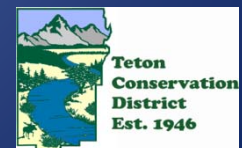


Fish Creek Ecosystem Evaluation and Protection

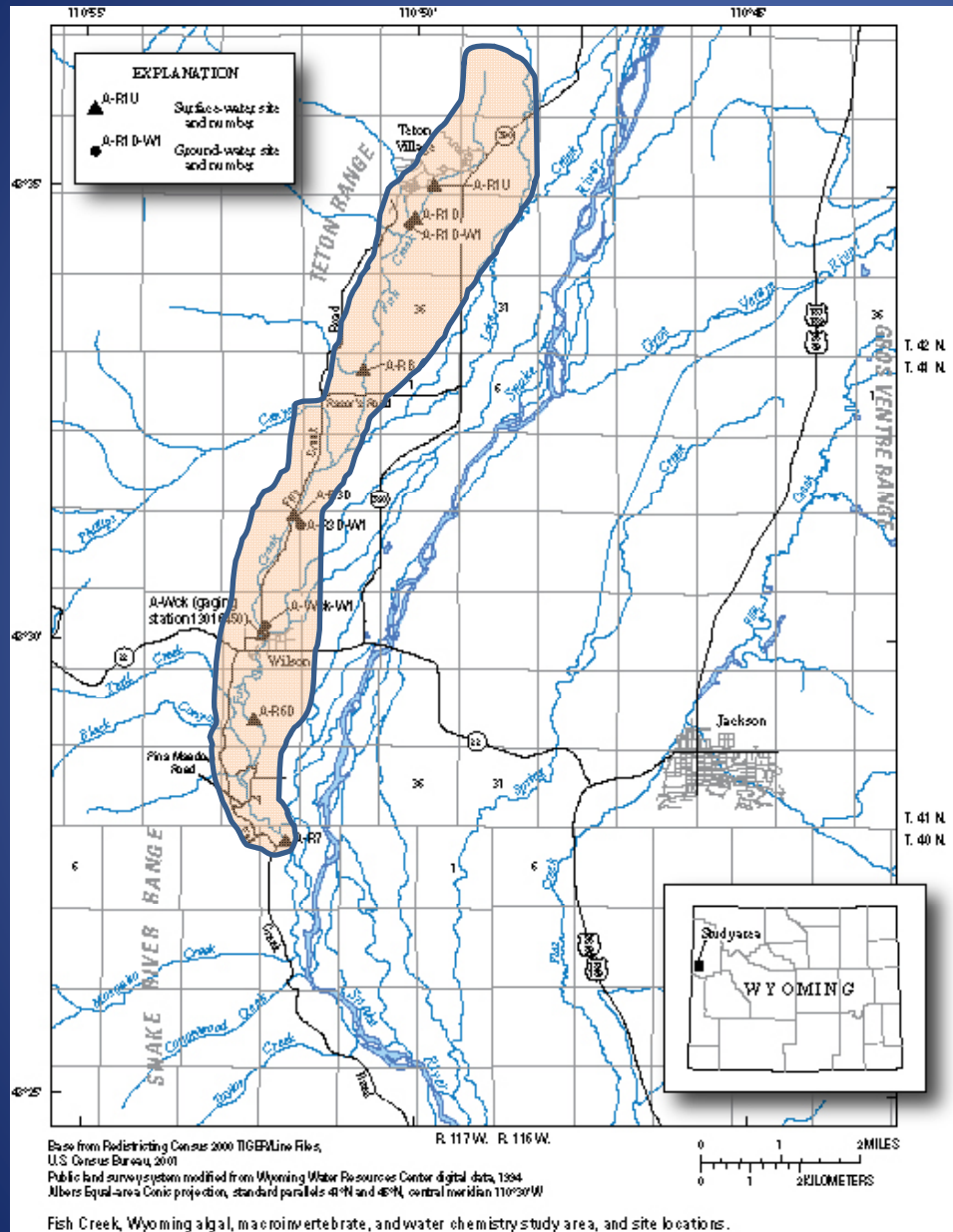


Project Sponsor:
**Teton Conservation
District**



Fish Creek

- Snake River tributary on western side of Jackson Hole
- Critical Snake River Cutthroat habitat
- Groundwater is large source of surface water
- Average summer flows range:
4 cfs, Teton Village
>500 cfs, Wilson



Why is Fish Creek Important to Wyoming?

