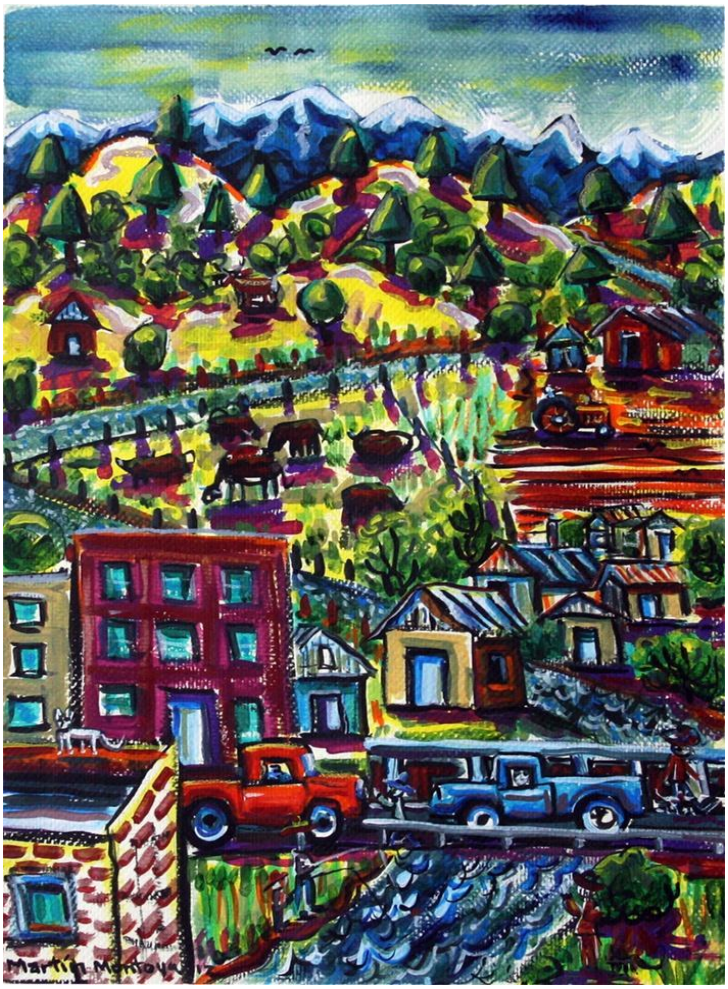
On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase III

FINAL REPORT



HERMIT'S PEAK
WATERSHED ALLIANCE

June 30, 2022

On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek - Phase III

FINAL REPORT

Funding by:

Federal Clean Water Act Section 319(h) Nonpoint Source Grant

Federal Assistance Agreement: C9 996101-18

NMED Sub-Grant: 667-393-2B

Submitted to:

New Mexico Environment Department

Prepared by:

Hermit's Peak Watershed Alliance
Lea Knutson, Project Manager

June 30, 2022

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PROJECT DESCRIPTION

INTRODUCTION

With EPA Clean Water Act Section 319 funding administered by the NM Environment Department, Hermit's Peak Watershed Alliance has completed the third phase of implementing the Updated Watershed Based Plan for Upper Gallinas River with a goal of removing water quality impairments and bringing the Gallinas River and Porvenir Creek into compliance with water quality standards.

This Final Report fulfills requirements for NMED Sub-Grant #667-393-2B providing information regarding the completion of tasks contained in the project Work Plan and Sub-Grant Agreement for the *On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase III* (Gallinas Phase III).

This Gallinas Phase III project is part of broader landscape level watershed planning and implementation to improve water quality within HPWA's service area (see Map 1) which covers the Gallinas, Tecolote, Sapello, and lower Mora watersheds. See our website:

https://hermitspeakwatersheds.org/watershed-restoration-and-management/

Map 1. Service area of Hermit's Peak Watershed Alliance.

PROJECT SUMMARY

Project Description (as stated in the project workplan): The purpose of the Project is to reduce temperature in the Gallinas River and Porvenir Creek in furtherance of the Watershed Based Plan for the Upper Gallinas River. The Sub-Recipient will reroute and improve drainage on key sections of Forest Trail #247, plant native woody riparian vegetation, construct a series of eighteen boulder and log step pools, repair or remove eleven obsolete fish habitat structures, design and implement a stream channel restoration project in a location to be determined, develop plans for future stream restoration, and pursue beaver reintroduction within the Pecos Wilderness on Beaver Creek.

Project Name: On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase III (Gallinas Phase III)

Federal Assistance Agreement: C9 996101-18

NMED Sub-Grant: 667-393-2B

Project Manager: Lea Knutson

Project Start Date: December 17, 2018

Project Completion: June 30, 2022 (September 31, 2021, original completion date)

Budget Summary:

Total Budget: $314,858.00

Project Expenses (Billed): $314,737.72

Match Budget: $209,950.00

Match Acquired: $217,765.71

PROJECT CHRONOLOGY

DATE	DESCRIPTION OF ACTIVITY	NOTES
12/17/2018	Butch Tongate, Cabinet Secretary, NMED Signed the Sub-Grant Agreement	Clean Water Act Section 319 Watershed-Based Planning Funds Federal Assistance Agreement C9 996101-18 Solicitation # 667-393-1A
	Notice to Proceed	Project Officer – Susan Styer
April 2019	Change of Technical Coordinator from Eliza Montoya to Richard Pratt	Eliza Montoya took a job at the NM Environment Department
August 12, 2019	Requested the addition of Chris Michel of CM ArborCare, LLC	Contractor to replace Reineke Construction
October 2019	Change of Technical Coordinator from Richard Pratt to Amina Sena	Richard continued to serve as a Technical Assistant
March 2020	COVID restrictions began	Limitations in public and private meetings. Education and outreach work shifted to making videos and remote meetings.
May 2020	Hired Jacob Erickson as our PR Coordinator and videographer	Replaces Reina Fernandez
August 11, 2021	Amend Section V, **Term of Agreement**, to extend the agreement additional nine-months beyond the September 30, 2021, termination date to June 30, 2022.	Signed by Stephanie Stringer for James Kenney, Cabinet Secretary. This extension was requested because of delays securing the USACE 404 permit for our final instream restoration project. See below discussions.
May 2021	Richard Pratt took a job with Los Alamos National Laboratory	
September	Amina Sena took a job with the US	

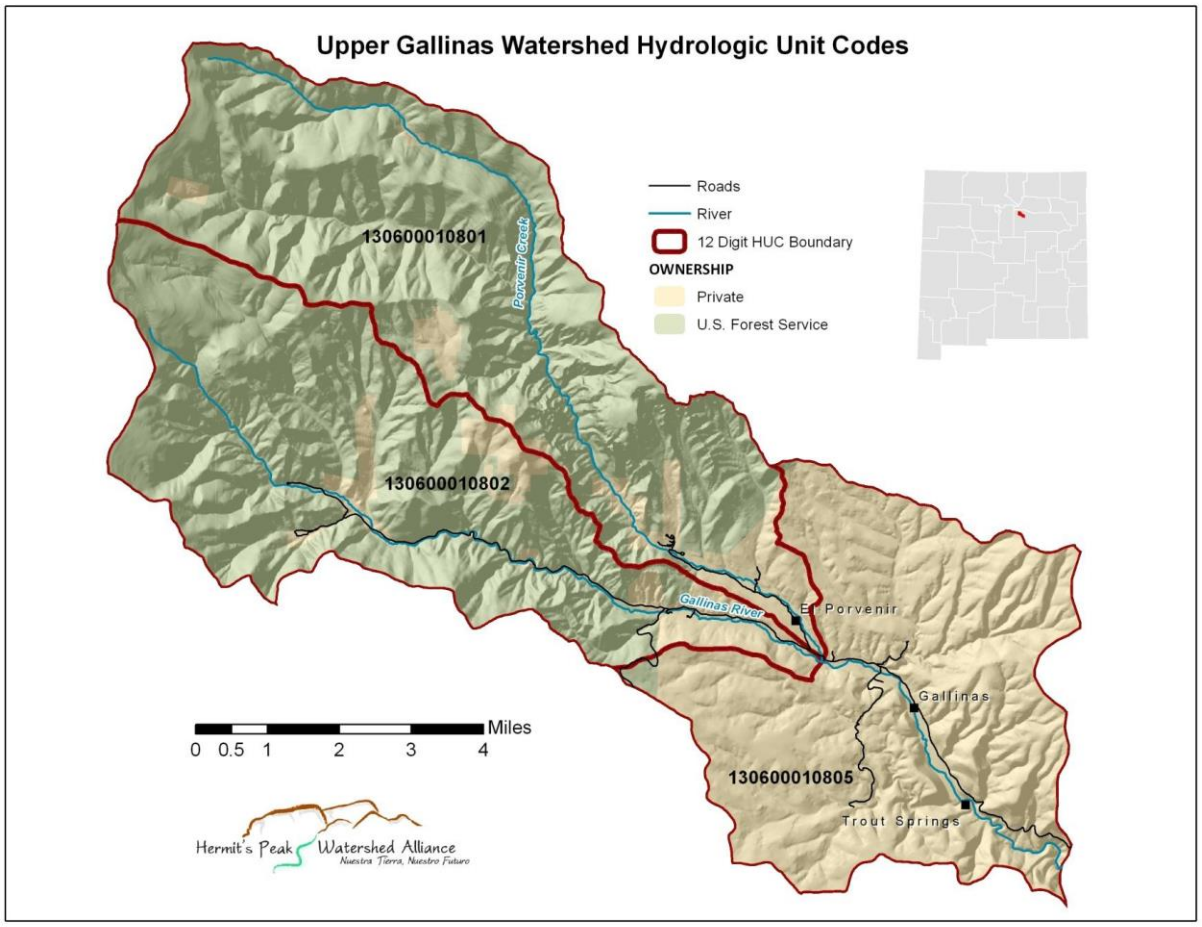
DATE	DESCRIPTION OF ACTIVITY	NOTES
2021	Forest Service	
June 2021	Hired Conrad Greaves and Patrick Gutierrez	Replacing Amina and Richard
Sept. 2021	Hired Meagen Larson	She was responsible for completing the Story Map and Driver's Guide
Nov. 2021	Began *On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase IV*.	
April and May 2022	Catastrophic wildfire throughout the upper Gallinas and surrounding Watersheds.	Not addressed in this project because it was largely completed at the time of the fires. Will be addressed fully in upcoming on-the-ground project Phase IV.
June 30, 2022	Notice of Completion, Final Report, Final Invoice	

PROJECT AREA

The project area encompasses 48,968 acres addressing 32.5 miles of the upper Gallinas River and El Porvenir Creek according to the following table and map. The entire upper Gallinas River includes 43.46 miles of river and perennial tributaries (2020-2022 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report Appendix A Integrated List).

Table 1. Upper Gallinas River Watershed Project Area.

Reach Name/Description	NM Assessment Unit No.	HUCs
Gallinas River (Las Vegas Diversion to USFS Boundary)	NM-2212-00	130600010805, 130600010802
Gallinas River (USFS Boundary to Headwaters)	NM-2212_02	130600010802
El Porvenir Creek (Gallinas Creek to SFNF Boundary)	NM- 2212_01	130600010801
El Porvenir Creek (SFNF Boundary to Hollinger Canyon)	NM-2212_05	130600010801
Beaver Creek (El Porvenir Creek to Headwaters)	NM-2212-04	130600010801



Map 2. Upper Gallinas River Watershed Project Area with USGS Hydrologic Units.

