers, ranchers and forest landowners improve water quality and aquatic habitats in impaired streams. NRCS offers producers an opportunity to implement conservation and management practices through a systems approach to control and trap nutrient and manure runoff. Qualified producers can receive assistance for installing conservation practices such as cover crops and filter strips.

For FY2016, NRCS and the Utah Division of Water Quality recommended projects in the Hillsdale watershed located on the Upper Sevier River and the Lower Main Creek and Little Hobbie Creek watersheds located in Utah County.

Partners sometimes offer financial assistance in addition to NRCS programs. Practices planned with WQI assistance may include: Waste Storage Facility, Pond Sealing/Lining, Solid/Liquid Waste Separation Facility, Waste Transfer, Pumping Plant, Fence, Irrigation System, Sprinkler, Pumping Plant, Structure for Water Control, Irrigation Pipeline, Forage and Biomass Planting, Obstruction Removal, Nutrient Management, Irrigation Water Management, Riparian Herbaceous Cover, etc.

NRCS will continue to coordinate with local and state agencies, conservation districts, nongovernmental organizations and others to implement this initiative. This strategic approach will leverage funds and provide streamlined assistance to help individual agricultural producers take needed actions to reduce the flow of sediment, nutrients and other runoff into impaired waterways.

U.S. Forest Service- Mark Muir

The Forest Service, an agency of the U.S. Department of Agriculture, manages National Forest System (NFS) lands across the country. All or a portion of six National Forests are in Utah. These public lands are managed by staff at Forest Supervisor Headquarters and Ranger District offices throughout the State, with support from the Intermountain Regional Forester's office in Ogden, UT.

High-quality water is one of the most important natural resources coming from these NFS lands. In addition to providing drinking water and other municipal needs, this water sustains populations of fish and wildlife, affords recreation opportunities, and provides supplies to meet downstream agricultural and industrial needs throughout the State.

Non-point source pollution control is a key component of managing NFS lands for high-quality water. Direct control is accomplished through two primary mechanisms:

- prescription, implementation, and monitoring of best management practices (BMPs) for a variety of land use and management activities¹, and
- implementation of watershed improvement projects.

Additionally, direct non-point source pollution control may occur after wildfire if burned area emergency response (BAER) assessments prescribe the implementation of treatments designed to mitigate fire effects.

Indirectly, the Forest Service provides for non-point source pollution control through sustaining or restoring watershed function and resilience so that NFS lands are resistant to catastrophic events such as fire, insects and disease, and a changing climate.

In 2016 the Forest Service continued implementation of a national Best Management Practices (BMP) program that provides a standard set of core BMPs² and a consistent means to track and document the use and effectiveness of BMPs on NFS lands across the country. These core BMPs integrate individual State and NFS regional BMPs under one umbrella. They are general and non-prescriptive and will not change the substance of site-specific BMP prescriptions. Site-specific prescriptions will continue to be based on State of Utah BMPs, the Intermountain Region Soil and Water Conservation Practices (SWCP) handbook, Land and Resource Management Plan (LRMP) standard and guidelines specific to each of the six Forests, annual BMP monitoring information, and professional judgment.

The national forests in Utah, in addition to their long-standing use of State BMPs, the SWCP handbook, Forest Plan guidance, annual BMP monitoring, and professional judgment, are using these national core BMPs in project planning, design, and implementation. Implementation and effectiveness monitoring by individual personnel and interdisciplinary teams is a core part of Forest Service best management practices. In 2016, all the forests in Utah completed 4-6 BMP monitoring evaluations with interdisciplinary teams. Results of the reviews will be entered into a national database, which over time will help demonstrate and document the effects of implementing BMPs for different activities across the region and country.

In 2016 the Forest Service continued implementation of the Watershed Condition Framework (WCF)³. Forests within Utah continued implementation of integrated (essential) projects identified in priority watershed restoration action plans written in 2011. These projects are specifically designed to improve or maintain watershed health, including the reduction or elimination of non-point source pollution. During 2016, work continued on priority watersheds as well as additional watersheds throughout the state. Forests completed watershed improvement projects that directly improved watershed conditions. The type of direct watershed improvement work varied but included projects such as road and trail re-routing or decommissioning, recreation site restoration, gully control, spring and riparian area protection, and stream or wetland restoration. Additional projects were implemented that will have an indirect effect on sustaining and restoring watershed function and resilience, such as fuel reduction, aquatic habitat improvement, invasive plant treatment, and forest and rangeland vegetation improvement (See Table 1 for a summary of Watershed Improvement acres in Utah).

¹ For example, motorized and non-motorized recreation, leasable and locatable minerals, range management, timber management, special uses permitting, wildlife and fisheries habitat management

² http://www.fs.fed.us/biology/resources/pubs/watershed/FS_National_Core_BMPs_April2012.pdf

³ <http://www.fs.fed.us/publications/watershed/>

Table 6. Watershed Improvement Projects Completed on National Forest System lands in fiscal year 2015 (October 1, 2014 – September 30, 2015).

Forest	Soil and Water Acres Improved	Soil and Water Acres Improved with Partners*	Total Acres Improved
Ashley	2,478	19	2,497
Dixie	2,832	1,592	4,424
Fishlake	15,430	5	15,435
M-L	1,300		1,300
U-W-C	8,576	1	8,577
Total	30,616	1,617	32,233

* Acres improved with partners include a mix of National Forest System (NFS) and external funds.

In addition to BMP implementation/monitoring, and watershed restoration activities, Forest Service (BAER) teams assessed fires that burned in Utah on NFS lands that had potential effects on life and property, long-term soil productivity, and water quality. Common recommendations for burned areas included Early Detection, Rapid Response (EDRR) treatment of noxious and invasive plants, seeding and mulching of hillslopes with moderate to severe soil burn severity, and road or trail drainage improvement projects.

Per the Memorandum of Understanding (MOU) between the State of Utah and federal agencies, a federal consistency review of activities and conditions on NFS lands occurred on the Fishlake National Forest in 2016. Personnel from the Utah Division of Water Quality and BLM joined Forest Service personnel for field reviews of various projects, including watershed improvement work done in the Fishlake area and UM Creek/Fremont river drainages. Projects reviewed on site included aspen regeneration treatments and protection measures, fuels reduction treatments, stream crossing/aquatic habitat improvements, and riparian and wetland protection fences and pastures. Federal consistency reviews are a useful opportunity for coordination and collaboration on nonpoint source protection issues between the state and federal agencies, and are planned to continue on a different forest each year in Utah.

Bureau of Land Management (BLM)- Jeremy Jarnecke

BLM manages of approximately 23 million acres of Utah's public lands with the mission to: *'sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.'* BLM manages lands and resources through a multiple-use framework that provides for a variety of uses including; energy & mineral development, livestock grazing, recreation, and timber harvest, while protecting cultural/ historical properties, water resources, wildlife, and other natural resources.

To better address watershed conditions, water quality, and to develop watershed improvement projects, BLM UT has established zone/district Hydrologists/Soil Scientists for all areas of UT. Currently, the agency has watershed staff in Moab Field Office, Richfield Field Office, Cedar City Field Office, Price

Field Office, and the West Desert District (Fillmore and Salt Lake Field Offices), and is in process of filling a vacancy in the Vernal Field Office.

Utah BLM continues to implement land and watershed improvement projects to benefit water quality through a variety of programs and partnerships including BLM's Clean Water and Watershed Restoration (CWWR) Program, BLM Healthy Lands Initiative, State of Utah Watershed Restoration Initiative, the Bureau of Reclamation Salinity Control Forum, and many local watershed groups. These efforts include implementation of watershed improvement projects designed to improve land health and reduce long-term erosion and sedimentation rates. Specific watershed improvement based activities are discussed below by Field Office or Management Unit.

Price Field Office

UDWR, USU, and the BLM continued implementation and monitoring of the 2013 San Rafael Restoration and Monitoring Plan. In 2016 several activities occurred related to San Rafael River restoration implementation and monitoring, as described below.

Instream restoration

Canyon Country youth corps were contracted to help with riparian plantings (see below). The crews completed plantings earlier than expected and were thus able to complete beaver-dam analogue (BDA) repair and maintenance on two sections of the river. Crews built or maintained about a dozen structures.

Riparian planting

Canyon Country youth corps were contracted to plant cottonwood and willow saplings in the Moonshine Wash area of the San Rafael River. Tamarisk removal had taken place in this section in February 2015, but no recruitment of cottonwood trees was observed in the project area. Thus, plantings were undertaken to promote cottonwood regeneration in the project area. The crews worked for about one week and planted over 500 cottonwood and willow trees.

Monitoring

Several monitoring programs continued in the reporting period, including surveys of habitat around installed BDAs and gravel bars to track changes in fish habitat following restoration and several high flow events, surveys of channel change around BDAs, and bed sediment surveys to map movement and distribution of added gravel. Results from these monitoring efforts have indicated local improvement in habitat around BDAs and that gravel is continuously moving through the channel and if captured and exposed, can provide important fish habitat. In addition, the location of all planted cottonwood trees was mapped, and all trees were measured for condition, height, and diameter, which will allow tracking of survival rates and growth rates over time.

In 2016, restoration efforts have continued to help improve channel and riparian habitat in the San Rafael River. In addition, monitoring activities have provided important lessons for future implementation on the San Rafael and nearby rivers. Indeed, lessons learned are already being transferred to other river systems in the region through a recently completed, including the Dolores River, where managers have used the San Rafael restoration plan as an example for planning restoration activities, and the Price River, where successful habitat restoration activities from the San Rafael will be used to improve habitat in the near future.

Additional monitoring is planned for the next reporting period. In particular, habitat and geomorphic surveys will be conducted to determine the degree of channel change around BDA structures over the

high flow and summer monsoon periods. Cottonwood plantings will also be surveyed for survival, as the river did dry completely during the summer period. In addition, we will be hosting a tour of the San Rafael River restoration project for river management personnel throughout the southwest as a demonstration project for how restoration can be planned and implemented in desert rivers.



Picture of Canyon Country Youth Corps personnel installing BDA structure.

