



**Title Page:** Final Report for 205j Funding of the Fish Creek Watershed Voluntary Nutrient Reduction Program, Teton Conservation District, Jackson, WY

Project Title: Fish Creek Watershed Voluntary Nutrient Reduction Program

Project Sponsor: Teton Conservation District

Date: 01/12/2017

Cooperative Statement: This project was conducted in cooperation with Teton Conservation District, Friends of Fish Creek, the State of Wyoming and the United States Environmental Protection Agency.

State Project Number: QP036

Grant Number: C6-00856815

Keywords: Nutrients, Septic Systems, Watershed Based Planning, Water Quality Monitoring, Grazing



## **Executive Summary:** Fish Creek Watershed Voluntary Nutrient Reduction Program

This project was started on 04/21/2015, and was completed on 12/31/2016

The purpose of the Fish Creek Watershed Nutrient Reduction Program was to take a multipronged approach to initiate data gathering and voluntary best management practices, while building relationships to mitigate further nutrient contamination in the Fish Creek Watershed. Existing US Geological Survey (USGS) research has shown that excess plant and algae growth in Fish Creek, a Class 1 Water was likely the result of nitrate contamination.

<b>Budget Summary</b>	
Total 319 or 205(j) Funds Awarded	\$40,000
Total 319 or 205(j) Funds Expended	\$40,000
Total Nonfederal Match Commitment	\$115,000
Total Nonfederal Match Expended	\$94,385.53
Total Project Budget	\$155,000
Total Project Expenditures	\$134,385.53

To address this contamination, Teton Conservation District (TCD) and partner Friends of Fish Creek (FoFC) convened a Stakeholder Group to guide further research and develop next steps towards nutrient reductions. Additionally, TCD and partners developed a plan to continue stream monitoring that was begun by USGS in 2007. TCD and partners also hired USGS to complete a nutrient loading study, to quantify the proportional contribution of nutrients from different sources across the watershed. TCD also worked directly with Teton Village Water and Sewer District to assess potential nutrient contamination of Fish Creek that resulted from their tertiary groundwater effluent discharge location. TCD successfully administered these projects, setting a strong foundation to initiate targeted best management practice implantation to curb future nutrient inputs.

This project has many significant accomplishments and deliverables, many of which go beyond what was originally set forth within our Project Implementation Plan. The bond and trust that has formed within the Stakeholder Groups is clear, and has resulted in voluntary actions taken by individual stakeholders to reduce nutrient inputs (some examples include direct reduction of golf course fertilization and waste treatment plant upgrades). The publishing of the USGS nutrient loading study (Miller et al. 2016) is an extremely valuable local resource that will also provide an excellent template for other watersheds experiencing nutrient issues. A unique culmination of this and other water related partnerships was a very successful local candidate forum on water resources topics. The accomplishments of this public private partnership has been demonstrated at all significant benchmarks with excellent press in local newspapers.

A particular point of pride for the project sponsors is the large amount of data that has been generated through this effort. Data was both generated to produce the nutrient loading study and produced as an outcome. The loading estimates provide a baseline that can now be used to measure success of existing and future BMP's. Outside of the USGS loading study, the empirical surface water quality data that we have collected under this project will be used by Wyoming Department of Environmental Quality (WDEQ) to assess designated use support. It will also allow us to assess current stream health based on historic and future data collection. The momentum of this project is in itself an example of this project's success. We have been requested to present conclusions of the USGS nutrient loading study to our County Commissioners and Staff, which comes at a critical time, when our Land Development Regulations are being redrafted.

# Contents

Title Page: Final report for 205j Funding of the Fish Creek Watershed Voluntary Nutrient Reduction Program, Teton Conservation District, Jackson, WY .....	i
Executive Summary: Fish Creek Watershed Voluntary Nutrient Reduction Program .....	ii
Contents .....	iii
Section 2.0 Background .....	1
Section 3.0 Goals and Outcomes .....	1
Figure 1. Fish Creek monitoring sites. Fish Creek flows though the Town of Wilson in Teton County, Wyoming. ....	2
Section 4.0 Task Activities .....	4
Table 1. Detailed descriptions of the Fish Creek Watershed Voluntary Nutrient Reduction Program's tasks and their deliverables. ....	4
Section 5.0 Monitoring Results.....	4
Figure 2. Stacked bar chart summarizing richness of major tax (colors) by year, with separate panels for each site and season (Spring or Fall).....	5
Figure 3. Grouped bar chart of mean chlorophyll A concentrations by site and season (Spring and Fall). ....	6
Figure 4. A- Boxplots of nitrate concertation data from TVWSD/TCD cooperative sampling. TVWSD and TCD data are differentiated by color and grouped by site. B- Boxplots of TVWSD and TCD nitrate concentrations differentiated by color, and grouped by date. ....	6
Figure 5. Pie chart of the percentage of nitrate estimated to enter the Fish Creek Watershed by source, as described within the USGS Nutrient Loading Report.....	7
Section 6.0 Partners .....	8
Section 7.0 Information and Education.....	9
Section 8.0 Complications .....	9
Section 9.0 Recommendations .....	10
Section 10.0 Financial Summary .....	11
Table 2. Project budget, by task. Task expenditures are broken out by funding pools: 205j grant, TCD, or Federal. ....	11

