

Willard Bay Mitigation Funds Project Plan Submittal

Submit Invoices to:

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Questions? Please email:

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1. Project Description and Grantee Information

1.1. Project Title: *Willard Creek Research and Riparian Improvement*

1.2. Grantee's Name and Contact Information

Name: Ben Watkins

Title: Teacher

Agency/Business: Box Elder High

Mailing Address: 380 S 600 W

City: Brigham City

State: UT

Zip: 84302

Phone: 435-734-4840

Email: ben.watkins@besd.net

1.3. Grant Award: \$6037.49

1.4. Project Duration:

Scheduled Project Begin Date__Oct 2014__ Scheduled Project End Date__Dec 2017__

1.5. Brief Project Summary (*This should reflect the requested changes since the initial application.*)

1.5.1. Description: We are interested in comparing 3 study sites: A) Channel Segments, Willard Bay State Park (site of oil spill); B) Willard Creek, State Park; C) Willard Creek, Beard property, east of I-15. We are interested in 4 questions:

1.5.1.1. What are similarities and differences in riparian habitat between sites A, B and C? What is the abundance and species diversity of terrestrial invertebrates in

each location? How will riparian tree plantings affect abundance and composition of terrestrial invertebrate assemblages?

1.5.1.2. How do fish assemblages (i.e. the collection of species) and fish populations compare between these three waterways?

1.5.1.3. What are trout and bass eating in these 3 waterways—terrestrial invertebrates? Aquatic invertebrates? Fishes?

1.5.1.4. What is water quality in each waterway? How do these data compare between A, B and C? How does water quality relate to invertebrate and fish samples?

1.5.1.5. How connected are sites A, B and C? Do trout travel between all three? How long are trout living? How much are they growing?

1.5.2. Location: A) Channel Segments, Willard Bay State Park (site of oil spill); B) Willard Creek, State Park; C) Willard Creek, Beard property, east of I-15.

1.5.3. Total Project Area or Linear Feet: Project area: 2,000 x 4,000 feet = 8,000 ft²

1.5.4. Summary of Project Goals:



1.5.4.1. Sample aquatic invertebrates

1.5.4.2. Sample terrestrial invertebrates

1.5.4.3. Measure stream bank health indicators

1.5.4.4. Willow plantings

- 1.5.4.5.Fish population sampling
- 1.5.4.6.Fish tagging
- 1.5.4.7.Gastric lavage
- 1.5.4.8.Fish aging
- 1.5.4.9.Water quality measurements
- 1.5.4.10.Flow measurements
- 1.5.4.11.Data entry
- 1.5.4.12.Statistical analysis
- 1.5.4.13.Report key findings

1.6.Key Staff, Key Project Partners, and/or Sub-consultants (If Sub-consultants have not been chosen, please describe in detail the type and extent of work that the Sub-consultant will be contracted to perform)

- 1.6.1.James Morgan, manager, Willard Bay State Park
- 1.6.2.Dr. Lynn Beard, property owner, Willard
- 1.6.3.Dr. Chris Hoagstrom, aquatic ecologist, Weber State University
- 1.6.4.Andrew Miller, science teacher, Box Elder High

2. Project Scope of Work & Project Schedule

2.1.**Detailed** Description of Goals and Associated Tasks:

2.1.1. Sample aquatic invertebrates at each site: In the spring and fall of each year, we will do a macroinvertebrate assessment, and use an index for water quality.

2.1.2.Sample terrestrial invertebrates: In the spring and fall each year, we will use pitfall traps along transects and other methods (e.g. sweep nets and visual surveys for spider webs) to assess what terrestrial invertebrates are found along stream banks.

2.1.3.Measure stream bank greenline, canopy cover, ground cover, and photopoint: In spring and fall we will use methods provided by Utah Water Watch to assess stream bank health and change in vegetation over time.

2.1.4. Willow plantings in areas of need: We will identify areas with relatively few or no deep-rooted vegetation and plant willows in those areas, from live stake cuttings. We will use jute mesh to secure the banks during times of heavy run-off.

2.1.5. Fish population sampling: Using electrofishing equipment, we will sample fish in all three waterways, spring and fall. All fish will be identified to species and measured to the nearest millimeter total length.

