

TECHNICAL SPECIFICATIONS

**Upper Yampa Water Conservancy District (UYWCD)
Union Ditch Headgate Project**



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SECTION 1 SCOPE OF WORK

1.01 GENERAL

The project purpose is to improve delivery to the Union Ditch during low flow periods in the Yampa River, while minimizing long term impacts to the riverine and riparian environment in the project reach.

The scope of this project includes constructing and/or installing the following:

- Demolition and Removal of existing headgate, inlet pipe, and culverts.
- Installation of concrete headgate structure with metal hardware.
- Installation of a boulder grade control structure across the Yampa River.
- Installation of an engineered riffle downstream of the boulder grade control structure.
- Installation of bank stabilization measures in two locations.
- Adjustment of an existing 1-foot Parshall flume.
- Installation of culvert pipe in two locations, including through the proposed headgate.
- Maintenance of the Union Ditch, including sediment removal and vegetation clearing.
- Armoring Rock Upstream and Downstream of the concrete headgate structure.

The project scope also includes the following tasks associated with major in-channel installations:

- Identify and maintain Erosion Control Measures and Best Management Practices (BMPs) and provide a detailed Erosion and Sediment Control Plan (ESC) Plan to be submitted prior to construction and reviewed and accepted by the Owners Representative.
- Identify and maintain Care of Water (CW) plan and BMPs involved with protecting river from construction related activities.
- Provide a detailed Spill Prevention Control and Countermeasure Plan (SPCC) Plan to be submitted prior to construction and reviewed and accepted by the Owners Representative.
- Identify and maintain measures necessary to Protect in Place (PIP) Trees, Wetlands, and other natural resources.
- PIP all driveways, access road, utilities, parking lots, fences, gates, power lines, and other structures not identified for removal.
- Haul off and dispose of unclassified excavation removed from the channel and banks and dewater as necessary.
- Restore construction staging areas and access areas to equal or better than pre-construction condition.

In accordance with these Specifications and as shown on the Project Drawings.

1.02 KEY PROJECT PERSONNEL CONTACTS

References to the OWNER and/or OWNERS REPRESENTATIVE are to the Upper Yampa Water Conservancy District (UYWCD).

The following is a list of Project stakeholders and their contact information. CONTRACTOR shall notify all stakeholders 7 days prior to construction:

1. Upper Yampa Water Conservancy District (OWNER)

Emily Lowell, PE, UYWCD District Engineer
2220 Curve Plaza
Steamboat Springs, CO 80487
970.439.1084
elowell@upperyampawater.com

2. Quinn Donnelly, PE (Project Engineer)

RiverRestoration.org, LLC.
PO Box 248
Carbondale, CO 81623
970.947.9568
quinn.donnelly@riverrestoration.org

3. Nick Emmendorfer, PE (Engineer)

J-U-B ENGINEERS, Inc.
P.O. Box 1161
305 Main Street, Suite 6, Palisade, CO 81526
970.208.8508
nemmendorfer@jub.com

SECTION 2 GENERAL CONSTRUCTION METHODS

2.01 PROJECT LIMITS

The Project Limits are defined in the plans. No construction related activities or impacts shall occur outside of the project limits, excepting road access, materials acquisition and spoils haul-off and disposal, unless otherwise authorized by the OWNER in writing. Protect in place (PIP) all structures, vegetation, drainages and other within the Project Limits that are not specifically identified for construction. Mark, flag and sign all Project Limits.

2.02 PERMITS AND REQUIREMENTS

The CONTRACTOR shall comply with all applicable requirements set forth in all permits obtained for this project. Obtained permits, with associated terms and conditions, include:

U.S. Army Corps of Engineers 404 Permit – The project qualified for an agricultural exemption and thus a USACE 404 Permit was not required. See Section 3 for a description of Best Management Practices required to minimize impacts to the riverine and riparian environment during construction.

Routt County Floodplain Development Permit – This permit is currently being processed by Routt County and will be secured by UYWCD and the design team prior to the start of construction.

2.03 CONTRACTOR SUBMITTALS

The CONTRACTOR shall submit for review by the OWNER the following plans, schedules, and documentation. All plans and documentation shall be submitted a minimum of 7 calendar days prior to beginning construction. Rejected plans and documentation shall be modified per review comments and re-submitted. Plans shall incorporate detailed BMPs, means, methods, and materials necessary for achieving project performance, safety, and protection targets.