## **Section 2.0 Background**

Fish Creek is an approximately 15-mile-long tributary to the Snake River, located in Teton County in western Wyoming near the town of Wilson (Figure 1). Fish Creek is an important resource for Teton County because it is used for irrigation, fishing, recreation, and adds significant scenic value to the properties it flows through. During the 1990's local anglers began to report increasing algae and rooted aquatic plants, and a significant decline in aquatic insect hatches. To address these concerns the Teton Conservation District (TCD) and the United States Geological Survey (USGS) initiated a series of scientific investigations to characterize the hydrology, water quality, and biologic communities of Fish Creek.

In September 2013 the USGS and TCD released the final report, Characterization of Water Quality and Biological Communities, Fish Creek, Teton County, Wyoming, 2007-2011 (Eddy-Miller et al. 2013). The report details that algal growth in Fish Creek is atypical when compared to other area streams. Using Chlorophyll-A as an indicator, Fish Creek samples at sites with perennial flow averaged more than 200 mg/m<sup>2</sup>. Typical concentrations found in other area streams range from 1.1 – 16 mg/m<sup>2</sup>. The water quality results, as well as our understanding that surface water in Fish Creek largely originates from groundwater, verified that nitrate is entering Fish Creek from groundwater. The nitrate found in both the groundwater and Fish Creek comes from a variety of sources including sewage/manure. These nutrient sources are hypothesized to have contributed to elevated algae growth, by increasing the potential for biomass production. The water quality in Fish Creek was sufficient to sustain aquatic life but statistically significant seasonal differences were noted in the aquatic insect community.

The phase of this ongoing effort that this grant supports originated due to partnership efforts between TCD and Friends of Fish Creek (FoFC), which is a relatively new not-for-profit formed to address the issues listed above. The collaborative approach has been a community initiative, and this grant helped secure funding and motivate the effort using a multi-pronged approach.

Fish Creek's groundwater dominance forces a watershed approach. Also, its small watershed size, tight community and its shared values elevate the justification and strength of a watershed approach. TCD and FoFC leveraged these points to form a Stakeholder Group of large players in the watershed. The Stakeholders all want Fish Creek to be a community asset, and to be considered stewards of this resource.

There is currently no formal watershed plan for Fish Creek, although, that is a logical next step. Because Wyoming Department of Environmental Quality (WDEQ) is just becoming closely involved, and data is being generated for their use, it makes sense to wait until a formal evaluation by WDEQ is complete before creating a Watershed Plan. Additionally, a WDEQ use support determination will drive next steps towards a potential TMDL or watershed plan.

## **Section 3.0 Goals and Outcomes**

The goal of the Fish Creek Watershed Voluntary Nutrient Reduction Program was to promote the reduction of nutrient inputs into the drainage with data driven community action. It was not suggested that this project would eliminate all nutrient inputs or stream health concerns in Fish Creek, but instead set a foundation for meaningful actions. Project partners consider this effort very successful because it brought