Grand Staircase Escalante National Monument (GSENM)

Since 2014, GSENM has received funding from BLMs Salinity Program to reduce salt loading to the Colorado River and tributaries originating on BLM lands. In support of this program GSENM is in process of rehabilitating sediment retention structures that were established in the 1950's and 1960's on the landscape below saline soils. Renovations typically include dam/spillway repair, headcut stabilization, sediment removal and upland stockpiling/stabilization, and removal of non-native & invasive vegetation. In 2016, work was completed on six structures. This work included removal of nearly 10,000 tons of salt-laden sediments and ~320 tons of salt from the retention structures and drainage system.



Eight Mile Impoundment pre-excavation (2014)



Eight Mile Impoundment post Excavation (2015)



Eight Mile Impoundment with water (2016)

BLM Moab Field Office

The BLM Moab Field Office completed a number of implementation and research/monitoring projects to address and better understand non-point pollution. Many of these projects rely heavily on well-established and productive partnerships with non-government organizations and working groups such as the Moab Area Watershed Partnership, the Delores River Restoration Partnership, Southeast Utah Riparian Partnership, and the La Sal Sustainability Collaboration.

Vegetation Inventory & Monitoring

BLM staff helped to develop an extensive monitoring program for the La Sal Sustainability Collaboration. This group is focused on improving grazing strategies for a single rancher who manages multiple grazing allotments on BLM and USFS lands. A comprehensive monitoring plan is almost complete and includes water quality monitoring (both chemical and biological), riparian assessments, streambank stability studies, MIM transects and upland vegetation monitoring. BLM is working with a variety of state, federal and non-profit partners to accomplish this monitoring.

As part of the Moab Area Watershed Partnership collaboration, MIM studies were established on both Mill Creek and Castle Creek in anticipation of 2017 vegetation treatments. Removal of the invasive Tamarisk and Russian Olive trees is ongoing in these watersheds, and can be impacting to the stability of stream banks.

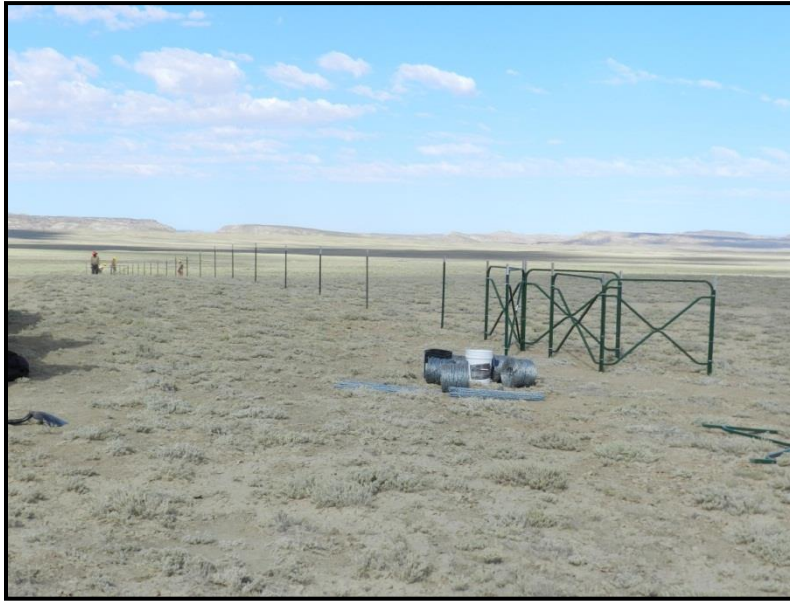
The Seven Mile wetlands area is located in the Seven Mile Wash, part of the Courthouse Wash Watershed. This area has a large native plant component, with clumps of non-native trees scattered throughout the area. Prior to any vegetation treatments, a monitoring project has been initiated in this area. Baseline data was collected in 2016 including data from 4 shallow water wells, 2 sampling events for macro-invertebrates and terrestrial insects along 4 transects, vegetation transects, water quality sampling at an upper site and at a lower site. Vegetation removal began this fall and will continue for several years. Monitoring efforts will be repeated over the length of the project to determine any short term impacts.

Grazing Exclosure Project

The Moab Field Office includes 315,000 acres of moderately saline soils, mainly derived from the Mancos Shale Formation. In order to better understand the range of impacts from different grazing systems on saline soils, the BLM has been constructing grazing exclosures and conducting baseline data

collection efforts adjacent to existing long-term range study sites. We are collaborating with USGS, to collect and analyze soils and vegetation data from both inside and outside these exclosures.

The Moab Field Office manages an ongoing grazing exclosure project related to saline soils and long term monitoring efforts. The overall goal of this project is to quantify impacts from grazing actions on moderately saline soils including increased erosion rates, decreased vegetation cover, decreased nutrient cycling and increased salinity loading to the Upper Colorado River Basin.



Grazing exclosure in moderately saline soils

Protection Fencing in Ten Mile ACEC

The Ten Mile Wash Area of Critical Environmental Concern (ACEC) is located northwest of Moab and drains into the Green River. This 5,000-acre area contains perennial and intermittent stream flows that maintain ecological diversity in both upland and riparian zones. Ten Mile Wash is subject to extreme flooding, increasing potential safety hazards to vehicle and camping activities. The potential for floods is great because the Ten Mile Wash watershed basin drains 176,000 acres. The canyon bottoms are filled with moderately saline soils which are extremely mobile and are redistributed during flood events.

The Moab Field Office, through partnership with American Conservation Experience (ACE), completed monitoring of 5,000 acres within the Ten Mile ACEC. Trespass cattle and illegal off road travel are impacting the ecological values of the ACEC. These management issues are compounded by moderately saline soils that occur throughout the canyon bottom. This effort included documentation and monitoring of watershed conditions, fencing repair, and identification of areas that would benefit from additional fence construction. This is in a very remote area with little vehicle access, so all materials and tools are hand carried to each site.



Spring fed pool in Ten Mile Canyon ACEC

Other Projects

BLM staff implemented several projects in 2016 that were designed to reduce non-point source pollution. These projects include watershed improvements in the Mill Creek Watershed, maintaining riparian grazing exclosures and revegetation efforts subsequent to removal of invasive plant species such as Tamarisk.

Watershed improvements in the Mill Creek Watershed are funded by multiple partners including BLM, UWRI, UDWQ and Moab Solutions (a local non-profit organization). Work included closing duplicate hiking trails, daily garbage clean-up in heavy recreation use areas, seeding trampled areas and treatments to control the invasive riparian Ravenna Grass.

The Moab Field Office conducted 3 riparian restoration projects along the Colorado River Corridor. These projects received funding from multiple partners including BLM, UWRI, Utah State Lands, and The Nature Conservancy (TNC). Restoration actions included removal of invasive Tamarisk trees, herbicide treatments on secondary weeds such as Russian Knapweed and Kochia, and planting locally-sourced native plants at previously treated sites. The plantings were maintained by weeding and watering throughout the year, and are showing great survival rates.

The Moab Field Office maintains many riparian and spring protection fences throughout the field office. Many of these fences need regular repairs as they are susceptible to flash flooding damage. By keeping these fences in good condition, riparian conditions and stream bank stability conditions are improving at these sites, and improve downstream water quality conditions.

Richfield Field Office

Otter Creek is an important stream system managed by BLM in Central Utah. The BLM managed segment of this stream currently has a pretty good brown trout population and good numbers of southern leatherside chub and non-native game fish (brown trout). In addition to the fishery resources, Otter Creek exclosures include a substantial valley-wide wetland-riparian system. This riparian area serves as

brood rearing habitat for greater sage grouse. The stream bottoms and riparian meadow system are part of the surrounding 12,600 acre South Narrows Allotment. Livestock grazing occurs from Oct 1 thru June 30 (winter/spring allotment).

In 1977 the BLM constructed 3 riparian/stream exclosures along lower Otter Creek. A total of 5.1 miles of stream and about 260 acres were included in the fenced exclosures. The 3 exclosures were later used in a study on the effects of different livestock grazing regimes on vegetation, stream characteristics and fisheries. After the study concluded, grazing within the 3 exclosures was managed under a rest/rotation system. Over the years, the fences degraded and lost functionality for managing livestock. As a result, livestock had access to the valley bottoms & stream/riparian areas throughout the entire grazing season.

In 2016, BLM repaired/reconstructed the exclosure fences to improve livestock management and improve riparian/stream conditions. The goals of the exclosures and increased management capability include re-establishment of willow species & overbank vegetation, reduced livestock impact on streambanks and floodplain surface, increased riparian residual vegetation height to benefit sage grouse, and overall improvement of riparian/stream conditions. The BLM is also partnering with Utah State University and Utah DEQ to develop a stream restoration plan for out-year implementation.



Spring fed pool in Ten Mile Canyon ACEC

BLM Healthy Landscape Initiative (HLI) and Utah Watershed Restoration Initiative (WRI)

Utah BLM is in its twelfth year of cooperative implementation of the statewide Utah Watershed Restoration Initiative through its participation in the Utah Partners for Conservation and Development. This is a multi-agency Federal, State, and private partnership treating lands for watershed improvement and long-term habitat restoration. Funds are contributed by partners, including non-governmental organizations and wildlife groups. Projects are submitted and prioritized by regional teams prior to submittal for final approval and funding by the statewide oversight team. BLM funds primarily come through the Wildlife, Fuels, and Healthy Lands Initiative programs. Moab BLM continues

to participate in the agreement with the Delores River Restoration Partnership, which has multiple NGOs, private, BLM, and other federal partners focusing efforts on the Delores River.

Under the HLI/WRI program, over 55,000 upland acres, 5,844 acres of aquatic-riparian areas, and 294 stream miles were treated on BLM Utah managed lands in 2016 through this program. Treatments include riparian restoration, tamarisk and Russian olive removal, sagebrush restoration (Dixie-harrow and seeding), removal of juniper through bullhog and hand thinning methods, wildlife and rangeland seeding, cheatgrass treatment and reseeding degraded rangelands, and other similar projects. The Utah Division of Wildlife Resources website has interactive maps and project descriptions: <http://wildlife.utah.gov/WRI/>

Table I in the appendices shows a tally of the projects completed during FY 2016. These are interagency funded projects and funding for most projects is based on the state fiscal year so some of these were actually started in the fall of 2015. More information can be found searching the database utilizing the project number and various report features.

