Dry Fork Creek River-Wetland Corridor Restoration

Final Report

Before *After*

Prepared for: Colorado Watershed Restoration Program SB21-240 Special Release
Attn: Chris Sturm

February 14, 2025

The National Audubon Society
Grant Amount: $319,621
Prepared by: Nathan Boyer-Rechlin

Audubon | ROCKIES

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Introduction

Why was the plan/ project created? What is the need? Is it part of a larger project? Provide any information about your organization you feel is relevant to better understand the project.

Project Overview

The Dry Fork Creek River-Wetland Corridor Restoration project at High Lonesome Ranch (HLR) aims to restore a 1.7-mie reach of North Dry Fork Creek located on the (HLR) near De Beque, CO, using a combination of high-tech and low-tech process-based restoration (LTPBR) methods to restore valley bottom river-wetland corridor functions post Pine Gulch Fire, improve the condition of riparian/wetlands/beaver habitat, improve water quality, and improve the quantity and quality of forage for livestock and wildlife to meet ranching objectives. In December 2022, Audubon was awarded $319,621 by CWCB as a part of a special release of the Watershed Restoration Program's SB21-240 grant program.

This grant was awarded to support replacement of two undersized culverts located at HLR road crossings of North Dry Fork Creek, with low-ford crossings, as well as a comprehensive restoration design plan (including LTPBR) by BIO-Logic Inc., and design of the low-ford crossing by SGM Inc. The ranch road crossings are in areas the HLR calls "Rose Pond" and Walker Ford." The planned construction of a low-ford crossing of North Dry Fork Creek at Rose Pond was abandoned due to dramatic post-fire debris flows in August 2024 that resulted in geomorphological changes to the creek, which included debris completely burying the road culvert and filling in the stream channel changing it to a shallow braided stream. Construction of the Walker Ford crossing began in November 2024 and was completed in December 2024.

The culvert replacement and low-ford crossing construction at Walker Ford, funded by CWCB, is part of Audubon's larger North Dry Fork Creek River-Wetland Corridor Restoration Project on HLR. The project goals are to: 1) restore natural surface hydrology and increasing lateral floodplain connectivity, 2) encourage aggradation of the incised creek channel, 3) stabilize developing head cuts in wet meadow

areas and preventing or aid recovery of incised sections, 4) encourage and support further beaver (Castor canadensis) activity in the area, and 5) managing post fire debris flows and improve water quality by reducing and capturing excessive sediment. Design and implementation of LTPBR upstream and downstream of Walker Ford is funded by an award from the National Fish and Wildlife Foundation's (NFWF) RESTORE program to Audubon in 2023.

Project Need

The HLR has been enrolled in Audubon's Conservation Ranching Program (ACR) since 2021. ACR ranches work with Audubon staff to develop a sustainable habitat management plan that meets operational ranching objectives while maintaining and restoring quality rangeland bird habitat. HLR currently practices a regenerative livestock grazing model on over 30,000 acres of private lands embedded within over 230,000 acres of leased federal grazing allotments managed by the Bureau of Land Management (BLM). Elements HLR's approach included developing a grazing management plan and limiting sedimentation in bottomland habitats.

In November 2022, Audubon contracted BIO-Logic Inc to complete a site assessment on the potential for process-based restoration (PBR) of a 5.5 mile reach of the North Dry Fork Creek corridor that runs through HLR. At the time of the site assessment, reaches of North Dry Fork Creek in HLR had become incised and disconnected from its historic floodplain in many reaches due to decades of damaging grazing practices, re-routing and straightening the stream channel, and a series of in-channel ranch reservoirs. Erosional downcutting in the stream channel drains key wet-meadow habitat for birds, and lowers the water table reducing the quality and extent of forage and grazelands in the stream's riparian corridors. Additionally, culverts at three road crossings (at Rose Pond, Walker Ford, and just above the confluence of North Dry Fork Creek and Middle Dry Fork Creek) were accelerating flow and leading to erosional downcutting.

Additionally, North Dry Fork Creek runs through the burn scar of the Pine Gulch Fire. In July 2020, a lightning strike started the Pine Gulch Fire which burned over 139,000 acres on the southeastern end of the Roan Plateau northwest of De Beque, Colorado. At the time, it was the largest wildfire ever recorded in Colorado. Subsequent heavy rains and flooding in the burn scar has resulted in massive transformation of the landscape in the HLR. Unnaturally large flow events have accelerated downcutting in the stream channel, and large sediment flows in erosional side gullies have transported large amounts of sediment into North Dry Fork Creek's riparian corridor.

Restoration of North Dry Fork Creek at HLR will expedite recovery from the Pine Gulch Fire. Additionally, the large amount of sediment transport due to post fire conditions offers a unique opportunity to accelerate recovery from historically degraded conditions by capturing debris flows with LTPBR structures to begin floodplain reconnection. Replacing the culvert at Walker Crossing with a low-ford crossing removes a key contributor of stream degradation and ensures the additional LTPBR work is effective.

Background

Provide a summary of the background information used when creating the plan/ project. Please include the information used to develop the plan/ project, including existing plans, assessments, monitoring efforts, studies, reports, etc., as well as additional information gathered and used after the application was submitted.

Describe the objectives and long-term goals of the project in detail. A Site Summary should be included within this section, entailing the general location of the plan/ project, as well as locations of the specific sites involved within the plan/ project. If using maps and pictures in this section, a caption should be included at the top of the image.

Site Summary/Location

The High Lonesome Ranch is located 10 miles northwest of DeBeque, CO **(Figure 1).** The project reach is located between 6,200 ft and 6,800 ft along North Dry Fork Creek (**Figure 2**). Generally, vegetation composition at lower elevations is Pinyon-Juniper woodland on south facing slopes and Gamble's Oak mixed montane shrubland with Douglas Fir on north facing slopes. Many shrub species in this system sprout from the roots after fire and are beginning to regenerate including Gamble's oak, serviceberry, snowberry, and chokecherry. Riparian vegetation is dominated by box elder and hawthorn. A few pockets of narrow leaf cottonwood (Populus angustifolia) occur at lower elevations. Prior to the fire, upland vegetation was dense along the valley corridor, with extensive stands of basin big sagebrush lining some of the corridor. The Pine Gulch fire eliminated most of the sagebrush. Topography of the area is characterized by steep shale ridges, especially on the north and by small slump benchlands to the south. The Walker Ford Crossing (**Figure 3, Figure 4**) is located in the lower portion of the reach, just upstream of the confluence of North Dry Fork Creek and Forshay Gulch.

Plans & Assessments

In November 2022, Shawn Conor from BIO-Logic Inc completed a site assessment of a 5.5 mile reach along North Dry Fork Creek. BIO-Logic consulted with Audubon, the HLR, and Alex Nees and Eric Krch of SGM to identify project needs & objectives. For LTPBR work funded by NFWF and supported by CWCB (design work), BIO-Logic compiled a LTPBR restoration plan in June 2024.

The Site Assessment identified 3 culverts at road crossings within the assessment reach that have contributed significantly to degradation of the stream channel: the Y-Junction culvert just upstream of the confluence of North Dry Fork Creek with Middle Dry Fork Creek, the culvert at the Rose's Pond Crossing**,** and the culvert at the Walker Fork Crossing **(Figure 4, Figure 5).**

Early in the project design, the decision was made to abandon initial plans to replace the culvert at the Y-Junction. based on several factors, including Audubon's intention to: 1) maximize ecological function restoration of the river corridor, and 2) not interfere with the road ownership legal matters and the timeline of resolution is uncertain, which could continue to hold up project progress. Additionally, the Y-junction culvert was replaced by the County during the summer of 2023.

SGM completed the low-ford crossing 30% design plan in January 2024 and the 90% design plan for both crossings in April 2024. SGM facilitated a bidding process for implementation of the construction plans, which was won by Kuersten Construction. SGM also completed wetland delineation surveys at Walker Ford **(Figure 4)** and Rose Pond, and submitted applications for USACE permits – a NW 27 (for

LTPBR work) and a NW14 (for culvert removal and construction of the low ford crossing). Following the August 2024 floods, plans to construct a low-ford crossing at Rose Pond were abandoned and the design plans for Walker Ford were updated to reflect geomorphological changes due to large debris flows. Due to these impacts, and with HLR consensus, the planned HTPBR work at Rose Pond was abandoned, and the Walker Ford culvert replacement and low-ford crossing were prioritized as the sole HTPBR component of the project. Funds initially allocated for culvert replacement at the Y-Junction and Rose Pond crossings were re-allocated to support LTPBR river-corridor stabilization work. SGM-engineered redesigned plans in October 2024 (**Appendix A**) for the crossing to reflect the magnitude of the flooding event, which required a longer crushed rock and gravel approach to the crossing on both sides of Dry Fork Creek.

In June 2024, Audubon also partnered with Aridlands to complete a multi-spectral drone survey, assessing pre-project hydrology, geomorphology, and riparian habitat. This survey was provided for Audubon at no-cost, and did not use CWCB funds. HLR data will be the first of its kind–a model for future monitoring efforts on similar LTPBR projects. Multispectral imagery from before project implementation, followed by repeat imagery during our monitoring program, will provide Audubon concrete data to describe the improvements achieved through both the culvert replacement and the LTPBR methods, from sediment control to riparian habitat improvements. The multispectral data collected will allow for more precise measurements of key outcomes demonstrating improved hydrologic function of the valley (including percent active valley bottom, active floodplain area, non-primary channel length, number of active channels, pond area, pool frequency, and primary channel length). Furthermore, multispectral data is necessary to have an adequate understanding of vegetation change, including presence of specific weedy species, cover of tree and shrub species, areal extent of wetland herbaceous plants, and more precise delineation of riparian communities and wildlife habitat that result from the restoration activities on HLR.