PROBLEM STATEMENT

According to the *2020-2022 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report Appendix A Integrated List* (these designations are the same as the beginning of the project, 2016-2018 Integrated Report), *t*he Gallinas River (Las Vegas Diversion to USFS Boundary) is listed as impaired for temperature for the Designated Use of High Quality Cold Water Aquatic Life. Some probable sources include highway/road/bridge runoff, livestock, loss of riparian habitat and rangeland grazing and streambank modification/destabilization. Also, the El Porvenir Creek (Gallinas Creek to SFNF Boundary) is listed as impaired for temperature. According to the list, the source of this impairment is unknown. In the Watershed Based Plan, there are two sections of this unit that were found to not meet the % Stream Shade Standard and would need stream shade to increase to meet the standard.

Table 2. Upper Gallinas River Watershed Water Quality Descriptions. Source: 2020-2022 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report Appendix A Integrated List.

NM AU ID	REACH DESCRIPTION	WATER QUALITY/ CAUSE	REACH LENGTH (MILES)	DESIGNATED USE (Impaired Use is Bold
NM-2212_06	Burro Canyon (Gallinas River to headwaters)	Fully Supporting	5.19	DWS, HQColdWAL, IRR, LW, PC, WH
NM-2212_02	Gallinas River (USFS bnd to headwaters)	Fully Supporting	9.86	DWS, HQColdWAL, IW Supply, IRR, LW, PC, PWS, WH
NM-2212_00	Gallinas River (Las Vegas Diversion to USFS bnd)	Temperature	8.2	DWS, **HQColdWAL**, IRR, LW, PC, WH
NM-2212_04	Beaver Creek (El Porvenir Creek to headwaters)	Fully Supporting	6.77	DWS, HQColdWAL, IRR, LW, PC, WH
NM-2212_03	Hollinger Creek (El Porvenir Creek to headwaters)	Fully Supporting	5.87	DWS, HQColdWAL, IRR, LW, PC, WH
NM-2212_05	El Porvenir Creek (SFNF	Fully Supporting	4.89	DWS, HQColdWAL, IRR, LW, PC, WH

NM AU ID	REACH DESCRIPTION	WATER QUALITY/ CAUSE	REACH LENGTH (MILES)	DESIGNATED USE (Impaired Use is Bold
	bnd to Hollinger Canyon)			
NM-2212_01	El Porvenir Creek (Gallinas River to SFNF boundary)	Temperature	2.68	DWS, **HQColdWAL**, IRR, LW, PC, WH

PLANNED AND ACTUAL TASKS

Task details in the Gallinas Phase III work plan and the actual accomplishments during this project are detailed below.

Task 1. Project Management and Administration

Project oversight and coordination: **Completion Benchmarks Planned -** Contracts with subcontractors, Semiannual Reports, Final Report, Invoices with Match Reports, Notice of Completion.
Completed – Oversight and management of HPWA staff occurred throughout to ensure project objectives and deliverables were met and stayed on budget. As to be expected this required adaptive management as staff and conditions changed. See Project Chronology for staffing changes and other significant events. The following subcontractors were hired during the project; contracts will be furnished upon request.

- Reina Fernandez – Originally served as the Outreach Coordinator. She was replaced by Jacob Erickson in May 2020.
- Elizabeth Juarros – Originally served as the Education Director. When she became the Gallinas River Park Director for HPWA, her activities were split between staff members Jacob Erickson (May 2020), Richard Pratt (April 2019), and later Meagen Larsen (September 2021).
- Deanna Einspahr – Financial Coordinator completed quarterly and annual financial reviews and IRS Forms 990.
- NM Forest and Watershed Restoration Institute – Originally hired to develop the Story Map but they were unable to follow through on their contract. Staff Richard Pratt and Meagen Larsen completed this task.

- Watershed Artisans, Inc. – Completed two instream restoration projects: El Porvenir Christian Camp and the Galligan/Gomez.
- CM ArborCare, LLC – Completed all projects originally planned for Reineke Construction, including Upper Gallinas Creek Trail and Log Dam Repair Design, Trail (#247) Reroutes and Repair and Log Dam Repair in Beaver Creek, design a 1.4-mile trail re-route on Beaver Creek.
- Townsend Archaeological Consultants – Completed the archeological surveys needed for the El Porvenir Christian Camp and the Galligan/Gomez project 404 permits.
- Pathfinder Environmental, LLC – Completed 404 Permit for Beaver Creek and NEPA documentation for Gallinas Creek trail and log dam repair projects.
- Louise Jensen was hired to serve as our Advancement and Outreach Consultant. With her background as a professional in Public Relations and Fundraising she provides PR oversight which has significantly improved our media presence.
- Rangel Design – Designed the layout of the Upper Gallinas Driving Guide.

The Project Manager stayed in regular contact with NMED Project Officer, Susan Styer, and as issues arose that needed consultation. Quarterly HPWA Board of Directors meetings occurred on:

December 3, 2018
March 4, 2019
April 15, 2019
July 17, 2019 – Annual Retreat
October 17, 2019
December 10, 2019
February 25, 2020
July 17, 2020 – Annual Retreat
October 14, 2020
February 26, 2021
May 4, 2021
July 26, 2021 – Annual Retreat
October 25, 2021
February 17, 2022
May 12, 2022

Invoice and match reports - Twelve invoice packages were submitted, approved, and paid. Each package included expense and match tracking information, copies of all expense invoices to vendors and subcontractors, accomplishments that also sufficed as quarterly reports, and timesheets for all staff according to formats requested by NMED.

Semi-annual and Final Reports - The following annual, semi-annual, and final reports were submitted:

Semi Annual Report - Jan. 1 – June 30, 2019
Semi Annual Report – July 1 – December 2019
Annual Report - July 1, 2019 – June 30, 2020
Semi Annual Report - July 1 – December 31, 2020
Annual Report - July 1, 2020 – June 30, 2021
Final Report (includes annual for July 1, 2021 – June 30, 2022) – Jan. 1, 2019, to June 30, 2022

Task 2. Stakeholder Engagement

Completion Benchmarks Planned - Landowner agreements, communicate project plans and status, address issues.
Completed – The Project Manager led communication and negotiations with landowners and land managers to obtain landowner agreements, agreed on specifics of project plans and arranged logistics of project implementation. This landowner/land manager stakeholder engagement included the U.S. Forest Service, Nate Stafford of El Porvenir Christian Camp (Landowner Agreement signed 8/22/2019), Camilo Gomez and six members of the Pat Galligan family (Landowner Agreements completed in April 2021). Landowner agreements will be furnished upon request.

Continued discussions with the U.S. Forest Service led to a new proposed and awarded *Watershed Project Implementation for Upper Gallinas River and Porvenir Creek - Phase IV* to work closely with them on numerous projects. This was facilitated by Amina Sena who transferred to the Santa Fe National Forest during this project. Collaborative work planned included sustainable recreation management (trails, campgrounds, signage) and livestock management. The Santa Fe National Forest expressed interest in building our joint capacity to work together leading to an application (by USFS) to receive funding under the USFS Water Source Protection program to build collaboration with us as a partner. While this grant has not yet materialized, it is expected to facilitate joint projects and collaborative agreements. The Hermits Peak and Calf Canyon Fire has been a huge distraction from our building this partnership, but it will be revisited later in 2022.

Established a relationship with the NM Volunteers for the Outdoors for trail work in the National Forest in the Upper Gallinas Watershed. NMVO held a workday with 13 volunteers during which they cleared 3 miles of the El Porvenir trail on June 5, 2020. Mike Timmer, Project Leader with NMVO, agreed to work together with us in the future for other such efforts in all our watersheds.

Met with Ranch Manager of Swayze Ranch to attempt to resolve a "Nuisance" beaver problem. Were ultimately unable to provide an acceptable resolution and the landowner chose to have them relocated.

In 2020, we began work with NM Game and Fish and Defenders of Wildlife to cooperate on production of Beaver Video series (see details below). Defenders of Wildlife contributed $4,000 toward this production. We also assisted Defenders of Wildlife and others in putting on a Beaver Summit in fall 2020.

Task 3. Project Planning and Contractor Oversight

Completion Benchmarks Planned – Develop and finalize project designs and plans, oversee project implementation and completion. The Project Manager and Technical Coordinator will work with landowners, land managers and contractors to plan and carry out each project.

Completed – see descriptions below for all project accomplishments.

Management Measure #1: Domestic and Recreational Use Management – Trails

During On-the-Ground Improvement Projects Phase II, degraded trail stream crossings and trail sections located immediately adjacent to stream channels were identified as a significant cause of streambank erosion, channel widening with heat gain, loss of appropriate geomorphology and consequent stream sedimentation. A follow up assessment and concept design of repairs needed to degraded trail sections was conducted by Reineke Construction in Phase II.

In Phase III we followed up with that assessment with the three tasks:

- Performed trail repairs and reroutes on trail #247 along Beaver Creek,
- Designed and estimated a 1.4 mile reroute along upper Beaver Creek and gained NEPA approval for this work (see Appendix 2)
- Designed Gallinas Creek trail repair work.

CM ArborCare (a protégé of Reineke Construction) was contracted to do the trail repairs and reroutes and complete all design work for future projects.

Trail repairs and reroutes along approximately 6.25 miles of trail #247 to reduce stream erosion and improve trail stability was completed between mid-July and mid-October 2020. Work included four short trail re-routes and various trail repair tasks. Degraded conditions were remedied with construction of 5 rolling grade dips or check dams at two separate locations, 7 rock step/landing structures, 20 linear feet of elevated trail, harden 20 linear feet

of trail with gravel, and clearing logs from the existing trail. This work was covered under a NEPA (approved August 13, 2019) and a completed 404 Permit (Sept. 16, 2019).

Coordination with James Munoz, the recreation staff officer on the Las Vegas Ranger District from the Forest Service, was done to meet COVID restrictions and forest closures, follow USFS trail repair guidelines, and ensure that accommodations were met to protect the Mexican Spotted Owl Protected Activity Centers.

CM ArborCare also designed a 1.4-mile trail re-route to move the entire length of the trail out of the valley bottom and riparian area and eliminate four stream crossings. The design consisted of 4 smaller reroutes and was estimated to cost (see Appendix 1) $66,560 requiring about 8 weeks of work. It is recommended to pursue other funding for this work (e.g., National Forest Foundation). This reroute was cleared in the NEPA decision memo (see Appendix 2).

Devin Kennemore, Pathfinder Environmental, coordinated the archaeological surveys required for the newly designed 1.4-mile trail reroute and received USFS NEPA approval for that future work. He also secured the 404 permit to do all trail and log dam repair work planned for 2020 (see Task 4).

We attempted to apply for a grant from National Forest System Trail Stewardship Partnership Funding to do this reroute, but this grant was discontinued this year due to lost funding.

CM ArborCare was hired to evaluate the Gallinas Creek Trail #216 condition and recommend trail repairs needed and reroutes to move the trail away from the stream or select better locations for stream crossings. Twenty high priority trail repairs and reroutes were designed to include in NEPA documentation to enable that later work.