U.S. National Park Service- Rebecca Weissinger

The National Park Service is a significant land manager of 2.1 million acres in Utah, or about 3.9% of the state, and hosts 12 million visitors per year. National Park System units have a dual Congressional mandate to preserve natural and cultural resources and to provide for their enjoyment by the public in such a manner that will leave them unimpaired for future generations. There are 13 National Park System units in Utah. On-going water quality monitoring, in cooperation with the State of Utah, occurs at seven of these National Park units. In addition to routine water quality monitoring, sampling for pesticides, wastewater indicators, pharmaceuticals, and personal care products also occurred at four national park units in Utah in cooperation with the Environmental Protection Agency and U.S. Geological Survey.

In 2016, the National Park Service and USGS completed a study to investigate mercury bioaccumulation in Lake Powell, Glen Canyon National Recreation Area. The study collected detailed, multi-parameter limnological profiles from 24 sites throughout the reservoir and water, sediment, and biological samples from 13 sites, including the San Juan and Escalante River. The samples were analyzed for a multitude of geochemical and microbiological constituents to evaluate the processes driving the mercury accumulation in striped bass and the consumption advisory issued for the southern portion of the reservoir.

Glen Canyon National Recreation Area continued an extensive quagga mussel containment effort focused on educating boaters to clean, drain, and dry their equipment after exposure to Lake Powell, which is infested with quagga mussels. The program is a cooperative effort with Utah and Arizona. The NPS made nearly 200,000 direct boater contacts and used many other outreach and regulatory control approaches. The effort has been highly successful; out of hundreds of thousands of vessel launches on Lake Powell in 2016, less than 4 vessels have been identified that did not follow the laws and prescribed procedures.

A cooperative effort with Utah Division of Water Quality to resolve *E. coli* contamination in the North Fork Virgin River upstream from Zion National Park continued in 2016. Several agencies and landowners were involved seeking a solution to high levels of *E. coli* carried into the stream by irrigation return flows. Possible solutions including changes in livestock and irrigation management are being tested, and installing a more efficient pressurized irrigation system is being considered but high costs are a major hurdle. In 2016 one irrigator chose not to irrigate or run livestock on his lands, while adjacent BLM

pastures were irrigated for only a few weeks before storms rendered the irrigation ditches inoperable. As a result, monitoring on thirteen sample dates in 2016 showed a considerable reduction in levels of *E. coli*. BLM installed a hiker passage through a fence to solve chronic problems with a gate being left open that permitted livestock trespass.

The National Park Service continued treating non-native tamarisk trees and herbaceous non-native invasive plants at priority sites in the riparian corridors of the Colorado and Green Rivers in Canyonlands National Park. The primary benefits of this project include creating better visitor experiences, reducing fire risk in river campsites, preserving biodiversity by decreasing risk of fire spreading into native tree stands, and the gradual replacement of beetle-impacted tamarisk stands with native vegetation. Indirect benefits include overall reduced erosion of bank sediments into the river as fire frequency and fire size is reduced.

Capitol Reef National Park continues to cooperate with the Utah Division of Water Quality in their *E. coli* monitoring program. Four sites in the park, and several sites upstream, are being monitored through the state's citizen science program.

FEDERAL CONSISTENCY REVIEW AND NPS PROJECT TOURS FOR FY-16

During FY-16, DEQ continued to use a combination of approaches to work collaboratively with federal land management agencies and others to promote federal consistency with the State NPS Pollution Management Program. As part of this program, tours of projects implemented by federal agencies are organized every year. The following is a summary of a tour that took place in the Fish Lake National Forest and surrounding area.

Utah Federal Consistency Review

Location:

Fish Lake National Forest and Surrounding Areas
October 5th-6th, 2016

Participants:

Jim Bowcutt (UDEQ), Carl Adams (UDEQ), Scott Daly (UDEQ), Mark Muir (USFS), Adam Solt (USFS), Bill Zanolli (UFFSL), Mark Dean (BLM), Larry Greenwood (BLM), Brant Hallows (NRCS), Jason Bagley (UDWR), Clint Wyrick (USFWS)

Day One October 5th

Otter Creek Restoration-Otter Creek Narrows

The Bureau of Land Management owns a large section of property near the Otter Creek Narrows. This section includes approximately 5 miles of Otter Creek. This area was one of the first 319 projects in the state and primarily entailed upland treatments on the west side of Otter Creek. Since then, a large scale project has taken place to implement Pinion Juniper treatments, and sage brush treatments. These treatments have been funded largely in part with Utah's Watershed Restoration Initiative funding. While

the primary purpose of the treatments are to improve sage grouse habitat, they also has a water quality benefit by increasing ground cover and reducing soil erosion.

Restoration work has also been conducted along the riparian corridor. The BLM has installed exclosures that include around 2 miles of Otter Creek. Historically large scale restoration activities occurred along this stretch of the creek, which included planting several woody species such as cottonwood trees and willows. Unfortunately, few of these trees have been able to survive. However, more recent efforts have allowed several species to begin to grow such as buffalo berry, and yellow willow.

While beavers exist on this stretch of the river, they are not very common, and do not have the necessary vegetation required to build a dam. To help better understand the impacts that beavers can have on the system the BLM received a grant from the Division of Water Quality to build Beaver Dam Analog (BDAs) structures in various locations throughout the exclosure. These BDAs will help to retain water and inundate the floodplain during high flow events.



Restricted Access Watering point on Otter Creek



Proposed BDA Location near Otter Creek Narrows

Bagley Restoration Project

The Bagley Stream Restoration project is located upstream from the BLM Otter Creek Narrows property. On this stretch of river the Bagley Family has been working closely with the Fish and Wildlife Service to restore a section of Otter Creek that was historically over grazed. This section of the river was denuded of willows, and some discussion was had as to what had killed the willows. Some potential factors were a willow fungus, over grazing, and spraying of the willows. In the lower reaches of the project there is a large stand of yellow willows that have been able to survive. Hopefully this project will help willows once again dominate the riparian corridor and provide the necessary shading and soil holding properties evident in other willow dominated riparian areas.

The project consists of 3 phases that began to be implemented 4 years ago. The first section that was treated used a harder fix which included the use of rock and logs to help stabilize the bank along with willow plantings. The second phase of the project consisted of a softer fix where banks were sloped back and willows were planted. This stretch of river was implemented 2 years ago. The third phase of the project has yet to occur, but when implemented the cattle will be excluded and willows will be planted without any heavy equipment work. While the primary purpose of this project is to restore riparian function, it will also serve as a valuable education tool that can help agencies know what fixes

are the most cost effective for future projects. The landowner upstream of the Bagley's is also interested in implementing 2 miles of streambank restoration work on his property as well.



Bagley Restoration Project Phase 2



Bagley Restoration Phase 3 Pre-implementation

Mill Meadow Dam and Pipeline

The Mill Meadow Dam is located northeast of Fremont, Utah and has been built for the purpose of providing irrigation water to farmers throughout Rabbit Valley (Fremont, Loa, Lyman, and Bicknell areas). The Fremont River flows out of the Mill Meadow dam and has a steady flow that varies anywhere between 50-100 cfs throughout the season.

The irrigation company that is currently using the water out of Mill Meadow would like to put a pipeline directly from the reservoir that would transport the water to the southern end of the valley. This will help improve efficiency of the delivery system, and reduce management costs for the irrigation company. They will also generate power with this new pipeline that will be sold to help offset the cost of the new system.

The concern that this poses is that there is a strong possibility that piping this water directly from the dam will dewater the Fremont River for several miles, including a section of river that flows across the BLM administered lands downstream of the dam.

A discussion was had on what can be done to ensure that flows be maintained through this stretch of river. Ideally the BLM would put this clause into the easement that will be required to take the pipeline across BLM land. If this does not work, agencies will have an opportunity to weigh in on the project during the Federal Energy Regulatory Commission's application for hydropower generation and/or the State of Utah's 401 Water Quality Certification process to protect its cold water fishery designated use with significantly reduced flows.



Looking Down From Mill Meadow Dam

Day 2 October 6th

Fish Lake- Lake Side Resort

Three years ago the Fish Lake National Forest received a grant from the Division of Water Quality to help address runoff coming from a parking lot of the Lake Side Resort. Prior to installing the project the runoff from the parking lot and road would flow into a creek, and into the reservoir. At times, there would be a very noticeable plume where this runoff enters the lake. To help remedy the problem a culvert was installed that diverted the runoff away from the creek and into an open field, where the sediment settles and other contaminants are filtered out. This project has spurred other similar projects that will take place at the other parking lots around the lake.

Brush Management Practices

To help improve water quality and increase forage for livestock and wildlife in the area, 200 acres of brush treatments were completed in the uplands on the north end of Fish Lake. They mowed the sage brush, which had little disturbance to the soil, and allowed the grasses to rebound back more quickly, thus reducing the amount of erosion that could have taken place while the treated area recovered. The mowing created a nice mosaic on the landscape that allowed the amount of grass to increase.



Brush Management near Fish Lake

Gravel Pit below Johnson Reservoir

Recently there have been several road improvement projects in the Fish Lake National Forest. To help limit costs, a gravel pit was developed above the Fremont River below Johnson Reservoir. To help reduce erosion that reaches the Fremont River two sediment catchment basins were installed at the bottom of the drainage, and some netting was installed. However, there is still some rill erosion that is evident. It is proposed that additional measures be taken to reduce erosion such as planting native vegetation and contouring the large piles of gravel remaining in the pit. Some effort also needs to be taken to treat invasive plants that are coming in as a result of the disturbance.



Gravel Pit Near Johnson Reservoir

UM Creek

UM Creek is another area that has been impacted by cattle grazing over the years. As a result the Forest Service created an exclosure that extends about $\frac{3}{4}$ of a mile and is about 50 acres in size. As part of the project the road crossing was also replaced to promote fish passage and spawning, and help reduce erosion during high flow events. To further help with grazing management an additional fence was also installed to help keep cattle further from the riparian area about 50 yards off of the riparian

fence. While people were not fond of the idea of the exclosure at first, they have now warmed up to it, and it has become a very popular place to fish.