Spec Section	Submittal Item	Date Due
2.03.A	Erosion and Sediment Control (ESC) Plan	7 calendar days prior to the start of construction
2.03.B	Spill Prevention, Control and Countermeasures (SPCC) Plan	7 calendar days prior to the start of construction
2.03.C	Traffic Control (TC) Plan	7 calendar days prior to the start of construction
2.03.D	Care of Water (CW) Plan	7 calendar days prior to the start of construction
2.03.E	2 Week Look Ahead Construction Schedule	Each Monday by 10:00 AM
2.03.F	Construction Materials and Product forms for approval	7 calendar days prior to delivery
2.03.G	Qualified Sub-Contractors List	At start of construction. Changes/additions should be submitted 3 days prior to start of work by specific sub-contractor

Spec Section	Submittal Item	Date Due
2.04	Existing Conditions Documentation	Prior to the start of construction activities.
3.03	Overall Project Schedule	7 calendar days prior to the start of construction.
3.04	Bio-degradable Fluid Equipment list	Prior to the start of in-channel construction activities.

2.03.A: Erosion and Sediment Control (ESC) Plan

CONTRACTOR shall submit an Erosion and Sediment Control (ESC) Plan seven (7) calendar days prior to the start of construction, which shall detail all of the proposed BMPs, means, methods, and materials used to prevent and/or control storm water and potential erosion and sediment mobilization above the OHWM including surrounding construction, dewatering and staging areas. The ESC Plan shall include a detailed narrative as well as specific Locations, Maps, and Schedules for all stages of construction, and shall identify and provide contacts for all Qualified Subcontractors and Notifications. The ESC Plan shall include BMPs, means, methods, and materials used to Protect-In-Place and maintain Vegetation, Wetlands, Riparian Corridor, Soils and Waters, and Cultural Resources on and surrounding all disturbed areas prior to and during all stages of construction. A hand marked up copy of the plans is acceptable.

2.03.B: Spill Prevention, Control and Countermeasure (SPCC) Plan

CONTRACTOR shall submit a Spill Prevention, Control and Countermeasures (SPCC) Plan which shall detail all of the proposed BMPs, means, methods, and materials used to prevent and/or mitigate spills or other releases of fuels, chemicals, oils, sewage, and other contaminants within and surrounding all in-channel and upland construction and staging areas, and from entering Waters of the US. SPCC Plan shall include a detailed Narrative as well as specific Locations, Maps, and Schedules for all stages of construction, and shall identify and provide contacts for all Qualified Subcontractors. SPCC Plan shall identify and provide contacts for all Qualified Subcontractors, OWNER, and ENGINEER. CONTRACTOR shall submit the SPCC to ENGINEER for review 7 calendar days prior to the start of construction.

- A. As part of the SPCC, Spill Cleanup is wholly the responsibility of the CONTRACTOR and Spill Cleanup procedures shall be posted and available at all times on site for all work areas prior to any construction activities and shall include coordination with local emergency response agencies.
- B. A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) shall be reported to the Colorado Department of Public Health and Environment (CDPHE) immediately (25-8-601 CRS) and form <http://www.cdphe.state.co.us/hm/spillselfreportform.pdf> and/or Toll-Free 24-hour Environmental Emergency Spill Reporting Line 1-877-518-5608 may be used. Written notification to the Department shall follow within five (5) days (5 CCR 1002-61, Section 61.8(5)(d)). Releases of petroleum products and certain hazardous substances listed

under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to Colorado Department of Public Health and Environment as required under the Clean Water Act and the Oil Pollution Act. Furthermore, contact must be made immediately, reporting any spill incident, with Colorado Parks and Wildlife (CPW), the OWNER and ENGINEER.

- C. Any incident spills that do not threaten water resources shall be reported to: Colorado Emergency Planning Committee (CEPC)(members include Colorado Department of Health and Environment - Hazardous Waste Division, Colorado Department of Public Safety - Division of Homeland Security and Emergency Management, and Colorado Department of Public Safety - Colorado State Patrol), at **Toll-Free 24-hour Colorado Environmental Release and Incident Reporting Line 1-877-518-5608**, <https://www.colorado.gov/pacific/cdphe/wq-environmental-spills>. Furthermore, contact must be made immediately, reporting any spill incident, with the Gunnison County Health Department, the OWNER and ENGINEER. The CONTRACTOR shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, the measures taken and/or planned to be taken to clean up the release, and steps to be taken to minimize the chance of future occurrences to the Executive Secretary.