Management Measure #2: Riparian Area Restoration

To improve stream shade and enhance riparian habitat conditions for beaver and other wildlife, we planned to plant riparian vegetation in wilderness areas of Beaver Creek that lacked sufficient cover because of historic livestock overgrazing. We planned to plant site appropriate riparian vegetation with purchased or harvested plant stock nearby. To protect young plantings from livestock and ungulate herbivory, brush or natural material barriers were to be constructed with local materials.

After having a number of backpacking planting trips cancelled because of a lack of participation and COVID, we held a weekend trip into the Beaver Creek wilderness on October 3rd and 4th, 2020. Staff and community volunteers made a 16-mile round trip hike up Beaver Creek during which they harvested and transplanted 400 willows to deficient riparian areas. Local willow whips were harvested and transplanted because high elevation species are not available commercially.

Constructing brush barriers around newly planted seedling occurred to a limited extent because of a lack of material in the vicinity. The valley bottom where planting occurred was lacking in woody materials and that material was only available on the side slopes, quite some distance from planting areas.

Concentrated livestock grazing in the area was clear so seedling protection would have been beneficial. Survival of planted seedlings because of grazing was uncertain. This prompted us to begin discussions with the USFS and the grazing permittee to explore how we might help to improve livestock management in this valley bottom. Those discussions led to the development of plans to help the grazing permittee with fencing maintenance and reconstruction to better distribute livestock through the unit and reduce pressure on riparian vegetation. This work was added to our subsequent proposal for Gallinas 319 Phase IV (submitted 1/21/21, awarded, and contracted 11/8/21).

Management Measure #3: Stream Channel Restoration

Three stream channel restoration efforts were planned.

One was to repair man-made one log dams along Beaver Creek on National Forest Lands (in the same area as trail improvements). During Phase II we identified the need to repair or remove 11 man-made log dams that are causing stream channel widening. These log dams were installed during the 1960's and 70's, before stream hydrology was well understood, with the expected goal of improving fish habitat. However, some of these structures, especially those in meadow environments without rock and log controls, were causing streambank erosion, channel widening and sequestration of excessive fine sediments. Identification of log dams causing this degradation, designs for their repair (removal was deemed inappropriate by the USFS Archaeologist), and the NEPA to enable this work were completed during Phase II.

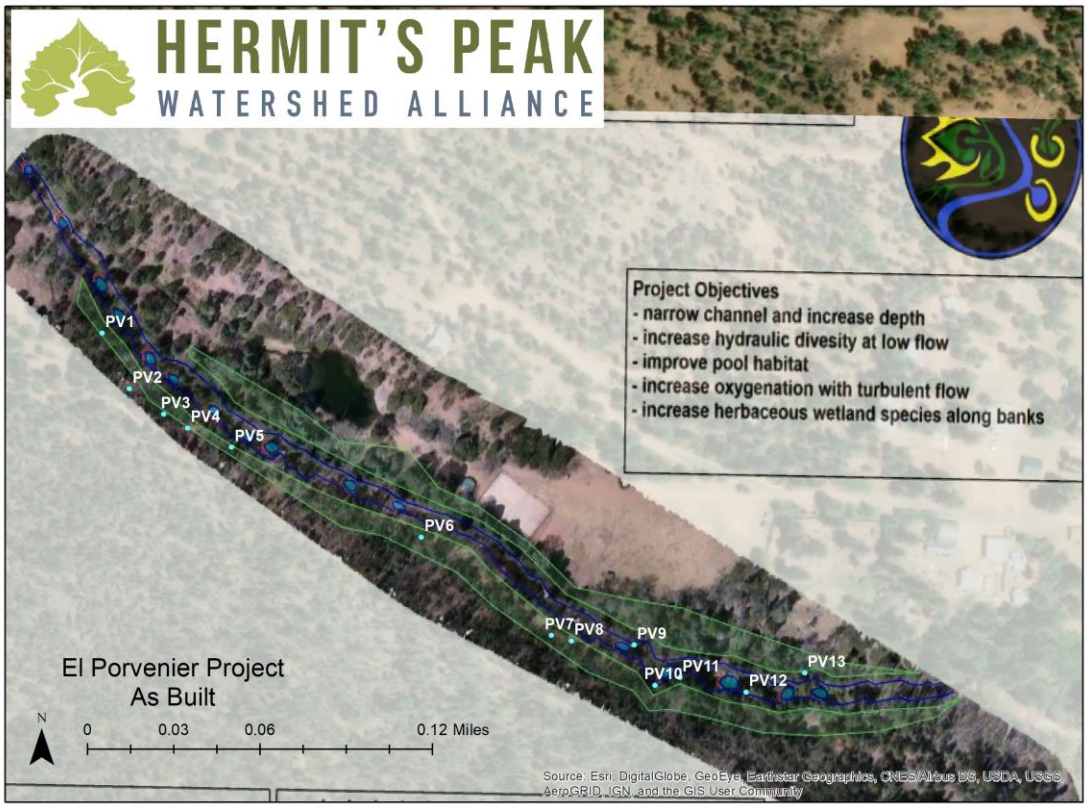
Eleven log dam repairs were done by CM ArborCare during July to October of 2020. They were permitted by US ACE 404 permit SPA-2019-00235-ABQ (Beaver Creek Restoration Project) dated Sept. 16, 2019. Repairs were with a thalweg notch alone or in combination with repairing the stream widening that occurred when stream flow moved around the ends of the logs with on-site rocks to force water flow over the center of the log. All log dams needing repaired were done.

The second effort entailed an in-channel restoration project of Porvenir Creek as it flows through a private land in-holding immediately upstream of the Porvenir Campground and just downstream of the Pecos Wilderness boundary at the Porvenir Christian Camp. A shovel and permit ready restoration design for 1750' feet (0.33 miles) of Porvenir Creek was completed in Phase II. Restoration objectives for this reach were to: stabilize the channel bed, increase bedform complexity, increase dissolved oxygen and aeration, narrow baseflow

channel and increase low flow sinuosity and increase the number and depth of pools. This was to be accomplished by constructing a series of 18 boulder and log step pools.

The Porvenir Christiam Camp instream restoration work was completed between October 7 and October 21, 2020. A Landowner Agreement with Nate Stafford, manager of the Camp was signed August 22, 2019, and the US ACE 404 Nationwide 27 404 permit (SPA-2019-00262) was finalized on April 22, 2020, with assistance from Devin Kennemore. The construction design was developed by Craig Sponholtz and construction done by Watershed Artisans, Inc. (see As-built below).

A significant complication with designing and constructing this project resulted from a large wind event that occurred between the time that the original design was done (2018) and the start of the project (2019). Locations of structures needed to be changed and access to the site need to be cleared before construction could be done. This resulted in extra design work to finalize the permit it also resulted in extra work by the contractor to clear woody material. The landowner generously helped with much of the unanticipated but necessary work to remove blowdown in and adjacent to the creek as project match.



As-Built for El Porvenir Creek Instream Restoration completed October 21, 2020.

A third, stream channel restoration project was planned for another location on private land either on Porvenir Creek, downstream of the Porvenir Campground or on the Gallinas River downstream of its confluence with Porvenir Creek.

The selected project was to occur on the Camilo Gomez and Pat Galligan properties. Watershed Artisans completed a design and construction for instream restoration and addition of an off-channel wetland along a 0.5 mile stretch of the Gallinas River. Instream restoration involved reinstating stable large woody debris structures in the channel (see Appendix 4). The Nationwide 27 404 Permit (dated June 22, 2021 – SPA-2021-00103) was obtained from USACE with the permit application work was done by a Denise Smith under subcontract with Watershed Artisans. Seven landowners on the Gomez/Galligan were involved in this project and all signed Landowner Agreements in April of 2021.

Before we settled on the design for this project, we did pursue a previous desire to reconnect the Gallinas River to its former channel on valley right to improve floodplain access. It was the hoped that a floodplain reconnection project would be done on this undeveloped 20-acre area. Discussion revolved around a downstream home that exists in the potential floodway. We examined the possibility of doing detailed survey work and HECRAS modeling to be confident that the project would not jeopardize this downstream home. It was determined that this modeling effort would be extremely expensive if we used a contractor (approx. $30,000). So, it was decided to look for alternative means of doing this at a future date. It was decided to limit the project to instream restoration only.

Management Measure #4: Conservation Programs, Planning, and Regulatory Measures

To prepare for implementation of needed watershed restoration projects that were identified during Phase II on National Forest Lands in the upper reaches of Gallinas Creek, a NEPA review was planned. The NEPA would include plans to repair or reroute trail crossings and resolve issues where trails are located adjacent to the stream channel and are causing stream channel or water quality problems. It would also include the assessment and repair designs of man-made log dams that are causing stream channel widening.

Devin Kennemore (Pathfinder Environmental) was hired to develop the NEPA with CM ArborCare hired to develop designs for trail work and log dam repairs. A preliminary inventory of man-made log dams in Gallinas Creek indicated that there were over 100 log dams that were built around the 1920s. Seventeen high priority log dams were identified, and repairs were recommended. Chris Michel completed all field work and designs for the log dam and trail repair designs in a report and cost estimate to HPWA (available upon request).

After considerable work to prepare the NEPA, in 2021, the Santa Fe National Forest completed a programmatic NEPA review called the Northern New Mexico Riparian, Aquatic, and Wetland Restoration Project Environmental Assessment (EA). The SFNF then issued a Finding of No Significant Impact in 2021 for this EA, which made it available for use by Forest Service Cooperators. This EA reduced the permitting work required to complete the NEPA process for this project (see Appendix 3 for more information).

Management Measure #5: Reintroduce Beaver

During Phase II it was determined that the reintroduction of beaver into the Beaver Creek area in the Pecos Wilderness would significantly improve stream, floodplain and wetland conditions and be cost-effective. Preliminary habitat assessment and negotiation with both NM Game and Fish Dept. and the US Forest Service also occurred with both parties interested in pursuing this further. Our plan during Phase III, was to continue pursuing this possibility.

Discussions with USFS staff, Mike Lujan, indicated that USFS would consider the relocation but would defer to the NM Game and Fish regarding the habitat suitability and practicality of this effort. Numerous conversations were had with Nicholas Foreman, the NM Game & Fish small mammal program manager about identifying the Beaver Cr. as a potential release site for beaver. Mr. Foreman agreed to list it as such. However, the logistics related with getting physically moving beaver into this wilderness area are challenging while not insurmountable. No further work occurred on this task during Phase III.

Ancillary to this effort we were asked to assist a landowner in Gallinas with a beaver conflict. We did help cage several trees that were vulnerable to beaver harvest (that was their main concern). However, the landowner could not be convinced to keep the beaver in the long run. We were able to convince them to wait to relocate the family until the kits were larger (around June) and could withstand trapping and relocation. We did construct a few temporary cages on significant trees closest to the lodge to protect trees while the kits matured. This satisfied the landowner to not do lethal removal immediately. The landowner then proceeded with their own plans to relocate the beaver independent of us.

Task 4. Permitting

Three USACE 404 permits were obtained to accomplish work under this grant: Beaver Cr., El Porvenir Christian Camp, and the Gomez/Galligan projects.