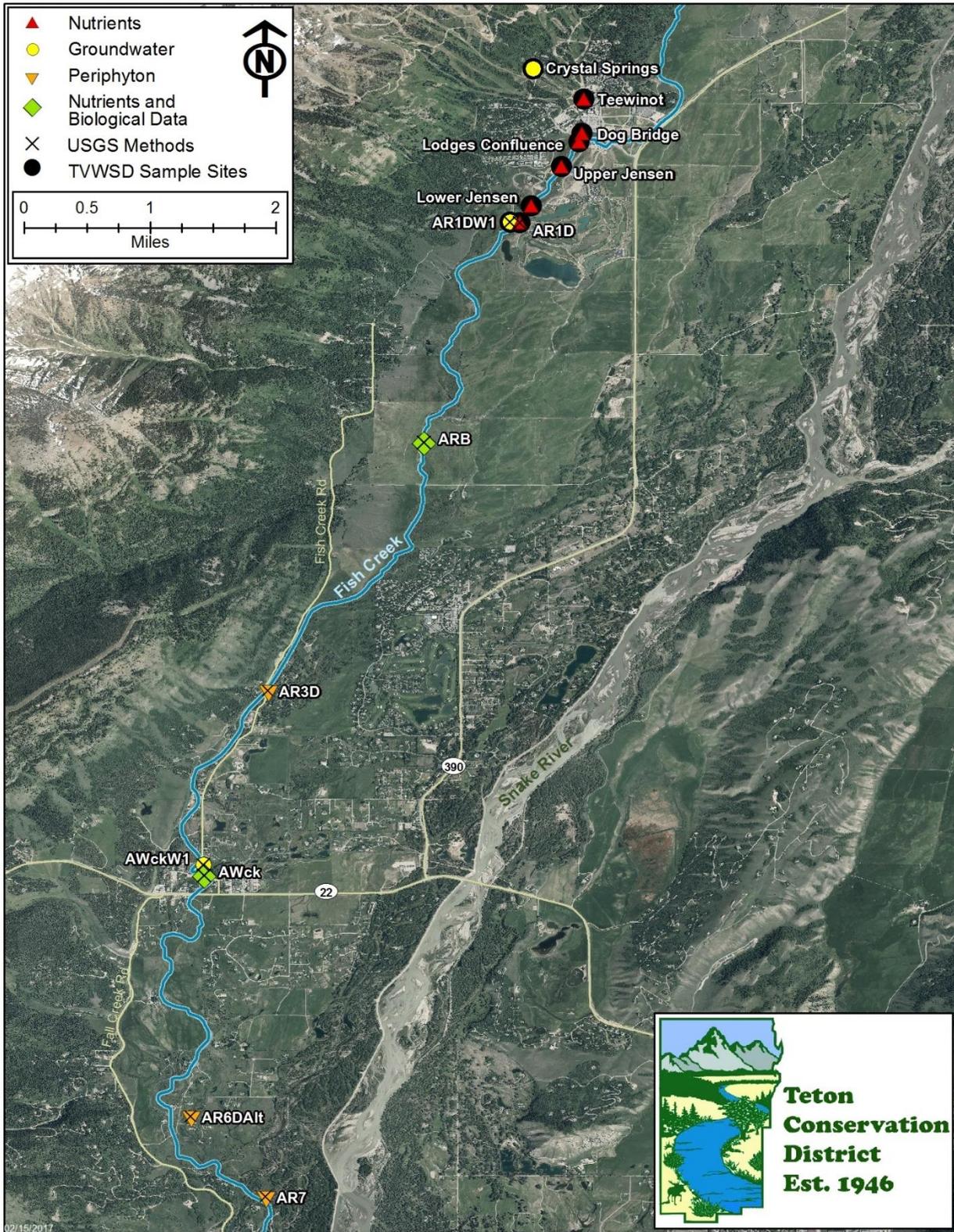


Figure 1. Fish Creek monitoring sites. Fish Creek flows through the Town of Wilson in Teton County, Wyoming.

community members together, resulted in significant community education, generated data to guide Best Management Practice (BMP) Implementation, and resulted in direct nutrient reductions through voluntary Stakeholder activities.

The planned environmental outcomes from this project were primarily based in monitoring and data gathering. Aligning with the intent of 205j Funds, this project was designed to set the stage for future environmental outcomes. The foundation to this strategy was using a community based approach- a Stakeholder Group, and to use data as guidance to the greatest extent possible.

Our first Outcome was to organize a Stakeholder Group that included TCD, FoFC, Teton County, local sewer and water districts, golf courses and resorts, landowners, Wyoming Game and Fish Department and other interested parties. We did this by obtaining the services of an independent 3rd party moderator (Flitner Strategies) to facilitate the strategy, formation and mediation of the stakeholder group. With the facilitator and Stakeholders, we established a collaborative solutions strategy, and identified the group's goals. In routine Stakeholder meetings we built consensus on the approach to use for outreach, stream health monitoring, methods for the nutrient loading study, and leveraged the groups knowledge to discuss BMP's.

Our Second Outcome was the completion of the USGS Nutrient Loading Study (Eddy-Miller et al. 2016: <https://pubs.usgs.gov/sir/2016/5160/sir20165160.pdf>). We developed the scheme of this study within the Stakeholder Group in partnership with USGS with the hopes of developing support for the final results. We leveraged Federal funding and USGS expertise and objectivity. This study estimated nutrient contributions by source and in space. USGS completed an anecdotal analysis outside of their publication that aligned existing surface and groundwater nutrient data with their loading estimates, and actual concentrations appeared to align with nutrients input estimates. The loading study was made public in a Stakeholder meeting, at which point BMP's were considered and discussed.

The last and final Outcome of this program was to continue data collection in surface and groundwater in the Fish Creek drainage to assess current water quality and biological conditions, but also to continue long-term trend monitoring that will allow the measurement of success of BMP's. Data collection was partitioned into two unique sampling plans. [1] TCD worked with WDEQ and a contractor to continue data collection per USGS existing methodology to collect spring and fall water chemistry, primary producer and aquatic macroinvertebrate sampling. [2] TCD also worked directly with Teton Village Water and Sewer District to develop and implement a paired nutrient monitoring sampling exercise above and below their groundwater discharge location. All data is being housed at TCD in a water quality database on a dedicated server. This data has and will continue to be available to agencies and the public upon request. This data will also be submitted to WDEQ directly, in association with this report.

Success of these projects was evaluated based upon the completion of the intended objectives along the planned timeframe, in successful partnership with the many collaborators. In addition to meeting intended goals of this project there were also secondary benefits. There were voluntary reductions in nutrients that resulted from changes in golf course management, waste treatment plant operation, and Teton County requiring proper residential waste treatment at residential sites. Indirect benefits resulted from the relationships that spawned from the Stakeholder Group and many tangential activities.

