



# 2026 On-the-Ground Project Application Form

## General Information

Project Name

Applicant Name

Is your organization registered with the Montana Secretary of State?

**Explanation:** Each applicant must be registered with the Montana Secretary of State to do business in the state of Montana. Registration with the Secretary of State may be completed via the following website: <https://sosmt.gov/business/>

Is your organization registered with the federal System for Award Management (SAM)?

**Explanation:** Each applicant is required to register with SAM. To register or check your organization's status, go to <https://sam.gov/content/home>. If you get an "Unsupported Browser" error, copy, and paste the link into a Google Chrome browser window.

Primary Contact  Title

Address  City  State  Zip Code

Phone Number  Email

Signature

**Explanation:** This is the person who DEQ would routinely contact to discuss project progress, billing, etc.

Signatory  Title

Address  City  State  Zip Code

Phone Number  Email

Signature

**Explanation:** This is the person who can legally sign contracts and other binding documents on behalf of the applicant (e.g., a board chair)

**Note:** The primary contact, signatory and landowner must sign the application. Signatures must be either signed electronically, or wet-signed, scanned and sent electronically.

Landowner Name

Landowner Signature

Landowner Name

Landowner Signature

Landowner Name

Landowner Signature

**Explanation:** Landowner signatures are required. Signing the application does not obligate the landowner to implement a project. Instead, it is

Your organization's Unique Entity Identifier number (UEI #)

MMJXECQ1AWA6

**Explanation:** Each applicant is required to have a current UEI number. The UEI number replaces the old DUNS number. If your organization had a DUNS number, you should have received a notification from the federal government indicating that your DUNS number has been changed to a UEI number. If you did not receive this notification, or if you never had a DUNS number, you will need to go to the federal government's System for Award Management (SAM - <https://sam.gov/content/home>) to obtain your UEI number. DEQ recommends starting this process early as it is very time-consuming, requires providing documentation-sometimes with follow-up requests for additional information, and can take up to 2 months to complete. If you need assistance, you may contact the federal help desk at 866-606-8220 Monday-Friday 8:00 a.m. through 8:00 p.m. EST.

Does your organization have adequate liability insurance for the risks associated with your project?

Y

**Explanation:** Each applicant must have or obtain liability insurance coverage meeting the requirements stated in the Draft Sample Contract and/or requirements negotiated based on the appropriate level of risk associated with the project.

Describe the technical and administrative skills your organization will use to effectively and efficiently complete your proposed project(s).

This application and proposed project is sponsored by the Lincoln Conservation District (LCD) . LCD is a special district governed by elected and appointed supervisors. It is staffed by a part-time administrator, Rhonda Rockwell. LCD is tasked with administering the (310 Law) in addition to providing natural resources and agricultural conservation education, watershed planning, and administration of a watercraft inspection station. LCD has previous experience with similar restoration projects and grant administration including Grave Creek, and Mud Creek. LCD currently contracts with Rae Lynn Hays of Sagemore Associates to provide grant writing and administrative services. Ms. Hays is the former administrator of the Lincoln Conservation District and has experience administrating local, state and federal grants. She assisted with the closeout of the last 319 grant on the Tobacco River. LCD also receives technical assistance in an advisory capacity MT FWP, NRCS, USFS, and DNRC.

Shawn Higley, WWC Engineering, provides technical support to the LCD. WWC Engineering brings over 40 years of experience in construction and water resource projects. They employ licensed and experienced staff in geomorphology, stream restoration, and water resources. Shawn is a licensed professional engineer (P.E) and hydrologist (P.H).

## Budget Form

Please fill out the On-the-Ground Project Budget Template (Excel file). Cells highlighted in yellow may be edited to fit the needs of your particular project. DEQ uses a template to construct nonpoint source grant contracts. The Budget Template contains tasks and typical deliverables that match up with the grant contract template. Please see the Example Contract and Scope of Work Template for a more detailed look at typical task requirements and deliverables.

## Project Form

A separate Project Form (including providing separate attachments) must be submitted for each project included in your application. . . . . lump and when to split projects.

Splitting Examples (fill out multiple Project Forms)

- Stream restoration work occurring on two separate streams..
- Two projects with significantly different sets of project partners.
- Two projects that address substantially different pollution sources (e.g., one project move a corral off of a streambank, and another removes mine tailings, with both projects being on the same property}.

Lumping Examples

- Contiguous stream restoration work spanning multiple land parcels.
- Three projects that address similar sources of pollution on a single land parcel (e.g., moving a corral off a stream, implementing a grazing management plan, and relocating a manure storage facility out of the floodplain, all on the same ranch}

# Project Form

A separate Project Form (including providing separate attachments) must be submitted for each project included in your application

**Project Name:**

## Required Attachments in Addition to This Form

- Letter of support from the organization that created or sponsored the creation of the DEQ-accepted Watershed Restoration Plan or the Tribe that created the EPA-approved Tribal Nonpoint Source Management Plan (if applicable).
- Letter of support from EACH landowner associated with the proposed project area (if applicable).
- Budget Table (see Microsoft Excel Template).
- Detailed Project site map(s)** Attach a map or set of maps showing the location and size of proposed activity if a site has been predetermined. The map scale must be between 1:1,000 and 1:12,500. The map(s) must have an aerial photo background (e.g., USDA NAIP photography, Google Earth imagery, etc.). The map(s) must show the latitude, longitude, site name, and landowner for the activity site. The map(s) should also identify waterbodies affected by the pollution that the activity is designed to address. *(This is in addition to adding points of the project location to the website on page 4).*

## Optional Attachments

Attach additional items and information that could help reviewers better understand your project. Information could describe public health risks, opportunities to leverage other funding sources, etc. However, application reviewers may have limited time available, and excessively long, optional attachments might not get reviewed. Do not attach copies of TMDL documents, TMDL implementation evaluations, Watershed Restoration Plans, Tribal Nonpoint Source Plans, or large comprehensive studies. The following attachments may be included. Please no more than 20 pages.

- Project Design Plans/Drawings
- Preliminary Engineering Reports / Site Evaluations
- Landowner Agreements / Construction Permits / Floodplain Permits
- Site photos
- Additional Letters of Support
- Other:
- Other:
- Other:

## Project Area

Please provide as detailed a description of the project area as possible.

List the counties in which the project will be located.

Lincoln

List the 12-digit Hydrologic Unit Codes (HUCs), sometimes referred to as Sixth Code HUCCS, in which the project will take place. Use the following link to help assist you in determining the HUCs: <https://apps.nationalmap.gov/viewer/>

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### Project Location Map

**In addition** to providing your own project site map, please go to the following website and follow the instructions to add your project location to the map.

<https://gis.mtdeq.us/portal/apps/storymaps/stories/42f4a668285c4ef6aa94b1623f10df57>

## Connection to a Previous or Ongoing Project

Is this project tied to a previous or ongoing project? If so, please describe the connection.

Grave Creek is a dynamic watershed with a long history of development. In the late 1800s, the valley encompassing Grave Creek was settled by early pioneers who cleared the valley bottom to accommodate agricultural practices. Prior to settlement, Grave Creek was characterized by several channels meandering through a dense spruce wetland. Upon settlement, the channels were filled, wetlands drained, and the combined flow of multiple channels diverted into what is now the present-day Grave Creek. For many years, the lower portion of Grave Creek was used for log drives, transporting logs from the upper watershed downstream to the Tobacco River. These log drives had significant impacts on the stream, leading to channel straightening, widening, shallowing and bank erosion. Although the log drives were discontinued after some years, their effects on lower Grave Creek are still evident today.

This project is a continuation of restoration efforts initiated in 2001 on Grave Creek. The Grave Creek Rehabilitation Project included a review of the past restoration work in addition to assessing newly identified deficiencies downstream of previous restoration efforts. The completed PER identified five distinct reaches (Three locations on the Flanagan Ranch in addition to Greer and Hearn locations) on Lower Grave Creek beginning 1/4 mile downstream from Vukonich Lane and extending 1/4 mile downstream of the Highway 93 crossing. Due to financial constraints, the projects were prioritized and will occur in phases. The proposed phase for this funding (Rehabilitation Phase 1 - Hearn) was prioritized due to the threat of septic contamination in addition to a steep, eroding streambank due to unstable geomorphic conditions. This phase of the project also involves an over-widened stream corridor. The Hearn Reach is a small residential parcel that includes a home and large garden. The newly constructed highway and bridge crossing is located upstream of this site. The landowners lack the financial resources to initiate this rehabilitation project or to move the septic system. In addition, the layout and topography of the property limits relocation options. The Greer reach as well as the Flanagan reaches (a portion of which was included in previous restoration efforts) will be implemented in phase II and phase III of this rehabilitation project.