- Beaver Creek Trail repair and man-made log dam repair work US ACE Nationwide 27, 404 permit application was developed by Devin Kennemore, Pathfinder Environmental. It was approved on September 16, 2019 - SPA-2019-00235-ABQ.
- El Porvenir Christian Camp instream restoration Nationwide 27, 404 permit application was prepared by Devin Kennemore, Pathfinder Environmental. Permit number SPA-2019-00262 was obtained on April 22, 2020. Work developing an acceptable permit application and monitoring plan took longer than expected because the monitoring requirements for 404 permit projects changed. Previously, monitoring project photo points for a 5-year period has been acceptable for all 404 permits. However, now monitoring one or more metrics related to at least one goal of the projects was being required.
- Gomez/Galligan stream restoration project USACE Nationwide 27, 404 permit application was prepared by Denise Smith and obtained on June 22, 2021 - SPA-2021-00103.

Task 5. Monitoring

Monitoring efforts planned for this Phase III project included:

1. Develop a new Quality Assurance Project Plan (QAPP),
2. Stream temperature monitoring each summer,
3. Stream shade assessment during the second summer,
4. Stream morphology pre and post treatment,
5. Evaluate and coordinate other desirable monitoring efforts for overall watershed condition,
6. Assess overall progress made since the WBP development and reevaluate the budget and implementation plans laid out in the WBP will occur.

A new QAPP was submitted to EPA for review in May 2019 and approved by EPA on June 19, 2019. Upon recommendations from Miguel Montoya (Quality Assurance Officer), this QAPP did not include a stream shade assessment as it was determined to not be central to model temperature load reductions.

Temperature monitoring adhered to QAPP guidelines and data are presented in 10-year Assessment Report (see attached). New staff were trained in protocol either by NMED staff or by staff that was previously trained. Temperature data loggers were deployed at all 11 previously used upper Gallinas sites for the summers of 2019, 2020, and 2021 from June to October. A new temperature monitoring site was established for the El Porvenir Christian Camp project. Results of Phase III temperature monitoring are contained in the 10-year Assessment Report.

Stream shade assessments were not conducted during this project except at project locations.

Stream Morphology, pre and post treatment, occurred at the El Porvenir Christian Camp and Gomez/Galligan projects with Physical Habitat Assessment including bankfull cross sections, flow, canopy, width:depth, pebble count and longitudinal profile (see attached Gallinas Phase III Stream Morphology Data Report June 26, 2022).

A thorough evaluation of future monitoring approaches did not occur during this phase in part because of HPWA staffing changes. Amina Sena was to have performed this evaluation because of her significant hydrologic monitoring experience. New staff lacked the experience to evaluate our past monitoring and recommend improved future monitoring. This evaluation will occur as part of the Phase IV implementation project.

Task 6. Outreach and Volunteer Recruitment

Completion Benchmarks Planned – Promote the project and events through traditional and social media, recruit volunteers for implementation efforts.

Completed - Reina Fernandez (contractor) and Jacob Erickson (staff) continued to promote HPWA in general and the Gallinas Phase III project specifically through the Las Vegas Optic, local radio, social media, and through HPWA website to inform the public of planned work and its benefits. Volunteer and educational events were similarly publicized. Active volunteer recruitment focused on general community volunteers and students at NM Highlands University.

A Las Vegas Optic article was published August 25, 2019, telling the story of Hermit's Peak Watershed Alliance with a focus on Gallinas River work (see attachment).

Jacob Erickson did a major redesign of our website in 2020 to include records of past documents, profiles of each watershed, events notice, and a new section, Learning Together, that provides videos and other educational documents. See the website at https://hermitspeakwatersheds.org/

A professional Public Relations and Fundraising contractor, Louise Jensen, was hired near the end of this project to provide PR oversight which has significantly improved our media presence. Once such example is a Public Service Announcement released monthly on KFUN radio station with relevant educational information. Another is a more pointed and intentional social media presence.

Task 7. Education

Completion Benchmarks Planned – Identify, develop, and carry out educational programs. The following efforts were planned: 1) develop a Gallinas Watershed Tour Guide (aka Story Map and Driving Guide), 2) a Landowner Guide to Supporting Watershed Health, and 3) a series of workshops, lectures, and tours.

Completed –

1) The Gallinas Watershed Tour Guide consists of two parts – a digital GIS based Story Map and a hardcopy Driving Guide. Both were completed by June 30, 2022. The Story Map will be distributed on our website soon but can now be found at:

   https://storymaps.arcgis.com/stories/8e196c690bac43ba96992b50cc71bd18

Originally, the NM Forest and Watershed Restoration Institute at NMHU were contracted to develop the Story Map. Staffing and workload issues made it impossible for them to proceed with this contract. HPWA staff, Richard Pratt and later Meagen Larson instead completed the Story Map.

While conditions in the Upper Gallinas Watershed are now radically different after the Hermit's Peak and Calf Canyon Fire from those when the Story Map and Driving Guide were produced, they do provide a great pre-fire baseline to put the current conditions into perspective. We do plan on developing a post-fire video in *Watershed Project Implementation for Upper Gallinas River and Porvenir Creek – Phase IV* that will provide a good update.

This Story Map is an excellent virtual tour guide for students, our municipal government officials, community members, and visitors. It offers an excellent overview of the Upper Gallinas but perhaps more importantly, it is an educational product that contributes to an understanding of watershed functions and benefits.

2) Landowner Guide – Some work was accomplished toward the end of developing a Landowner Guide to Watershed Stewardship, but no physical products were released. Work entailed sketching an outline for these documents and an approach for developing them. One document on the Role of Plants was developed but not finalized.

3) Educational Workshops, Lectures, Tours, and Materials –

In part because of the COVID pandemic but also because we were able to hire a videographer onto our staff, we were able to begin production of a series of educational videos. These videos offer lasting educational resources that are present on our website as part of our Land Stewardship Series and are posted on our Facebook page.

Also, part of our educational videos, we worked collaboratively with Defenders of Wildlife to support the NM Beaver Summit in 2020. An outgrowth of that summit was our production of a video series called ***Partnering with Beaver*** with this project's educational funding and a grant from Defenders of Wildlife.

Videos that were produced during this Phase III project are listed below and can be found on our website at https://hermitspeakwatersheds.org/educational-videos/

- Monitoring Temperature along the Gallinas River
- Storm Water Treatment Systems and Green Infrastructure

- Riparian Vegetation along the Gallinas River
- How to Build a Willow Fascine
- Data Monitoring along Wolf Creek
- Las Vegas Water Treatment Facility
- What is a Watershed? https://hermitspeakwatersheds.org/educational-me/
- Partnering with Beaver (series)
    - Why Beaver?
    - How Beaver Benefit Landowners
    - Beaver Economics (to be later released)
    - Living with Beaver (to be later released)
    - Return of the Beaver (to be later released)

Numerous educational events were held during this project period– see below table

Table 3. Educational Events and Efforts done during the Gallinas Phase III project.

DATE	DESCRIPTION OF ACTIVITY	NOTES
March 8, 2019	Forest Thinning & Watershed Health	Presented by Amina Sena, NM Forest and Watershed Restoration Institute, approximately 20 people attended.
April 27, 2019	Annual Gallinas River Cleanup	
May 3, 2019	Geologic Relations to our Water Supply: presented by Dr. Jennifer Lindline, NMHU	A presentation to the community and NMHU students. About 15 people attended.
June 20, 2019	What makes a Stream Healthy or Not and How it Affects YOU: presented by Amina Sena	Held in collaboration with the NM Forest and Watershed Restoration Institute at NMHU, approximately 25 people attended.
September 28, 2019	3rd Annual Gallinas Riverfest	Over 200 people attended.

DATE	DESCRIPTION OF ACTIVITY	NOTES
December 9, 2019	Presentation at the Northern NM Wetlands Round Table	10 Years of Watershed Restoration Work.
December 15, 2019	Christmas Bird Count	
March 4, 2020	Land Stewardship Series presentation on titled "Low-Tech Stream Restoration using Beaver as a Teacher and Engineer	Presentation by Cecil Rich, US Forest Service, Santa Fe National Forest. Nineteen people attended.
March 5, 2020	Beaver Believers documentary screening	53 people attended at the Indigo Theater
April 2020	Gallinas River Cleanup	Joint river and community cleanup in in collaboration with the City of Las Vegas.
May 9, 2020	The Big Day (birding)	Promoted participation in the Big Day, a global bird count sponsored by Cornell Lab of Ornithology using eBird.
Summer 2020	8 walks along the Gallinas River in Las Vegas.	Featuring a variety of topics like water quality, riparian habitat, river restoration, edible and medicinal plants, fish habitat, and birding and bird habitat. These walks were well attended and received.
November 16, 2020	Non-point Source Pollution National Conference	Amina Sena presented 10 years of HPWA's work at NMED annual conference
December 2020	New Mexico Beaver Summit	Collaboration with Defenders of Wildlife
December 10, 2020	Webinar on Riparian Habitat Assessment training based on the Bullseye method	Collaborative effort with High Plains Grassland Alliance. https://youtu.be/NageOaoIvd8.

DATE	DESCRIPTION OF ACTIVITY	NOTES
December 19, 2020	Christmas Bird Count	
Spring 2021	Riparian vegetation assessment exercise for a class Humans and Ecosystems class at NMHU	Led by Amina Sena
July 23-25, 2021	Ranch Road Workshop put on by Steve Carson	https://hermitspeakwatersheds.org/workshops/
Summer 2021	NMHU SOMOS STEM workshop - professional development in Water Resources and Natural Resources	Amina Sena gave a presentation and tour explaining our Gallinas Watershed restoration projects.
August 2021	NMHU presentation	Amina Sena did a presentation to an NMHU Watershed Management class about our Gallinas work and other projects.
	LAND STEWARDSHIP SERIES VIDEOS	https://hermitspeakwatersheds.org/educational-videos/
	Monitoring Stream Temperature along the Gallinas River	
	Stormwater Treatment Systems and Green Infrastructure	
	Riparian Vegetation Along the Gallinas	
	How to Build a Willow Fascine	
	Monitoring Wolf Creek	
	Las Vegas Water Treatment Facility	

DATE	DESCRIPTION OF ACTIVITY	NOTES
	What is a Watershed?	https://hermitspeakwatersheds.org/watershed-restoration-and-management/ https://www.youtube.com/watch?v=Hh2fuIAoQus
	Restoring the Rio Mora	https://youtu.be/EgcSQYfBU0k
	Partnering with Beaver: Why Beaver?	Part of a 5 part video series parts 3-5 are in production. https://hermitspeakwatersheds.org/educational-videos/

4) Professional Development - To advance Watershed related professional development while obtaining field assistants, interns from NM Highlands University are regularly recruited. All interns are paid by NMHU programs and grants. The Alliance for Minority Participation (AMP) program provided a total of four interns for 2019 and 2020. Interns and volunteers received training and actual experience on a variety of in-field river data collection methods. HPWA further supports NMHU students and programs by providing guest lectures, field trips and participating in NMHU SOMOS STEM workshops to promote professional development in Water Resources and Natural Resources.

SIGNIFICANT PROJECT CHANGES

HPWA experienced considerable staff turnover during this project in contrast to relatively stable staff in the past. Considerable time investment was needed to train and oversee new staff. HPWA had three different Technical Coordinators during this project, and we also added several positions to our staff.

Organizational growing pains related to these changes did affect progress on this project. Each staff change required a training and on-the-job learning period. Some mistakes were made during this time but also some improvements were made as we got better at documenting processes that helped with these transitions. Specific staff changes are listed in the Project Chronology section.