2.03.C: Traffic Control (TC) Plan

CONTRACTOR shall submit a Traffic Control (TC) Plan, to include the Roads, Parking Areas, Walking Paths, Boat Ramps, River Navigation, and Construction Access to be approved by the OWNER. The (TC) Plan shall detail all of the proposed BMPs, means, methods and materials used to maintain street traffic surrounding all construction and staging areas, and to isolate construction and staging areas from the public. TC Plan shall include Site Access, Traffic Control, and Public Safety plans for all stages of construction, and shall include a detailed Narrative as well as specific Locations, Maps, and Schedules. TC Plan shall identify and provide contacts for all Qualified Subcontractors, OWNER, ENGINEER, and 24-Hour Emergency Traffic Control Technician. No construction activities shall impede public traffic patterns prior to written approval from the OWNER. If CONTRACTOR finds it necessary to close any Paths or re-route traffic, the OWNER shall work with CONTRACTOR to approve a reasonable alternative route.

2.03.D: Care of Water (CW) Plan

CONTRACTOR shall submit a Care of Water (CW) Plan which details all of the proposed BMPs, means, methods, and materials used to manage and treat waters below the OHWM in order to access the work. The ENGINEER will provide a recommended construction sequencing strategy and typical on-site water management details in the project plans for reference; however, it is wholly the responsibility of the CONTRACTOR to design, submit for approval, and implement a comprehensive and site-specific CW Plan. The CW Plan shall include a detailed Narrative as well as specific Locations, Maps, and Schedules for all stages of construction, and shall identify and provide contacts for all Qualified Subcontractors. The CW Plan shall include a

specific and detailed plan for returning on-site waters to the active channel which includes settling, pumping, and filtration methods and locations. The final accepted CW Plan shall provide a reliable means to conform to allowable construction discharge turbidity regulations and shall include methods and schedules for turbidity monitoring. See Section 2.08.

2.03.E: Two Week Look Ahead Construction Schedule

The CONTRACTOR shall submit an updated construction Look Ahead Schedule each Monday morning by 10:00 AM during construction via email. The Look Ahead Schedule shall list activities for the next 2 weeks and should include the following:

- All forecasted tasks associated with in-channel and upland construction, mobilization, staging and access, and materials acquisition and delivery.
- Completed construction tasks
- Report submittals
- Permit timeframes and deadlines
- Potential disruptions to local community/land owners that would require coordination or notification.
- Anticipated Inspections

2.03.F: Construction Materials and Products Form

All construction materials shall conform to the requirements detailed in project plans and specifications. All materials shall be submitted to the OWNER and ENGINEER for approval at least 7 calendar days prior to delivery to the construction site.

2.03.G: List of Qualified Sub-Contractors Form

At the start of construction, the CONTRACTOR shall submit a list of all Qualified Sub-Contractors to be used during any and all stages of Mobilization, Site Access, and Construction. The List shall include contractor license numbers and contact phone numbers and email addresses. If changes or additions are needed, these modifications shall be submitted to the OWNER and ENGINEER for approval at least 3 days prior to that specific sub-contractor beginning work on the project.

2.04 SITE INTEGRITY

The CONTRACTOR is required to document the condition of Utilities, Adjacent Streets and Sidewalks, Recreation Area Facilities, Construction Access Areas on the banks, Wetlands, Mature Vegetation and the general area with pictures and video recordings, submitted to OWNER and ENGINEER prior to any construction phase and after each phase of construction is completed. The pictures and video recording shall document the surface integrity of the structures with clear and recognizable reference features or established and repeatable reference markers in the field of view. The CONTRACTOR is responsible for rehabilitating, repairing or replacing, to better than pre-construction conditions, any damage to the structures, roads, and vegetation not specifically identified for disturbance.

2.05 UTILITIES

CONTRACTOR shall field-locate and mark all utilities within or adjacent to the Project. Any utility locations marked on plans are approximate and actual field location of any utility is wholly the responsibility of the CONTRACTOR. Any temporary interruption to utilities shall be planned and coordinated with the appropriate utility provider by the CONTRACTOR. OWNER shall be notified of any such interruptions 10 days prior. CONTRACTOR shall protect in place all utilities.

2.06 TEMPORARY FACILITIES

CONTRACTOR shall provide all temporary facilities required for performing the work. Temporary construction facilities and temporary utility connections are solely the CONTRACTOR's responsibility based on his selected method of operation and schedule. CONTRACTOR is responsible for providing a clean and safe environment for all workers on the job site. CONTRACTOR is responsible for providing sanitary facilities. CONTRACTOR shall follow Occupational Safety and Health Administration (OSHA) regulations. CONTRACTOR is responsible for providing all electrical, water and utility needs. CONTRACTOR shall keep the Project Limits in a neat and orderly manner. CONTRACTOR is responsible for removing temporary facilities and controls after completion of all Work.