The Grave Creek Rehabilitation Project Phase 1 Hearn, as well as previous projects on Grave Creek, provide reach-specific strategies for stabilizing streambanks, improving fish habitat, reducing sediment load, and mitigating flood risks.

Previous efforts included:

Grave Creek Demonstration (2001) - Evaluate stream restoration techniques

Grave Creek Phase One Restoration (2002) - Reduce sediment sources using natural stabilization techniques

Grave Creek Restoration Phase II (2004) - Realignment and restoration of 3,000 LF stream channel and floodplain

Grave Creek (2005) - Engineered structures repaired and built (log vanes, J-hooks, debris jams and revegetation)

Grave Creek (2006) - Continued revegetation efforts and maintenance of structures built in Phase 1 and Phase II

Grave Creek (2007) - improving rock cross vane structure to enhance fish passage and improve water flow to irrigation

Grave Creek (2008) - Further enhancing revegetation efforts with floodplain microtopography and vegetated soil lifts.

The previous project used a combination of channel spanning structures and bank treatments to develop a single threaded channel. Many of these structures have failed. The failure mechanisms are unknown, however, developing designs that account for the high sediment loading was identified as a key design element.

# Project Purpose

Select the watershed restoration plan or tribal nonpoint source plan that your project will help implement (please type in if missing from list) (Not required for HAB reduction projects)

Kootenai Basin - Kootenai River Network Inc

Letter of support from author, or if the author was contracted, the author sponsor, attached? (If no, explain why below.)

**IMPAIRMENT LISTINGS:** Projects that address water quality impairments on Montana's 2020 List of Impaired Waters are preferred though not a requirement. Funding may be used for projects that protect waterbodies that are demonstrated to be healthy.

Waterbody name from the 2020 List of Impaired Waters

Grave Creek

Probable causes of impairment to be addressed

Sedimentation/Siltation - Non-pollutant causes include flow regime modification and alteration in stream-side or littoral vegetative covers resulting from silviculture harvesting, water diversion, and forest roads.

Waterbody name from the 2020 List of Impaired Waters

Probable causes of impairment to be addressed

**HEALTHY WATERSHEDS:** While project funding is prioritized to addressing known impairments, funding can be used to protect healthy waters from becoming impaired.

Name of healthy waterbody to be protected

Description of identified threat

Name of healthy waterbody to be protected

Description of identified threat

# Project Partners

Identify each of the project partners and describe their contribution to the project. Include landowners, land managers, project designers, funders, and your own organization. Indicate whether each partner, other than your organization, has provided a letter of support. *(Note: each landowner must provide a letter of support if project site(s) have been predetermined.)*

Landowner	Contributions to Project	Letter of Support Attached?
Doug and Roze Hearn	Landowner and project support	<input checked="" type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

Project Partner	Contributions to Project	Letter of Support Attached?
Lincoln Conservation District	Project Sponsor	<input checked="" type="checkbox"/>
Kootenai River Network	Letter of Support	<input checked="" type="checkbox"/>
WWC Engineering	Project Designer	<input type="checkbox"/>
Montana Department of Natural Resources and Conservation (DNRC)	Technical assistance and funding for stream restoration projects	<input type="checkbox"/>
Montana Department of Environmental Quality (DEQ)	Technical assistance and funding to improve water quality	<input type="checkbox"/>

# Project Coordination and Planning Task

This task would include completion of all applicable planning tasks from the list below, as well as coordination and oversight of the efforts of all project partners.

**Identify the status of the following project planning tasks, where applicable.**

	Completed?	Copy Attached?	To Be Completed Pre-Contract (Oct 2026)?	To Be Completed as Contract Deliverable?
*Draft Project Designs .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*Final Project Designs .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultation With Potential Regulators .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Necessary Permits .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural Resources Inventory <i>{if relevant}</i> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**\*\*See Call for Applications Section 5.1 for minimum design standards.**

Describe any additional project planning that will have been completed prior to execution of a contract (October 2026).

Lincoln Conservation District is applying for a 2027 RRGL Grant for match funding on this project in May 2026. LCD will also be monitoring grant solicitations for Trout Unlimited as well as NRDP for additional funding opportunities. The landowners lack the financial resources to implement this project.

Describe any additional project planning and coordination that will need to be completed after the execution of a contract (October 2026).

Lincoln Conservation District will be awaiting funding approval for the 2027 RRGL Grant Cycle which will be used for required 319 match funding. LCD anticipates award announcements April 2027. Upon successful grant contracting, WWC Engineering will complete final design, and LCD will put the project out for bid as part of the procurement process. LCD will review bids and award contracts for project implementation.

# Landowner Agreement Task

DEQ includes the following language in every nonpoint source contract involving on-the-ground activities:

*Contractor shall submit signed landowner agreement(s) verifying that Contractor and DEQ staff may access the project site, at reasonable times and with prior notification, for the purposes of project planning, implementation, and post-implementation monitoring. The agreement(s) must ensure appropriate operation and maintenance of all structures, vegetation, and management measures for the life of the project (typically 10 years). If grazing will be allowed within the project area, the agreement(s) must include a sustainable management plan for livestock grazing, designed to protect and enhance riparian function. If a signed landowner agreement does not meet the above-stated minimum requirements, Contractor shall negotiate an amended agreement with the landowner that ensures appropriate operation and maintenance of all structures, vegetation, management measures, and includes a sustainable management plan for any livestock grazing for the life of the project (typically 10 years).*

Identify the status of the following landowner agreement tasks, where applicable.

	Completed?	Copy Attached?	To Be Completed Pre-Contract (Oct 2026)?	To Be Completed as Contract Deliverable?
Draft Landowner Agreement(s) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Final Landowner Agreement(s) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grazing Management Plan .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Project Effectiveness Monitoring Task

**If you will be conducting any on-the-ground implementation work**, you will be required to complete the monitoring activities described in the task language below, as applicable. Describe below how you plan to determine the effectiveness of your project. Project effectiveness success criteria should be time-bound and assess each project objective quantitatively. Success criteria should clearly define adaptive management thresholds. Examples may include: a minimum 25% decrease in sediment/nitrogen/phosphorus load within 2 years; a 70% survival rate of containerized plantings after one year.

**If you are applying for nonpoint source grant funding for project design only**, and not for project implementation, you may either skip this task, or describe below which parts of this task you intend to complete:

Contractor shall, in consultation with the DEQ Project Manager, develop a reasonable method or set of methods for evaluating and reporting on the effectiveness of the project in addressing water quality issues. Contractor shall complete a monitoring plan to guide monitoring activities. Contractor shall complete the following monitoring activities:

Indicator	Design Feature/Purpose	Monitoring Method	Success Threshold	Trigger for Adaptive Action
Toe-wood stability	Stabilize banks, create habitat	Visual inspection, fixed photo points, GPS stake checks	≥95% structure intact after each runoff season	Shifting logs, exposed anchors, bank slumping
Min-vane performance	Flow deflection, scour pool creation	Longitudinal profile survey, scour pool depth measurement	>1.5 ft deep scour pools; no structure undermining	Loack of sour, vane rotation, toe scour
Bankfull bench function	Sediment storage, vegetation growth, floodplain reconnection	Benchmark re-surveys, vegetation transects, depositional mapping	≥1" sediment deposition/year; ≥60% native cover by year 3	<50% survival; dominance by invasives
Scour pool development	Enhance aquatic habitat	Pool surveys: depth, area, residual pool depth	>1 pool every 5-7 channel widths; >2 ft residual depth	Pool infilling or channel flattening

## Example Task Language

*Contractor shall, in consultation with the DEQ Project Manager, develop a reasonable method or set of methods for evaluating and reporting on the effectiveness of the project in addressing water quality issues. Contractor shall complete a monitoring plan to guide monitoring activities. Contractor shall complete the following monitoring activities:*

- *Estimate the sediment load reductions (tons/year) achieved through implementation of the proposed restoration activities and management practices.*
- *Estimate the nitrogen load reductions (pounds/year) achieved through implementation of the proposed restoration activities and management practices.*
- *Estimate the phosphorus load reductions (pounds/year) achieved through implementation of the proposed restoration activities and management practices.*
- *For projects designed to address pollution from pollutants other than nitrogen, phosphorus and sediment, evaluate and report on the effectiveness of the project in addressing water quality issues.*
- *Contractor shall collect data, as directed by the DEQ Project Manager, to be used in estimating sediment, nitrogen, and phosphorus load reductions (and for harmful algal bloom reduction projects, carbon sequestration/emissions reductions) achieved through implementation of restoration activities and management practices designed to address these pollutants.*
- *Use the following measures to evaluate the sustainability of restoration activities and management practices:*
  - *[Vegetation mortality rate.]*
  - *Pre- and post-construction photo point monitoring consistent with the "Oregon Watershed Enhancement Board Guide to Photo Monitoring" methodologies, or a similar published photo point monitoring method accepted by DEQ. The U.S. Forest Service provides additional photo point monitoring guidance in the "United States Forest Service Photo Point Monitoring Handbook".*
  - *[Riparian survey.]*
  - *[Other.]*

Please describe any additional monitoring you intend to do as part of the project.