Walker Ford Low-Ford Crossing Objectives

The construction objectives for culvert replacement and construction of a low-ford crossing at Walker Fork were:

- Remove the culvert at Walker Ford, just upstream of Forshaw Gulch. The elevation of this culvert was very low, and contributing to an advancing 2-foot-tall head-cut just up-valley of the culvert.
- Construct a low-ford crossing to replace the previous road & culvert design.

The restoration objectives for the above design are:

- Mitigate the up-valley head-cut, and address downstream downcutting caused by the culvert.
- Re-establish the natural wider flow downstream of the road crossing.
- Support the overall goals (*see Introduction)* of the North Dry Fork Creek River-Riparian Corridor Restoration Corridor, and maximize the restoration impact of LTPBR directly upstream and downstream of the Walker crossing, by mitigating the root cause of erosional issues in the reach

(head-cuts and erosional downcutting caused by former grazing practices and scouring caused by the undersized culverts).

Figure 1 – Overview of the project reach (outlined in red) in relation to the Pine Gulch fire (outlined in black), and the town of DeBeque, CO.

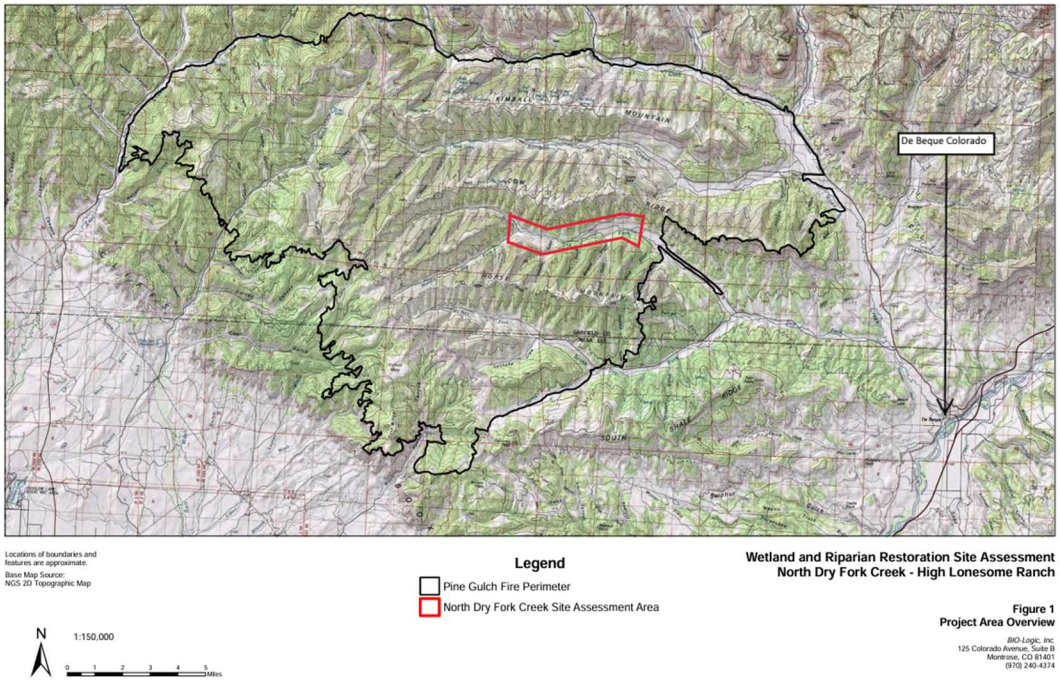


Figure 2 – Outline of the project reach (full assessment area) outlined in red. Bureau of Land Management land is shaded yellow, and HLR property is unshaded.

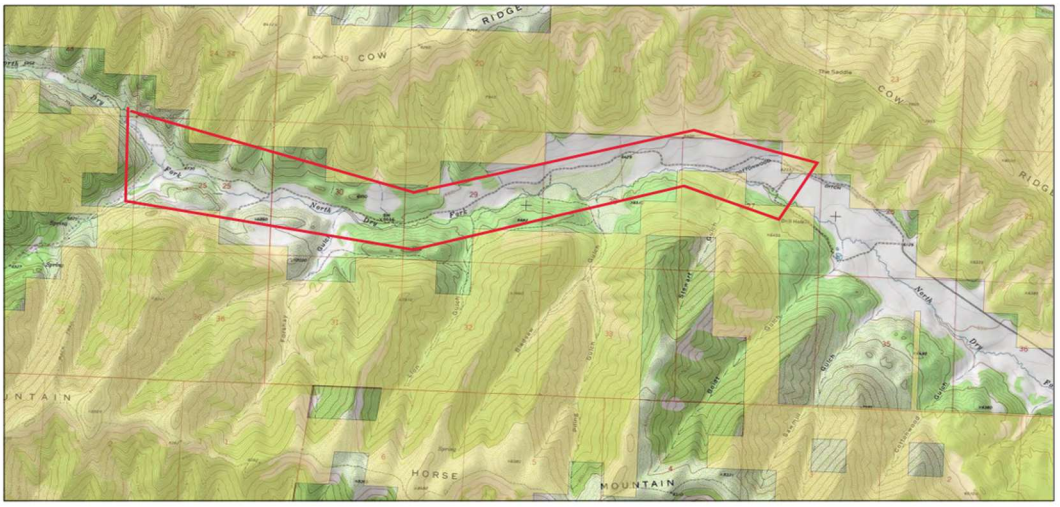


Figure 3 – Satellite imagery of the lower assessment reach, including the location of the Walker crossing (culvert #3). This crossing was the only crossing addressed with culvert removal and construction of a low-ford crossing using CWCB funds.

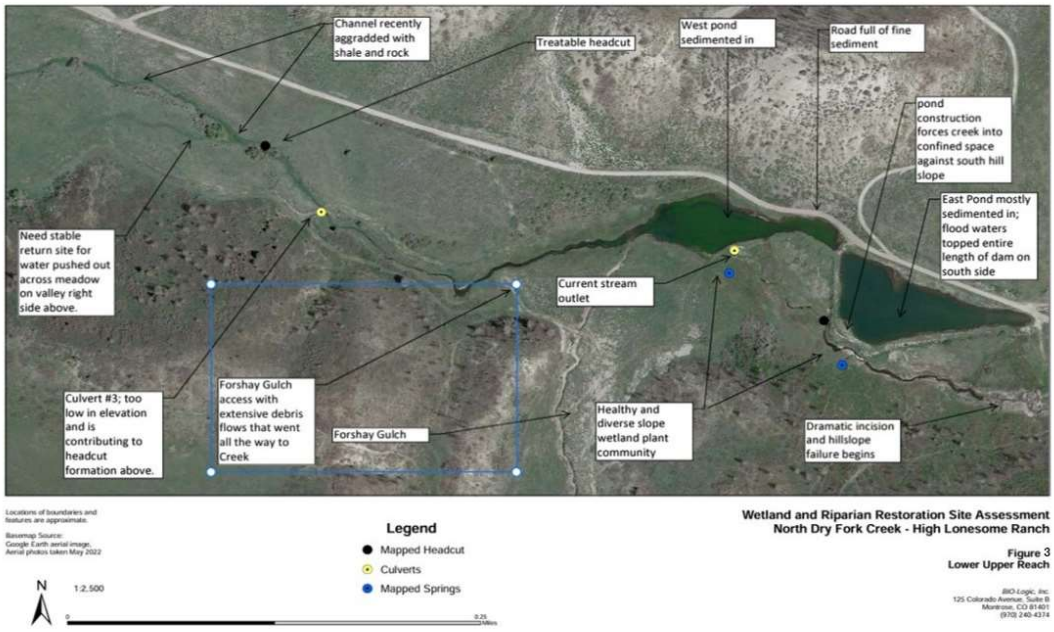
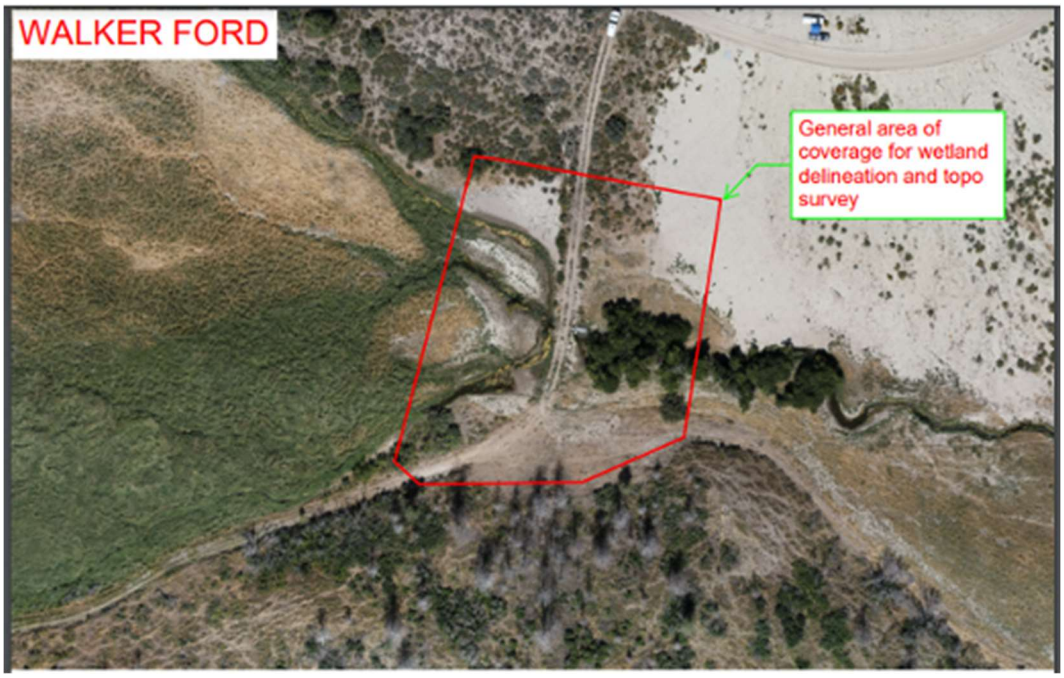


Figure 4 – Satellite imagery of the Walker Crossing, prior to culvert removal and installation of the low-ford crossing. The location of the wetland delineation completed by SGM is outlined in red.