## Section 4.0 Task Activities

Table 1. Detailed descriptions of the Fish Creek Watershed Voluntary Nutrient Reduction Program's tasks and their deliverables.

Task #	Task Title	Task Description	Actual Deliverables
1	<i>Administration</i>	Administration of the project.	Reports, reimbursement requests, and other project management documentation as-needed to administer the grant award.
2	<i>Facilitation</i>	Contract an experienced, independent firm to facilitate and mediate the stakeholder process.	Hired an experienced, independent firm to facilitate the stakeholder process. Facilitators aided in getting community members to the table, kept meetings civil and focused, while building trust among the group.
3	<i>Chemical, Physical, Biological Monitoring</i>	Bi-annual data collection consistent with previous USGS/TCD Scientific Investigations	Contracted and worked to sample surface and groundwater chemistry, macroinvertebrates and plants in the fall and spring at sites along Fish Creek.
4	<i>Teton Village Water Quality Monitor</i>	The cooperative monitoring effort with the Teton Village Water and Sewer District is an excellent opportunity to work directly with a Fish Creek Stakeholder to monitor nutrient concentrations, while helping them meet their goal of not adversely impacting Fish Creek's water quality.	Monthly nutrient concentration data collection from surface water and groundwater well locations above and below their injection facility that meet WDEQ QA/QC standards.
5	<i>Nutrient Budget</i>	The nutrient budget will quantify the nutrient additions to the Fish Creek watershed for each known source and match the results to existing nutrient concentration data for validation	A publication of quantified nutrient concentrations from sources including: wastewater injection facilities, septic systems, livestock, fertilizer applications, irrigation diversions, avalanche explosives, and atmospheric deposition. This, for generation of targeted BMP's that address major contributors, and cost-benefit analysis of BMP's.

## Section 5.0 Monitoring Results

The Fish Creek Voluntary Nutrient Reduction Program had three distinct data oriented projects, each with its own set of objectives. Two of these were water quality monitoring projects, which were completed under WDEQ approved Sampling and Analysis Plans. The larger monitoring project used existing USGS water quality and biological monitoring methods. This data collection is intended to be used with a long-term Fish Creek dataset, but also will be submitted to WDEQ for a designated use support determination (Figure 1). The second monitoring project was a collaborative nutrient assessment with Teton Village Water and Sewer District (Figure 1). This data was collected to assess the potential that surface and groundwater nutrient concentrations could be influenced by their effluent discharge. The third data oriented project that did not involve monitoring was the USGS Nutrient Loading Study. While each of the projects had its own objectives, each was aimed at the overall goal of better understand the sources and effects of nutrients in Fish Creek.

Fish Creek sampling based on USGS sampling methodology was successful, in that our objectives were met, and that the data provides valuable insights into the health of Fish Creek and will be submitted to WDEQ. For this report, data collected under this grant will be used alongside existing data and reporting.