BEHI pre-and post-implementation will be implemented to evaluate effectiveness of sediment reduction.

# Project Implementation Task

Provide a **detailed description of the solution you are proposing** to implement to address a nonpoint source pollution problem.

- Describe the practices you intend to design and/or implement to solve the problem (what, where, when, how much or how many).
- Describe the anticipated maintenance needs (what, where, who, how long).
- Refer to the minimum design standards in the Call for Applications.
  - *Please fill out this section to the best of your ability, even if you are only seeking funding for project design.*

The Hearn Reach, Phase 1 of the Grave Creek Rehabilitation Project, is exhibiting severe streambank erosion, evident in the tall, nearly vertical and actively sloughing banks composed primarily of unconsolidated alluvial material. The probable sources for the impairment include agriculture, grazing, silviculture, including logging and road maintenance, dams, and flow regulation/modification upstream from this site. The purpose of the Grave Creek Rehabilitation project is to return Grave Creek to a more natural, stable, and historical condition resulting in ecological health that can support aquatic life. The project will significantly reduce sediment loading and active transport from this location (as well as the next phases of this project) that will significantly reduce downstream siltation.

This reach of Grave Creek will require approximately 250 feet of targeted restoration to address excessive bank erosion and sediment loading from a high terrace on the left bank. The objective is to reduce localized shear stress, reconnect the floodplain, and enhance long-term bank stability while accommodating the dynamic sediment and flow conditions typical of Lower Grave Creek. Based on performance data from similar stabilized alluvial reaches in northwest Montana, properly designed bioengineered stabilization reduces erosion rates by 80–95% once vegetation is established. This is estimated to reduce annual sediment load by at least 40 tons per year.

To achieve this, the project will involve construction of a 30-foot-wide vegetated bankfull bench at the base of the high terrace. The bench will be established through minor channel realignment within the existing bankfull corridor, allowing for improved flow deflection and energy dissipation. This new bench will tie into existing stable bankfull benches immediately upstream and downstream, reinforcing continuity along the reach.

The project analysis included numerous alternatives. The selected approach combines channel realignment and floodplain bench construction with a suite of complementary stabilization measures designed to address both short and long-term geomorphic and hydraulic challenges. This integrated solution emphasizes flexibility, floodplain connectivity and adaptive stability rather than rigid channel confinement.

Key Design components include:

**Toe-Wood Bank Stabilization:** Large wood will be placed along the toe of the newly constructed bankfull bench to resist erosion, promote sediment retention and establish undercut bank habitat. Toe-wood will also support riparian vegetation development by creating low-velocity zones at the bench toe. Coir wrapped solid lifts with willow live stakes will be placed above toe-wood structure to approximately bankfull elevation.

**Mini-Vane Rock Structures:** Two mini-vanes constructed of large boulders will be installed. These structures will redirect flow away from the high terrace and reduce near-bank shear stress, while also inducing localized scour pools to enhance aquatic habitat diversity.

**Floodplain Roughness and Sills:** Boulder sills will extend laterally from the mini-vanes into the floodplain and up to the high terrace. Willow transplants will be installed as willow trenches every 40–50 feet along the constructed bankfull bench. These features will act as floodplain containment and energy-dissipation elements, reducing the risk of avulsion of lateral channel migration into the newly filled bankfull bench area. Additional woody debris and native vegetation clusters will be placed across the bench surface to further increase hydraulic roughness and promote sediment deposition.

**Material Sourcing and Site Balancing:** Excavation on the right bank will be used to generate material for the left bank bench, improving grading efficiency and reducing material import needs.

The large boulders proposed for the mini-vane structures and associated floodplain sill elements will be contextually appropriate and consistent with the natural bed material and coarse sediment found within Grave Creek and the surrounding watershed. Field observations and geomorphic assessments conducted during the July 2024 site visit indicate that the streambed and banks in this reach contain a mixture of gravel, cobble, and occasional large cobbles and boulders derived from glacial and alluvial deposits common throughout the basin. The boulders selected for use in the project will therefore be sized to match the upper end of the naturally occurring particle size distribution already present in the system, rather than introducing materials that exceed natural geomorphic conditions.

The intent of incorporating these boulders is not to armor the streambank or create riprap-like protection, but rather to provide strategically placed grade and flow control elements that support natural stream processes. The mini-vane structures are designed following natural channel design principles and will consist of a small number of partially buried boulders installed at low angles to redirect flow away from vulnerable banks and reduce localized shear stress. These structures work in conjunction with toe-wood bank stabilization, vegetated soil lifts, and riparian revegetation to promote sediment deposition, encourage vegetation establishment, and allow the channel to adjust naturally over time.

Unlike riprap, which typically involves continuous rock armoring along a bank, the proposed mini-vanes and floodplain sills are discrete, widely spaced features intended to guide flow and stabilize the channel while maintaining natural channel dynamics. Much of the bank stabilization in this reach will be achieved through large woody debris, vegetated soil lifts, and riparian plantings, with the boulders serving only as localized structural anchors that enhance the stability of these natural materials under high-flow conditions.

The design approach prioritizes process-based restoration, where natural materials and geomorphic processes are used to stabilize the channel and reconnect the floodplain. The limited use of boulders is intended to support the long-term resilience of the natural stabilization measures, not to replace them with hard armoring. As such, the proposed structures are fundamentally different from riprap installations and are consistent with accepted stream restoration practices used throughout Montana and the Pacific Northwest.

## Education, Outreach and Training Task

To get good projects on the ground, trained staff and board members and educated, enthusiastic landowners are required. To promote the development of future projects, DEQ encourages project sponsors to use up to \$5,000 per project of funding to support training and conduct education and outreach. Example training topics might include: project management, public procurement, technical writing, GIS, water quality monitoring, web design, public speaking, human resource management, photo journalism, UAV (drone) piloting, financial management, and restoration techniques. Education and outreach activities might include targeted landowner outreach, conducting project site tours for local landowners, tabling at community events, holding a watershed festival, providing stipends and travel reimbursements for speakers and participants to attend a nonpoint source pollution prevention workshop, or generating articles for social media. The primary requirement for training and outreach is clearly explaining how the activity generates behavior change to address nonpoint source pollution. Funding may not be used to pay for food and beverages, or for honorariums and gifts.

Describe the education and outreach activities or training you will complete to promote behaviors or facilitate future efforts to reduce nonpoint source pollution. Additionally, identify the goals of the training/education and outreach activities.

**Board Capacity Training:** The Lincoln Conservation District board of supervisors and staff will receive training to increase engagement and expand capacity for public outreach efforts.

**Tabling at community events:** LCD will develop displays and handouts to educate the community on nonpoint source pollution prevention and the impact to water quality. These will also feature the Grave Creek Rehabilitation Project.

**Social Media Campaign:** LCD will feature posts about water quality and nonpoint source pollution on its Facebook page. These posts will also be shared to community groups.

**Stream trailer youth and community education:** LCD will utilize its stream trailer for hands-on demonstrations to youth and community members. A stream trailer is a mobile, hands-on educational exhibit. It includes a large, slanted trailer bed filled with sand or plastic grit to simulate natural river systems. It uses a closed-loop water pump system to demonstrate stream processes, including erosion, meander formation, sediment transport, and the impacts of land use on water quality. The LCD will feature the trailer at after-school events and natural resource educational events that occur through the spring.

**Grave Creek Rehabilitation Project Tour –** LCD will organize a tour to the rehabilitation site for interested participants. It will feature before photos that can be used to compare/contrast current conditions and demonstrate techniques used to improve water quality through reduction of sedimentation.

Identify the specific target audience and method of delivery. Additionally, describe how the proposed training and/or education and outreach will increase local capacity and interest for addressing/promoting behavior change to reduce nonpoint source pollution.

**Board Capacity Training:** The target audience will include at least four supervisors and one staff member. The proposed training will increase the knowledge base, interest, and capacity to balance routine board activities and expectations with outreach efforts such as youth educational events, discussions at on-site inspections, and promotions at community events.