The COVID pandemic occurred during two of the most active years of this project. To adjust to a new way of working, accommodate staff who now needed to homeschool their children, and to change how we interacted with the public, many modifications needed to occur. All public meetings and events ceased with a shift to one-on-one meetings outside and a change from public educational events to virtual efforts. To allow these modifications, we hired a videographer to produce lasting educational video which in the long run is promising to be an excellent addition to our educational toolbox. However, personal relationships with residents did suffer.

Another change that happened during this project was the shift in contractual expenses to personnel expenses. Some work planned for subcontractors (e.g., NM Forest and Watershed Restoration Institute, Reina Fernandez, Elizabeth Juarros) was done by staff. This conversion has increased the capacity of HPWA to do work in-house.

Then, at the end of the project, most of the upper Gallinas Watershed was subject to the Hermit's Peak and Calf Canyon Fire. While it did not affect this Phase III project, it did reset how we approach on-the-ground implementation in the future, especially the now in motion Phase IV project. An updated Watershed Based Plan is likely called for to address significantly altered conditions that are not yet well understood. It is to be expected that new water quality and land health conditions will persist in the watershed for many years. New Management and Restoration Measures will be needed, new priorities established, and new information will need to be added to adjust planned work to these drastically new conditions.

MEASURES OF SUCCESS

This *On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase III* was successful at further reducing Nonpoint Source Pollution on the Upper Gallinas River within Priority Reaches 5 and 10. Based on load reduction methods established in the Upper Gallinas River Watershed Based Plan, total load reduction for this Phase III project was 46.34 $J/M^2/S$ (see Table 4). This load reduction resulted from instream restoration (including log dam repairs), riparian vegetation enhancement, and trail improvements along Beaver Creek and at El Porvenir Christian Camp. Also contributing to the load reduction was stream channel restoration, wetland creation, and riparian vegetation enhancement at the Galligan/Gomez project.

Table 4 - Estimated load reductions by reach during Gallinas Phase III on-the-ground work.

PRIORITY REACH	RECOMMENDED LOAD REDUCTION J/M²/S	ACTUAL LOAD REDUCTION J/M²/S	RECOMMENDED STREAM SHADE INCREASE %	ACTUAL STREAM SHADE INCREASE %
Priority 1	69.89	N/A	27.52	N/A
Priority 2	55.33	N/A	21.78	N/A
Priority 3	50.37	N/A	19.83	N/A
Priority 4	45.49	N/A	17.91	N/A
Priority 5	32.03	38.44	12.61	15.13%
Priority 6	28.1	N/A	11.06	N/A
Priority 7	24.97	N/A	9.83	N/A
Priority 8	17.66	N/A	6.95	N/A
Priority 9	13.74	N/A	5.41	N/A
Priority 10	6.59	7.90	2.59	3.10
Priority 11	1.33	N/A	0.52	N/A

LESSONS LEARNED

- Expect the unexpected! While project planning during the proposal stage and the work plan development stage is important to a project's success, inevitably unforeseen changes (like fires, staff changes, and pandemics) require flexible and creative thinking to adjust and remain effective. Maintaining regular written communication with the Project Officer at NMED is important so changes are well documented and NMED is not surprised when outcomes are different than planned. Reports that accompany invoices are a good place to document these changes, but letters to the file requesting approval of contractor, staff, and on-the-ground project changes are good too.
- HPWA has usually relied on staff to perform monitoring and a variety of other tasks. So, our project plans have been developed with our specific staff experience in mind. Project tasks should not be dependent on staff with particular expertise or if it is, have a backup plan for other people or contractors that can perform the work if staffing does change.
- Developing a staff training program is good to have in place to efficiently bring new staff up to speed with the organization and its work.

- We discovered that it is difficult to organize wilderness work. First it is hard to get participation, especially with people who are experienced in wilderness settings. Plan extra time to accomplish wilderness tasks with enough time to enjoy the experience. Finding an experienced group of backcountry people to do the trip makes it go much smoother.
- Plan adequate time to complete the USACE 404 permits and expect problems. Three months from permit application submission to approval is good to expect, but it can take even longer if revisions are needed. To put a project on hold because of the 404 permit is a significant frustration for everyone.

TECHNICAL TRANSFER

Consult with NMED about data submission formats early in a project so that data are entered and stored in a format that is acceptable. NMED calls for data often do not include adequate time to reformat data preparing it for submittal. Request data entry forms and specific formats needed from the NMED Project Officer.

FUTURE RECOMMENDATIONS

- Consider updating the Watershed Based Plan to guide the post-fire environment.
- At the time of QAPP development for Gallinas Phase IV, reevaluate appropriate monitoring to continue in the post-fire environment.
- Reevaluate load reduction calculation methods for future phases of on-the-ground work. Past load reduction calculations were determined for 11 priority reaches. Examine another way to represent load reductions. Also, confirm use of STEPL for load reduction calculations.
- Develop practical method of seedling protection when planting riparian vegetation in areas with abundant livestock or ungulate populations. This is especially relevant in the wilderness areas of Beaver Creek and Gallinas Creek.

PHOTO DOCUMENTATION

El Porvenir Christian Camp In-stream Restoration

Post treatment of Porvenir Creek instream restoration project looking upstream. Pools were deepened and streambanks anchored.

Galligan/Gomez – Large Woody Debris Structures

Wilderness Riparian Planting

Volunteer planting willows along Beaver Creek.

Community volunteers heading up El Porvenir Canyon to Beaver Creek for willow planting weekend.

Log dam and trail repair work

Man-made log dam repairs - LD 12 looking downstream before log notching.

Man-made log dam repairs - LD 12 looking downstream after log notching.

APPENDICES

APPENDIX 1

Report For Task 5 of Beaver Creek Trail and Log Dam Repairs Contract
To: Lea Knutson, Hermit's Peak Watershed Alliance
From: Chris Michel of CM ArborCare LLC
Date: 12/31/19

Task 5: Design and locate proposed centerline of a 1.4 mile long reroute of the upper section of Trail #247. Provide a construction cost estimate for the reroute.

The goal was to layout and design a reroute that would take the trail out of the lower meadows and eliminate stream crossings. After exploring the area for the reroute it became apparent that various unpassable limestone ridges would make a single reroute not plausible. To avoid passing these ridges and maintain connectivity with Trail #10 and Trail Trail #214, four separate smaller reroutes were designed. The centerline of these reroutes is included in the kmz file named Beaver Creek Reroutes.kmz and described below.

Reroute #1
This reroute begins approximately 250 feet down trail from the first crossing where the existing trail crosses to the southside of the valley. It climbs up the north side through small ponderosa and oak thickets, opening up to grassland. The reroute will come down off the slope and join a cow trail (possibly the original Trail #247) where a sign post marking a junction with Trail #10 is propped up with a pile of rocks. To avoid some of the limestone ridges mentioned above the reroute will follow the cow trail for approximately 900 ft on the valley floor and then climb out of the drainage and join Trail #214. The cow trail section is very prominent and should not require any additional tread work to be a passable trail. Total new tread construction in Reroute #1 is 0.5 miles. It has some steep sideslope areas that will require a full bench cut and some rocky areas that will require a little more labor to construct. The trail is laid out to have grade reversals throughout so drainage features like waterbars will not be necessary. No trees larger than 4" diameter will need to be removed, but there are few that will need branches pruned, as well as some larger fallen logs that will need to be cleared. Care should be taken when joining Trail #214 to prevent run off from Trail #214 from running down the newly constructed trail. This may require a drain dip or water bar but should be achievable with proper layout of tread. This reroute will eliminate the use of 2 stream crossings and avoid some marshy grasslands.

Reroute #2
After following Trail #247 for approximately 230 feet Reroute 2 will exit continuing on the north

slope of the valley. This reroute is 0.25 miles long and ties into the existing trail just before a large limestone ridge. This ridge makes continuing upslope not possible as it would require climbing high up the slope for a suitable crossing point and would require construction of switchbacks or a much longer reroute. This reroute is laid out to have grade reversals throughout so drainage features like water bars will not be necessary. Few trees will have to be cut down, but pruning will be required. Construction of this reroute will eliminate 2 stream crossings and a long stretch of non-existent tread that has been grown over by grass.

Reroute #3

This reroute begins approximately 515 feet up trail from Reroute #2. This section of Trail #247 is close to the stream but the side slope and limestone ridge make it difficult to construct otherwise. Reroute #3 is simply moving the trail upslope 10-15' for about 265 linear feet of tread. This will avoid 2 sections of trail that are very close to the stream and are at risk of collapsing due to erosion. Construction of this reroute may require a few small rock retaining walls in this section. It will require full bench cut in steep rocky terrain. A few small trees and shrubs will need to be removed.

Reroute #4

Reroute #4 begins about 0.25 miles up trail from the end of Reroute #3. The section of Trail #247 between these reroutes is far enough from the stream to be sustainable but may require the addition of cairns or wooden posts to guide the user if the trail is overgrown. The reroute will climb steeply up the north side of the valley, gaining altitude to make a crossing of a side drainage. This steep section may require construction of water bars or drain dips. There is a 200' section that will require construction of a short retaining wall to get the trail passed some large Douglas fir roots. After crossing the side drainage the trail becomes more gradual. This reroute is through fairly heavy forest and will require lots of pruning, but no trees greater than 4" diameter should be removed. This reroute avoids a large marshy area where a spring crosses the trail and a section of non-existent tread that has been overgrown.

Description of Tread Work

The tread will be constructed using a full bench. All constructed tread should be 24" - 36" wide with a maximum tread obstacle height of 6". The tread shall have a minimum outslope of 5% grade. The layout of most of the reroutes should allow for enough grade reversals that there will be little need for drainage features such as water bars. The exceptions for this are noted in the description of Reroute #1 and Reroute #4. Clearing of the corridor will be cut to 8' wide and 10' high to allow proper clearance for horse use.

Construction Costs

See Table 1 for construction costs for the individual reroutes. Prices do NOT include gross receipts tax. All time estimates assume working with a four-man crew. If all reroutes are constructed at the same time the total cost will be $58,240 and will take an estimated 7 weeks

with a four-man crew.

Table 1: Individual Construction Costs
Construction Cost (pre-tax) Construction Time

Reroute #1 $24,960.00 3 weeks
Reroute #2 $12,480.00 1.5 weeks
Reroute #3 $4,160 - 0.5 weeks
Reroute #4 $24,960 - 3 weeks

Total – $66,560 and 8 weeks of work

APPENDIX 2

Beaver Creek NEPA Decision Memo

DECISION MEMO
USDA FOREST SERVICE
PECOS/LAS VEGAS RANGER DISTRICT/SANTA FE NATIONAL FOREST
SAN MIGUEL COUNTY, NEW MEXICO

Beaver Creek Restoration Project
Decision for Creek Restoration and Trail Improvements

Description of the Project

The Pecos/Las Vegas Ranger District of the Santa Fe National Forest (SFNF), in cooperation with the Hermit's Peak Watershed Alliance (HPWA), proposes restoration activities to address erosion damage caused by log dams in Beaver Creek and the hiking/horse trail that parallels it in El Porvenir Canyon. The proposed project area is located along Beaver Creek at multiple discrete locations in El Porvenir Canyon (see Project Area Map, Figure 1). This site is located within the first 10 miles of Forest Service Trail 247 and on Beaver Creek starting at the trailhead located at El Porvenir Campground at the terminus of New Mexico Highway 65 in San Miguel County, New Mexico (T 18N, R 14E, Sections 27, 22, 9, 8, and 7). The general project area is located in the Pecos Wilderness, a designated National Wilderness.