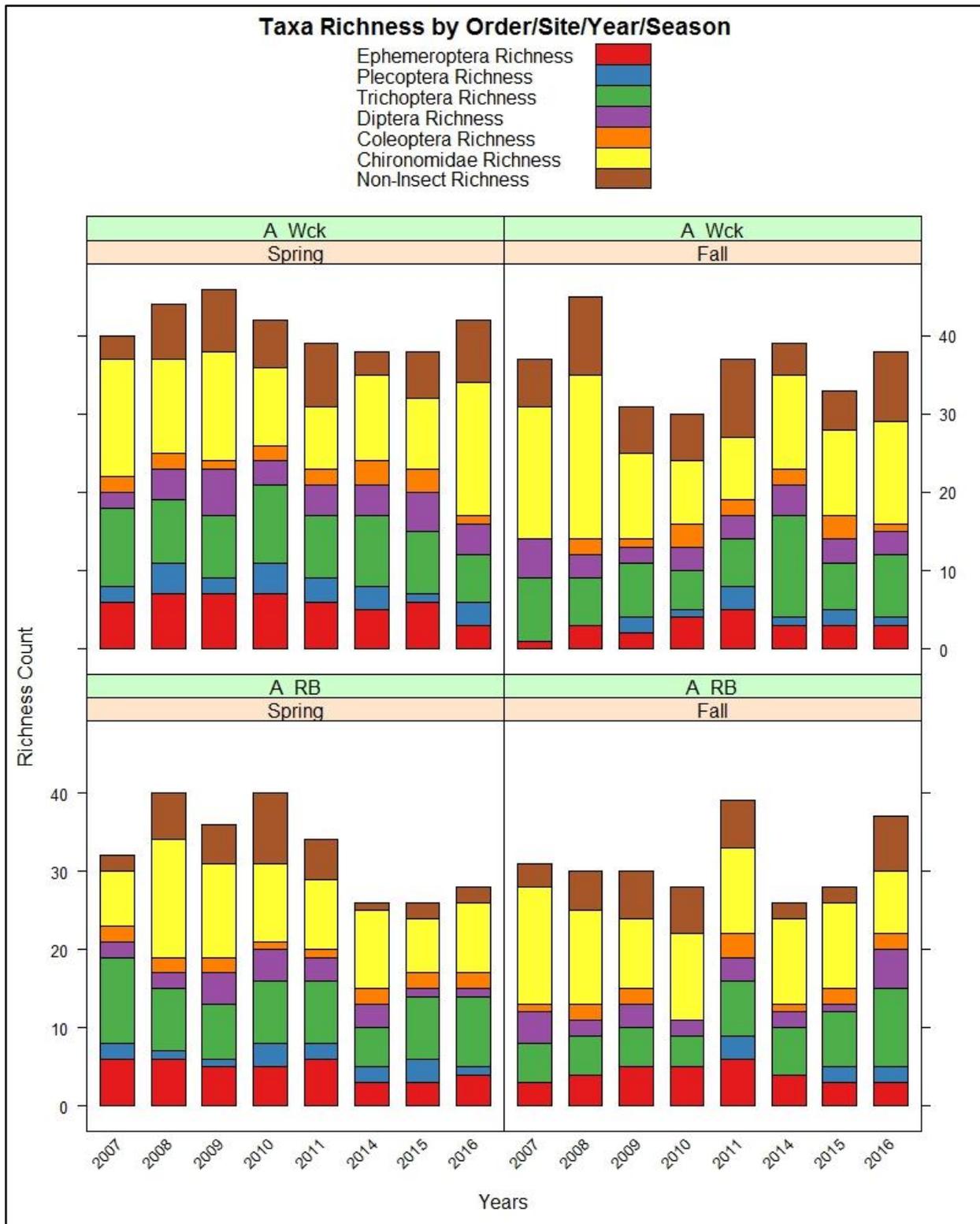


Figure 2. Stacked bar chart summarizing richness of major tax (colors) by year, with separate panels for each site and season (Spring or Fall)

The long-term trend of orders Ephemeroptera, Plecoptera, Trichoptera (EPT) shown in Figure 2 do not indicate any stark shifts in sensitive macroinvertebrate richness. Instead, the plots show some potential trends (spring samples at A-Wck show a general decrease in EPT richness through the sample period) and that there is year to year variation. Further analysis by WDEQ of these data will hopefully determine which taxa are present and missing, and how that relates to regional reference streams. Additionally, WDEQ and TCD collected control/reference macroinvertebrate samples on two different streams, which will also help to make more solid determinations of the stream health currently found in Fish Creek.

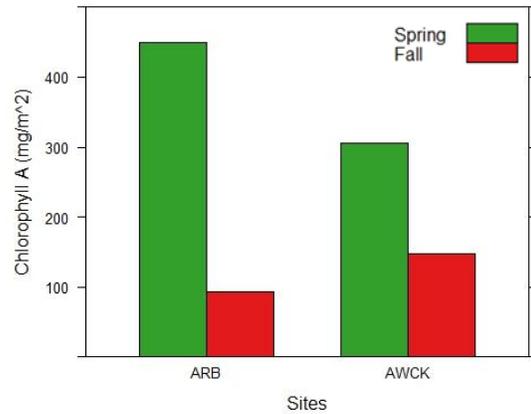


Figure 3. Grouped bar chart of mean chlorophyll A concentrations by site and season (Spring and Fall).

In combination with our long-term monitoring data on Fish Creek, macroinvertebrate data we collected do not meet the expectations of season trends shifting towards more degraded communities from spring to fall. Figure 2 depicts the loss of all Plecoptera taxa from spring to fall in some years during the 2007-2011 USGS study. The 2016 data, which was collected under this study does not show this trend.

One potential explanation for 2016's lack of the stated USGS shift toward more degraded bug communities from spring to fall can be found by evaluating our algae data collection. Chlorophyll A was used to quantify the amount of primary productivity present at the sampling locations, and was collected in the spring and fall at the same time as our macroinvertebrate samples. In our 2016 data collection, our chlorophyll-a concentrations decreased from spring to fall (Figure 3). Spring Chlorophyll-a concentrations were high, especially in the spring, compared to regional standards developed for streams. If Chlorophyll-a had increased from spring to fall, perhaps Plecoptera would have dropped off, as was seen by USGS. TCD also collected macrophyte data that has not yet been analyzed.

Spring and fall nutrient monitoring was also completed at surface and groundwater sites throughout the Fish Creek Watershed (not shown in plots). There were no water quality criteria exceedances, or strong trends indicating specific issues. The highest nitrate concentration found (1.00 mg/L) was at a Fish Creek surface water location, A-R1D. This was among the five nitrate concentrations found exceeding 0.5 mg/L and was therefore sent to the USGS Reston Laboratory where the nitrate was evaluated for its Delta 15