**Tabling at community events:** The target audience will be attendees at two yearly events such as the County Fair, local farmers markets, and natural resource educational events. These outreach opportunities will provide educational materials to increase awareness and suggest strategies for community members to reduce nonpoint source pollution activities such as fertilizer/pesticide use, maintaining septic systems, and planting native vegetative barriers along waterways. LCD is targeting the distribution of 200 fact sheets.

**Social media campaign:** The target audience will be Facebook users, primarily within the Lincoln County demographic. The posts will feature educational information about nonpoint source pollution in addition to the Grave Creek Rehabilitation project. The posts will feature questions designed to increase engagement and observe behavioral changes. LCD is targeting a 10 percent increase in page engagement.

**Stream Trailer Youth and Community Education:** LCD projects 100 youth and community members will engage in hands-on activities to learn about the impact of building a home near a stream as well as activities such as livestock watering, grazing, fertilizers, and stream channel manipulation. The goal is to create behavioral changes for landowners as well as future landowners living adjacent to streams.

**Grave Creek Rehabilitation Project Tour –** LCD will host a tour for the community to view the site. LCD projects 25 people will attend. While landowners on Grave Creek are already engaged, the intent is that landowners on other streams will implement practices such as riparian buffer strips, thoughtful planning of infrastructure prior to construction on sites adjacent to waterways, and other nonpoint source pollution prevention practices.

Describe how you will evaluate the effectiveness of the proposed activities.

Assessments, self-reporting, direct observation, and social media engagement methods will be used to evaluate the effectiveness of the proposed activities.

## Project Administration Task

Please use the task description below as a guide when calculating your budget for project administration. DEQ typically includes these requirements in every nonpoint source grant contract, with only minor variation. Funding applied to the Project Administration Task on each project must not exceed 10% of the total amount of funding requested, or \$12,000, whichever is lower.

### Example Task Language

*Contractor shall oversee and be accountable for the completion of all tasks. Contractor shall maintain regular contact with the DEQ project manager. Contractor shall prepare and submit Status Reports, Final Reports and Attachment B Billing Statements according to the format and schedule described below.*

### Report Format

- *Contractor shall submit each Attachment B Billing Statement, Status Report and Final Report using the most current reporting guidance and templates provided by the DEQ project manager.*
- *Contractor shall ensure each Status Report and Final Report contains adequate documentation to justify accompanying reimbursement requests and match reporting, to the satisfaction of the DEQ project manager.*
- *Contractor shall ensure that the Final Report is a standalone document describing all contract activities and containing copies of all contract deliverables (even if the deliverables were previously submitted).*

### Reporting Schedule

- *Status Reports: Due June 15th and December 15th of each year the Contract is in effect, and each time an Attachment B Billing Statement is submitted.*
- *Draft Final Report: Contractor shall submit a complete draft Final Report for DEQ review and comment at least 15 days prior to the contract expiration date.*
- *Final Report: Contractor shall submit a Final Report, addressing DEQ comments on the draft Final Report, on or before the Contract expiration date.*
- *Attachment B Billing Statements: Contractor shall submit an Attachment B Billing Statement with each Status Report, or Final Report submitted to DEQ while the Contract is in effect. To maintain cash flow, Contractor may submit interim Attachment B Billing Statements as frequently as monthly during the term of the Contract. However, each interim Attachment B Billing Statement must be accompanied by an Interim Report.*

# Project Timeline

4Q 1Q 2Q 3Q 4Q 1Q 2Q 3Q 4Q 1Q 2Q 3Q  
 2026 2027 2027 2027 2027 2028 2028 2028 2028 2029 2029 2029

Project Coordination and Planning Task	<input type="checkbox"/>	<input type="checkbox"/>										
Landowner Agreement Task	<input type="checkbox"/>	<input type="checkbox"/>										
Project Effectiveness Monitoring Task								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Project Implementation Task					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Education, Outreach and Training Task			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Project Administration Task	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Co-Benefit Considerations

DEQ is committed to carrying out nonpoint source pollution reduction projects within engaged communities where the impact stretches beyond improving water quality. DEQ will award additional points in the scoring form where co-benefits extend beyond the project. Below are a few examples of how projects might exemplify co-benefits.

- Project will reduce economic hardship such as from livestock mortalities, cost and energy needs to treat municipal drinking and wastewater treatment, or loss of income from recreation
- Project will benefit underserved markets
- Project will improve or create equitable access to a clean and healthy environment
- Project planning included consultation with Tribal Nations
- Project will improve flood and drought resilience of the landscape
- Project impacts will benefit a downstream community and other natural systems (e.g., drinking water sources, human health, wildlife habitat, etc.)

Please use this section to highlight co-benefits your project may have.

\* This project will reduce economic hardship for landowners who lack financial resources as well as real estate to relocate a septic system and reduce erosion resulting in sedimentation. Preventing the septic from seeping into Grave Creek will also benefit downstream users, fish, and wildlife.

\* This project will benefit recreationists by reducing erosion and increasing fish habitat.

\*This project is expected to decrease flood-related damage costs to landowners and local governments. While Grave Creek was not affected by flood damage in NW Montana, it has flooded in previous years.

\*This project will benefit downstream users as Grave Creek is the major tributary that combines with Fortine Creek to form the headwaters of the Tobacco River. The Town of Eureka obtains its drinking water from groundwater wells that draw from an alluvium aquifer associated with the Tobacco River.

2026 Nonpoint Source Pollution Reduction Application - On-the-Ground Project Budget Template

Project Title: <b>Grave Creek Rehabilitation Project Phase 1 Hearn</b>		Funding Request*	Non-Federal Match**	Other Funding***	Match Source	Match Secured? (Y/N)	Total Project Cost	Additional Information****
<p><b>Instructions</b></p> <p><i>This task includes completion of all planning tasks and coordination and oversight of the efforts of all project partners. Provide a detailed budget and add a row if needed.</i></p>	<b>Tasks and Potential Deliverables</b>							
	<b>Project Planning</b>							
	Preliminary site investigation data and site maps						\$ -	
	Required Permits	\$ 2,000.00					\$ 2,000.00	
	Draft Project Designs						\$ -	
	Final Project Designs	\$ 23,840.00					\$ 23,840.00	
							\$ -	
							\$ -	
	<b>Total</b>	\$ 25,840.00	\$ -	\$ -			\$ 25,840.00	
	<p><i>This task includes costs for developing and managing landowner agreements and developing grazing management plans as applicable. Provide a detailed budget and add a row if needed.</i></p>	<b>Landowner Agreements</b>						
Draft Landowner Agreement							\$ -	MOU required. No other landowner agreement required.
Final Landowner Agreement							\$ -	MOU required. No other landowner agreement required.
Grazing Management Plan							\$ -	
<b>Total</b>		\$ -	\$ -	\$ -			\$ -	
<p><i>This task includes costs for developing and implementing a monitoring plan to evaluate effectiveness to reduce nonpoint source pollution. See example contract template or application instructions for required monitoring activities. Provide a detailed budget and add a row if needed.</i></p>	<b>Effectiveness Monitoring</b>							
	Draft Monitoring Plan						\$ -	
	Final Monitoring Plan	\$ 4,500.00					\$ 4,500.00	
	Written Summary of all Monitoring Activities	\$ 2,500.00					\$ 2,500.00	
	<b>Total</b>	\$ 7,000.00	\$ -	\$ -			\$ 7,000.00	
<p><i>This task includes all costs for implementation of the plans developed in the Project Planning task. If you are requesting funding for design only, leave this task blank. Provide a detailed budget and add a row if needed.</i></p>	<b>Project Implementation</b>							
	Materials	\$ 20,000.00	\$ 120,000.00		RRGL GRANT		\$ 140,000.00	
	Labor	\$ 20,000.00					\$ 20,000.00	
	Equipment costs	\$ 14,200.00	\$ 5,000.00		RRGL GRANT		\$ 19,200.00	
	Construction oversight	\$ 10,000.00					\$ 10,000.00	
	As-built surveys						\$ -	
	Photo documentation						\$ -	
	Landowner recommendation letter						\$ -	
	Contingency	\$ 35,840.00					\$ 35,840.00	
	<b>Total</b>	\$ 100,040.00	\$ 125,000.00	\$ -			\$ 225,040.00	
<p><i>This task includes costs to develop and improve organizational capacity and to incorporate education and outreach into each on-the-ground projects. Provide a detailed budget and add a row if needed.</i></p>	<b>Education and Outreach</b>							
	Volunteer Coordination						\$ -	
	Event/Tour Planning		\$ 200.00		LCD IN-KIND		\$ 200.00	
	Outreach/Publication materials	\$ 1,000.00	\$ 500.00		LCD IN-KIND		\$ 1,500.00	
	Education and Outreach Events	\$ 4,000.00	\$ 500.00		LCD IN-KIND		\$ 4,500.00	
<b>Total</b>	\$ 5,000.00	\$ 1,200.00	\$ -			\$ 6,200.00		
<p><i>Funding applied to Project Administration task must not exceed 10% of the total amount of funding requested per project, or \$12,000, whichever is lower. Project admin includes normal business expenses and reporting requirements.</i></p>	<b>Administration</b>							
	Mid/Annual/Interim Reports and Billing Statements	\$ 8,000.00					\$ 8,000.00	
	Draft/Final Report and Billing Statement	\$ 3,000.00					\$ 3,000.00	
	Communication with DEQ	\$ 1,000.00					\$ 1,000.00	
	<b>Total</b>	\$ 12,000.00	\$ -	\$ -			\$ 12,000.00	
<b>Grand Totals</b>		\$ 149,880.00	\$ 126,200.00	\$ -			\$ 276,080.00	