Methods

How was the plan/ project implemented? Describe what was done through the project to achieve the stated objectives. How was CWCB funding used specifically to implement your project? If part of a larger project, what costs did CWCB cover? ***Be as precise as possible (equipment used, materials used [including quantities], etc.)*** *Please use enough detail when describing actions taken, so that the plan/ project can be implemented again in the same way based on explanations found in this section. Describe the methods for each task individually. Include diagrams, figures, and tables where appropriate.*

CWCB funds paid for the design work completed by SGM, including permitting and reporting (NW27 & NW14), initial drone survey, project management support by Audubon and Jackie Corday of Corday Consulting, and construction of SGM's design (including culvert removal) by Kuersten Construction.

In September 2024, Goodfellers LLC was contracted to implement the LTPBR Restoration Plan designed by BIO-Logic. 1,100 wooden posts were ordered from local supplier K&K lumber, however only 850 posts were delivered. 82 LTPBR structures were installed along the 1.7 mile reach over 2 weeks, using ~800 posts. Structures included post-assisted log structures, beaver dam analogues, and one rock structure.

LTPBR Methods

A wide variety of materials were used for structure installation, based on desired objectives for the structure, what was available nearby and other logistical opportunities and constraints. Crews were familiar with using Utah juniper, and this was harvested from a site down valley that had not been burned. The juniper branches have a dense twig density and are ideal for use in PAL structures. However, in a post-fire environment, several other material types were used to experiment with different materials that were available. These included Gamble's oak, serviceberry, box elder maple, basin big sagebrush, Douglas fir whole tree felling, rubber rabbit brush, sod, and debris flow logs and root balls. The Goodfellers LLC crew was very interested in overall design intent and was open to using multiple and varied construction materials to build structures to accomplish design goals.

Walker Ford low-ford crossing Methods

John Kuersten from Kuersten Construction was hired to construct the Walker Ford low-ford crossing designed by SGM. The crossing was constructed over the course of 6 weeks in November and December 2024**.**

The stream was temporarily diverted to facilitate removal of the culvert and excavation of the former crossing. The low-ford was constructed to facilitate flow through porous substrate under low flow conditions. Under high-flow conditions, the crossing facilitates overflow. The crossing was constructed using heavy equipment, following the design plans provided by SGM (**Appendix A**).

Construction of the crossing utilized:

- 11 tons of CDOT class 6 aggregate
- 155 tons of CDOT course aggregate No. 57, for roadway infill and downstream bedding

- 48 tons of CDOT course aggregate No. 3, for downstream infill
- 86 tons of CDOT riprap D50, 6”, for the roadway
- 113 tons of CDOT riprap D50, 18”.

Results

Please describe any findings through the duration of your plan or project including, but not limited to, any measurements taken, materials generated, communities affected, etc. Utilizing figures, pictures, and tables to represent findings is highly recommended. All figures, pictures and tables should have captions.

The culvert removal and construction of the Walker Ford low-ford crossing began in November 2024 and was completed in December 2024 **(Figure 5).** The Rose Pond crossing was effectively “restored” by the August 2024 flooding and debris flows. The culvert, crossing, and previously incised stream channel were buried in sediment, and the streambed was transformed back into a natural braided shallow stream channel **(Figure 6 & 7).** BIO-Logic compiled the *Low-tech Process Based Restoration As-Built 2024 Report, version 2.0* to document the 82 LTPBR structures installed. Evidence of beaver maintaining and building upon structures was noted only weeks after implementation. Additional monitoring of LTPBR structures installed in 2024 is scheduled for spring 2025.

Figure 5: Photos of the low-ford crossing at Walker Crossing. The first photo shows the stream channel downstream of the crossing. The resulting crossing will spread water into the floodplain during high water events, mitigating the upstream head cut and downstream channel incision.

Figure 6: The Rose Pond crossing prior to the August 2024 flooding and debris flows.

Figure 7: The former site of the Rose Pond crossing following August 2024 flooding and debris flows.

Conclusions and Discussion

Discuss whether or not your objectives were met. If they were, to what degree were the objectives met? What monitoring efforts are currently in place? Include how the project will be sustained in the long-term, and how this can be measured.

Discuss difficulties or "lessons learned" with the plan/ project. How were these difficulties addressed? Did they influence your end results, if so, how? Is there anything you would do differently? Is there anything you plan to do differently if the project continues?

Discuss any future work related to the plan/ project. Was there room for continuance once the plan/ project was completed? What new questions arose throughout the process? How is the plan/ project continually beneficial?

Project Objectives were met.

The objectives for culvert removal and construction of a low-ford crossing at Walker Ford were met, improving overall ecological function of the stream corridor post fire & debris flows. This new crossing will serve the Ranch's needs, sufficient for normal ranch traffic (full-size truck vehicles). For restoration goals, the crossing performs well, passing late-season stream flow through the heavy riprap layer. The culvert removal will support LTPBR work implemented upstream and downstream of the Walker Ford crossing. Eighteen LTPBR structures were installed on the immediate downstream reach of the crossing and 14 LTPBR structures were installed on the upstream reach. Upstream of the crossing is a wet-meadow, where the stream channel had been downcutting and had potential to lower the water table, draining the meadow. LTPBR structures on this reach were designed to slow and spread the water, and the constructed low-ford crossing at Walker Crossing will help mitigate the root cause of stream channel incision in this reach (**Figure 8**). High Lonesome management is grateful for the river corridor improvement and stability for ranch operations.

Figure 8: Several Post Assisted Log Structures and Large Woody Debris jams were installed in the reach upstream of the Walker Ford crossing to encourage flood water to spread across the floodplain, and address incision of the stream channel.

Follow up work is scheduled for spring 2025. Key needs to be completed include: use surplus riprap and aggregate material to fine tune the initial installation; roughen the surface of areas where materials were stored; reseeding all disturbed areas with the project seed mix. Kuersten Construction has agreed to complete fine grading and seeding of the construction site in Spring 2025 for no additional charge.

Lessons Learned

This project went through a number of design iterations throughout its two-year life span. Challenges with road access due to an ongoing dispute between Garfield County and HLR, and large-scale

geomorphological changes resulting from yearly spring runoff, monsoonal events, and the August 2024 floods, resulted in abandoning the original plans to remove culverts at the Y-Junction and at Rose Pond. Lessons learned throughout this process include:

- Road conditions to support heavy-equipment for construction needs must be addressed early in project planning. An on-going access dispute between the County and HLR relating to public access on a forest service road that crosses ranch property threatened to derail this work. The road was not in good enough condition to support the heavy equipment needed to complete the planned work and due to this access dispute, it was unclear whether the County would be able to complete necessary road maintenance in time for the construction of the low-ford crossings.
- Using a local contractor familiar with the ranch, road conditions, and ranch operations post-fire was extremely beneficial for project finances and efficiency. Kuersten Construction had professional connections with Garfield County roads department.
- Adaptability is key when working in burn scar environments. Due to the volatility of post-burn ecosystems, landscape scale change is possible, especially due to flooding in post-burn environments. The massive changes due to the August 2024 flooding dramatically changed design plans. Audubon's ability to recognize that the restoration goals for the Rose Pond crossing were no longer needed due to geomorphological changes allowed quick transition to a sole focus on the Walker Ford crossing. Although the initial designs for two crossings were not completed, the overall restoration goals for both reaches have been met.
- For the LTPBR work, we learned that standard practice is for the project manager to order and facilitate delivery of raw materials (pointed stakes). The number and type of stakes required for this type of LTPBR work will require a special order, and requires at least 3 months lead time. Audubon recommends placing an order at least 6 months in advance if possible, and scheduling delivery at least 2 weeks before project work begins.

Future Work

The full North Dry Fork Creek River-Riparian Corridor Restoration Project will be completed by 2026. In September 2024 82 LTPBR structures were installed along the full 1.7 mile reach, that includes the Walker Crossing. Round 2 LTPBR installation is scheduled for September 2025, and will complete the restoration plan written by BIO-Logic in June 2024. The timeline for project completion is:

- All construction work as described in the November 2022 CWCB grant using SB21-240 funding was completed in December 2024.
- **January – May 2025:** Monitoring and adaptive management of LTPBR structures installed in Round 1 implementation.
- **Spring/Fall 2025**: Round II LTPBR installation, completing the LTPBR *Restoration Plan.*
- **Adaptive Management & Monitoring Through:** May 2026

Based on initial project successes and support from the ranch, Audubon applied for an additional NFWF RESTORE grant to support additional LTPBR work on two additional stream miles upstream & downstream of the initial project reach. Funding award is expected in spring 2025.

Actual Expense Budget

CWCB Funds	
Project Design, Engineering, Surveying & Permitting	$130,744.44
Construction (Walker Ford Crossing & LTPBR)	$146,260.73
Project Management and Oversight	$42,615.83
Total	**$319,621.00**
Matching Funds	
Audubon matched $35,000 in-kind and cash.	