2.06.A: Staging Areas

Preliminary Staging Areas are shown on the Plans. All construction staging, stockpiling of materials, equipment storage, equipment fueling and maintenance, and other, shall take place in designated areas with adequate barriers to protect the public from entry. Staging areas shall have a designated office or contact information posted for public inquires. Staging areas shall provide employees all necessary facilities, legal postings, and safety protocol. Staging area shall include temporary restroom facilities maintained and serviced as necessary. The CONTRACTOR is responsible for maintaining a clean and organized staging area and restoring all disturbed areas equal to pre project conditions.

2.06.B: Dewatering Areas

Construction activities are anticipated to produce clean fill materials, as well as some other waste materials. All excess materials produced by construction activities shall be properly disposed. Prior to construction activities CONTRACTOR shall report any materials disposal locations to the OWNER. All disposal locations, and means and methods of disposal, shall be in accordance with any applicable regulations and permits, and it is solely the responsibility of the CONTRACTOR to acquire any applicable permits. Dewatering areas shall have adequate BMPs in place to stockpile material prior to disposal. Any temporarily stockpiled materials shall be covered and protected from wind and rain-drop erosion with durable plastic sheeting and sandbags prior to and during storm events. Dewatering areas may also be configured to include a Washout Area for concrete pours. Pours shall not be conducted during or before an anticipated storm event. All excess concrete and concrete washout slurries from the concrete mixer trucks and chutes shall be discharged off site, or temporarily into a washout area designated in an

unvegetated upland location and completely isolated from stormwater and drainage. All concrete residues shall be hauled off-site and properly disposed. Returning water from dewatering areas to surface flow routes may require a dewatering permit from the CDPHE and is wholly the responsibility of the CONTRACTOR.

2.06.C. Equipment Fueling, Greasing, and Maintenance Areas

Any and all fueling and greasing of equipment shall be in designated upland locations, with adequate BMPs to contain any potential spill. All major equipment/vehicle maintenance shall be performed off-site. Fuel tank may be kept on-site in the staging area with drip pans underneath the fueling area or a truck mounted transfer tank is also acceptable. All equipment fluids generated from maintenance activities shall be disposed of into designated drums stored on spill pallets in accordance with hazardous waste management practices. Drip pans shall be placed under all equipment receiving minor or routine maintenance. All equipment shall be inspected daily for leaks and proper function. Leaking or otherwise improperly functioning equipment shall not be used in any capacity for construction activities. Any equipment found to be leaking upon inspection shall be immediately taken out of service for maintenance.

2.06.D. Hauling Routes

The import and export of materials from the project limits shall occur at designated locations on defined haul routes. The access routes to construction sites shall be maintained by the CONTRACTOR with standard maintenance activities, including minimizing and mitigating for equipment Track Out. Loads shall be covered while hauling where necessary. Haul routes shall be repaired, at the completion of the work, to pre project conditions as determined by OWNER.

2.06.E. Channel Access Areas

CONTRACTOR shall be responsible for establishing and maintaining channel access sites for equipment and workers within Project Limits defined on plans and for rehabilitating access sites once construction is complete. Channel access ramps will be graded per plan in order to protect flood walls and other bank structures from equipment damage. Gravel berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed Riverbanks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw Bales or wattles shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the river.

2.06. F. Temporary Bridges

Coffered, in-channel construction areas may require access through the use of temporary culvert or bridges spanning the remaining active channel. The CONTRACTOR is solely responsible for installing and maintaining temporary culverts/bridges where necessary. Culverts/bridges must adequately sized and load rated to safely accommodate the planned equipment traffic. The CONTRACTOR is responsible for obtaining any necessary permits for the installation and

operation of temporary culverts/bridges and is responsible for facilitating any required inspections.

2.06. G. Disposal Area

CONTRACTOR to provide for an offsite disposal area for inert, clean fill materials required to be removed from the site such as alluvium and bank material.

2.07 CONSTRUCTION STAKING

The ENGINEER shall provide adequate horizontal and vertical control points for the CONTRACTOR to establish the lines and grades shown on the plans. The ENGINEER shall provide initial construction staking. Grade elevations and additional construction staking shall be wholly the responsibility of the CONTRACTOR.

Established control points shall be provided with special colored flagging and it shall be the responsibility of the CONTRACTOR to protect those control points. In the event they are lost, due to any cause, the CONTRACTOR shall re-establish adequate and permanent control markers.