\*Funding Request - Must not exceed \$300,000 and must be at least \$125,000 for harmful algal bloom reduction projects

\*\*Non-Federal Match - Can include in-kind materials.  
 \*\*\*Other Funding - Include federal match here, or, for example, other funding that is supporting the project but cannot be reported as match on this grant because it is matching another funding source.

\*\*\*\*Additional Information - Use to specify non-federal match and other funding sources, or use to justify cost if needed (e.g., hourly rates, rental costs, etc.)

# MEMORANDUM OF UNDERSTANDING

## Between

**Lincoln Conservation District**

and

**Doug and Roze Hearn**

## 1. Parties

This Memorandum of Understanding (“MOU”) is entered into by and between:

- **Lincoln Conservation District (LCD)**, serving as the grant sponsor and fiscal agent; and
- **Doug and** the owner of real property located at 7734 US Highway 93 S, Eureka, MT, (S15, T35 N, R26 W, TR-4F IN S2SE) (“Landowner”).

Collectively referred to as “the Parties.”

## 2. Purpose

The purpose of this MOU is to establish roles, responsibilities, and financial commitments related to the implementation of a water quality improvement project funded through a Section 319 Nonpoint Source Pollution Grant administered by the Montana Department of Environmental Quality (DEQ 319 Grant).

LCD agrees to act as the grant sponsor and contracting entity with the Montana Department of Environmental Quality. The Landowner agrees to participate in the project and assist with in-kind match.

## 3. Project Description

The project includes the implementation of approved best management practices (BMPs) designed to improve water quality and reduce nonpoint source pollution on the Landowner’s property.

Specific practices may include, but are not limited to:

- Riparian planting
- Livestock exclusion fencing
- Off-stream watering systems
- Erosion control measures
- Other approved conservation practices

Final scope of work will be consistent with the DEQ 319 grant contract and approved work plan.

#### **4. Grant Funding and Cost Share**

1. The DEQ 319 Grant will fund up to [60–90%] of eligible project costs.
2. The LCD will apply for a DNRC RRGL Grant for \$125,000
3. Additional match will include
  - o In-kind contributions from LCD and Landowner

#### **5. Match Funding Requirement**

The Landowner acknowledges and agrees that:

- All required funding must be secured and provided prior to project implementation.

#### **6. Roles and Responsibilities**

##### **Lincoln Conservation District Shall:**

- Serve as the official grant sponsor and fiscal agent.
- Enter into and administer the DEQ 319 grant contract.
- Ensure compliance with state and federal grant requirements.
- Process payments to contractors upon receipt of proper documentation.

##### **Landowner Shall:**

- Cooperate with project planning, design, and implementation.
- Assist with project monitoring and revegetation success.
- Allow reasonable site access for project monitoring and inspection.
- Maintain installed conservation practices for their required lifespan as specified in the grant and practice standards.
- Comply with all applicable local, state, and federal regulations.

#### **7. Term**

This MOU becomes effective upon signature by both Parties and remains in effect until:

- Completion of the project and required maintenance period; or
- Termination by mutual written agreement; or
- Termination due to failure to meet funding or compliance requirements.

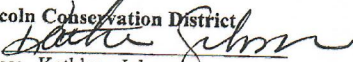
#### **8. Liability and Indemnification**


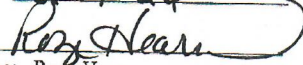
Each Party shall be responsible for its own acts and omissions. Nothing in this MOU shall be construed to create a partnership, joint venture, or agency relationship beyond that of grant sponsor and participating landowner.

**9. Amendments**

This MOU may only be amended in writing and signed by both Parties.

**10. Signatures**

**Lincoln Conservation District**  
By:   
Name: Kathleen Johnson  
Title: Chair  
Date: \_\_\_\_\_

**Landowner**  
By:   
Name: Doug Hearn  
Date: 2-19-26  
By:   
Name: Roze Hearn  
Date: 2-19-26

Doug and Roze Hearn  
PO Box 44  
Fortine, MT 59918  
406-882-4417  
dougroze@gmail.com

February 13, 2026

Meagan Gilmore, Nonpoint Source Program  
Montana Department of Environmental Quality  
1520 E. Sixth Avenue  
P.O. Box 200901  
Helena, MT 59620-0901

**RE: Letter of Support for Grave Creek Rehabilitation Project Phase 1 Hearn**

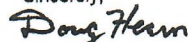
Dear Ms. Gilmore,

I am writing to express my support for the **Grave Creek Rehabilitation Project Phase 1 Hearn** proposed by **Lincoln Conservation District**. I am the owner of the property located at 7734 US Highway 93 S, Eureka, MT, (S15, T35 N, R26 W, TR-4F IN S2SE) where a portion of this project is proposed to take place.

I am aware of the goals of this project, which include reducing erosion, improving water quality, and stabilizing the streambank on Grave Creek. I have worked with the project proponent to discuss how this project will be implemented on my property. I grant permission for Lincoln Conservation District and DEQ staff to access my property for the purposes of project planning, construction, and post-implementation monitoring.

I am committed to the success of this project and agree to work with Lincoln Conservation District to ensure the appropriate operation and maintenance of all implemented structures, vegetation, and management measures for the life of the project (typically 10 years).

I believe this project will provide significant improvements to the health of our local watershed.

Sincerely,  
  
Doug Hearn

  
Roze Hearn

**Lincoln Conservation District**

**66121 Hwy 37**

**Eureka, MT 59917**

**lincolncd@interbel.net**

**February 13, 2026**

Meagan Gilmore, Nonpoint Source Program  
Montana Department of Environmental Quality  
1520 E. Sixth Avenue  
P.O. Box 200901  
Helena, MT 59620-0901

RE: Letter of Support for Grave Creek Rehabilitation Project Phase 1 Hearn

Dear Ms. Gilmore,

I am writing to express my support for the Grave Creek Rehabilitation Project Phase 1 Hearn proposed by our organization, Lincoln Conservation District (LCD). This project is located at 7734 US Highway 93 S, Eureka, MT, (S15, T35 N, R26 W, TR-4F IN S2SE).

The LCD has reviewed the preliminary engineering report and is knowledgeable of the goals of this project, which include reducing erosion, improving water quality, and stabilizing the streambank on Grave Creek. The LCD is working with the landowner and reviewing how this project will be implemented on this reach of Grave Creek.

The LCD is committed to the success of this project and agree to work with the landowner and Montana Department of Environmental Quality to ensure the appropriate operation and maintenance of all implemented structures, vegetation, and management measures for the life of the project (typically 10 years).

We believe this project will provide significant improvements to the health of the Grave Creek watershed.

Sincerely,

/s/

Kathleen Johnson

Chair



Date: 2/14/2026

To: Kathleen Johnson, Lincoln Conservation District, Chairperson

Subject: Letter of Support for 319 and Renewal Resource Grants and Loans (RRGL)  
Applications - Grave Creek

The Kootenai River Network (KRN) offers full support to the Lincoln Conservation District (LCD) in pursuit of funding for rehabilitation and stabilization efforts on numerous sections of Grave Creek. A long-standing relationship between KRN and LCD has resulted in substantial improvements on Grave Creek over the past 28 years. Urgent needs are now identified to stabilize some existing project areas and address critical issues on other highly erosive stream banks. Work on these areas will have a significant improvement on water quality and aquatic habitat. Grant applications for these projects deserve positive consideration and subsequent funding.