References

All assessments and design plans can be provided to CWCB upon request.

"*High Lonesome Ranch: 2023 Annual Monitoring Report*", Audubon Rockies (2023).

Shawn Connor, "*Wet Meadow and Riparian Restoration Assessment: North Dry Fork Creek"*, BIO-Logic, prepared for High Lonesome Ranch/Audubon Rockies (Nov. 2022).

Shawn Connor, "*Low-Tech Process Based Restoration Plan: North Dry Fork Creek*", BIO-Logic, prepared for High Lonesome Ranch/Audubon Rockies (June 2024).

Shawn Connor, "*Low Tech Process-Based Restoration As-Built 2024 Report, Version 2.0: North Dry Fork Creek*", BIO-Logic, prepared for High Lonesome Ranch/Audubon Rockies (Oct. 2024)

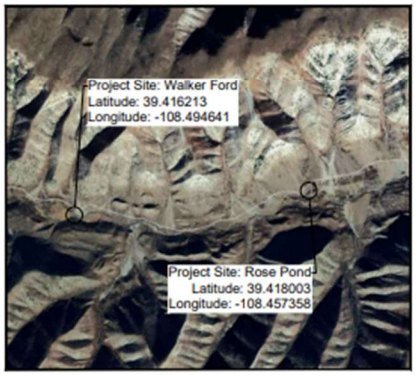
Eric Krch, "*Audubon Rockies-The High Lonesome Ranch: New Ford Crossings*," SGM (Oct. 2024)

Appendices

Appendix A: SGM final design plans for the Walker Ford low-ford crossing.

Audubon Rockies

The High Lonesome Ranch
New Ford Crossings



Vicinity Map

Scope of Work

Removal of three existing culverts and construction of two ford crossings at the North Dry Fork

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Construction Set
October 2024

Sheet Index

811 Know what's below. Call before you dig.
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Audubon Rockies
The High Lonesome Ranch New Ford Crossings

Cover Sheet

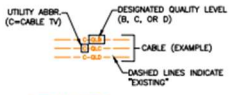
1

LEGEND

LINETYPES

EXISTING	PROPOSED	DESCRIPTION
T OH	T OH	OVERHEAD TELEPHONE LINE
T	T	UNDERGROUND TELEPHONE LINE
G	G	LOW PRESSURE GAS LINE
HPG	G HP	HIGH PRESSURE GAS LINE
C	C	UNDERGROUND CABLE TELEVISION LINE
C OH	C OH	OVERHEAD CABLE TELEVISION LINE
E	E	UNDERGROUND ELECTRICAL LINE
E OH	E OH	OVERHEAD ELECTRICAL LINE
		STORM DRAIN LINE
W	W	WATER LINE
WS	WS	WATER SERVICE LINE
S	S	SANITARY SEWER LINE
SS	SS	SANITARY SEWER SERVICE LINE
FO	FO	FIBER OPTIC LINE
IRR	IRR	IRRIGATION LINE
		DRAINAGE SWALE FLOWLINE
		BARBED-WIRE FENCE LINE
		CHAIN LINK FENCE
SF	SF	SILT FENCE
		CULVERT & FES
		EDGE OF ASPHALT
		EDGE OF CONCRETE
		EDGE OF WATER
		CENTERLINE
		ROCK WALL
		CONTOURS
		RIGHT-OF-WAY
		VEGETATION
LDA	LDA	LIMITS OF DISTURBED AREA
		RAILROAD TRACKS
		TOP OF CUT
		TOP OF FILL
		EASEMENT
	AC	ACTIVITY ENVELOPE

SUE UTILITY LINE TYPES WITH "QUALITY LEVELS"



C-QLB	CABLE COMMUNICATION
T-QLB	TELEPHONE
F-QLB	FIBER OPTIC
TR-QLB	TRAFFIC COMMUNICATION
E-QLB	ELECTRIC
ET-QLB	ELECTRIC TRANSMISSION
G-QLB	GAS
HPG-QLB	HIGH PRESSURE GAS
CA-QLB	COMPRESSED AIR
S-QLB	SANITARY SEWER
DR-QLB	DRAIN LINE (STORM SEWER)
W-QLB	WATER
IRR-QLB	IRRIGATION
NP-QLB	NON-POTABLE WATER
UNK	UNKNOWN UTILITY

SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		DECIDUOUS TREE
		CONIFEROUS TREE
		MONUMENT MARKER
		CONTROL POINT
		MARKERS (CATV, ELEC, FIBER) (TELE, TRAFFIC, UNKNOWN)
		PEDESTALS (CATV, ELEC, FIBER) (TELE, TRAFFIC, UNKNOWN)
		MANHOLES (DRAINAGE, ELEC, FIBER, IRRIGATION, SANITARY, TELEPHONE, UNKNOWN, WATER)
		VAULTS/HANDHOLES (CATV, ELEC, FIBER, TELE, TRAFFIC, UNKNOWN)
		ELECTRIC TRANSFORMER
		GAS VALVE
		SANITARY VALVE
		IRRIGATION CONTROL VALVE
		WATER VALVE
		WATER SHUTOFF VALVE
		FIRE HYDRANT
		VENTS(GAS,WATER,SEWER,MISC.)
		METERS (GAS, ELECTRIC, WATER)
		GAS WELL
		MONITORING WELL
		WATER WELL
		CLEAN-OUT
		PROPANE TANK (ABOVE GROUND)
		PROPANE TANK (UNDERGROUND)
		HEATING/AIR CONDITIONING UNIT
		WATER SPIGOT
		IRRIGATION CONTROL BOX
		IRRIGATION HEADGATE
		IRRIGATION SPRINKLER HEAD
		PVC PIPE
		FLAG POLE
		UTILITY POLE
		GUY WIRE
		STREET LIGHT POLE
		TRAFFIC LIGHT POLE
		FLOOD LIGHT
		SIGN
MB	MB	MAILBOX
		BOLLARD
		SOIL BORING LOCATION
		TEST PIT LOCATION
		LARGE ROCK/BOULDER
		"I" POST
		SATELLITE DISH
		TRANSITION FROM SPILL TO CATCH GUTTER
		MINIMUM 4" TOP SOIL OR SPECIFIED ALTERNATIVE
		CHANGE IN SUE LEVEL
		UTILITY POTHOLE LOCATION