This project is funded by the State of New Mexico through a Federal Clean Water Act Section 319(h) Nonpoint Source Grant administered by the New Mexico Environment Department, which specifically targets state waters that are listed as impaired for their designated uses. The lower part of Beaver Creek and portions of Gallinas Creek are impaired for temperature. This project is designed to improve temperatures in Beaver Creek, and downstream in Gallinas Creek. The project is located within the El Porvenir Canyon-Gallinas Creek Watershed.

The proposed project would occur in two phases along approximately five and a half miles of Beaver Creek and its associated hiking trail and approximately 0.5 mile of a headwater intermittent tributary of Beaver Creek. Riparian planting would occur in the late-March to late-June timeframe, which is the optimal time for pole-planting willows. In-stream work on the log dams would occur in the fall when the creek is typically experiencing low-flow conditions. The entire project is located within the Pecos Wilderness Area; therefore, no motorized equipment would be used for project implementation (hand-tools only). Hand tools, such as a Pulaski, Pick Maddox, McLeod, and shovel, would be used to implement the project.

The Forest Service and HPWA propose to implement one or more of the following actions at each site in order to achieve the desired conditions in the project area:

On Forest Service Trail #247:

1. Four short segments (30-100 feet) of trail would be rerouted using non-motorized hand tools to improve the long-term stability of the trail and reduce erosion (see attached map);

2. One 1.4-mile-long segment of trail would be entirely rerouted up and out of the valley floor and onto the base of the adjacent slope along the northeast to north side of the valley (see attached map);

3. Reroutes with extended grades would have frequent grade reversals (dips) incorporated into them to divert runoff and thereby reduce potential erosion;

4. Where advantageous and appropriate, creek crossings, either existing or relocated, would be armored on the banks with rocks to minimize bank erosion caused by stock trampling;

5. Abandoned segments of the trail would be blocked off using brush, branches, rock and/or existing logs and, where practical, hand tools, such as a Pulaski and McLeod, would be used to loosen compacted dirt of the old trail route surface loosening to promote natural revegetation;

6. Where possible, blazes would be put on trees to more clearly indicate the new trail route.

In Beaver Creek:

7. Log dams that are either no longer functioning or otherwise causing damage to the creek's natural hydrology would be repaired (see attached map);

8. Repairs would consist of reinforcing the creek bank where it has eroded around the end of log dams by using rocks from the creek bed to construct vanes that would direct flow of the creek toward the middle of the channel.

9. Log dams may be notched in the middle to direct more flow toward the middle of the channel, which would reduce the tendency for water to erode around the ends of the logs and help to scour the pool just below the dam during periods of high flow.

In the floodplain and riparian zone of Beaver Creek:

10. Where absent and needed for shade and bank-stability, and particularly around the ends of repaired log dams to further stabilize the bank, riparian vegetation, such as Bebb willow, Scouler's willow, mountain willow, Drummond's willow, and diamondleaf willow, and possibly other high-elevation willow species, in the form of willow whips, would be pole planted from stems gathered from available locations near the project area.

11. Brush obtained from the surrounding area would be piled up around willow plantings to protect them from being consumed by livestock and wildlife grazing until they become well-established, at which time it may either be removed or just left to decompose.

12. All sites would be monitored once annually for such time as necessary to determine project success.

Project Location
The site in general is located within the first 10 miles of Forest Service Trail 247 and on Beaver

Creek starting at the trailhead located at El Porvenir Campground at the terminus of New Mexico Highway 65 in San Miguel County, New Mexico (T 18N, R 14E, Sections 27, 22, 9, 8, and 7).

Decision

I have decided to approve the Beaver Creek Restoration Project on the Pecos/Las Vegas Ranger District of the Santa Fe National Forest. In Beaver Creek there are man-made log dams which are common to mountain streams throughout Northern New Mexico. They were constructed for the purpose of improving fish habitat, long before stream hydrology was well understood. Because they are flat and level, they do not direct water to flow toward the middle of the channel. Consequently, when water encounters a log dam, it is directed laterally against the bank at each end of the log on the upstream side. This frequently causes bank erosion and widening of the channel. Sometimes, the water cuts a channel around the ends of the logs or under them. In other cases, channel widening reduces flow energy and causes sediment to fill in the channel on the upstream side.

The hiking trail that follows along Beaver Creek, crosses the creek in multiple locations and in other places follows the creek immediately adjacent to the channel. The trail is also used regularly by people traveling by horse. Consequently, erosion of the trail adjacent to the creek has resulted in sediment being carried by rain water and snow melt runoff directly into the creek.

Restoring the form and function of Beaver Creek where the log dams are currently causing erosion would limit or eliminate additional erosion from the log dams in the creek. Rerouting segments of the hiking trail would reduce or eliminate sedimentation from trail erosion entering the creek. Planting woody riparian species such as willows and possibly cottonwoods in the riparian zone around the creek would reduce or eliminate further damage to the creek from bank erosion. Placing a temporary barrier such as brush piles around the willow plantings to keep livestock and wildlife out until the willows are established would improve water quality in Beaver Creek and downstream in Gallinas Creek, reduce erosion, improve the riparian habitat around the creek, improve function of the floodplain around the creek, improve fish habitat, protect the creek and its fish population from droughts and sedimentation caused by the log dams and trail erosion.

Category of Exclusion

This project is categorically excluded from documentation in an Environmental Assessment (EA) or Environmental Impact Statement (EIS). The project is covered under Forest Service Handbook (FSH) 1909.15, Chapter 30, Section 32.2.1 (36 CFR 220.6(e)(1)), Construction and reconstruction of trails, and Section 32.2.18 (36 CFR 220.6(e)(18)), Restoring wetlands, streams, riparian areas or other water bodies by removing, replacing, or modifying water control structures such as, but not limited to, dams, levees, dikes, ditches, culverts, pipes, drainage tiles, valves, gates, and fencing, to allow waters to flow into natural channels and floodplains and restore natural flow regimes to the extent practicable where valid existing rights or special use authorizations are not unilaterally altered or canceled.

Relationship to Extraordinary Circumstances

I find that there are no extraordinary circumstances that would warrant further analysis and documentation in an EA or EIS. I took into account resource conditions identified in agency

procedures that should be considered in determining whether extraordinary circumstances might exist:

- Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species – A Biological Assessment and Biological Evaluation were completed for the project area. There would be no effects to any Federally listed, threatened, or endangered species or designated critical habitat, or Forest Service sensitive species. (Biological Assessment and Biological Evaluation signed on 7/1/2019. See Biological Assessment Appendix A for mitigation/protection measures.
- Flood plains, wetlands, or municipal watersheds – There are no municipal watersheds in the project area. The project is located within a floodplain, but the effects are to be beneficial to the long-term stability (Soil, Water, and Watershed Resource Effects Analysis). There may be a few small wetlands in the general project area; however, these areas are not located where project activities are planned.
- Congressionally designated areas such as wild and scenic rivers, wilderness, wilderness study areas, or national recreation areas – The project area is not within a designated wild and scenic river, wilderness study area, or national recreation area. The project area is located within designated wilderness. All activities associated with the project are in compliance with the requirements for wilderness areas.
- Inventoried roadless areas or potential wilderness areas – There are no inventoried roadless areas within the project area. The project area is located within the Pecos Wilderness. There are no potential wilderness areas in the Pecos Wilderness.
- Research natural areas – There are no research natural areas in the project area.
- American Indians and Alaska Native religious or cultural sites – No American Indian or Alaska Native religious or cultural sites were identified within the proposed project survey area during the archaeological review of the project area. (IS&A signed 03/04/2019)
- Archaeological sites, or historic properties or areas—Two previously documented archaeological sites were updated, and two isolated occurrences (IOs) were discovered during the survey for this project. No new archaeological sites or other resources were discovered. The two IOs lack additional data potential and are not likely to increase our understanding of local or regional history. No further protection will be afforded them. In advance of work on the 1.4 mile section of trail a cultural resource will be done by a qualified archaeologist. This work will be done while the trail contractor is on-site laying out the line for the reroute to ensure the rerouted trail does not pass through nor otherwise affect any cultural sites or resources. Once the cultural resource survey has been completed and the documentation has been submitted to the Pecos/Las Vegas Ranger District for review and it is confirmed that there are no cultural resources on the reroute, construction of the reroute may begin. If cultural resources cannot be avoided by a section of the reroute, then that section of the trail will not be rerouted. Since the trail itself is a cultural resource, the rerouted trail will be constructed to preserve the traditional look, style, feel and use of the original trail. As a result, the proposed undertaking would have no adverse effect on any historic property listed, or eligible for

listing, on the National Register Historic Places. Heritage resource clearance is recommended. (IS&A signed 03/04/2019) The signed IS&A is included in the project record.

There are no extraordinary conditions or circumstances associated with this decision that have been identified through resources effects analysis that would have any significant effect on the environment (FSH) 1909.15, Chapter 30.3.

Findings Required by other Laws
This project is located within the Pecos Wilderness. It is located in Management Area "H." It is consistent with the general Forest Plan standards and guidelines, and those specific to Management Area H,

The action will not cause adverse effects to any of the following extraordinary circumstances: Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species; steep or highly erosive soils; flood plains, wetlands or municipal watersheds; congressionally designated areas; inventoried roadless areas; research natural areas; Native American Religious or Cultural Sites, Archeological Sites or Historic Properties or Areas (project record).

A biological assessment/evaluation and heritage resource clearance report are in the project record.

Recreation, and Soil, Water, and Watershed Specialists Reports are in the project record. A Range analysis is also included in the project record.

Public Involvement
The proposal was provided to the public and other agencies for comment during scoping, October 23, 2018 through November 15, 2019 via a scoping letter to local agencies, organizations, tribes, landowners in the vicinity of the proposed project area, and persons who had shown an interest in this type of project on Pecos/Las Vegas Ranger District.

One comment letter was received from San Miguel County in support of the project.

Appeals and Implementation

This decision is not subject to appeal in accordance with 36 CFR 215.12(f). This project may be implemented immediately. Any required permits, including a Clean Water Act Section 404 permit and Section 401 water quality certification, **will be obtained prior to implementation of the project.**

Contact Person

For additional information concerning the decision, contact Alberta Maez, NEPA Coordinator. She can be reached at the Pecos/Las Vegas Ranger District, 1926 N. 7th Street, Las Vegas, NM 87701 or by telephone at (505) 425-3534.