Sincerely,



James L. Dunnigan

Kootenai River Network, President

MAP

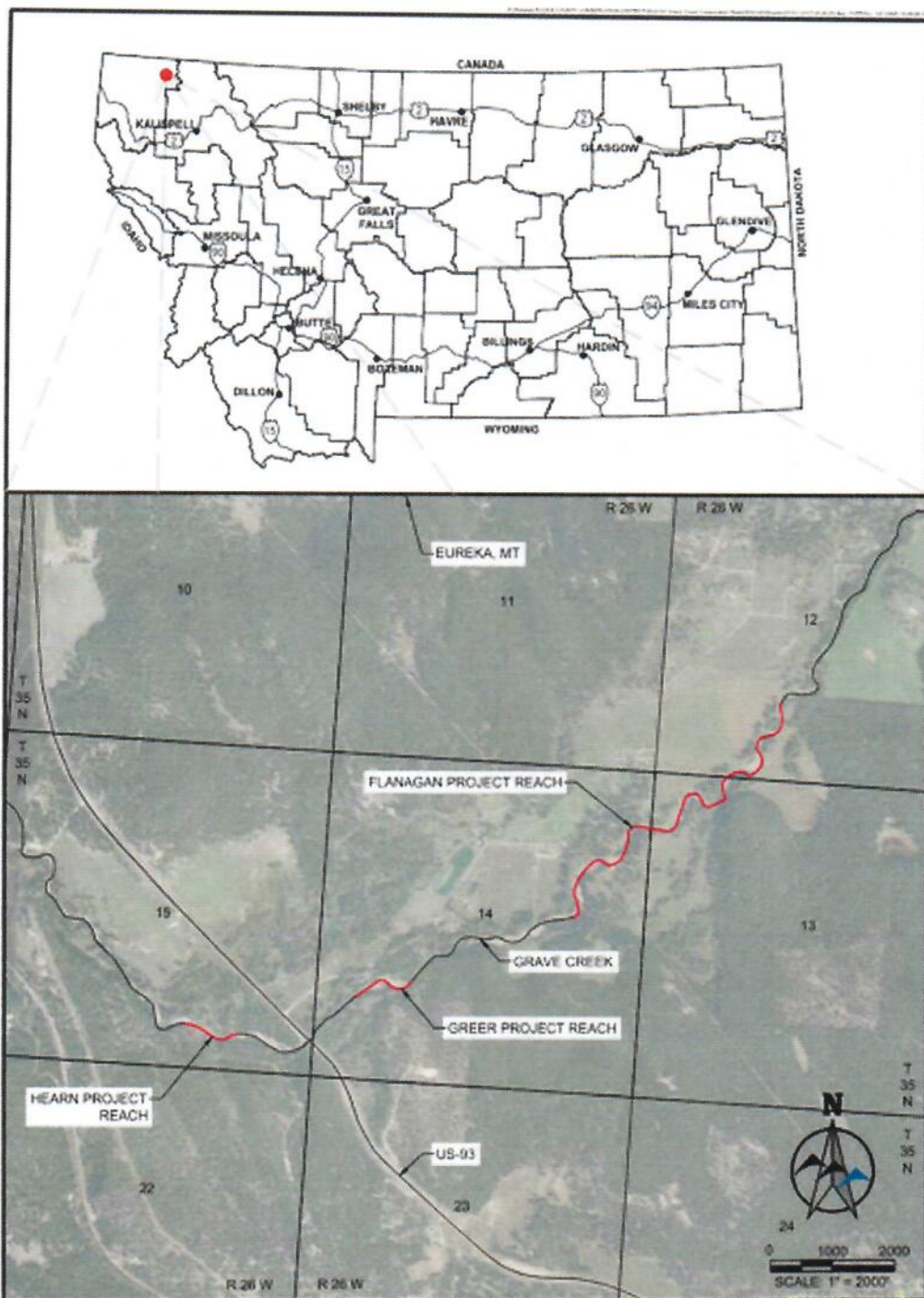


FIGURE 1. PROJECT LOCATION MAP

Figure 1. Project Location Map

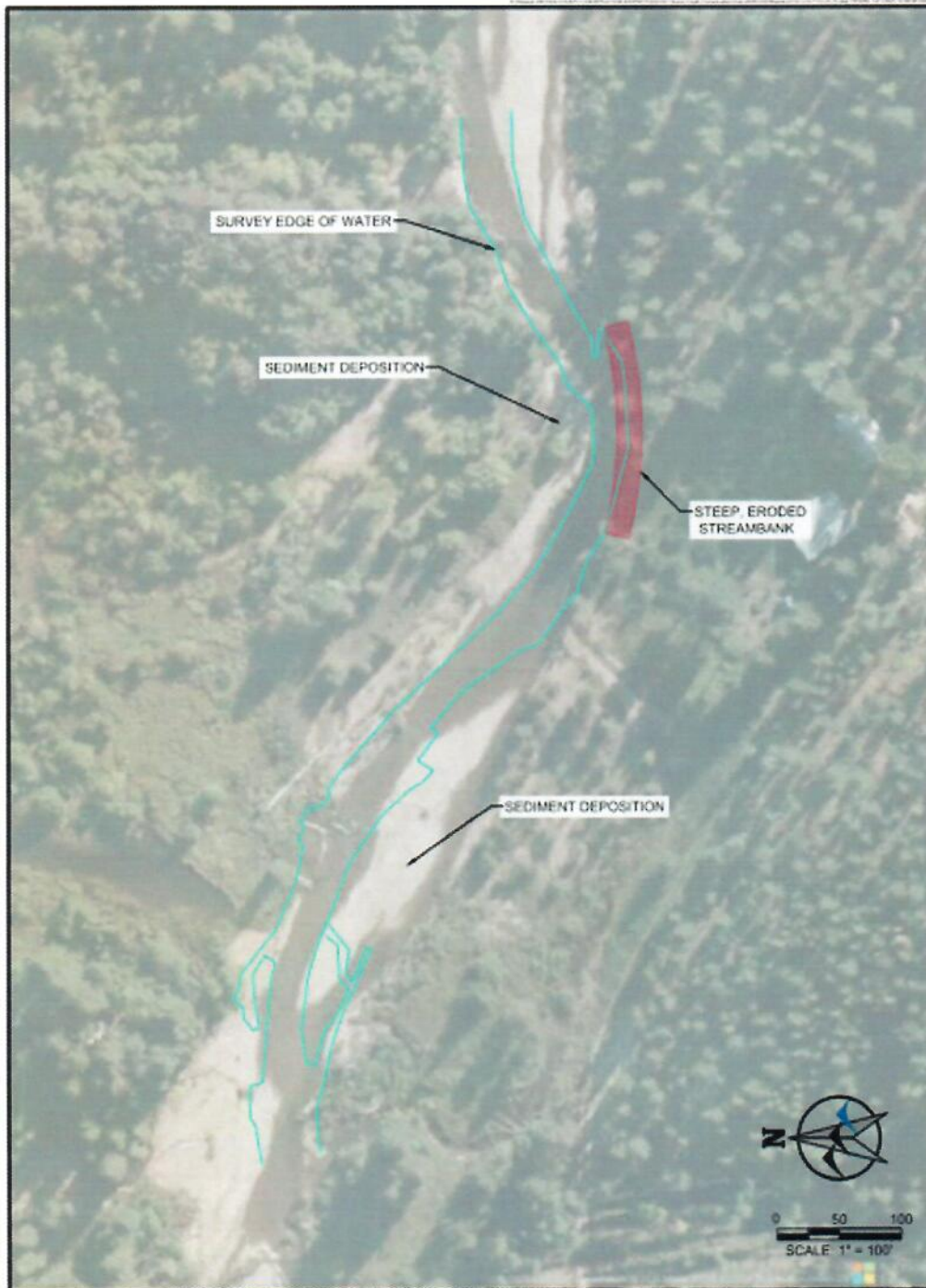


FIGURE 2. HEARN PROJECT REACH

Figure 2. Hearn Project Reach

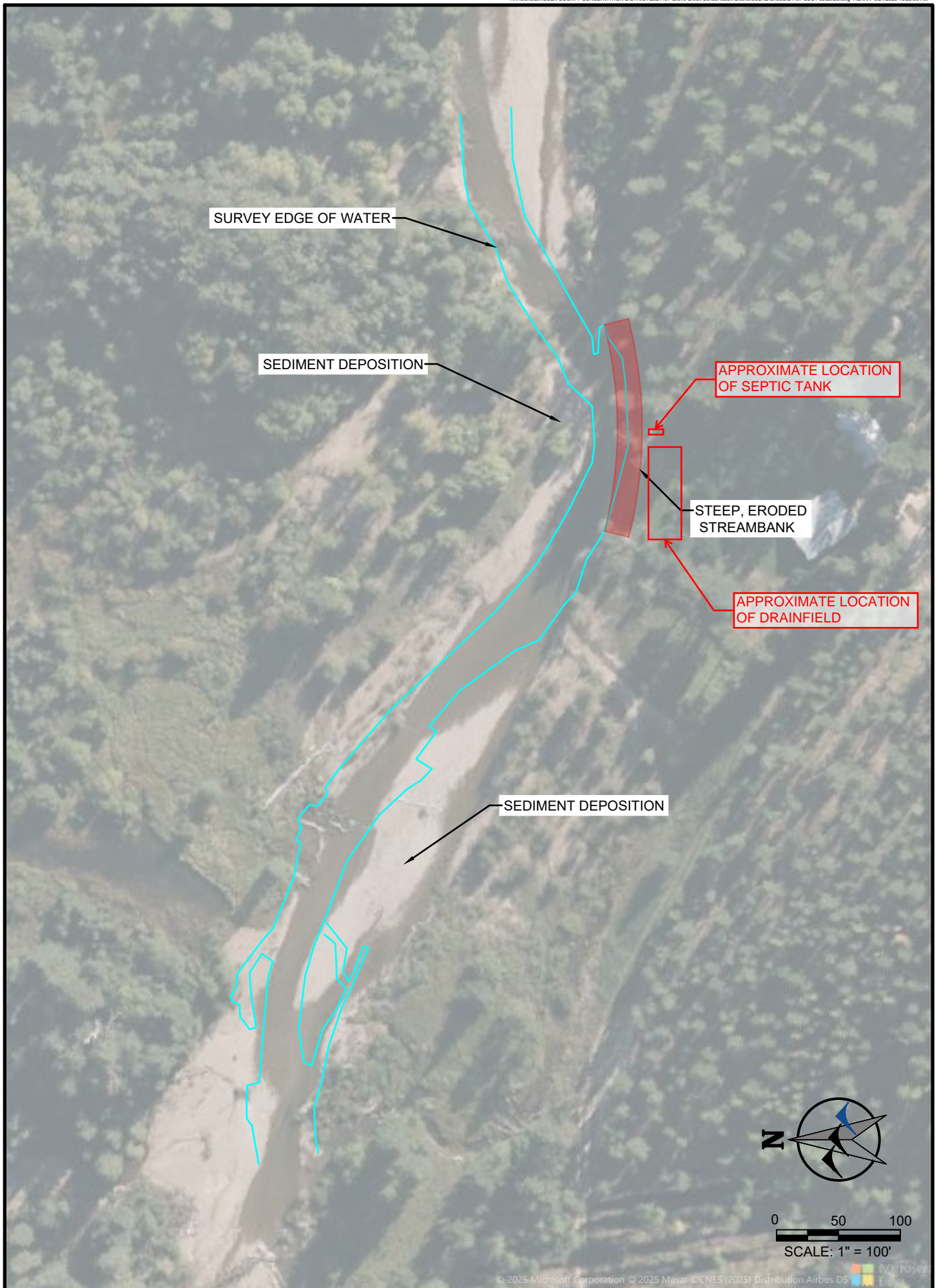


FIGURE 2. HEARN PROJECT REACH

**PRELIMINARY  
ENGINEERING REPORT  
EXCERPT**

Excerpts from the Grave Creek Rehabilitation PER Concern Hearn Reach. The entire PER report will be supplied upon request as it exceeds the maximum page allotment for the application.

### Hearn Reach

Based on the site visit, aerial imagery and geospatial data for the Hearn Reach, the following summarizes the problem and geomorphic condition at the site:

#### Problem Description

The Hearn Reach is exhibiting severe streambank erosion, evident in the tall, nearly vertical, and actively sloughing banks composed primarily of unconsolidated alluvial material. The lack of riparian vegetation on these banks significantly reduces soil cohesion, making the slopes highly susceptible to hydraulic undercutting and mass wasting during high-flow events.

Key issues visible in the photos include:

- **Bank Instability:** The tall cutbanks (~10–25 feet) show signs of active erosion, with recent slumps and exposed tree roots. These unstable banks are a significant sediment source.
- **Channel Incision and Lateral Migration:** The creek appears to have incised into its floodplain and is laterally migrating, eroding into the adjacent terraces with little resistance.
- **Lack of Riparian Buffer:** Sparse woody vegetation along the streambank limits natural bank stabilization and increases the likelihood of continued erosion.
- **Sediment Deposition and Bar Formation:** Point bars and mid-channel gravel bars suggest an unconfined, over-widened channel that is unable to transport its sediment load efficiently.
- **Large Woody Debris (LWD):** Accumulations of woody debris are present but appear uncontrolled and chaotic, potentially exacerbating localized scour and bank erosion without providing meaningful habitat complexity or stability.
- **Landowner septic tank** is located in close proximity to the vertical bank and is in jeopardy of falling into Grave Creek should the erosion continue.

#### Geomorphic Condition

Geomorphically, the Hearn Reach appears to be in a transitional and unstable state, characterized by:

- **Rosgen Stream Type:** Likely a C4 or C5 type—meandering, moderately entrenched channel with a gravel-dominated bed and highly erodible banks.
- **Entrenchment:** Moderate entrenchment suggests limited floodplain access, reducing overbank flow dissipation and contributing to vertical instability.
- **Width-to-Depth Ratio:** Elevated, indicating an over-widened channel susceptible to sediment deposition and decreased flow competence.
- **Sediment Regime:** The stream appears transport-limited, with a high supply of fine and coarse sediment sourced from the actively eroding banks and failing terraces.