ABBREVIATIONS

@	AT
°	DEGREE
ø	DIAMETER
#	NUMBER
AAC	ALUMINUM ARCH CULVERT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABC	AGGREGATE BASE COURSE
ABUT	ABUTMENT
ACM	ASBESTOS CONTAINING MATERIAL
ACP	ASBESTOS CEMENT PIPE
ADA	AMERICANS W/ DISABILITIES ACT
ADT	AVERAGE DAILY TRIPS
ALT	ALTERNATE
AP	ANGLE POINT
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AS	ASPHALT
ASD	ALLOWABLE STRESS DESIGN
ASPHASPHALT	
ATB	ASPHALT TREATED BASE
BBL	BARRELS
BCKF	BACK FACING
BLKF	BLOCK FACING
BLM	BUREAU OF LAND MANAGEMENT
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICES
BOW	BACK OF SIDEWALK
BP	BEGIN PROJECT, BEGINNING POINT
BT	BEGIN TRANSITION
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BW	BOTTOM OF WALL
C	CURB
CBC	CONCRETE BOX CULVERT
CC	CURB CUT
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CDPHE	COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CG	CURB AND GUTTER
CIP	CAST IN PLACE
CL	CENTERLINE
CLOMR	CONDITIONAL LETTER OF MAP REVISION
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CONCRETE
COM	COMMUNICATIONS
CONCCONCRETE	
CONST	CONSTRUCTION
CONT	CONTINUOUS
COR	CORNER
CPE	CORRUGATED POLYETHYLENE PIPE
CSP	CORRUGATED STEEL PIPE
CTB	CEMENT TREATED BASE
CU	CUBIC
CY	CUBIC YARD
D	DEEP
DB	DECIBELS
DEG	DEGREES
DHV	DESIGN HOUR VOLUME
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DOW	DIVISION OF WILDLIFE
DR	DRAIN
DTM	DIGITAL TERRAIN MODEL
DW	DRIVEWAY
DWG	DRAWING
E	EASTING
EA	EACH
EB	EAST BOUND
EG	EXISTING GRADE
EL	ELEVATION
ELEV	ELEVATION
EOA	EDGE OF ASPHALT
EOD	EDGE OF DRIVEWAY
EOC	EDGE OF CONCRETE
EOG	EDGE OF GRAVEL
EOM	EDGE OF MILLINGS
EOP	EDGE OF PAVEMENT
EP	END PROJECT, END POINT
EPA	ENVIRONMENTAL PROTECTION AGENCY
ES	ELECTRIC SERVICE
ESMT	EASEMENT
EST	ESTIMATE
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX	EXISTING
EXISTEXISTING	
EXT	EXTERIOR
FAA	FEDERAL AVIATION ADMINISTRATION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FES	FLARED END SECTION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FHWAFEDERAL HIGHWAY ADMINISTRATION	
FL	FLOWLINE
FOW	FACE OF WALL
FPS	FEET PER SECOND
FRTF	FRONT FACE
FT	FEET
G	GAS
GAL	GALLONS
GALV	GALVANIZED
GB	GRADE BREAK
GIS	GEOGRAPHICAL INFORMATION SYSTEM
GPM	GALLONS PER MINUTE
GPS	GLOBAL POSITIONING SYSTEM
GR	GRAVEL
GRAVGRAVEL	
GS	GAS SERVICE
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
HAZMAT	HAZARDOUS MATERIALS
HC	HANDICAP RAMP
HCL	HORIZONTAL CONTROL LINE
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIXED ASPHALT
HORIZ	HORIZONTAL
HOV	HIGH OCCUPANCY VEHICLE
HP	HIGH POINT
HPG	HIGH PRESSURE GAS
HWY	HIGHWAY
HYD	HYDRANT
ID	INSIDE DIAMETER
INT	INTERSECTION
INV	INVERT
IP	INLET PROTECTION
JB	JUNCTION BOX
KIP	THOUSAND POUNDS
KW	KILOWATT
L	LEFT
LGTH	LENGTH
LB	POUNDS
LB/FT	POUNDS PER FOOT
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LF	LINEAR FOOT
LOMRLETTER OF MAP REVISION	
LPFM	LOW PRESSURE FORCE MAIN
LP	LOW POINT
LS	LUMP SUM
LSA	LANDSCAPED AREA
LT	LIGHT POLE
LTB	LIME TREATED BASE
LUM	LUMINARY
M	METERS
MAT'LMATERIAL	
MAX	MAXIMUM
MH	MANHOLE
MHT	METHOD OF HANDLING TRAFFIC
MIN	MINIMUM
MISC	MISCELLANEOUS
ML	MEGALUG
MLW	MASONRY LANDSCAPE WALL
MP	MILE POST
MPH	MILES PER HOUR
MSE	MECHANICALLY STABILIZE EARTH
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
MW	MONITORING WELL
N	NORTHING
N/A	NOT APPLICABLE
NAT	NATIVE GRASS AREA
NAVD	NORTH AMERICAN VERTICAL DATUM
NB	NORTH BOUND
NE	NORTHEAST
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NGVD	NATIONAL GEODETIC VERTICAL DATUM 1929
NHS	NATIONAL HIGHWAY SYSTEM
NIP	NAIL IN PLACE
NO	NUMBER
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NTP	NOTICE TO PROCEED
NTS	NOT TO SCALE
NW	NORTHWEST
O/S	OFFSET
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OP	OUTLET PROTECTION
OT	OVERHEAD TELEPHONE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PED	PEDESTRIAN
PERMPERMANENT	
PG	PAGE
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PM	PROJECT MANAGER
PNT	POINT
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVE
PROPPROPOSED	
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FEET
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PUD	PLANNED UNIT DEVELOPMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
Q	PEAK DISCHARGE
QA/QC	QUALITY ASSURANCE/QUALITY CONTROL
QTY	QUANTITY
R	RIGHT
R+R	REMOVE AND REPLACE
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
REQ	REQUIRED
REVEG	REVEGETATE
RFTA	ROARING FORK TRANSIT AUTHORITY
ROW	RIGHT OF WAY
RP	RADIUS POINT
RSS	REINFORCED SOIL SLOPE
RW	RETAINING WALL
SAC	STEEL ARCH CULVERT
SAN	SANITARY
SB	SOUTH BOUND
SCF	SEDIMENT CONTROL FENCE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SE	SOUTHEAST
SECT	SECTION
SF	SQUARE FEET
SHLDR	SHOULDER
SL	SANITARY SEWER LINE
SMH	SANITARY SEWER MANHOLE
SOD	GRASS AREA
SS	SANITARY SEWER SERVICE
SSD	STOPPING SIGHT DISTANCE
STA	STATION
STBK	SETBACK
SW	SIDEWALK
SY	SQUARE YARDS
SYM	SYMMETRICAL
T	TREAD STAIRS
TAN	TANGENT
TBC	TOP BACK OF CURB
TBLK	THRUST BLOCK
TC	TOP OF CURB
TCE	TEMPORARY CONSTRUCTION EASEMENT
TCP	TRAFFIC CONTROL PLAN
TELE	TELEPHONE
TEMP	TEMPORARY
TP	TOP OF PIPE
TRANS	TRANSITION
TRFLG	TRAFFIC FLANGE OF FIRE HYDRANT
TW	TOP OF WALL
TYP	TYPICAL
UCTV	UNDERGROUND CABLE TELEVISION LINE
UE	UNDERGROUND ELECTRIC LINE
UG	UNDERGROUND GAS LINE
USACE	US ARMY CORPS OF ENGINEERS
USGS	US GEOLOGICAL SURVEY
UT	UNDERGROUND TELEPHONE LINE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VP	VALLEY PAN
VTC	VEHICLE TRACKING CONTROL
W	WIDE
W/	WITH
WB	WEST BOUND
WL	WATER LINE
WS	WATER SERVICE
WQCD	WATER QUALITY CONTROL DIVISION
WS	WATER SERVICE
WWM	WELDED WIRE MESH
X-S	CROSS SLOPE
YD	YARD

HATCHING

EXISTING	PROPOSED	DESCRIPTION
		ASPHALT MILLING
		ASPHALT
		CONCRETE SURFACING (PLAN VIEW)
		GRAVEL SURFACING
		RIPRAP/RIVER ROCK
		RE-ESTABLISH NATIVE VEGETATION
		WOOD DECK
		FLAGSTONE
		UNDISTURBED SOIL
		RECOMPACTED SOIL

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Audubon Rockies
The High Lonesome Ranch New Ford Crossings

Mark	By	Description

Project Milestone: FOR CONSTRUCTION

Job No. 2023-194.00
Drawn by: JCO
Date: 4.19.2024
QC: ELK / EC
File: HLR Admin

Title: Legend and Abbreviations

Dwg No. 2

GENERAL REQUIREMENTS:

1. THE CONTRACTOR AND SUBCONTRACTORS SHALL HAVE A COPY OF ALL APPLICABLE STANDARDS, CURRENT APPROVED CONSTRUCTION PLANS AND SPECIFICATIONS ON SITE AT ALL TIMES.
2. ALL WORK SHALL BE DONE TO THE HORIZONTAL AND VERTICAL INFORMATION SHOWN ON THE PLANS. NO FIELD CHANGES SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
3. THE DESIGN IS BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN. THIS INCLUDES BUT IS NOT LIMITED TO SITE CONDITIONS, FEATURES AND STRUCTURES, AND TOPOGRAPHICAL INFORMATION. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE FEATURES SHOWN. THE CONTRACTOR SHALL REVIEW AND VERIFY EXISTING PHYSICAL FEATURES AND ELEVATIONS OF THE CONDITIONS TO BE ENCOUNTERED DURING CONSTRUCTION.
4. ANY DISCREPANCY WITHIN THESE PLANS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
5. LIMITS OF CONSTRUCTION SHALL BE 5' BEYOND GRADING LIMITS, BASE OF FILL SLOPES OR TOP OF CUT SLOPES, AND 20' EITHER SIDE OF THE CENTERLINE OF UTILITY INSTALLATIONS, BUT NOT BEYOND FENCE LINE, EASEMENT OR RIGHT-OF-WAY. PROJECT LIMITS SHALL ALSO INCLUDE ANY DESIGNATED BORROW AREAS, EXCAVATION DISPOSAL AREAS AND MATERIAL OR TOPSOIL STOCKPILE AREAS.
6. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS. ANY DISTURBANCE BEYOND THESE LIMITS SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVITIES INCLUDE THE PARKING OF VEHICLES OR EQUIPMENT, DISPOSAL OF LITTER, AND ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFELY PERFORMING ALL WORK IN ACCORDANCE WITH APPLICABLE OSHA STANDARDS AND REGULATIONS.
8. THE ENGINEER AND OWNER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
9. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER AND THEIR ASSIGNED REPRESENTATIVE. THE OWNER AND THEIR ASSIGNED REPRESENTATIVE RESERVE THE RIGHT TO ACCEPT OR REJECT ANY MATERIALS AND WORKMANSHIP THAT DO NOT CONFORM TO THE PLANS OR SPECIFICATIONS.
10. PROJECT ACCEPTANCE TESTING WILL BE PERFORMED BY THE OWNER. CONTRACTOR SHALL PROVIDE 48 HOUR MINIMUM NOTICE FOR REQUIRED TESTS.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO TAKE A SUFFICIENT NUMBER OF PRE-CONSTRUCTION PHOTOGRAPHS/VIDEOS TO RESOLVE ANY DISPUTES, WHICH MAY ARISE REGARDING THE CONDITIONS PRIOR TO AND SUBSEQUENT TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE COPIES OF THE PRE-CONSTRUCTION PHOTOGRAPHS/VIDEOS TO THE ENGINEER PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL IDENTIFY ANY APPARENT POTENTIAL PROBLEMS AT THAT TIME.
12. PROGRESS AND RECORD PHOTOGRAPHS/VIDEOS SHALL BE PROVIDED BY THE CONTRACTOR TO RESOLVE DISPUTES AND TO DOCUMENT THE WORK PERFORMED AS A SUPPLEMENT TO THE RECORD DRAWINGS. IN GENERAL, ANY PHOTOGRAPHS/VIDEOS SHOULD BE SUFFICIENT TO SHOW THAT ALL WORK WAS PROPERLY COMPLETED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
13. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL SITE MATERIALS USED IN EARTHWORK ACTIVITIES.
14. THE CONTRACTOR SHALL PERFORM EXCAVATION, BACKFILL AND OTHER EARTHWORK ACTIVITIES IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE GEOTECHNICAL SUBSOIL STUDY.
15. SUBMITTALS SHALL BE PROVIDED FOR ALL MATERIALS TO BE INCORPORATED INTO THE PROJECT. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL ITEMS HAVING DIMENSIONAL REQUIREMENTS. MATERIALS SUBMITTALS AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. THE ENGINEER'S REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR ACCURACY, PROPER FIT OR PROPER FUNCTIONING AND PERFORMANCE OF THE WORK.
16. THE CONTRACTOR SHALL REVIEW AND APPROVE ALL SHOP AND LAYOUT DRAWINGS, PRODUCT DATA, SAMPLES, MATERIALS, MANUALS AND PLANS PRIOR TO SUBMITTING TO THE ENGINEER. APPROVAL BY THE CONTRACTOR INDICATES THAT THEY HAVE VERIFIED ALL MATERIALS AND FIELD MEASUREMENTS WITH THOSE SHOWN ON THE DRAWINGS. APPROVAL ALSO INDICATES THAT THE CONTRACTOR HAS COORDINATED INFORMATION CONTAINED IN THE SUBMITTAL WITH WORK REQUIREMENTS OF ALL TRADES AND WITH THE CONTRACT DOCUMENTS.
17. AT NO TIME SHALL MATERIALS BE SUBSTITUTED FOR THOSE SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER PRIOR TO RELATED CONSTRUCTION AT THE SITE. ANY DEVIATION FROM THE DRAWINGS AND SPECIFICATIONS SHALL BE ACCOMPANIED BY WRITTEN APPROVAL OF THE ENGINEER.
18. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY FACILITIES FOR THEIR OWN CONVENIENCE OR TO MEET LOCAL, STATE OR FEDERAL REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, POTABLE WATER, SANITARY WASTE FACILITIES, POWER, TELEPHONE, INTERNET, ETC. SANITARY FACILITIES SHALL BE LOCATED ON SITE AND SHALL BE FULLY OPERATIONAL BEFORE CONSTRUCTION CAN BEGIN. SANITARY FACILITIES SHALL BE FIRMLY SECURED AGAINST OVERTURNING AND SHALL BE PLACED AWAY FROM FLOW LINES OF STREETS, SWALES, RAIN GARDENS AND AWAY FROM INLETS. THE COST OF THESE FACILITIES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
19. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAILY CLEANING OF THE JOB SITE DURING AND AFTER CONSTRUCTION. A CONTINUING EFFORT SHALL BE MADE THROUGH THE DURATION OF THE CONTRACT TO KEEP ALL AREAS CLEAN AND FREE OF ALL RUBBISH, REMOVED VEGETATION, CONSTRUCTION WASTE, EMPLOYEE WASTE, AND OTHER OBJECTIONABLE MATERIALS GENERATED FROM THE PROJECT. WEEDS SHALL BE REMOVED IN DISTURBED AREAS PRIOR TO THEIR PRODUCING SEED AND PRIOR TO FINISHED GRADING AND LANDSCAPING INSTALLATION.
20. FINAL CLEAN-UP MUST BE APPROVED AND ACCEPTED BY THE OWNER BEFORE THE CONTRACT MAY BE CONSIDERED COMPLETE.
21. THE CONTRACTOR SHALL MAINTAIN TWO FULL SETS OF CONTRACT DRAWINGS MARKED UP TO INDICATE THE AS-BUILT CONDITIONS. THE DRAWINGS SHALL BE PROVIDED TO THE OWNER AND THE ENGINEER UPON COMPLETION OF THE WORK. WHERE PRACTICAL, THE CONTRACTOR IS TO PROVIDE AT LEAST TWO TIES FROM PHYSICAL MONUMENTS TO ALL FITTINGS, VALVES, MANHOLES, AND THE END OF ALL SERVICE LINES.
22. CONTRACTOR TO LIMIT STAGING FOR BOTH SITES ON THE ACCESS TRACTS BETWEEN PROJECT SITES AND COUNTY ROAD 200. FINAL STAGING AREA TO BE APPROVED BY RANCH MANAGER.