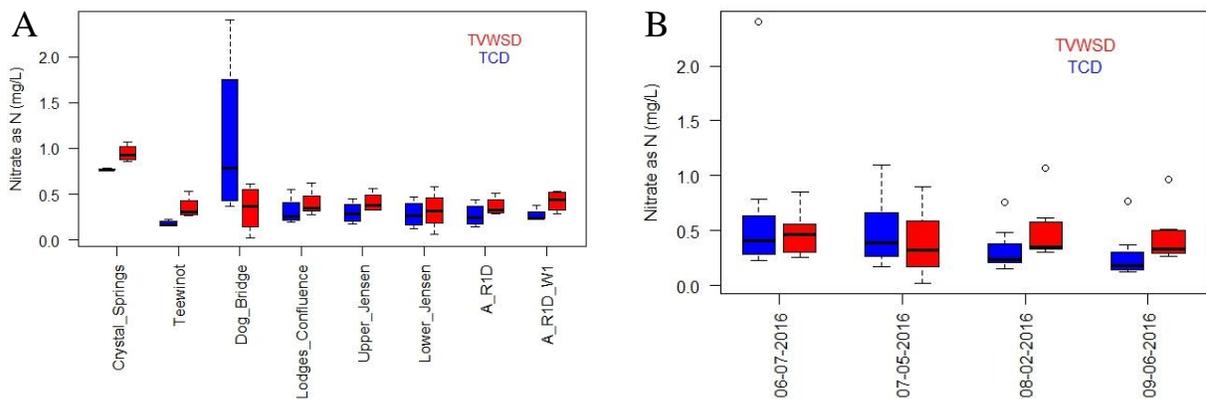


Figure 4. A- Boxplots of nitrate concentration data from TVWSD/TCD cooperative sampling. TVWSD and TCD data are differentiated by color and grouped by site. B- Boxplots of TVWSD and TCD nitrate concentrations

Nitrogen and Delta 18 Oxygen isotope ratios. The 1.00 mg/L nitrate sampled at A-R1D stood out from the other 4 samples evaluated for their isotope ratios. This sample from A-R1D had a Delta 15 N ratio of 15.45, putting it within the range expected for manure/septic/sewer sources. This same location has historically had Delta 15 N ratios in this range, and at that time was identified for expected wastewater effluent influence due to isotope signatures and also the presence of wastewater chemicals. Interestingly, wastewater influence was not supported by further nutrient sampling completed by TCD and Teton Village Water and Sewer District.

TCD’s Fish Creek nutrient sampling conducted in partnership with Teton Village Water and Sewer District helped develop a strong relationship among staff. It also yielded interesting results regarding the nitrate concentrations found within surface and groundwater, above and below their tertiary treatment and injection facility. None of TCD’s samples indicated that TVWSD was contributing measurable concentrations of nutrients to the study sites. Our paired sampling did shed light on potential strengths and weaknesses to TVWSD’s sampling and quantification methods.

For this project TVWSD and TCD each took samples at the same time and place. TVWSD used in-house equipment for nitrate quantification, whereas, TCD used a water quality lab. TCD used WDEQ approved QAQC criteria including blanks and duplicates, which allowed TCD to use their data as a standard for comparison to TVWSD data. TCD and TVWSD did not show good corroboration, per WDEQ’s relative percent difference calculations for nitrate. However, neither of TCD or TVWSD data had samples exceed WDEQ’s human health surface water numeric criteria for nitrate (10 mg/L), or implicate TVWSD injection as a cause of increasing nitrate below their facility (Figure 4A & B). TCD data did however show two interesting trends.