- Critical habitat for Snake River Cutthroat Trout
- Tourism in Teton County/Wyoming
- Provides critical food resource for bald eagles/osprey
- Provides habitat and critical winter water supply for wild life



Why it all began

- 1990s, residents began noting excessive algal growth



Fish Creek at Crescent H



Fish Creek at Wilson



Fish Creek at Harringtons

Is Algae a problem?



- 2007, began assessment of chlorophyll
- Results:

Fish Creek (Wilson) avg: 605 mg/m²
Snake nr Flagg Ranch avg: 16 mg/m²
Snake nr Moose avg: 1.7 mg/m²
Salt River nr Etna: 1.1 mg/m²

- Yes, algal growth appears to be atypical (excessive for this type of creek)

Why does it matter if algae levels are high?



- Aesthetics
- Head gates
- Dictates the number and types of macroinvertebrates that can grow in a stretch of creek.

Next step: Why is algae high?

- Possible reasons:
 - Increased nutrients
 - Changes in creek temperatures
 - Changes in flow regimes



Current hypothesis

- Nutrients:
 - Possible non-point sources include:
 - Septic from homes
 - Lawn fertilizer
 - Golf course fertilizer
 - Treated sewage injection into Westbank aquifer
 - Confined animal manure



Approach to date

- Characterize system:
 - is algae atypical?
 - invertebrates types?
 - water quality?
- Nutrients....
 - Very low concentrations in creek
 - However, higher in GW (10X)
 - With 2 years of data, may be inverse relation of algae vs. nitrate.



Where to go now....

- Collect additional ecosystem data.
 - Biological data in particular is highly variable. To establish a baseline, need a minimum of 5 years of data.



Where to go now....

- Evaluate all parameters collected.
- Use data collected to date to establish:
 - Creek ecosystem baseline
 - Ecosystem interactions
- Answer questions:
 - Are there negative impacts of the algae?
 - Are the macroinvertebrates indeed impacted?
 - Are nutrients indeed driving algae production



Where to go now....

- Proposed project is more than collecting data... it is the path to understanding the complicated ecosystem.
 - Critical to ensuring appropriate BMPs are suggested



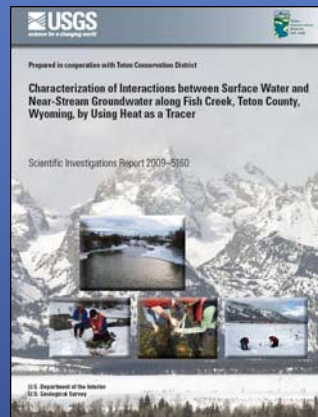
How to get there....

- Current plan is:
 - 2 additional years of ecosystem data.
 - Describe relationships between parameters
 - Collect isotope data to help describe where nitrate is coming from (animal/humans or fertilizer)
 - Write up findings in a peer-reviewed, publically available report
 - Remediation efforts may be costly and unpopular: must have best science possible



Milestones – Data Collection, Analysis, and Reporting

- Complete 2 additional years of ecosystem data collection: October 2011
- Complete analyses of isotope samples: May 2012
- Analyze raw data, write and publish peer-reviewed report: May 2013



Milestones – Public Outreach



- Open Houses: August 2010, October 2011, May 2012, May 2013
- Web site development: June 2010, with additions as they become available
- Newsletter creation and distribution: Annually, starting May 2010



Final Thoughts

- Not going to solve the entire puzzle of Fish Creek
- We will get an understanding of how different parts of the ecosystem relate to each other.
- Cause and effect information will allow the landowners, managers, and others to make decisions regarding the best way to protect the creek.