SURVEY NOTES:

1. SOURCE OF MAPPING: EXISTING FIELD CONDITIONS WERE GENERATED BY A SURVEY PERFORMED BY SGM, GLENWOOD SPRINGS, CO.
2. PROPERTY LINES, MONUMENTS, BENCHMARKS, SURVEY CONTROL, AND ADDITIONAL HISTORIC SURVEY INFORMATION CANNOT BE REMOVED FOR CONSTRUCTION. DISTURBED SURVEY ITEMS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE RESTORED BY A STATE OF COLORADO LICENSED LAND SURVEYOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION STAKING OF BOTH HORIZONTAL AND VERTICAL LAYOUT ON THIS PROJECT. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER FOR INTERPRETATION AND INFORMATION IN STAKING OF THE PROJECT FOR CONSTRUCTION.
4. LOCATIONS OF CLEANOUTS, LIGHTS, SIGNAGE, JUNCTION BOXES, AND OTHER SIGNIFICANT SITE FEATURES TO BE STAKED FOR ENGINEER AND OWNER APPROVAL PRIOR TO WORK. CLEANOUTS, JUNCTION BOXES, AND ADJACENT GRADES TO BE RAISED ONE-HALF INCH AT ASPHALT/CONCRETE (OR 1' AT LANDSCAPING) TO PROVIDE POSITIVE DRAINAGE AWAY FROM FEATURES.

PERMITS

1. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS TO COMPLETE WORK AND SHALL COMPLY WITH THE PERMIT CONDITIONS. REQUIRED PERMITS INCLUDE, BUT NOT LIMITED TO, GRADING PERMIT, RIGHT-OF-WAY PERMIT, NOISE PERMIT, TREE REMOVAL, CONSTRUCTION DEWATERING PERMIT AND CONSTRUCTION STORMWATER PERMIT.
2. ANY PUMPING OF WATER MAY REQUIRE A DISCHARGE PERMIT FROM CDPHE WATER QUALITY CONTROL DIVISION AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ONLY CLEAN WATER THAT HAS NOT PICKED UP SEDIMENT FROM THE WORK AREA SHALL BE DISCHARGED FROM THE SITE WITHOUT PRIOR TREATMENT. WATER CONTAINING ELEVATED LEVELS OF SEDIMENT SHALL BE TREATED PRIOR TO DISCHARGE USING BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER. CONDITIONS OF THE PERMIT INCLUDING MONITORING AND REPORTING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
3. REFER TO COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) LOW RISK DISCHARGE GUIDANCE DOCUMENT – DISCHARGE OF UNCONTAMINATED GROUNDWATER TO LAND https://www.colorado.gov/pacific/sites/default/files/WQ%20LOW%20RISK%20GW.pdf
4. USACE 404 PERMIT – THE PROPOSED WORK AS SHOWN ON THE PLANS HAS BEEN PERMITTED BY THE U.S. ARMY CORPS OF ENGINEERS UNDER SECTION 404 OF THE CLEAN WATER ACT. THE CONTRACTOR SHALL COMPLY WITH ALL SPECIAL AND GENERAL CONDITIONS ATTACHED TO THE PERMIT.

ACCESS AND PROTECTION REQUIREMENTS

1. PROPERTY OWNER ACCESS SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR.
2. IF TRAFFIC CONTROL IS NECESSARY, THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR APPROVAL BY THE JURISDICTION OF AUTHORITY OR ENGINEER. TRAFFIC CONTROL PLAN SHALL INCLUDE METHODS OF HANDLING TRAFFIC (MHT'S) APPLICABLE TO THE WORK.
3. ALL CONSTRUCTION TRAFFIC CONTROL SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
4. NO MATERIAL OR EQUIPMENT SHALL BE STORED IN THE PUBLIC RIGHT-OF-WAY OUTSIDE OF APPROVED WORKING HOURS. THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND OTHER OBSTRUCTIONS FROM THE PUBLIC RIGHT-OF-WAY AT THE END OF EACH DAY'S WORK AND AT OTHER TIMES WHEN CONSTRUCTION OPERATIONS ARE SUSPENDED FOR ANY REASON.
5. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL TREES, BUSHES, AND EXISTING IMPROVEMENTS INSIDE AND OUTSIDE THE LIMITS OF WORK NOT CALLED OUT FOR REMOVAL OR REPLACEMENT.
6. TREES AND VEGETATION SHALL BE PROTECTED WITH INSTALLATION OF CONSTRUCTION FENCING AT DRIP LINE OF TREES AND PLANTS NEAR THE WORK ZONE. HAND EXCAVATION REQUIRED AT ROOT ZONES WHERE PROPOSED PAVING OR UTILITY WORK IS WITHIN DRIPLINE OF TREES. TREES AND VEGETATION THAT ARE NOTED FOR PROTECTION AND DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S COST.
7. THE CONTRACTOR SHALL REROUTE ANY RUNOFF AS NECESSARY DURING CONSTRUCTION ACTIVITIES TO PREVENT EROSION AND DAMAGE.
8. ALL EXISTING UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHALL BE MAINTAINED IN CONTINUOUS SERVICE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ANY DAMAGE TO, OR INTERRUPTION OF SERVICES CAUSED BY THE CONSTRUCTION.