2.1.6. Fish tagging: Larger fish will be tagged to determine how connected our three sites are, how long fish are living, and how much fish are growing.

2.1.7. Gastric lavage: This will be used to determine trout diet. We expect to find a relationship between vegetation, invertebrate abundance, and trout diet.

2.1.8. Fish aging: Trout scales will be removed for aging in order to compare trout age and growth among sites A, B, & C and to populations elsewhere.

2.1.9. Water quality measurements: Each spring and fall (and possibly other months), dissolved O₂, turbidity, pH, temperature, and possibly hydrocarbons will be quantified.

2.1.10. Flow measurements: Stream width, depth, and velocity will be measured each spring and fall.

2.1.11. Data entry: Students will organize data in Microsoft Excel.

2.1.12. Statistical analysis: Students will use Excel and R to look for correlation between variables.

2.1.13. Report key findings: Project progress and findings will be reported to DWQ and shared with the school community.

(Add to this list as necessary. Procurement process for subcontractors should be indicated as its own goal with associated tasks, if applicable.)

2.1.11	0	0	0	0	0	0	0	
2.1.12	0	0	0	0	0	0	0	
2.1.13	0	0	0	0	0	0	0	
3.1	1600	0	0	0	0	1600	0	
3.2	1280	0	0	0	1280	0	0	
3.3.x	1857.49	* = 1857.49	All cells with an (*) will be part of the labor cost of \$1537.49					

4. Project Accounting

Specify how employee and volunteer time and expenditures will be tracked in order to ensure proper financial reporting.

4.1. Employee Time Track Recording & Reporting Procedures: Chris Hoagstrom will keep track of hours spent on project. Target hourly rate will be \$39.

4.2. Volunteer Time Tracking: Ben Watkins will track number of students and their volunteer hours.

4.3. Itemized Receipts for Accrued Expenditures Tracking Procedures: Chris and Ben will keep and submit receipts periodically to DWQ for reimbursement. They will also keep copies of receipts for their own records.

5. Permits, Design, Landowner Agreements

IMPORTANT: Where appropriate, list and attach applicable documents. Otherwise, indicate specific details and steps needed to obtain the necessary documents.

5.1. Permits: Willard Bay State Park (see attachment)—one year increments.

5.2. Conceptual Design (if applicable)

5.3. Design Specifications and/or Standards (if applicable):

5.4. Landowner Agreements: Dr. Lynn Beard, verbal permission, October 2014.

6. Project Risks & Mitigation Strategies

6.1. List possible risks or issues that may come up throughout the duration of the project and list strategies to plan for and overcome risks (*i.e. possible over budget, quality control for design, volunteers, environmental risks.*)

Table 6.1. Possible risks or issues that may come up throughout the duration of the project and list strategies to plan for and overcome risks.

Goal or Task number	Possible Risk or Issue During Project	Strategies to plan for and overcome risks
2.1.x	Injury to student	Have parents sign field trip release forms with emergency contact information

7. Deliverable Tracking and Reporting and Quality Assurance Plan

7.1. Deliverable Tracking and Reporting (*i.e. monitoring plan, photo documentation*):

Table 7.1. Deliverable Tracking and Reporting. How will successful implementation be reported, such as the creation of a monitoring plan or milestones, that show project progress.

Task	Monitoring plan or milestone to show project progress
2.1.x	Each spring and fall, students will create reports on project progress
2.1.x	Students will add photos and reports to a website: boxelder.weebly.com
2.1.3	Photopoint monitoring

IMPORTANT: DWQ expects biannual reports on projects, in April and October. The April report will allow for an update on where planning is, while October will allow for a report on the summer construction and project implementation. A form will be sent to you before the first reporting period is to occur.

7.2. Quality Assurance/Quality Control plan, if any:

8. Maintenance/Long-term Funding Plan

Describe how the project will be maintained and how it will continue to properly function after the project is completed (including how it will be funded, who will perform the maintenance, how often, etc.).

Willow plantings will be self-sustaining, since they will be on stream edges.

This is primarily a baseline study. However, near completion of the study, Dr. Chris Hoagstrom and Ben Watkins will consider seeking other grants to answer new questions that may arise.