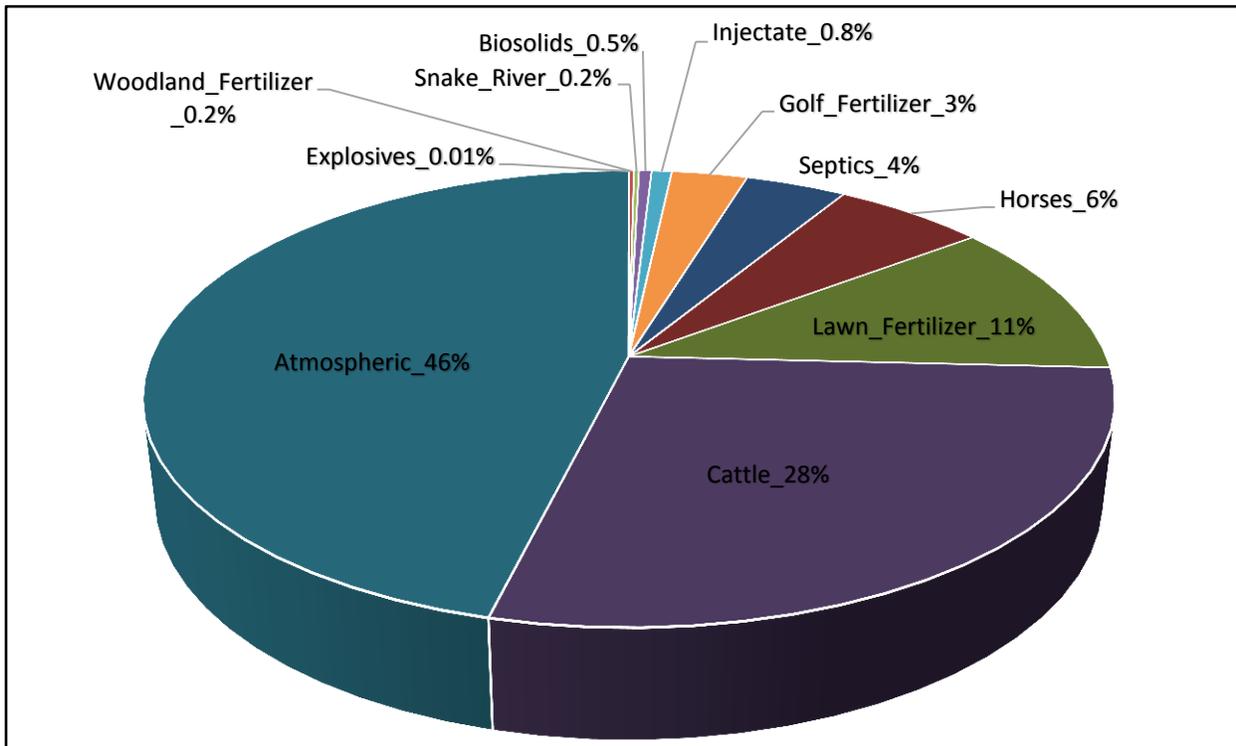


Figure 5. Pie chart of the percentage of nitrate estimated to enter the Fish Creek Watershed by source, as described within the USGS Nutrient Loading Report.

TCD nitrate concentrations did vary by site. The uppermost sampling location, Crystal\_Springs is a small spring on the lower part of the Jackson Hole Mountain Resort. Interestingly, there was very little variation in nitrate concentration at this spring, compared with the other sampling locations (Figure 4A).

Additionally, this site remained close to 1 mg/L nitrate throughout the sampling, which is relatively high for groundwater concentrations in the area. The Dog\_Bridge sampling site was chosen because there is a sump pump that discharges to Fish Creek immediately above this location. Our sampling corroborated pilot sampling, showing that this site had some of the highest nitrate concentrations within the study area (Figure 4B). Crystal\_Springs and Dog\_Bridge are considered to be above the influence of the TVWSD injection wells. Across almost all sampling locations, there was a trend of decreasing nitrate concentrations from the beginning to the end of the summer (Figure 4B).

While the USGS Nutrient Loading Study was not directly monitoring nutrient loads, it did generate numerical results (Figure 5). This study quantified the loading of the major nutrient input sources within the Fish Creek drainage using data provided by Stakeholders or data that was generated in ArcGIS. This study was designed to allow prioritization of BMPs and cost-benefit analysis. Because fate and transport were not considered in this study it is critical to acknowledge that the sources quantified have much different potential for uptake, denitrification and effect to Fish Creek. Major findings of this study included that roughly 50% of nitrates entering the watershed originate from atmospheric deposition; cattle waste is the next single largest nitrate contributor (~25%); and that generally, there is a variety of sources including residential factors like landscaping, septic systems and horses that combine to become about 20% of the total nitrate load. Our take away, especially after considering existing BMPs and potential uptake is that it will be important to consider a wide range of actions moving forward, because there are many large contributors of nitrate into the drainage. Publication of this study is one of the major education components of this project, especially because we have presented the report to the Stakeholder Group, and now have a request to do the same for Teton County Commissioners.

No true mathematical models were used during these data analyses. However, the USGS Nutrient Loading Study did use a spatial approach to estimate the spatial distribution of nutrient inputs into the watershed. In some ways this could be considered a spatial model.

Monitoring activities were all completed under WDEQ approved Sampling and Analysis Plans. These methods were followed with a high level of protocol compliance to assure that data can be used by WDEQ for future use support determinations in Fish Creek. In all cases, calibration was completed and logged, field logs were taken, data forms were filled out, duplicates and blanks were taken, and there was a strong overall effort to assure QAQC requirements were met. To my knowledge, our data has met these requirements.

## **Section 6.0 Partners**

The Fish Creek Voluntary Nutrient Reduction Program depended heavily on partnership. This grant allowed for close partnership with WDEQ because of the grant requirements, Sampling Plan development, and finally, amending this grant, and contribution of TCD staff time to WDEQ data collection for Fish Creek. The other very large partner was Friend of Fish Creek, a local advocacy group focused on improving and protecting Fish Creek. They were a project planning and funding partner. Trout Unlimited became another important partner as it was soon shown that their project planning and outreach

skills were particularly valuable to our team. Within the Stakeholder Group there were numerous partners, including representation from resorts, engineering groups, landscapers, waste treatment specialists, ranchers and landowners, Wyoming Game and Fish Department, and Teton County.

Two contractors were hired to complete the objectives of this program. Alder Environmental was hired after a competitive Request or Proposals for all contracted water quality and biological monitoring. They were excellent at working within the partnership framework, even though it required them to provide flexibility to accommodate the multiple groups involved. Flitner Strategies was hired for facilitation of the Fish Creek Stakeholder Group. They did an excellent job convening all relevant parties in the watershed. They helped devise an overarching plan, and helped build meeting agendas. They facilitated all of the meetings, providing a neutral mediator, and a demeanor that commands respect and builds trust. Flitner Strategies proved an excellent choice for their ability to manage groups and build relationships.