Grazing Exclosure and Improved Road Crossing on UM Creek

Black Flat

Black Flat is in the upper section of the UM Creek watershed. It is a very popular spot for ATV recreationists. In this area another exclosure was created along the creek. This exclosure has done very well and willows are abundant. However, due to the high recreational use a portion of the creek created a new channel through a meadow outside of the exclosure. This will need to be repaired and rerouted through the exclosure. In an attempt to better control impact from ATV use several ATV trails have been decommissioned and access has been limited, especially in areas where the trails would cross riparian areas.



Grazing Exclosure Black Flat

End of report

2016 EPA Project Tour

September 19th-21st, 2016

Location:

Bear River / Strawberry / San Pitch / Utah Lake Watersheds

Participants:

Gary Kleeman (Environmental Protection Agency), Jim Bowcutt, Carl Adams, Michael Allred, Scott Daly, Lucy Parham (Utah Division of Water Quality), Nathan Daugs, Christian Nelson, John Saunders, Jay Olsen (Utah Department of Agriculture and Food), Margie Borecki (USU Extension) Doug Garfield (Utah Association of Conservation District) Justin Robinson (US Forest Service) Wes Peirce, Alan Ward (Utah Division of Wildlife Resources)

Day 1 September 19th

Bear River Watershed

Stuart Nature Park- Logan River

Stuart Nature Park is located in an urban area a short distance below First Dam on the Logan River. This park provides an opportunity for locals to interact with the natural environment at the mouth of Logan Canyon, and consists of walking trails and educational signs. One of the major resource concerns at Stuart Nature Park is the erosion that is present where the Logan River flows through the park. Currently, approximately 200 feet of stream bank is actively eroding along this section due to recreational use, and modified stream flows from development upstream.

A 2017 State Nonpoint Source Grant has been awarded to the Blacksmith Fork Conservation District to treat the erosional issues at the site location. The project will consist of sloping the banks back, installing rock, and replanting the site to reduce erosion. A new bridge will also be installed upstream of the project site that will have a wider base, thus helping to alleviate channel constriction during high flows. Ideally the house upstream would be purchased and removed, allowing for additional floodplain access of the river and reducing the velocity of the flows through the park. Logan City is continuing to look into this possibility.



Erosion at Stuart Nature Park

Jablonski/Ellis- Logan River

The Jablonski/Ellis property are agricultural pastures located on 1,040 feet of the Logan River in a highly urbanized area. Various sections along this reach are eroding. One of the reasons that the erosion takes place is related to the large crack willow trees growing along this reach. Large limbs of these crack willows will break off, potentially redirecting flow into the side of the river banks, resulting in steep cut banks.

This project will focus on removing the dead branches of the crack willows, thus reducing the likelihood that they will break off and fall in the river causing the erosion that has historically taken place. In the locations where the erosion has taken place the banks will be sloped back, and revegetated. There is one section of the river that was used to drive equipment into the river for a past restoration project, and is currently being used as a water gap for horses. This spot will need to be properly restored to reduce the erosion that is taking place. This project will be funded using Section 319 grant.



Old Access Road on the Logan River

Rendezvous Park-Logan River

Rendezvous Park is located near the Logan River Golf Course by Highway 89. Currently Logan City is using funding from the Willard Bay Chevron mitigation funding to implement a project that will clear fallen trees from the riparian corridor, dredge sediment that has accumulated in bends of the river, realign the river to help improve hydrologic function, install a flood plain and create sediment deposition pools where excess sediment can accumulate. While much of the project will be funded using the Willard Bay mitigation funding, they will need to acquire additional funding from the State NPS program to complete the project. This funding will come from FY-2017 Section 319 funds.



Crack Willow Debris and Sediment Accumulation Near Rendezvous Park

Kunzler Property-Logan River

The Kunzler Riparian Project includes roughly one and a half miles of the Logan River from 1000 West to Mendon Road. The project will include clearing of dead crack willows, and will also include stabilizing sections of the riverbank that are currently failing. In this section clearing the crack willows will be especially helpful since the river is forced out of its banks every spring by the fallen debris, and it crosses the farmer's fields then returns into the channel contributing to sediment erosion. This project will be funded using FY-2017 Section 319 funding.



Failing Banks on the Kunzler Property

Cover Crops- Cub River

DWQ has funded a project in Lewiston, near the Cub River to evaluate the water quality benefits of cover crops. This project will look at the effectiveness of the crops for keeping soil on the fields and out of the river. It will also determine what seed mix is the most effective on both irrigated and dryland fields. Currently there is around 50 acres planted, and the grant will continue to pay the landowner for seed for a three year period. The local watershed coordinator will monitor field runoff, and help determine what kind of seed mixes should be used throughout the watershed after that three year period.



Cover Crops in Lewiston, Utah

Holmgren Fencing Project- Lower Bear River

The Holmgren fencing project is located on the main stem of the Bear River near Bear River City. The Holmgren family has received a NPS grant from DWQ to fence over 3 miles of the Bear River. Currently the cattle have free access to the river, and spend a large amount of time in the riparian area, including swimming the river, and grazing the neighbor's property. Off-site water will be installed in the pastures to better distribute the cattle throughout the pasture. The landowner also will also be fencing cattle off of the Malad River on property that he owns.



Fencing on the Bear River near Bear River City

Ferry Feedlot- Lower Bear River

The Ferry Feedlot is located where the Bear River crosses under the Corrine Bridge. Prior to this project taking place over 300 cattle would be placed in this feedlot during the winter months. A State NPS grant was awarded to the Ferry's to build a feedlot in a different location, away from any surface water. The old feedlot will be decommissioned with the exception of the working corrals, which will be used to move cattle for a short period of time.



Ferry Feedlot to be Decommissioned

Day 2 August 19th

Strawberry Reservoir Watershed/ Tibble Fork Watershed

Mud Creek Restoration Work

After completing the majority of the work on the Strawberry River, implementation efforts in the Strawberry Valley has shifted to the other tributaries of the reservoir. On this tour the implementation work that has been completed on Mud Creek was highlighted. Mud Creek is a high use recreational area, but is also grazed during the summer months. To help reduce sediment and nutrients from entering the creek a grazing exclosure was installed below the West Strawberry Road to the reservoir. Off-site watering was also installed to help better distribute cattle throughout the allotment. A hardened access and watering point was also installed in this section.

Above the road several illegal ATV trails were decommissioned. The road, which was a significant source of sediment to the creek, was improved by laying down gravel and installing culverts. Recreational areas were also improved to help encourage campers to use designated camping spots instead of camping in locations that can induce erosion.

Discussions should take place in the future to discuss how additional grazing exclosures can be developed in the upper end of the watersheds. This would be a big step toward restoring the Mud Creek drainage to where cutthroat trout will be able to use it for spawning purposes.



Hardened Access at Mud Creek



Mud Creek Exclosure

*Mud Creek Road Improvements**Mud Creek Road Closures*

Tibble Fork Dam

In the summer of 2016 a local irrigation company, along with federal partners began work to enlarge the storage area behind Tibble Fork Dam. As the dam was drained to begin the construction project large amounts of sediment that had been stored behind the dam began to be transported downstream. The large amount of sediment released in the stream below the dam resulted in a large scale fish kill. To help remedy the problem the contractor built a diversion that bypassed the reservoir, thus stopping the sediment from entering the system downstream. One of the concerns about the sediment that was released from the dam is the high amounts of heavy metals that may be present in the sediment as a result of mining activities higher in the watershed.

*Tibble Fork Dam Project**Tibble Fork Creek (post spill)*

Day 3 August 20th

San Pitch Watershed

The San Pitch watershed is one of the watersheds selected to receive a majority of the FY-2016 Section 319 funding, as well as a significant amount of State Nonpoint Source funding. During this tour six projects were visited where project work will begin as soon as the fall of 2016.

Bench Project

The Bench Project is a project that was completed the previous year. This project is a streambank stabilization project located near the Moroni Feed Plant. The restoration project is approximately 2,200 feet long, and consisted of sloping the banks back, placing rock where necessary, planting grass and willows, and fencing along the river. The project has already healed really well, but one of the bends near the feedlot could not be treated due to the large amount of concrete and asphalt dumped along the river. DEQ has been in contact with the Moroni Feed Company, and they will be restoring this section of the river in the coming year.



Illegal Fill to be removed from Bench Project

Parry Property

The Parry Property consisted of two different projects. One part of the project was several acres that had been converted from flood irrigation to sprinkler irrigation using Section 319 funding.

The next part of the project was a streambank stabilization project that was installed two years ago. This project consisted of approximately 650 feet of streambank work that consisted of sloping back the banks, fencing the channel, installing rock structures, and replanting. One thing that was noticed was the invasive Russian Olive trees that were coming in on the project location. It is recommended that we work with the landowner to help remove those Russian Olive trees, and help establish native vegetation there instead.



Parry Streambank Project

Castleberry/Sorensen/Olsen

This section of river consisted of three landowners, and is roughly 6,300 feet long. While the side of the river that the Sorensen's owned had steep cut banks that would require sloping and rock, the north side of the river was in fairly good shape, and could be fixed with proper grazing management, and the installation of a fence.



Erosion on Sorensen Property

Sweat Streambank Project

This project is located near Fairview, and will consist of fencing and streambank stabilization. The project work will consist of nearly 1,900 feet of streambank that will be restored. This property was recently purchased, and in conversation with the landowner, they are very excited about improvements that this project will make to their property, especially the possibility of improving the fishery for their young sons.



Sweat Streambank Project

Carter AFO Project and Streambank Stabilization

This project was a two part project. The first part of the project deals with the animal feeding operation that is located adjacent to the river. This feedlot will be decommissioned, and moved higher so that the runoff will no longer reach the river.