The Hearn Reach is geomorphically unstable and ecologically impaired due to significant streambank erosion, poor channel form, and a disrupted sediment regime. Restoration at this site will likely require regrading of the banks, installation of bioengineered treatments (e.g., toewood, vegetated lifts), strategic placement of LWD, and re-establishment of riparian vegetation to improve floodplain connectivity, channel stability, and aquatic habitat conditions. The disturbance required for mitigation at this site may affect adjacent landowner properties. A photo of the existing degradation found within the Hearn Reach is shown on Photo 01.



Photo 01 - Hearn Reach Degradation

## REACH-SPECIFIC ALTERNATIVES SUMMARY

### Hearn Project Reach

This reach of the project has degradation characterized primarily by a steep, eroded streambank. The cause of this erosion is due to septic leakage from an adjacent, upgradient development, as well as an unstable streambank. According to a USGS Streamstats report for this reach, the creek has an average annual flow rate of 138 cfs, and a 100-yr flood event flow rate of 2060 cfs. With an average bankfull width of 65 feet gathered from WWC survey data, this reach is estimated to see a flow velocity of 32 ft/s during a 100-year flood event. The high velocity of the stream flow during flood events coupled with the unstable stream bank due to septic leakage is likely the cause of bank erosion in this reach.

The Hearn Reach will require approximately 250 feet of targeted restoration to address excessive bank erosion and sediment loading from an eroding high terrace on the left bank. The restoration objective is to reduce localized shear stress, reconnect the floodplain, and enhance long-term bank stability while accommodating the dynamic sediment and flow conditions typical of Lower Grave Creek.

To achieve this, the project will involve construction of a 30-foot-wide vegetated bankfull bench at the base of the high terrace. The bench will be established through minor channel realignment within the existing bankfull corridor, allowing for improved flow deflection and energy dissipation. This new bench will tie into existing stable bankfull benches immediately upstream and downstream, reinforcing continuity along the reach.

#### Alternatives Considered:

1. Toe-wood bank stabilization
2. Mini-vane rock structures
3. Low-tech bank stabilization
4. Vegetated riprap
5. Revegetation

## 6. Floodplain roughness elements

### Preferred Alternative:

The selected approach combines channel realignment and floodplain bench construction with a suite of complementary stabilization measures designed to address both short- and long- term geomorphic and hydraulic challenges. This integrated solution reflects lessons learned from prior restoration efforts, emphasizing flexibility, floodplain connectivity, and adaptive stability rather than rigid channel confinement.

### Key design components include:

- Toe-Wood Bank Stabilization

Large wood (logs with root wads) will be placed along the toe of the newly constructed bankfull bench to resist erosion, promote sediment retention, and establish undercut bank habitat. Toe-wood will also support riparian vegetation development by creating low-velocity zones at the bench toe. Coir wrapped soil lifts with willow live stakes will be placed above toe-wood structure to approximately bankfull elevation. Two soil lifts with willow stakes are anticipated.