Steve F. Romero
District Ranger
Pecos/Las Vegas Ranger District

8/13/2019
DATE

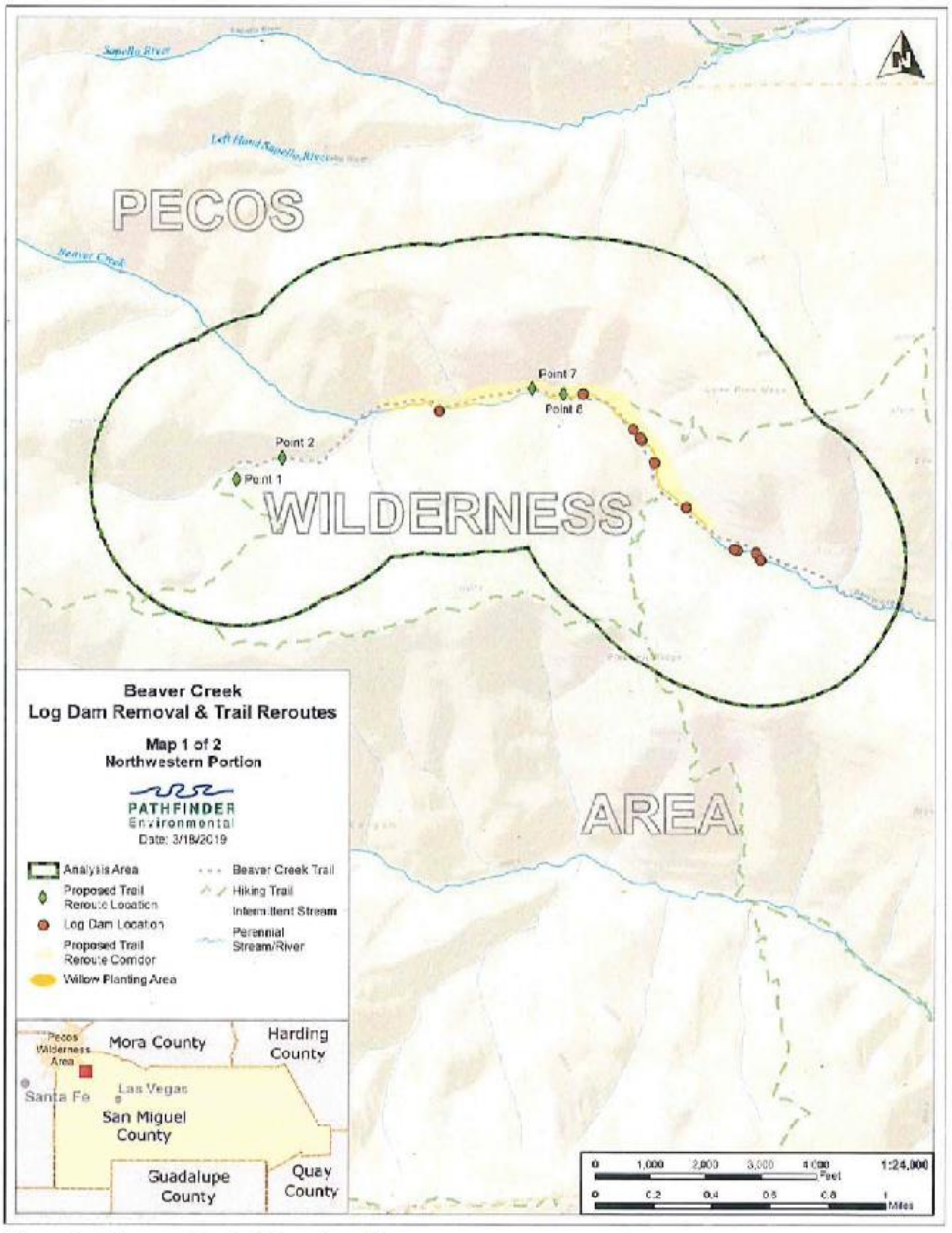


Figure 1a. General Project Location Map

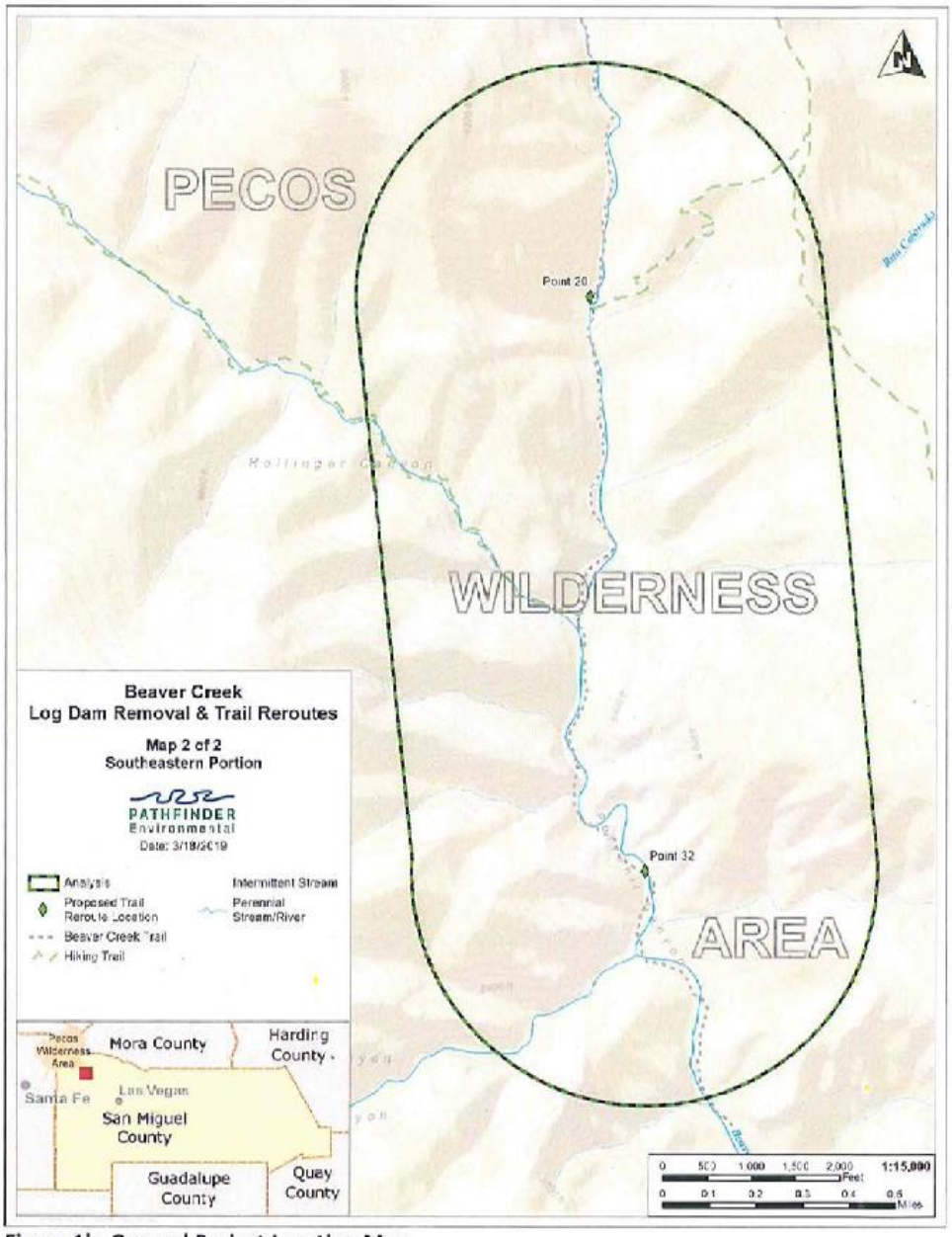


Figure 1b. General Project Location Map

APPENDIX 3

PATHFINDER Environmental
Pathfinder Environmental LLC
1800 Old Pecos Trail, Suite E, Santa Fe, New Mexico 87505

February 28, 2019

Lea Knutson, Director
Hermit's Peak Watershed Alliance
289 County Road A2
Sapello, NM 87745

Re: Gallinas Creek Log Dam and Trail Project – Final Status Report as of June 2022

This project began in 2020 under a grant (Gallinas Implementation Phase III) from the NMED SWQB that included planning for restoration work in Gallinas Creek and on the trail, #216, that follows it from the trailhead at the end of Forest Road 263 to a point approximately 4 miles in from the trailhead. The log dam portion of the project consists of making repairs to the old log dams in the creek that are no longer functioning properly and in many cases are causing damage to the bank and channel. For this portion, Hermit's Peak Watershed Alliance (HPWA) conducted an evaluation of all the log dams from the upper reaches of Gallinas Creek down to National Forest boundary.

HPWA then retained CM Arborcare in 2019 to evaluate the 17 log dams considered high-priority as a result of the HPWA evaluation. CM Arborcare produced a report, Gallinas Canyon Log Dam Report, that identifies each high-priority log dam, its location, description, and their recommendations for repair.

For the trail portion, CM Arborcare was retained in 2019 to examine Trail #216 using a report previously prepared by Reineke Construction. CM Arborcare hiked the trail and prepared a report, Gallinas Trail Maintenance Report, that presented their field observations and provided an analysis of trail conditions and their recommendations.

In 2020, HPWA retained the services of Pathfinder Environmental (Pathfinder) to assist them in getting the work on the creek and trail permitted by the Santa Fe National Forest (SFNF), Pecos/Las Vegas Ranger District (PLVRD). Since the log dams were likely built by the Civilian Conservation Corps (CCC) in the 1920s and therefore have historic value, Pathfinder Environmental hired Townsend Archaeological Consultants (TAC) (Steve Townsend) to conduct Class I and Class III cultural resource surveys of each of the 17 log dams. The PLVRD archaeologist then expanded the surveys to require an evaluation of all of the log dams from the uppermost log dam to be repaired downstream to the SFNF PLVRD boundary, because they determined that any work done in the creek may affect all downstream structures.

TAC made multiple site visits over the 2020-2021 field seasons in an attempt to survey every log dam on the stream and document each one for the Cultural Resource reporting requirement. Many of the log dams are remote, difficult to access, and hard to find. In latter 2021, the SFNF Archaeologist, Kathi Turner, informed TAC that SFNF was sending its own cultural resource staff out to survey all of the dams and prepare its own report. At that point, TAC stopped working on the project because it became unnecessary.

In 2020 and 2021, Pathfinder conducted multiple site visits to conduct biological surveys of the log dams. Pathfinder did not survey the trail repair sites due to a determination by SFNF and PLVRD that, with the exception of a short trail reroute, the trail work qualifies as annual maintenance and therefore does not require permitting. Pathfinder was preparing to have TAC conduct a Class III cultural resource survey of the trail reroute in 2022 when wildfire broke out in the area and it was closed by the Forest Service.

In 2021, the SFNF completed a programmatic National Environmental Policy Act (NEPA) review called the Northern New Mexico Riparian, Aquatic, and Wetland Restoration Project Environmental Assessment (EA). The SFNF then issued a Finding of No Significant Impact (FONSI) in 2021 for this EA, which made it available for use by Forest Service Cooperators like HPWA for projects like this one. This EA reduced the permitting work required by HPWA to complete the NEPA process for this project.

The PLVRD now no longer requires the preparation of a Biological Assessment (BA) and Biological Evaluation (BE) by the cooperator for restoration projects. Cooperators, such as HPWA, are now only required to conduct a biological survey of the project area and submit the data to the PLVRD Biologist. The PLVRD Biologist will then take that information and use it to determine what, if any, mitigation needs to be followed by the project proponent during implementation. Pathfinder provided all of its biological survey data to Danny Burton for the Gallinas Log Dam Project in 2021. The only question Mr. Burton asked was regarding the potential presence of wood lily (*Lilium philadelphicum*). Pathfinder made multiple attempts to find this species in the project area, but none were observed.

Before the Hermits Peak and Calf Canyon Fires broke out, HPWA and Pathfinder had conducted several online meetings with the PLVRD Interdisciplinary Team (IDT) to identify remaining tasks to complete to clear this project for implementation. The last online IDT meeting was conducted on January 19, 2022. A site visit was conducted (Pathfinder did not attend) with the SFNF/PLVRD IDT and HPWA representatives on March 24, 2022. A wrap-up summary of this site visit was provided via email from Marely Smith of the SFNF on April 1, 2022.