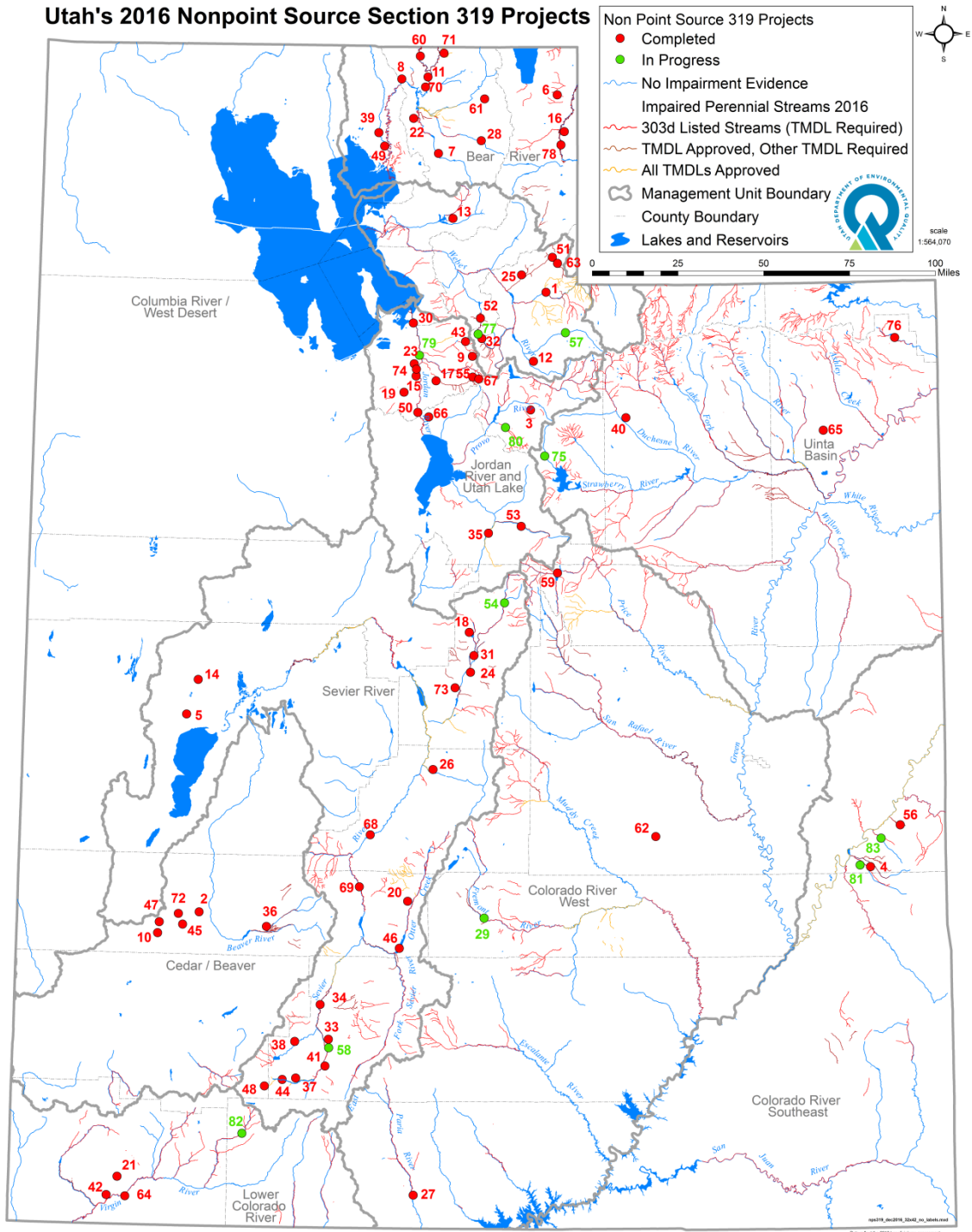
The other phase of this project has to do with the stabilization and revegetation of 900 feet of the San Pitch River.



Carter AFO

APPENDICIES

FIGURE 1: PROJECT LOCATION MAP



UTAH NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

TABLE A: COMPLETED AND ACTIVE 319 PROJECTS (SEE FIGURE 1

Map_ID	STATUS	PROJECT_NAME	Map_ID	STATUS	PROJECT_NAME
1	Completed	Chalk Creek	43	Completed	Emmigration Creek Water Quality Study
2	Completed	Milford Baseline GW and Aquifer Mapping	44	Completed	Groundwater (Mammoth Creek)
3	Completed	Wasatch County GW Study and Aquifer Mapping	45	Completed	Mitigation of NPS Chemicals - Milford Groundwater
4	Completed	Spanish Valley Baseline GW Mapping	46	Completed	Otter Creek Reservoir TMDL
5	Completed	South Sevier Desert GW Recharge Area Mapping	47	Completed	Milford Microbial Contamination GW Study
6	Completed	Bear River Watershed Outreach Information/Education	48	Completed	Cedar Mountain GW Assessment
7	Completed	Little Bear River Animal Waste System	49	Completed	Bear River Information / Education
8	Completed	Bear River TMDL Development	50	Completed	Jordan River WQ/TMDL Assessment
9	Completed	Millcreek Canyon Watershed Phase II	51	Completed	Rees Creek Demonstration
10	Completed	Milford Baseline GW Contaminant Inventory	52	Completed	East Canyon Instream Flow
11	Completed	Bear River Groundwater Contaminant Inventory	53	Completed	Soldier Creek Spanish Fork
12	Completed	Kamas Valley Groundwater	54	In Progress	San Pitch Watershed Implementation, re-opened
13	Completed	Ogden Valley GW Recharge Area Mapping	55	Completed	Little Cottonwood ImplementationTMDL
14	Completed	Millard County Groundwater	56	Completed	Onion Creek Impementation TMDL
15	Completed	Jordan River Wetland	57	In Progress	Upper Weber River Tech. Assist. & Information and Educ.
16	Completed	Bear River (Rich County)	58	In Progress	Upper Sevier River TMDL Implementation, re-opened
17	Completed	SL County Lawn Fertilizer/Pesticides Impacts on GW	59	Completed	Scofield Reservoir TMDL Implementation
18	Completed	Sanpete / Moroni Groundwater	60	Completed	Middle Bear River
19	Completed	Salt Lake Valley Drink. Water Source Protect.	61	Completed	Spawn Creek Bank Restoration
20	Completed	Otter Creek	62	Completed	Colorado River West
21	Completed	Washington County Septic Tank Effects on GW	63	Completed	Rees Creek Phase II
22	Completed	Cache Valley GW/Aquifer Assessment & Classification	64	Completed	Virgin River TMDL Implementation
23	Completed	Jordan River Parkway Millcreek Riparian	65	Completed	Oil/Gas Erosion Control
24	Completed	Sanpete Valley WQ Assessment and GW Mapping	66	Completed	Jordan Watershed Council
25	Completed	Echo Creek Demonstration	67	Completed	Alta Fen Rehab
26	Completed	Stuart Johnson Salina Canyon	68	Completed	Middle Sevier River Watershed TMDL Implementation
27	Completed	Paria River Restoration Demonstration	69	Completed	Sevier River @Marysvalle Animal Waste Demonstr
28	Completed	Hardware Ranch Demonstration	70	Completed	Bear River Amalga
29	In Progress	Fremont River Demonstration	71	Completed	Cub River
30	Completed	Peace Trees Information/Education (Salt Lake City)	72	Completed	Milford (Private Wells)
31	Completed	San Pitch River Information/Education	73	Completed	Sanpete Valley GW Recharge Area Mapping
32	Completed	East Canyon Creek	74	Completed	Jordan River Ecosystem Restoration
33	Completed	Upper Sevier Rangleland Improvement Demonstration	75	In Progress	Upper Strawberry River Riparian Management
34	Completed	USU Panguitch - Sevier River	76	Completed	Matt Warner Reservoir/ Pot Creek Riparian Management
35	Completed	Thistle Creek	77	In Progress	East Canyon Stream Restoration
36	Completed	Beaver River	78	Completed	Upper Bear River Riparian Restoration, BLRC
37	Completed	Mammoth Creek	79	In Progress	Jordan River Restoration
38	Completed	Panguitch Creek	80	In Progress	Wallsburg Watershed Restoration, re-opened
39	Completed	Lower Bear River Malad	81	In Progress	Spanish Valley Watershed Implementation
40	Completed	Duchesne River	82	In Progress	North Fork Virgin River Irrigation
41	Completed	Upper Sevier River Information / Education	83	In Progress	Castle Creek Restoration
42	Completed	Virgin River Information / Education			

TABLE B: 319 FINAL PROJECT REPORTS SUBMITTED IN FY-16

Project Title	Total 319 Award	Date Received
FY-10 Upper Bear Riparian Restoration	\$15,600	12/3/2015
FY-10 East Canyon Stream Restoration Phase IV	\$50,000	1/11/2016
FY-10 Upper Bear River TMDL Implementation	\$70,000	12/16/2015
FY-10 Lower Bear River TMDL Implementation	\$44,000	10/29/2015
FY-10 Middle Bear River TMDL Implementation	\$136,000	10/29/2015
FY-11 Utah Watershed Coordinating Council	\$10,000	9/29/2015
FY-11 USU Volunteer Monitoring and I&E	\$102,500	8/6/2015
FY-13 Duchesne River TMDL Implementation	\$66,577	1/13/16