- Mini-Vane Rock Structures

Two mini-vanes constructed of large boulders will be installed—one at the upstream end and one at the downstream end of the project reach. These structures will redirect flow away from the high terrace and reduce near-bank shear stress, while also inducing localized scour pools to enhance aquatic habitat diversity.

- Floodplain Roughness and Sills

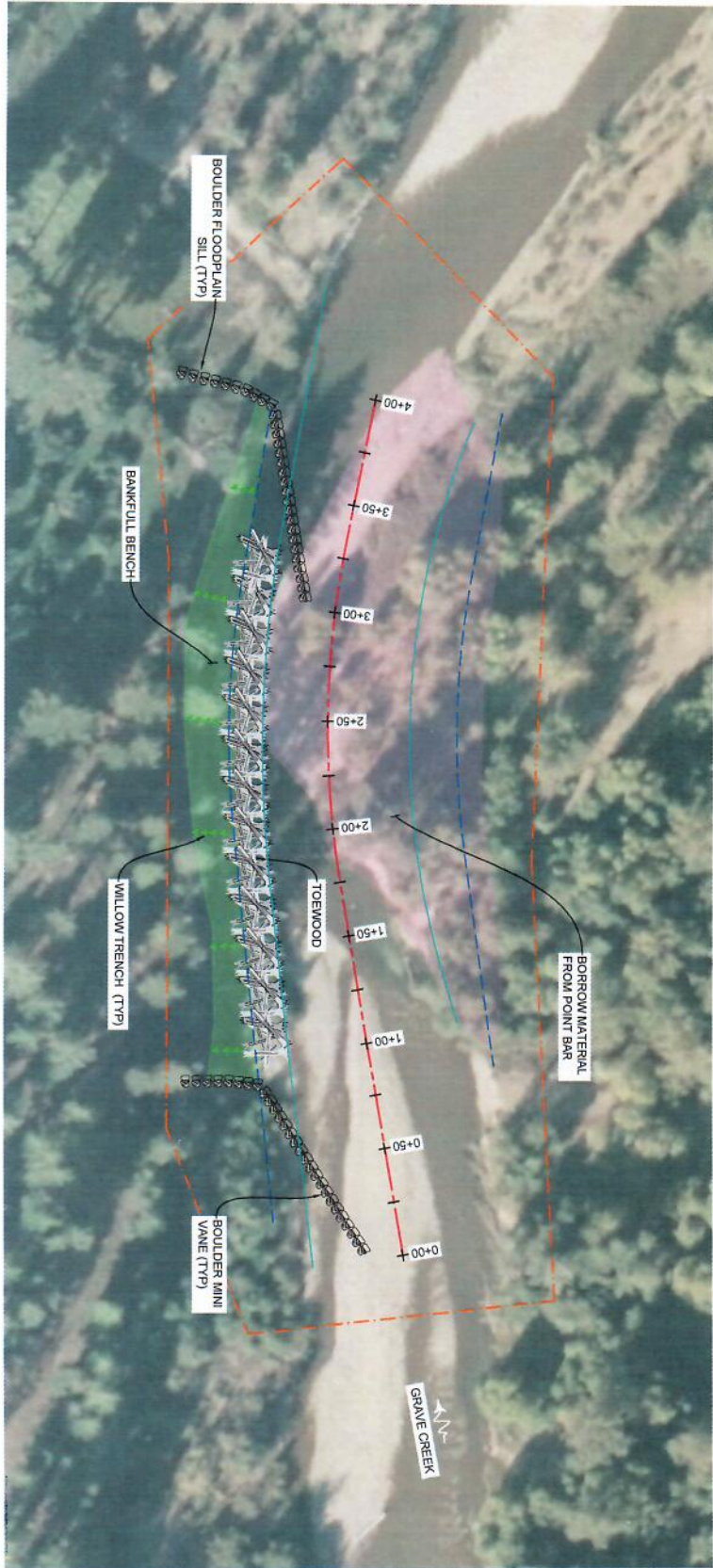
Boulder sills will extend laterally from the mini-vanes into the floodplain and up to the high terrace. Willow transplants will be installed as willow trenches every 40-50 feet along the constructed bankfull bench. These features will act as floodplain containment and energy-dissipation elements, reducing the risk of avulsion or lateral channel migration into the newly filled bankfull bench area. Additional woody debris and native vegetation clusters will be placed across the bench surface to further increase hydraulic roughness and promote sediment deposition.

- Material Sourcing and Site Balancing

Excavation on the right bank will be used to generate material for the left bank bench, improving grading efficiency and reducing material import needs.

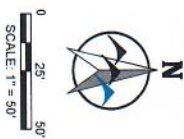
This design reflects a process-based, resilient approach tailored to the dynamic conditions of Lower Grave Creek. It prioritizes floodplain engagement, bank stabilization through natural materials, and allowance for channel adjustments where feasible, aligning with the overall restoration strategy for the watershed.

# DESIGN

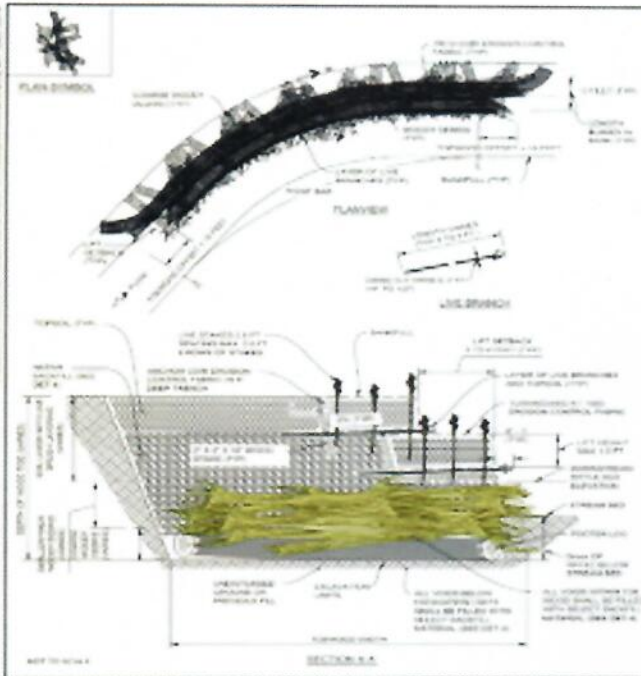


QUANTITIES		
ITEM DESCRIPTION	EST QTY	UNIT
MOBILIZATION	1	LS
EXCAVATION (GRADING CUT)	2000	CY
EMBANKMENT (GRADING FILL)	2000	CY
TOEWOOD	250	LF
BOULDER MINI VANE @ 130 TNS/STRUCTURE	2	EA
BOULDER FLOODPLAIN SILL	40	TN
REVEGETATION	1	LS

- LEGEND**
- DESIGN ALIGNMENT CENTERLINE
  - DESIGN ALIGNMENT INNER BERM
  - DESIGN ALIGNMENT BANKFULL
  - LIMITS OF DISTURBANCE



DESIGNED BY: <u>BEJ</u> DRAWN BY: <u>BEJ</u> CHECKED BY: <u>JAT</u> DATE: <u>5/20/25</u>	LINCOLN COUNTY CONSERVATION DISTRICT GRAVE CREEK STREAM RESTORATION PROJECT <b>HEARN CONCEPT LAYOUT</b> LINCOLN COUNTY, MT	PREPARED BY  <b>WWC ENGINEERING</b> 1275 MAPLE STREET, SUITE F HELENA, MT 59601 (406) 443-3962 www.wwcengineering.com	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">NO.</th> <th style="width: 40%;">REVISION</th> <th style="width: 10%;">BY</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> PROJECT NO. 2024-197	NO.	REVISION	BY	DATE																
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- NOTES**
1. VERIFY THE EXISTING CONDITIONS AND CONSTRUCTION OF THE EXISTING STRUCTURE PRIOR TO CONSTRUCTION OF THIS PROJECT. THE EXISTING STRUCTURE SHALL BE RECONSTRUCTED TO THE ORIGINAL DESIGN AND CONSTRUCTION STANDARDS.
  2. THE EXISTING STRUCTURE SHALL BE RECONSTRUCTED TO THE ORIGINAL DESIGN AND CONSTRUCTION STANDARDS. THE EXISTING STRUCTURE SHALL BE RECONSTRUCTED TO THE ORIGINAL DESIGN AND CONSTRUCTION STANDARDS.
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UNIVERSITY OF CALIFORNIA, BERKELEY  
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**TOEWOOD DETAILS**  
 LINDSEY COUNTY, KY

DATE: 10/15/14  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]

DETAILED - 1