The current needs to complete permitting for this project are as follows:

- Reassess site conditions as a result of the Hermits Peak/Calf Canyon Fire to determine if the project is still needed in its present form or if it needs to be modified, or canceled.
- If site conditions are such that it makes sense to continue pursuing implementation as originally designed, then a Class III survey of the trail reroute needs to be completed and report and forms prepared to finish the Cultural Resource clearance. The SFNF may also require another biological survey to update previous findings.
- HPWA will need to continue to stay in touch with SFNF and PLVRD staff to keep the project moving through the NEPA process until it is permitted.
- A Clean Water Act Section 404 permit and Section 401 Water Quality Certification will need to be obtained prior to implementation of the log dam repairs.

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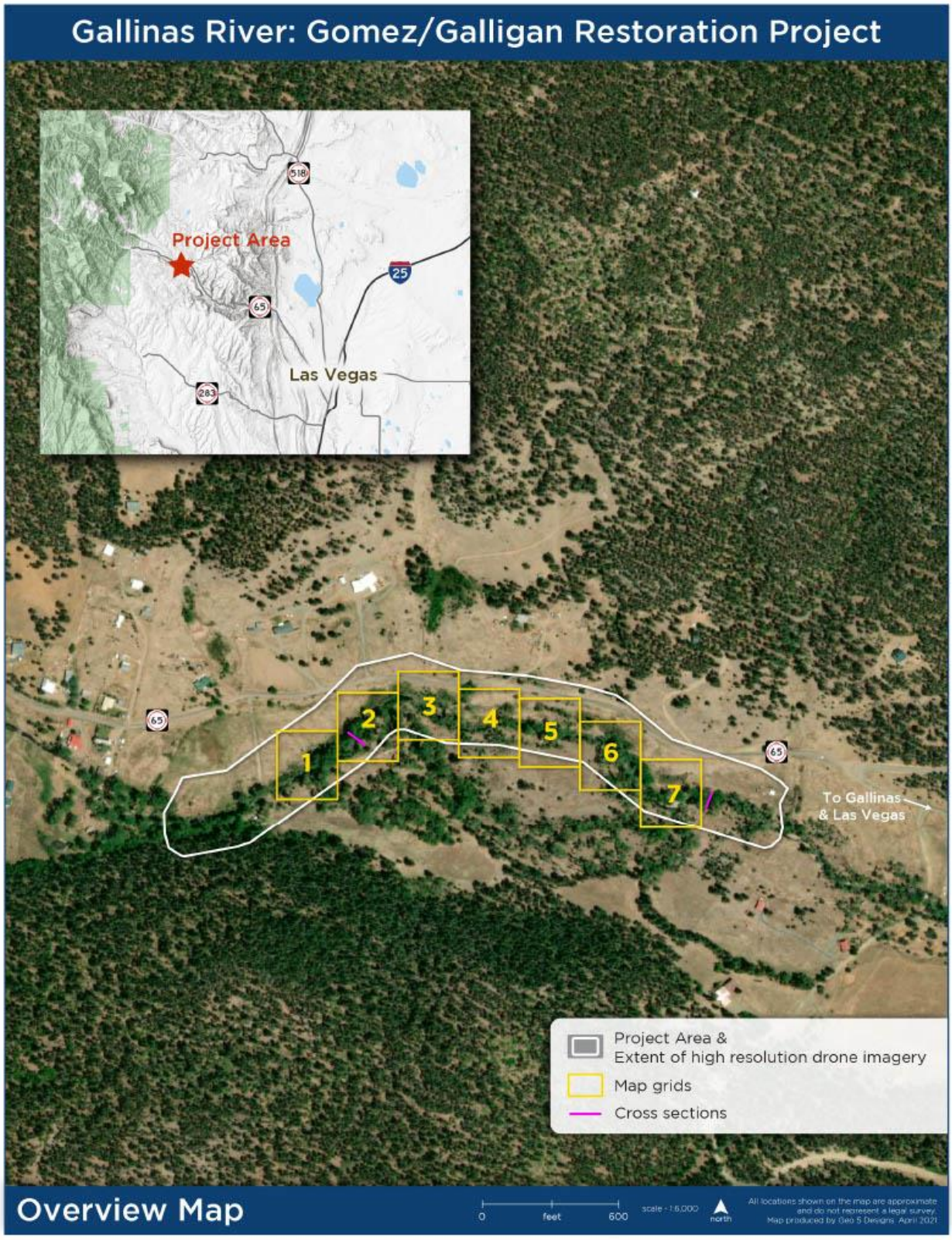
This summary was prepared by Pathfinder Environmental for Hermit's Peak Watershed Alliance to document the status of the Gallinas Creek Log Dam and Trail Project for the end of the Gallinas Implementation Phase III grant period.

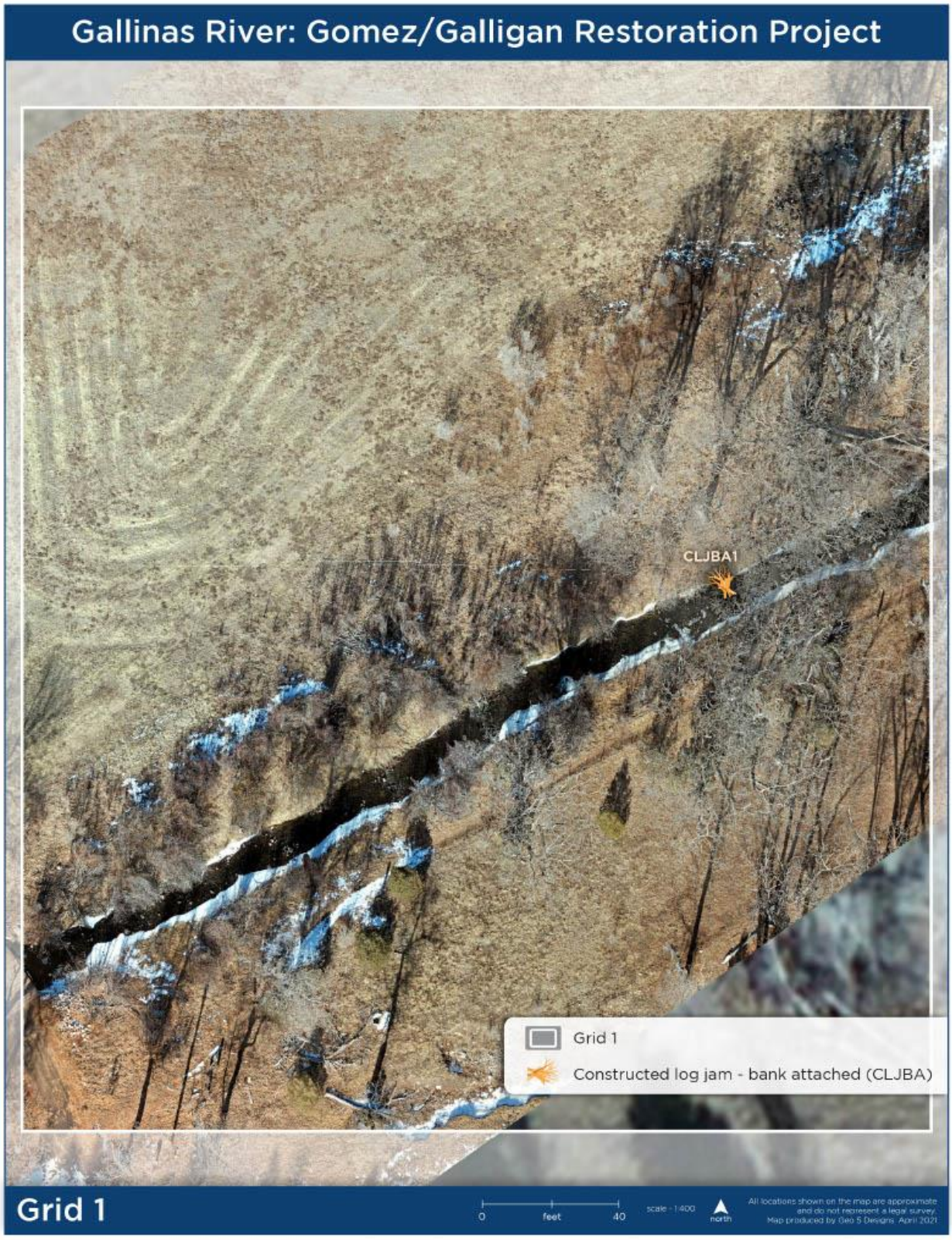
Best regards,
Pathfinder Environmental LLC

Devin Kennemore
President/Owner

APPENDIX 4

Design for Gomez/Galligan In-stream Restoration Project


Gallinas River: Gomez/Galligan Restoration Project
Project Area
Las Vegas
518
25
65
283
1
2
3
4
5
6
7
To Gallinas & Las Vegas
Project Area & Extent of high resolution drone imagery
Map grids
Cross sections
Overview Map
0
feet
600
scale - 1:6,000
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs April 2021


Gallinas River: Gomez/Galligan Restoration Project
CLJBA1
Grid 1
Constructed log jam - bank attached (CLJBA)
Grid 1
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs, April 2021


Gallinas River: Gomez/Galligan Restoration Project
Approximate Property Boundary
Gomez
Galligan
CLJBA4
CLJBA3
CLJBA2
Grid 2
Constructed log jam - bank attached (CLJBA)
Grid 2
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo S Designs April 2021


Gallinas River: Gomez/Galligan Restoration Project
Grid 3
Constructed log jam - bank attached (CLJBA)
Constructed log jam - cross channel (CLJCC)
Gomez
Galligan
Approximate Property Boundary
CLJBA5
CLJBA6
CLJCC1
CLJBA7
Grid 3
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs April 2021


Gallinas River: Gomez/Galligan Restoration Project
Grid 4
Constructed log jam - bank attached (CLJBA)
CLJBA8
Grid 4
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs April 2021


Gallinas River: Gomez/Galligan Restoration Project
Staging and Parking Area
CLJBA10
CLJBA9
CLJCC2
CLJBA12
CLJBA11
Grid 5
Constructed log jam - bank attached (CLJBA)
Constructed log jam - cross channel (CLJCC)
Grid 5
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs April 2021


Gallinas River: Gomez/Galligan Restoration Project
CLJBA13
CLJBA14
CLJCC3
CLJBA15
CLJBA16
BH1
ELOC1
CLJBA17
Grid 6
Backwater habitat (BH)
Constructed log jam - bank attached (CLJBA)
Constructed log jam - cross channel (CLJCC)
Excavated lead out channel (ELOC)
Grid 6
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs, April 2021


Gallinas River: Gomez/Galligan Restoration Project
Grid 7
Backwater habitat (BH)
Constructed log jam - bank attached (CLJBA)
Return flow channel (RFC)
Rock rundown (RR)
BH1
RFC1
RR1
CLJBA24
CLJBA23
CLJBA22
CLJBA21
CLJBA20
CLJBA19
CLJBA18
Grid 7
0
feet
40
scale - 1:400
north
All locations shown on the map are approximate and do not represent a legal survey.
Map produced by Geo 5 Designs April 2021