TABLE C: SUMMARY OF ACTIVE UTAH 319(H) GRANTS FY-16

Project Title	Total NPS Award	Grant Status
Matt Warner/Pot Creek Road Rehabilitation FY-10	\$63,600	Project Complete Final Report Approved
USU NPS I & E Outreach FY-10	\$37,000	Project Complete Final Report Approved
Lower Bear R TMDL Impl. FY-10	\$44,000	Project Complete Final Report Approved
Middle Bear R TMDL Impl FY-10	\$136,000	Project Complete Final Report Approved
Upper Bear R TMDL Impl FY-10	\$70,000	Project Complete Final Report Approved
West Colorado River Watershed Improvement FY-10	\$45,000	Project Complete Final Report Approved
USU Septic System Ed. Enhancement FY-10	\$51,100	Project Complete Final Report Approved
Utah Watershed Coordinating Council FY-10	\$30,000	Project Complete Final Report Approved
Upper Bear Riparian Restoration FY-10	\$15,600	Project Complete Final Report Approved
East Canyon Stream Restoration - Phase IV FY-10	\$50,000	Project Complete Final Report Approved
Mud Ck/Scofield Riparian Restoration FY-10	\$50,000	Project Complete Final Report Approved
Salt Lake County Stream Guide FY-10	\$31,100	Project Complete Final Report Approved
Jordan River Council Capacity - I&E FY-10	\$41,600	Project Complete Final Report Approved
TMDL Local Watershed Coordinators FY-10	\$400,000	Project Complete Final Report Approved
Utah NPS Program - Management Review FY-10	\$66,582	Project Complete Final Report Approved
Utah Watershed Coordinating council FY-11	\$10,000	Project Complete Final Report Approved
USU Volunteer Monitoring and I&E FY-11	\$102,500	Project Complete Final Report Approved
Utah Watershed Coordinating council FY-11	\$340,000	Project Complete Final Report Submitted for Approval
East Canyon Restoration FY-11	\$380,421	Project Completed Awaiting Final Report
TMDL Local Watershed Coordinators FY-11	\$340,000	Project Complete Final Report Submitted for Approval
Utah Watershed Coordinating council FY-12	\$10,000	Project Complete Awaiting Final Report
USU Volunteer Monitoring and I&E FY-12	\$102,500	Project Complete Awaiting Final Report
East Canyon Restoration FY-12	\$283,070	Ongoing
Upper Weber TMDL Implementation FY-12	\$95,230	Ongoing
TMDL Local Watershed Coordinators FY-12	\$340,000	Project Complete Awaiting Final Report
USU Volunteer Monitoring and I&E FY-13	\$97,000	Ongoing
Strawberry River Restoration FY-13	\$358,044	Ongoing
Duchesne River Restoration FY-13	\$66,577	Project Complete Final Report Awaiting Approval
TMDL Local Watershed Coordinators FY-13	\$340,000	Project Complete Awaiting Final Report
USU Volunteer Monitoring Program FY-14	\$84,525	Ongoing
Local Watershed Coordinators FY-14	\$340,000	Ongoing
Wallsburg Watershed Restoration Project FY-14	\$150,000	Project Complete Final Report Submitted

UTAH NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

Jordan River Restoration Project FY-14	\$319,096	Ongoing
USU Volunteer Monitoring Program FY-15	\$83,250	Ongoing
Local Watershed Coordinators FY-15	\$340,000	Project Complete Awaiting Final Report
Strawberry River Restoration FY-15	\$75,000	Ongoing
Spanish Valley Watershed Implementation FY-15	\$118,686	Ongoing
North Fork Virgin River Irrigation Project FY-15	\$85,133	Ongoing
Castle Creek Restoration FY-15	\$12,530	Ongoing
Fremont River Restoration FY-15	\$66,200	Ongoing
Wallsburg Restoration project FY-15	\$98,722	Ongoing
USU Volunteer Monitoring Program FY-16	\$72,595	Ongoing
Local Watershed Coordinators FY-16	\$370,000	Ongoing
Upper Sevier Restoration Project FY-16	\$249,700	Ongoing
San Pitch Watershed Restoration Project FY-16	\$295,163	Ongoing

TABLE D: APPROVED TMDLS

Water Body	Date Approved
Chalk Creek	12/23/1997
Otter Creek	12/23/1997
Little Bear River	5/23/2000
Mantua Reservoir	5/23/2000
East Canyon Creek	9/1/2000
East Canyon Reservoir	9/14/2010
Kents Lake	9/1/2000
LaBaron Reservoir	9/1/2000
Minersville Reservoir	9/1/2000
Puffer Lake	9/1/2000
Scofield Reservoir	9/1/2000
Onion Creek (near Moab)	7/25/2002
Cottonwood Wash	9/9/2002
Deer Creek Reservoir	9/9/2002
Hyrum Reservoir	9/9/2002
Little Cottonwood Creek	9/9/2002
Lower Bear River	9/9/2002
Malad River	9/9/2002
Mill Creek (near Moab)	9/9/2002

Spring Creek	9/9/2002
Forsyth Reservoir	9/27/2002
Johnson Valley Reservoir	9/27/2002
Lower Fremont River	9/27/2002
Mill Meadow Reservoir	9/27/2002
UM Creek	9/27/2002
Upper Fremont River	9/27/2012
Deep Creek	10/9/2002
Uinta River	10/9/2002
Pineview Reservoir	12/9/2002
Browne Lake	2/19/2003
San Pitch River	11/18/2003
Newton Creek	6/24/2004
Panguitch Lake	6/24/2004
West Colorado	8/4/2004
Silver Creek	8/4/2004
Upper Sevier River	8/4/2004
Lower and Middle Sevier River	9/17/2004
Lower Colorado River	9/20/2004
Upper Bear River	8/4/2006
Echo Creek	8/4/2006
Soldier Creek	8/4/2006
East Fork Sevier River	8/4/2006
Koosharem Reservoir	8/4/2006
Lower Box Creek Reservoir	8/4/2006
Otter Creek Reservoir	8/4/2006
Thistle Creek	7/9/2007
Strawberry Reservoir	7/9/2007
Matt Warner Reservoir	7/9/2007
Calder Reservoir	7/9/2007
Lower Duchesne River	7/9/2007
Lake Fork River	7/9/2007
Brough Reservoir	8/22/2008
Steinaker Reservoir	8/22/2008
Red Fleet Reservoir	8/22/2008
Newcastle Reservoir	8/22/2008
Cutler Reservoir	2/23/2010

Middle Bear River	2/23/2010
Pariette Draw	9/28/2010
Emigration Creek	7/18/2012
Jordan River Phase I	6/05/2013
Echo Reservoir	9/16/2014
Colorado River	6/17/2014
Rockport Reservoir	9/16/2014

TABLE E: WATERSHED PLANS

Watershed	Date Approved
Middle and Lower Sevier	October-10
San Pitch	January-06
Upper Sevier	June-04
Virgin River	February-06
Paria River	2006
Escalante River	2006
Salt Lake Countywide Water Quality Stewardship Plan	2009
Wallsburg CRMP	10/01/2012
Duchesne River	7/31/2014
Strawberry River Watershed	12/18/2014
Spanish Valley Watershed Plan	Submitted to EPA for Approval
North Fork of The Virgin River	Submitted to EPA for Approval
Upper Bear River Watershed Plan	Submitted to DEQ for Approval
San Pitch Watershed Plan (revision)	Initiated
Weber River	Initiated
Price River	Submitted to EPA for Approval
South Fork of Chalk Creek	Submitted to DEQ for Approval
Spanish Fork River	Initiated
Upper Sevier River (revision)	Initiated
Huntington Creek	Initiated
Maple Creek	Submitted to EPA for approval
Montezuma Creek	Initiated
Logan River	Submitted to DEQ for Approval
Otter Creek	Initiated
Pelican Lake	Initiated

TABLE F: STATE NPS FUNDS ALLOCATED IN 2016

Project Title	Watershed	Project Type	Amount Awarded
Gibbons Brothers AFO Project	Bear River	AFO	\$50,000.00
Bar JM Feedlot	Bear River	AFO	\$17,964.00
Roy Hafen Stream Bank	Cedar/Beaver	Riparian	\$21,000.00
Brad Hafen- Irrigation	Cedar/Beaver	Irrigation	\$90,000.00
Ence Stream Bank Stabilization	Cedar/Beaver	Riparian	\$128,063.00
Marsha Goodwin Stream Bank	Cedar/Beaver	Riparian	\$14,040.00
Fairchild Challenge	Jordan river	I&E	\$5,000.00
San Pete EQIP Strategic Funding Cost Share	San Pitch	Watershed Restoration	\$26,000.00
Bert Sorensen Stream Bank	San Pitch	Riparian	\$42,597.00
Cameron Parry- Irrigation Project	San Pitch	Irrigation	\$66,000.00
Michael Olsen- Irrigation/Riparian	San Pitch	Irrigation	\$60,500.00
Richard Castleberry- Irrigation	San Pitch	Irrigation	\$45,000.00
Doyce Coates- Irrigation	San Pitch	Irrigation	\$31,300.00
Mill Creek Monitoring Signage	South East Colorado	I&E	\$652.00
USU Moab Rainwater Harvesting System	South East Colorado	Storm Water	\$9,132.00
Pack Creek Stream Bank -2015	South East Colorado	Riparian	\$5,000.00
Upper Montezuma Creek Watershed Plan	South East Colorado	Planning	\$5,000.00
Nutrient Producer Website	Statewide	I&E	\$10,000.00
Environthon	Statewide	I&E	\$5,000.00
Water Week 2016 Library Program	Statewide	I&E	\$4,000.00
Onsite Reserve	Statewide	Septic	\$12,538.00
Monitoring Uptake of Selenium by fish at Stewart Lake	Uinta Basin	Research	\$6,380.00
Mud Creek Road Improvements	Uinta Basin	Road Improvements	\$66,980.00
Upper Strawberry Offsite Watering	Uinta Basin	Grazing Management	\$3,000.00
NWQI Partner Funding	Upper Sevier	Riparian	\$100,000.00
Sevier River I&E	Upper Sevier	I&E	\$10,000.00
Upper Sevier Grazing Demonstration Project	Upper Sevier	Grazing Management	\$85,654.00
Main Creek Restoration	Utah Lake	Riparian	\$10,700.00
Spring Creek Culvert	Utah Lake	Road Improvements	\$6,420.00
Spring Creek Restoration 2	Utah Lake	Riparian	\$25,680.00
Spring Creek Restoration 1	Utah Lake	Riparian	\$21,400.00
Watershed Festival and Watershed Education Provo River	Utah Lake	I&E	\$10,000.00
Ercanbrack Ranch Conservation Project	Weber River	Easement	\$5,000.00
Total			\$1,000,000