USGS was not only contracted for their technical services, but also provided matching funds for the nutrient loading study. Their scientific expertise objectivity strengthened the overall acceptance of their findings. TCD was able to work closely with USGS and provide them with local data for their analysis. This allowed their assessment to be primarily based on local empirical data whenever possible. The timeframe under which the resulting USGS publication was created and published was very short. This did not allow for review by TCD prior to publication, and was not ideal.

This grant provided a starting point for this multi-pronged program. The Stakeholder Facilitation and Fish Creek chemical, physical and biological monitoring will continue, and thus so will the relationships. The Teton Village and USGS projects were both building upon an existing relationship, and these partnerships will continue although they will be in a different capacity.

## **Section 7.0 Information and Education**

Newspaper reporting was a primary source of public outreach. We worked closely with a local reporter to create public awareness regarding Fish Creek issues and the strides being made to address them. Much of the additional public education and outreach for this project were done by Friends of Fish Creek, and consisted of newsletters, newspaper ads and social media posts. These efforts were completely synched with this project, but were paid for outside of this grant. Additionally, Fish Creek efforts resulted in a Town and County Elected Official Candidate Forum, which focused on local water issues. This was completed outside of this grant, but Fish Creek nutrient issues were a focus of the questions and resulting conversation. The outreach that has been conducted has reached many people. In addition to Stakeholders and General Public, this project has reached local politicians, Public Land Management Agencies, Land Trusts and students. We hope that this effort can also be used to support Statewide nutrient planning and project implementation.

## **Section 8.0 Complications**

All components of this project were completed successfully. The cooperative TCD/TVWSD nutrient sampling was only completed for one year, when we were hoping that it would run for two years. This was due to the difficult scenario of planning a project with two Board's governing staff roles and

responsibility, staff turnover, and general the difficulty of allocating Water and Sewer District Staff for surface and groundwater monitoring among their already busy schedule. I do not believe that this compromised this component, or the overall project. It sheds light on the difficulty of partnering, but does not counteract the overall importance of partnership. Usually, it takes a while to get a group agreed on a plan of action, and sometimes it takes an extra year.

We did modify the budget of this grant to accommodate the change from anticipated versus actual expenses of the different tasks. This was a useful endeavor considering the timeframe from beginning to end of this grant, and that changes are often to increase to efficacy of the project.

## **Section 9.0 Recommendations**

Voluntary Nutrient Reduction in the Fish Creek Watershed is an ongoing project for TCD and its partners. This grant was a kick start, which successfully initiated a series of important steps to create the foundation for work going forward. TCD and its partners will continue monitoring in the Fish Creek watershed to support WDEQ's use support determination. TCD and its partners will also continue to work with the Stakeholder Group to combine technical expertise and move forward with as much consensus as possible. We are looking forward now towards BMP's, which will come in many different forms. One such program that is planned targets residential homeowners- the Trout Friendly Lawns Program. This will support BMP's for landscaping. Another program that has been approved by the TCD Board, that is slated to begin in the Spring of 2017 is a septic system pumping cost-share program that is planned to increase awareness of septic system maintenance problems.

The completion of this project conveyed the importance of working within a Stakeholder Framework to break down barriers and find consensus prior to the initiation of projects. This project shed light on the importance of empirical data collection to set forth a plan of action for BMP's by changing perceptions about nutrient inputs in the drainage. The close partnership with WDEQ helped create relationships that have benefitted both agencies beyond this project. Overall, I am very happy that I put forth a complex plan under this grant, even though it complicated its administration. These are complicated issues that need to be addressed on multiple fronts, and through the partnerships built under this grant, I believe we will have better success.

Working with Jennifer Zygmunt and Richard Thorp at WDEQ was very effective and supportive. The people administering this grant have a large role in the success of the applicants. Making sure that the administrators are as well prepared and knowledgeable as Jennifer and Richard is the best thing that can be done for the 205j and 319 program.

## Section 10.0 Financial Summary

Table 2. Project budget, by task. Task expenditures are broken out by funding pools: 205j grant, TCD, or Federal.

<b>Task #</b>	<b>Task Title</b>	<b>205(j) Funds Expended</b>	<b>Nonfederal Match Expended (TCD)</b>	<b>Total NPS Expenditure s</b>	<b>Other Federal Funds Expended (USGS)</b>
1	Administration	\$0	\$0	\$0	\$0
2	Facilitation	\$9,375	\$28,125	\$37,500	
3	Chemical, Physical, Bio Monitoring	\$16,467.92	\$27,151.45	\$43,619.37	
4	Teton Village Coop Monitoring	\$532.08	\$2,734.08	\$3,266.16	
5	USGS Nutrient Loading Study	\$13,625	\$36,375	\$50,000	\$50,000
	<b>TOTALS</b>	\$40,000	\$94,385.53	\$134,385.53	\$181,985.53