TEMPORARY EROSION CONTROLS MEASURES

1. THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES (A.K.A. BEST MANAGEMENT PRACTICES OR BMPs), TO CONTROL EROSION AND SEDIMENTATION DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF ALL TEMPORARY EROSION CONTROL MEASURES.
2. THE CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO ANY SITE GRADING OR EXCAVATION ACTIVITIES. CONTRACTOR SHALL ALSO IMPLEMENT APPROPRIATE CONTROL MEASURES FOR PROTECTION OF WETLANDS, SENSITIVE HABITAT, AND EXISTING VEGETATION FROM GROUND DISTURBANCE AND OTHER POLLUTANT SOURCES BEFORE CONSTRUCTION BEGINS.
3. THE CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE, INCLUDING ALL BMP'S, STORAGE CONTAINERS, AND CONSTRUCTION EQUIPMENT, AT LEAST EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER A PRECIPITATION EVENT OR SNOW MELT THAT MAY CAUSE SURFACE EROSION.
4. THE CONTRACTOR SHALL KEEP A RECORD OF ALL INSPECTIONS ONSITE AND AVAILABLE FOR REVIEW. INSPECTION REPORTS MUST IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STORMWATER PERMIT.
5. CONTROL MEASURES SHALL BE MAINTAINED, INCLUDING REMOVAL OF COLLECTED SEDIMENT WHEN SILT DEPTH IS 50 PERCENT OR MORE OF THE EFFECTIVE HEIGHT OF THE EROSION CONTROL DEVICE. DAMAGES RESULTING FROM FAILURE TO MAINTAIN CONTROL MEASURES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THE STORMWATER MANAGEMENT PLAN SHALL BE UPDATED TO REFLECT NEW OR REVISED CONTROL MEASURES DUE TO CHANGES IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE CONSTRUCTION SITE. UPDATES MUST BE MADE WITHIN 72 HOURS FOLLOWING THE CHANGE IN CONTROL MEASURES.
7. VEHICLE TRACKING PADS SHALL BE USED AT ALL VEHICLE AND EQUIPMENT EXIT POINTS FROM THE SITE TO PREVENT SEDIMENT EXITING THE LIMITS OF CONSTRUCTION OF THE PROJECT SITE. WHENEVER SEDIMENT COLLECTS ON THE PAVED SURFACE, THE SURFACE SHALL BE CLEANED. STORM DRAIN INLET PROTECTION SHALL BE IN PLACE BEFORE SHOVELING, SWEEPING OR VACUUMING. SWEEPING SHALL BE COMPLETED WITH A PICKUP BROOM OR EQUIPMENT CAPABLE OF COLLECTING SEDIMENT. STREET WASHING WILL NOT BE ALLOWED.
8. ERODIBLE STOCKPILES (INCLUDING TOPSOIL) SHALL BE CONTAINED WITH ACCEPTABLE CONTROL MEASURES AT THE TOE OF THE STOCKPILE THROUGHOUT CONSTRUCTION. STOCKPILES THAT ARE INACTIVE FOR MORE THAN 14 DAYS SHALL BE STABILIZED WITH HAY OR STRAW MULCH WITH TACKIFIER, BONDED FIBER MATRIX, HYDRAULIC MULCH WITH TACKIFIER OR SPRAY-ON MULCH BLANKET.
9. PERMANENT STABILIZATION REQUIREMENTS SHALL BE COMPLETED WITHIN 4 DAYS OF PLACEMENT OF THE TOPSOIL. PERMANENT STABILIZATION IS THE COVERING OF DISTURBED AREAS WITH TOPSOIL, SEEDING, MULCHING WITH TACKIFIER AND SOIL RETENTION COVERINGS.
10. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND ANY OTHER CHEMICALS SHALL HAVE SECONDARY CONTAINMENT OR EQUIVALENT PROTECTION TO CONTAIN POTENTIAL SPILLS.
11. A CONSTRUCTED CONCRETE WASHOUT OR PREFABRICATED CONCRETE WASHOUT STRUCTURE THAT WILL CONTAIN WASHOUT FROM CONCRETE PLACEMENT, CONSTRUCTION EQUIPMENT CLEANING OPERATIONS AND RESIDUE FROM CUTTING, CORING, GRINDING, AND HYDRODEMOLITION MUST BE PROVIDED AND MAINTAINED.
12. ALL DRAINAGE STRUCTURES ARE TO BE PROTECTED BY EROSION AND SEDIMENT CONTROL MEASURES.
13. DUST MITIGATION SHALL BE PROVIDED BY THE CONTRACTOR AS NECESSARY. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE AND WHEN REQUIRED. SWEEPING AND CLEANING STREETS AND SIDEWALKS DURING THE CONSTRUCTION WILL BE DIRECTED BY THE AFFECTED JURISDICTIONS AND PERFORMED AS NECESSARY BY THE CONTRACTOR.

EARTHWORK

1. TOPSOIL IS TO BE STRIPPED PRIOR TO COMMENCING ROUGH GRADING. STRIPPED TOPSOIL GENERATED ONSITE IS TO BE STOCKPILED AND USED FOR RE-VEGETATION.
2. ANY OPEN EXCAVATION LEFT UNATTENDED SHALL BE BARRICADED OR FENCED OFF BY THE CONTRACTOR.
3. IF BEDROCK IS ENCOUNTERED CONTACT ENGINEER BEFORE PROCEEDING WITH WORK IN AREA OF BEDROCK.
4. IF GROUNDWATER IS ENCOUNTERED CONTACT ENGINEER BEFORE PROCEEDING WITH WORK IN AREA OF GROUNDWATER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS OR EROSION ON ABUTTING PROPERTIES. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND MEETING REQUIREMENTS OF CDPHE WATER QUALITY CONTROL DIVISION DEWATERING PERMIT FOR ANY DEWATERING DISCHARGES.
5. ONSITE NATIVE MATERIAL CAN BE USED FOR STRUCTURAL BACKFILL IF APPROVED BY THE GEOTECHNICAL, CIVIL AND STRUCTURAL ENGINEERS, AS APPLICABLE. MATERIAL SHALL BE SCREENED, PLACED IN LIFTS AND COMPACTED PER GEOTECHNICAL ENGINEER'S RECOMMENDATION.
6. THE CONTRACTOR SHALL CERTIFY THAT ALL AGGREGATES USED ON THIS PROJECT ARE FREE FROM HAZARDOUS COMPONENTS IN EXCESS OF THE THRESHOLD CONCENTRATIONS ESTABLISHED BY THE E.P.A.
7. ANY MATERIAL NOT SUITABLE FOR EMBANKMENT OR BACKFILL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AS PART OF THE WORK.
8. ALL MATERIALS REQUIRING COMPACTION MUST MEET APPLICABLE CDOT EMBANKMENT OR STRUCTURAL BACKFILL STANDARDS.
9. PLACEMENT OF AGGREGATE BASE COURSE OR PAVING SHALL NOT BEGIN UNTIL THE ENGINEER HAS APPROVED THE SUBGRADE. EXISTING SUBGRADE MATERIAL SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES, MOISTURE CONDITIONED AND RECOMPACTED. THE SUBGRADE SHALL BE PROOF ROLLED AND APPROVED BY THE ENGINEER PRIOR TO THE PLACEMENT OF ANY SUBSEQUENT STRUCTURAL LAYERS. AREAS THAT DEFORM UNDER HEAVY WHEEL LOADS AS DETERMINED BY THE ENGINEER ARE NOT STABLE AND SHALL BE REMOVED AND REPLACED TO ACHIEVE A STABLE SUBGRADE. THE ENGINEER SHALL APPROVE THE TYPE AND WEIGHT OF THE VEHICLE TO BE USED FOR THE PROOF ROLL. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND LABOR NECESSARY FOR THE PROOF ROLL. PROOF ROLLING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
10. WATER FOR COMPACTION WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
11. MOISTURE DENSITY CONTROL WILL BE REQUIRED FOR FULL DEPTH OF EMBANKMENTS AND AGGREGATE BASE COURSE IN PAVED AREAS.
12. ENSURE THAT DRAINAGE IS AWAY FROM ALL STRUCTURES IN ALL DIRECTIONS A MINIMUM OF 6 INCHES IN THE FIRST 10' OR 3 INCHES IN THE FIRST 10' IN PAVED OR CONCRETE AREAS, OR AS DIRECTED IN THE GEOTECHNICAL REPORT.

DEMOLITION AND REMOVALS

1. ALL EXCESS MATERIALS GENERATED FROM THE SITE ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY.

REVEGETATION

1. DISTURBED AREAS SHALL BE REVEGETATED.
2. DISTURBED AREAS SHALL BE FINE GRADED AND RAKED TO REMOVE ALL ROCKS OVER THREE INCHES IN DIAMETER. PLACE TOPSOIL TO A DEPTH OF FOUR INCHES ON ALL DISTURBED AREAS.
3. SOIL RETENTION BLANKETS SHALL BE INSTALLED ON SLOPES STEEPER THAN 2H:1V.
4. DUE TO HIGH FAILURE RATES, HYDROSEEDING WILL NOT BE ALLOWED FOR PERMANENT APPLICATIONS, EXCEPT WHERE THERE ARE HAZARDOUS DISTURBED SLOPES.
5. RESEED DISTURBED AREAS ACCORDING TO THE SEED MIX AND APPLICATION RATE SPECIFIED IN THE LANDSCAPING PLAN, PREPARED BY OTHERS.
6. SEEDING MATERIAL TO BE USED FOR RECLAMATION:

MESA COUNTY SEM-DESERT SCRUB & GRASSLAND MIX
APPLICATION RATE: 5.0 LBS. PLS PER ACRE

COMMON NAME	BOTANICAL NAME	%	LBS. PLS PER ACRE
INDIAN RICEGRASS	ORYZOPSIS HYMENOIDES	30%	2.4
THICKSPIKE WHEATGRASS	ELYMUS LANCEOLATUS	25%	0.9
SLENDER WHEATGRASS	ELYMUS TRACHYCAULUS	20%	0.4
SANDBERG BLUEGRASS	POA SECUNDA	10%	0.5
JAMES' GALLETA	HILARIA JAMESII	5%	0.2
MOUNTAIN BROME	BROMUS MARGINATUS	5%	0.2
WESTERN WHEATGRASS	PASCOPYRUM SMITHII (ARRIBA)	5%	0.4

EXISTING UTILITY NOTES (NON-SUE)

EXISTING UTILITY NOTES – NON "SUE-REQUIRED PROJECT"