TABLE G: SUMMARY CONSERVATION PRACTICES- NRCS FISCAL YEAR 2016

Summary Conservation Practices (Prac#)	Planned	Applied	Planned Count	Applied Count
Access Control (472) (ac)		3		1
Access Road (560) (ft)	900	873	2	1
Agricultural Energy Management Plan - Written (128) (no)	7	12	7	12
Agricultural Secondary Containment Facility (710) (no)		1		1
Aquatic Organism Passage (396) (mi)	1	1	1	1
Brush Management (314) (ac)	48,872	12,085	457	113
Channel Bed Stabilization (584) (ft)	512	270	8	4
Clearing and Snagging (326) (ft)	3,350		2	
Comprehensive Nutrient Management Plan - Written (102) (no)	1		1	
Conservation Cover (327) (ac)	170	195	18	26
Conservation Crop Rotation (328) (ac)	695	371	15	6
Cover Crop (340) (ac)	11,887	1,840	388	84
Critical Area Planting (342) (ac)	76	15	19	4
Dike (356) (ft)	104		1	
Diversion (362) (ft)	17,245		22	
Farmstead Energy Improvement (374) (no)	2	2	2	2
Fence (382) (ft)	558,181	250,526	268	108
Field Border (386) (ac)	5		7	
Filter Strip (393) (ac)	3		9	
Firebreak (394) (ft)	1,651		1	
Forage and Biomass Planting (512) (ac)	1,035	444	71	26
Forage Harvest Management (511) (ac)		175		2
Forest Management Plan - Written (106) (no)		4		4
Forest Stand Improvement (666) (ac)	288	10	14	6
Grade Stabilization Structure (410) (no)	6		6	

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Summary Conservation Practices (Prac#)	Planned	Applied	Planned Count	Applied Count
Grassed Waterway (412) (ac)	5		2	
Grazing management to improve wildlife habitat (ANM09) (ac)		1,246		33
Heavy Use Area Protection (561) (sq ft)	48,584	4	19	4
Hedgerow Planting (422) (ft)		320		1
Irrigation Canal or Lateral (320) (ft)	2,626		1	
Irrigation Ditch Lining (428) (ft)	22,035	13,955	18	15
Irrigation Land Leveling (464) (ac)	492	211	32	23
Irrigation Pipeline (430) (ft)	339,856	219,445	363	229
Irrigation Reservoir (436) (ac-ft)	44	29	23	10
Irrigation System, Micro-irrigation (441) (ac)	42	113	7	25
Irrigation System, Surface and Subsurface (443) (ac)	113	50	6	9
Irrigation Water Management (449) (ac)	3,372	6,321	224	357
Irrigation Water Management Plan - Written (118) (no)	4	3	4	3
Land Clearing (460) (ac)		44		1
Livestock Pipeline (516) (ft)	373,640	121,372	133	42
Monitor key grazing areas to improve grazing management (PLT02) (ac)		1,246		33
Mulching (484) (ac)	22	119	5	9
Nutrient Management (590) (ac)	3,026	2,693	129	120
Obstruction Removal (500) (ac)	1	394	7	4
On-Farm Secondary Containment Facility (319) (no)	4		4	
Pond (378) (no)	3		3	
Pond Sealing or Lining, Bentonite Sealant (521C) (no)	4	1	4	1
Pond Sealing or Lining, Compacted Clay Treatment (521D) (no)	9	4	9	4
Pond Sealing or Lining, Flexible Membrane (521A) (no)	6	6	6	6
Prescribed Burning (338) (ac)	8		1	
Prescribed Grazing (528) (ac)	56,616	78,744	268	241

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Summary Conservation Practices (Prac#)	Planned	Applied	Planned Count	Applied Count
Pumping Plant (533) (no)	98	61	90	61
Range Planting (550) (ac)	16,408	5,164	162	57
Residue and Tillage Management, No-Till (329) (ac)	891	1,321	42	18
Residue and Tillage Management, Reduced Till (345) (ac)	1,212	1,186	14	47
Restoration and Management of Rare and Declining Habitats (643) (ac)		3		2
Riparian Forest Buffer (391) (ac)		1		5
Riparian Herbaceous Cover (390) (ac)		7		2
Rotation of supplement and feeding areas (WQL03) (ac)		1,290		34
Spring Development (574) (no)	7	2	7	2
Sprinkler System (442) (ac)	5,604	3,833	340	208
Stream Crossing (578) (no)	8	7	8	7
Stream Habitat Improvement and Management (395) (ac)	11	9	2	5
Streambank and Shoreline Protection (580) (ft)	16,569	5,509	67	23
Structure for Water Control (587) (no)	1,365	103	225	100
Structures for Wildlife (649) (no)	17	15,435	14	18
TA Application (912) (no)	35	2,607	35	27
TA Check-Out (913) (no)	34	2,608	34	28
TA Design (911) (no)	33	29	33	29
Terrace (600) (ft)	78,531	10,650	18	7
Tree/Shrub Establishment (612) (ac)	29	14	31	3
Tree/Shrub Site Preparation (490) (ac)	13		13	
Upland Wildlife Habitat Management (645) (ac)	41,957	16,354	123	32
Waste Facility Closure (360) (no)	4	1	4	1
Waste Separation Facility (632) (no)	1	2	1	2
Waste Storage Facility (313) (no)	2	8	2	8
Waste Transfer (634) (no)	2	5	2	5

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Summary Conservation Practices (Prac#)	Planned	Applied	Planned Count	Applied Count
Water and Sediment Control Basin (638) (no)	11		11	
Water Harvesting Catchment (636) (no)	2		2	
Water Well (642) (no)	6	2	6	2
Watering Facility (614) (no)	227	79	212	73
Wetland Restoration (657) (ac)	5,260		2	
Windbreak/Shelterbelt Establishment (380) (ft)	4,345	960	5	2
Woody Residue Treatment (384) (ac)	6,791	9,801	112	46

TABLE H: MILESTONES OF THE UTAH STATEWIDE NPS PROGRAM

Milestone	2013	2014	2015	2016
Objective 1: Environmental Protection:				
Number of TMDLs Completed	2	2	1	0
Number of TMDLs Initiated	Huntington Creek-Selenium Pelican Lake-pH Nine Mile Creek-Temperature	Huntington Creek-selenium Parley's Creek- E.coli Lower Bear River- TP Red Creek Reservoir-TP	Nine Mile Creek-Temperature Silver Creek-TDS Utah Lake-Phosphorus Jordan River-Ecoli, Arsenic, Cadmium	Fremont River-E.coli
Number of 9 Element Watershed Based Plans Developed	Strawberry River Duchesne River	Spanish Valley North Fork of Virgin	Price River Upper Bear River North Fork of Chalk Creek Weber River	Mantua/Maple Creek
Number of 9 Element Watershed Based Plans Initiated	Price River North Fork of the Virgin River Otter Creek Upper Sevier San Pitch Middle Green/Desolation Canyon Weber River Watershed Plan	Price River Upper Sevier San Pitch Middle Green/Desolation Canyon Weber River North Fork of Chalk Creek Spanish Fork River	Huntington Creek Maple Creek Montezuma Creek	Logan River Otter Creek Pelican Lake

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	Upper Weber Watershed Plan	Pinto Creek		
Number of projects dedicated to the protection of threatened waterbodies identified in Utah's 303(d) list	0	The Cart Creek Watershed project funded using State NPS funding.	Tie Fork road Stream Crossing funded using State NPS funding.	One NPS Project was dedicated to watershed protection. This is the Montezuma Creek Watershed Plan Development.
Number of projects focused on groundwater protection throughout the state	One Septic I&E Program, One Groundwater outreach program.\$78,041 total in State NPS Funding	One Septic I&E Program, One Groundwater outreach program \$41,142. Bothwell ground water has continued to be implemented. \$14,358 for septic enhancements.	Aside from two grants focusing on septic system maintenance, no funding was spent on groundwater protection using FY-15 funding.	The Division of Water Quality Set aside \$12,538 in State NPS funding to help private landowners with maintenance of their septic systems.
Objective 2: Improve Program Efficiency and Effectiveness through Reporting and Evaluation.				
Total Number of Stream Miles Restored	0.77 miles of in-stream restoration implemented 5.35 miles of protective riparian fencing implemented	.71 miles of in-stream restoration 2.01 miles of riparian fencing	2.2 miles of stream restoration implemented in FY-2015 5.8 miles of riparian fencing implemented in FY-2015	1.61 miles of Stream restoration implemented in FY-2016 2,206 Feet of riparian fencing installed in FY-2016
Total Estimated Load Reductions Reduced in Project Areas (includes reductions from annual and final reports)	Nitrogen- 10,161 lbs/year Phosphorus- 3,878 lbs/year Sediment- 2,500 tons/year	Phosphorus- 8,899 lbs/year Sediment- 8,942 tons/year E.coli- 3,100 lbs/year Nitrogen-20,385 lbs/year	Nitrogen- 7,766 lbs/year Sediment- 903 tons/year Phosphorus-4,286 lbs/year TDS-2,359 tons/year	Nitrogen- 6,168 lbs/year Sediment- 691 tons/year Phosphorus- 1,976 lbs/year
Number of Final Project Reports Submitted	10 (See Table B)	9 (See Table B)	13 (See Table B)	8 (See Table B)
Number of 319 Grants Open During the Fiscal Year	28 (See Table C)	19 (See Table C)	17 (See Table C)	12 See (Table C)
Amount of Unexpended Funds in Each Open 319 Grant (As of June 30, 2014)	FY-08- \$90,405 FY-09- \$252,811 FY-10- \$188,479 FY-11- \$341,358 FY-12- \$667,452 FY-13- \$861,621 (See Table1)	FY-09- \$206,697 FY-10- \$148,287 FY-11- \$76,155 FY-12- \$295,598 FY-13- \$724,575 FY-14- \$893,621	FY-11- \$62,994 FY-12- \$190,509 FY-13- \$167,993 FY-14- \$558,943 FY-15- \$879,521	FY-11- \$8,180 FY-12- \$62,018 FY-13- \$31,613 FY-14- \$364,696 FY-15- \$395,640 FY-16- \$987,458
Number of Success Stories Showing the environmental Benefits of Completed NPS	2- Cub River and East Canyon Creek	1- Fremont River	3 -Main Creek	2-Fremont River (WQ10)