1. THIS IS NOT A "SUBSURFACE UTILITY ENGINEERING-REQUIRED PROJECT," AS SET FORTH IN THE 8/8/2018 COLORADO STATE LAW. SEE CHECKLIST BELOW FOR ENGINEER'S BASIS FOR THIS DETERMINATION. (NOTE: A PROJECT MUST MEET ALL 4 CONDITIONS)

COLORADO REVISED STATUTES (CRS) 2018 TITLE 9-1.5-102 SUBSURFACE UTILITY ENGINEERING (SUE) REQUIRED PROJECT COMPLIANCE CHECKLIST

1	9-1.5-102-6.8.A	PROJECT INVOLVES CONSTRUCTION CONTRACT WITH A PUBLIC ENTITY		YES	X	NO
2	9-1.5-102-6.8.B	PROJECT INVOLVES PRIMARILY HORIZONTAL CONSTRUCTION AND DOES NOT INVOLVE PRIMARILY THE CONSTRUCTION OF BUILDINGS	X	YES		NO
3A	9-1.5-102-6.8.C.I.A	EXCAVATION FOOTPRINT EXCEEDS 2-FEET DEPTH AND IS A CONTIGUOUS 1,000-SQUARE FEET; OR	X	YES		NO
3B	9-1.5-102-6.8.C.I.B	INVOLVES UTILITY BORING		YES	X	NO
4	9-1.5-102-6.8.D	PROJECT REQUIRES THE DESIGN SERVICES OF A LICENSED PROFESSIONAL ENGINEER (P.E.)	X	YES		NO
SUMMARY	9-1.5-103-2.4	REQUIRED TO MEET OR EXCEED THE ASCE 38 STANDARD AND CO SUE LAW?		YES	X	NO

2. EXISTING UTILITIES ARE DEPICTED ACCORDING TO THE BEST AVAILABLE INFORMATION THAT WAS PROVIDED BY THE UTILITY OWNERS AND SURFACE FEATURES AT THE TIME OF THE SURVEY. RELIANCE UPON THIS UTILITY DATA FOR RISK MANAGEMENT PURPOSES DOES NOT RELIEVE THE PROJECT OWNER, CONTRACTOR, OR UTILITY COMPANY FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICIES, AND/OR PROCEDURES DURING EXCAVATION. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811 OR 800-922-1987, TO VERIFY EXISTING UTILITIES AND HAVE LOCATIONS OF UNCC REGISTERED LINES MARKED BY MEMBER COMPANIES.
3. OTHER UTILITIES MAY BE PRESENT WHICH WERE NOT IDENTIFIED IN THIS PLAN SET OR PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE DUE-DILIGENCE AND ENACT GOOD PRACTICES WHEN EXCAVATING NEAR POTENTIAL CONFLICT AREAS AND REDUCE POTENTIAL DAMAGE TO UTILITIES AS MUCH AS POSSIBLE.
4. SHOULD THE CONTRACTOR ENCOUNTER UNKNOWN AND/OR ABANDONED UTILITIES THE CONTRACTOR SHALL VERIFY WITH THE RESPECTIVE UTILITY OWNER THAT THE UTILITY IS INACTIVE/ABANDONED BEFORE REMOVAL FROM THE WORK AREA
5. THE CONTRACTOR SHALL COMPLY WITH COLORADO REVISED STATUTES (CRS) 2018, TITLE 9, ARTICLE 1.5-103 (10), "ALL NEW UNDERGROUND FACILITIES, INCLUDING LATERALS UP TO THE STRUCTURE OR BUILDING BEING SERVED, INSTALLED ON OR AFTER 8/8/2018, MUST BE ELECTRONICALLY LOCATABLE WHEN INSTALLED."

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259 Grand Ave., Suite 200
Grand Junction, CO 81501
970.245.2571
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Audubon Rockies
The High Lonesome Ranch New Ford Crossings

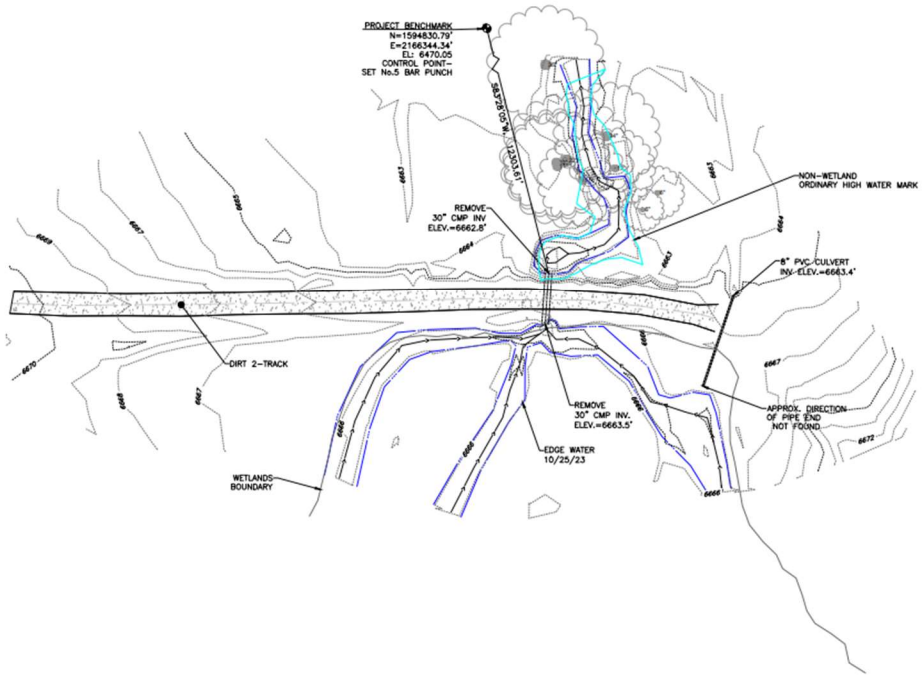
Project Milestone: FOR CONSTRUCTION

Job No. 2023-194.001
Drawn by: AM
Check Date: 4.19.2024
QC: ELK ERC ELK
File: 18.0-Notes

Title: General Notes

Dwg No. 3

Of: 8



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Audubon Rockies

The High Lonesome Ranch New Ford Crossings

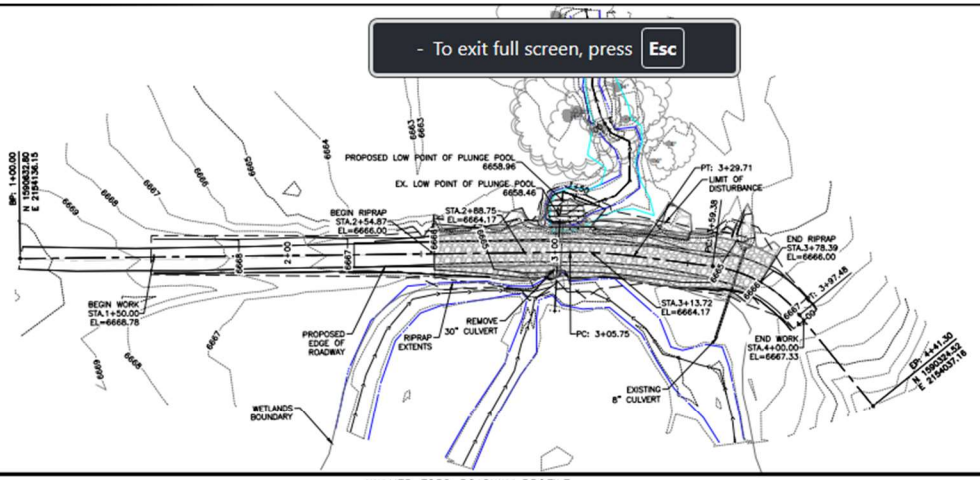
No.	Date	Revision
1	4.19.24	Project Milestone: FOR CONSTRUCTION

Job No. 2023-154.001
Drawn by: JGR
Print Date: 4.19.2024
QC: ELK | PIC: ELK
File: HLR ExCondDemo

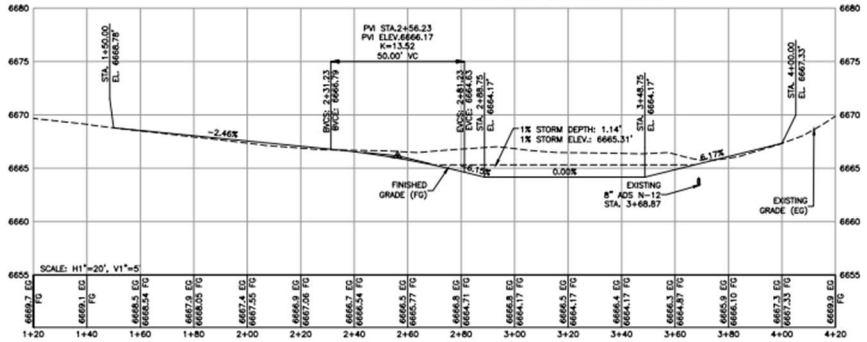
Title:
Existing Conditions and Removal

Dwg No.
4

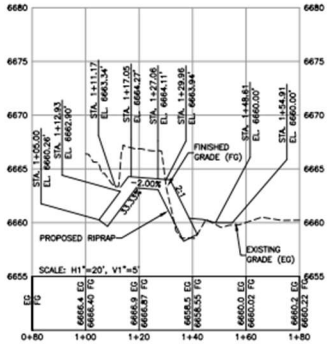
Sh. 8



WALKER FORD ROADWAY PROFILE



WALKER FORD STREAM PROFILE



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Graphic Scale
In Feet: 1" = 20'

Audubon Rockies
The High Lonesome Ranch New Ford Crossings

Walker Ford Road Plan and Profile

Drawing No. 5