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Projects Submitted to EPA for Approval			Spring Creek Strawberry River	Strawberry Reservoir
Objective 3: Improve Public Participation and Understanding of NPS Issues				
Number of Participants Involved in the Statewide Volunteer Monitoring Program	196	448	980	1048
Number of I&E Projects Implemented with Section 319 and State NPS Funding	3 projects -AFO Outreach (NPS) -Septic I&E Outreach (NPS) -Volunteer monitoring program (319)	6 projects -AFO Outreach (NPS) -Septic I&E Outreach (NPS) -Volunteer monitoring program (319) -Mercury Take Back (NPS) -Strawberry Valley I&E (NPS) -Rain Water Exhibit (NPS)	7 projects -Cedar Beaver I&E (319) Volunteer Monitoring Program (319) AFO outreach (NPS) Envirothon (NPS) Riparian Grazing Workshop (NPS) Onsite BMP Manual (NPS) Water Week AWWA (NPS)	4 Projects -Fair Child Challenge (NPS) -Mill Creek Monitoring Signage (NPS) -Nutrient Producer Website (NPS) -Envirothon (NPS) -Water Week 2016 AWWA (NPS) -Sevier River I&E (NPS) -Provo Watershed Festival (NPS) -Volunteer Monitoring Program (319)
Updates Made to the State NPS Program Website	The website was updated to include additional information for grant applicants including Final reporting guidance, and grant applications. In 2014 USU Waterquality extension will begin development of a much improved website.	We have begun working with USU Extension to create a website focused solely on NPS pollution. This will include an interactive map showing where projects have taken place in the state as well as movies highlighting the NPS projects that have been implemented throughout the state.	Utah State University has made good headway on the new NPS Program website. This website will be completed by the end of the calendar year. The website can be found at: http://www.utahcleanwater.org/	The NPS Program Website has now been completed, and Utah State University continues to maintain it as new information becomes available.
Objective 4: Improve Data Collection and Management				
Track Updates Made to Enhance NPS Monitoring in the Division of Water Quality's Annual Monitoring Strategy	Additional monitoring equipment was purchased for the Local Watershed Coordinators to assist with NPS project monitoring. Trainings were also offered on the development of SAPs.	The equipment that was purchased in 2013 has been distributed to the local watershed coordinators, and a training was conducted during the summer of 2014 showing the local watershed coordinators how to use this equipment.	Watershed Coordinators are now collecting data monthly to demonstrate the effectiveness of the best management practices that are being implemented. Monitoring locations were selected for the Bear River Watershed in cooperation with the local work group, and pre-implementation data has been collected since the summer of 2015. The local watershed coordinator is also working with	The Division of Water Quality is in the process of developing a statewide SAP for the monitoring of NPS projects. This statewide SAP will summarize all of the monitoring that will need to take place throughout the State of Utah, who will be responsible for the collection of that data, and how often it will be collected. This will also include the installation of long term continuous monitoring stations. In locations where local watershed coordinators

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			Tetrattech to develop a SAP in the Upper Sevier Watershed.	or partners are unavailable to collect the data the DWQ Monitoring staff will collect data. The first statewide SAP should be completed and ready to implement by the end of the State fiscal year.
Number of SAPs Developed	8	2 Many of the SAPs needed throughout the basins were developed last year. It is anticipated that several more will be developed next year.	During FY-2015 the local watershed coordinators dedicated the majority of their time to implementing the 10 existing SAPs. In talking with the local watershed coordinators, it is anticipated that 2-3 more SAPs will be developed in 2016.	During FY-2016 a SAP was developed for the San Pitch and Maple Creek Watershed. SAPs are currently being developed for the South Fork of Chalk Creek, The Upper Sevier River, and Logan River.
Track Status and updates of AWQMS database	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report
Report on Water Quality Data Uploaded to the EPA WQX Database	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report
Objective 5: Improve Coordination of Governmental and Private Sectors				
Hold Annual NPS Management Program Coordination Meetings	Held February 26, 2013	Held February 26 th , 2014	Held March 3 rd , 2015	Held on March 2 nd , 2016
Conduct Annual Consistency Reviews with State and Federal Agencies	Conducted August 13 th and 14 th , 2013.	Conducted October 7 th and 8 th , 2014	Conducted August 12 th , 2015	Conducted October 5 th -6 th , 2016
Number of Water Quality Task Force Meetings Held During the Fiscal Year	Three meetings were held. October 10 th , 2012, February 14 th , 2013, and May 22 nd , 2013	Three meetings were held. August 7 th , 2013, November 19 th , 2013, and May 19 th , 2014.	Four meetings were held. August 25 th , 2014, December 4 th , 2014, and February 12 th , 2015, June 17 th , 2015.	Three meetings were held. October 7 th , 2015, January 7 th , 2016, and April 6 th , 2016.
Amount of Funding Used to Leverage 319 Funding Throughout the State	\$1,970,887 (See Table G)	\$4,571,096 (See Table G)	\$3,901,572 (See Table G)	\$5,631,010 (See Table 5)

TABLE I: FY-16 BLM WRI PROJECTS

2016 Utah WRI/HLI Accomplishments				
Project Id	Title	Terrestrial Acres	Aquatic/Riparian Acres	Stream Miles
3330	South Bookcliffs Vegetation Improvement (Hay)Phase III	458		
3381	FFO The Cove	275		
3417	Restoring Water, Trout, Sage Grouse and Riparian Areas on Working Lands Using Beaver in Box Elder County - A Demonstration Project in Partnership with Tanner Family Stage 1			2
2625	Deadman Bench Harrow Phase III	516		1
3313	Southern Region Riparian Tree and Shrub Planting FY16		87	6
2658	Riparian Enhancement: Follow-Up Treatments on Private Land Parcels along the Colorado River	75		
3454	Grouse Creek Bullhog Phase 3	702		
3279	UKC - Carly Knoll/Mill Creek	685		
3399	Phase 1 of Woodruff Area Juniper Removal for Wildlife (arc surveys)			5
3278	UKC - Cottonwood Spring- Phase I	2,962		1
2076	Hamlin Valley Habitat Restoration Project - Sagebrush Restoration Year I	6,030		22
3475	Cottonwood Springs Bullhog - Lop and Scatter	803		
3263	Yellowjacket (Farm Canyon)	1,733		
3249	Onaqui East Bench Bullhog Phase 3	885		
3226	Adobe Mesa Sagebrush/Mule Deer Winter Range Improvment	306		1
3354	Crouse Reservoir Lop and Scatter	2,350		6
2890	Cedar Groves Lop and Scatter Project Phase I	1,288		5
3296	Project Maintenance - South Beaver	4,251		9
3247	East Tintic Bullhog Phase 5 (Lofgreen Phase 3)	958		-
3304	Indian Spring Phase I Maintenance	319		-
3306	Meachum Canyon stage 1 Juniper Removal	1,809		7
3309	Park Valley Winter Range Lop and Scatter	1,081		1
3423	Utah Lake Shoreline Restoration: Year 7		1,754	3
3294	Burnt Timber Bullhog	649		

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1647	Reservation Ridge	83		
3315	Big Wash Masticaton II	469		3
3368	Buck Hollow Sagebrush Planting	18		
3265	Dog Valley Hand Thinning	9,768		
3546	Redd Fallow Field Seeding	12		
3400	Park Valley PJ Treatment Project Phase 2	1,020		
3341	Sunset Cliffs Rabbitbrush Treatment	328		2
3562	UKC - Coal Hollow Phase III	517		2
3344	FFO Furner Valley Bullhog Phase 1	813		
3403	Boreal Toad Habitat Enhancement			
3334	Dry Basin Phase 2- Treatment	2,997		12
3345	Cedar Mountain Hazardous Fuels Reduction and Vegetation Restoration Project-Phase II	696		
3264	South Canyon (Limestone)	3,851		
3150	North Cove Maintenance and Guzzlers	1,220		2
3375	Escalante River Watershed Partnership Project - Phase 8		3,214	103
3431	Enterprise/Hwy 56 Project Maintenance	1,323		8
3329	Badger Flat Greenstrip Maintenance	249		2
3280	Alton/South Canyon Retreatment - large tree removal	1,211		
3283	Lower Beaver River Restoration - FY16		141	4
3227	Middle Mesa Sagebrush Improvement Project Phase II	409		
3267	Cottonwood Ridge PJ Removal	2,070		3
3534	Hampton Canyon Drainage Repair	10		
3380	Southern Region Riparian Restoration FY16		648	85
Totals		55,198	5,844	294

TABLE J PROJECTS SPONSORED BY LOCAL CONSERVATION DISTRICTS

CD Zone	Project Type	NPS	NRCS	In-kind	Producer	Total
Zone 1	Dairy	60,000	\$250,000		\$20,000	\$330,000
	Dairy	\$45,000	\$250,000		\$45,000	\$340,000
	Riparian	\$34,000			\$6,000	\$40,000
	Riparian	\$7,000			\$2,000	\$9,000
	Feedlot	\$15,000	\$40,000		\$10,000	\$65,000
Zone 3	Culvert Spring Creek	\$6,420			\$5,973.00	\$12,393
	Riparian Spring Creek	\$22,986	\$20,140		\$7,550	\$50,676.00
	Riparian Spring Creek 2	\$16,608	\$17,483		\$750	\$34,841
	Riparian Fencing	\$9,582			\$2,878	\$12,469
	Wallsburg Septic Study	\$15,204				\$15,204
	Canal Safety Plan Spanish Fork South Irrigation Company					\$7,500
	Spanish Fork River CRMP				UDAF	\$30,000
	Birdseye ISM	ISM \$24,580			\$45,991	\$70,751
	Irrigation Flood to Pivot	\$5,000	\$61,893	WRI \$14,500	\$31,000	\$112,393
	Riparian/calving area	\$11,300			\$11,300	\$22,600
Zone 5	5 Water Quality	\$649,927		\$12,000	\$35,125	\$697,052
	3 Miles Riparian					
	1,168 feet pipeline					
	9,610 feet Fence					
	300 feet Willow Plantings					
Zone 7	Green River Diversion	\$6,240,191		\$335,660	\$1,009,184	\$7,585,035
	Huntington Creek Watershed Plan					
	San Juan Montezuma Creek Watershed Plan	\$5,000				
	Green River No-Till Drill				CD Funds	\$35,000
				Grand Total		\$9,469,914