The ENGINEER will provide a proposed XML compatible digital surface model and river alignment to the CONTRACTOR. The CONTRACTOR shall have the means to load the alignment and surface into a field survey controller, for use in layout, checking, and as-builts of any location in the project area. Surveyor shall be available for ENGINEER'S request. Prior to construction grading activities, CONTRACTORs site localized survey/stake-out equipment will be validated as accurate with the ENGINEER or Surveyor's equipment to within the following tolerances:

See Sheet G02 for Horizontal Control and Datums. The project vertical and horizontal control has been established in:

Horizontal - North American Datum, 1983 (NAD-83), Colorado State Plane North
Vertical - North American Vertical Datum, 1988 (NAVD-88).

2.08 TURBIDITY MONITORING

During periods of in-river construction turbidity of the water 200 yards downstream of the Project Limits shall not be visually greater than the turbidity of the water upstream of the Project Limits. BMP's to limit turbidity increases shall include: intermittent excavation; construction during periods of elevated background turbidity; Care of Water, and structural BMP's such as turbidity curtains. CONTRACTOR shall regularly monitor and daily record any turbidity increases. ENGINEER or OWNER may stop construction during ineffective BMP's and visual increases of downstream turbid conditions. CONTRACTOR is wholly responsible for time delays associated with inadequate BMP's, inadequate Care of Water, or stopped work. CONTRACTOR is wholly responsible for environmental damage associated with uncontrolled sedimentation outside of the Project Limits.

2.09 UTILIZING IN-CHANNEL MATERIALS

Clean Native Alluvium that is excavated for structure placement and is to be backfilled in the channel may be utilized in channel as temporary cofferdams or for other water control practices. Exposed Alluvium resulting in noticeable downstream turbidity shall be isolated from the flow of the channel.

Excavated clean native alluvium, boulders and clean bedrock may be allowed to be backfilled in the channel around structures within the limits of excavation as defined in plans. All other excavated material including fines and bank material shall not be placed in any flow path, shall be properly disposed of in designated disposal area and shall have appropriate erosion control measures in place. All in-stream structures shall be constructed in sections sized to minimize open excavation area. Each day of work shall be a completed work and no excavations of the bank or streambed shall be left open to erosion.

2.10 TEMPORARY DIVERSION STRUCTURES

Control of the River stage and associated access to work during construction is wholly the responsibility of the CONTRACTOR. The CONTRACTOR is responsible for designing, installing and maintaining any temporary flow diversion structures and coffer dams. Some tasks may be performed in the wet or flowing channel, however, if the CONTRACTOR selects to construct any in-channel work in an isolated area, it is the responsibility of the CONTRACTOR to design, permit and implement any isolation and dewatering measures. The project plans provide a permitted means, method, and materials for coffer dam construction for CONTRACTOR's reference. However, the CONTRACTOR shall be wholly responsible for designing, permit compliance and implementing any final Care of Water plan.

In addition to controlling the stage of the river, seepage and ground water may require additional control methods, such as pumping and discharging. The CONTRACTOR shall be wholly responsible for the selection of suitable method(s), and for design, installation, and operation of the diversion and care of the river required during the performance of the work under these specifications. The CONTRACTOR is required to design and install adequate diversion and care of water facilities in a timely fashion in accordance with his/her schedule of construction and the requirements of these specifications. All means, methods, and materials used for work area isolation and for the care of on-site waters below the OHWM shall be included in the Care of Water (CW) Plan submitted by the CONTRACTOR.

Areas disturbed for temporary diversion practices shall be restored and stabilized to pre project conditions. Failure of the CONTRACTOR to become adequately familiar with and address the existing structures, access and river conditions which impact the work may result in unnecessary construction delays and associated increased efforts for which the CONTRACTOR shall be solely responsible. Pumping and returning of coffered water may require a dewatering permit from the CDPHE and is wholly the responsibility of the CONTRACTOR.

2.11 HYDROLOGY

Hydrology herein is based on Gage USGS 09237450 YAMPA RIVER ABOVE STAGECOACH RESERVOIR, CO for water years 1988 thru 2022. The 09237450 gauge may be accessed online for daily discharge data and flood prediction.

https://waterdata.usgs.gov/co/nwis/uv?site_no=09237450

Real time data may be seasonal and is provisional, subject to change. Statistical Analysis of historical data is not a guarantee for the flow rates during construction and are provided herein solely for the information of the CONTRACTOR. Maintenance of the river flows, Care of Water, diversions, erosion, environmental protection, BMPs and river stages during the construction period, and damage or delays due to, are wholly the responsibility of the CONTRACTOR.

Figure 2.11-1 provides the 10th, 25th, 50th, 75th, and 90th percentiles of flow rates on a give calendar year based on 34 years of record at USGS Gage 09237450.

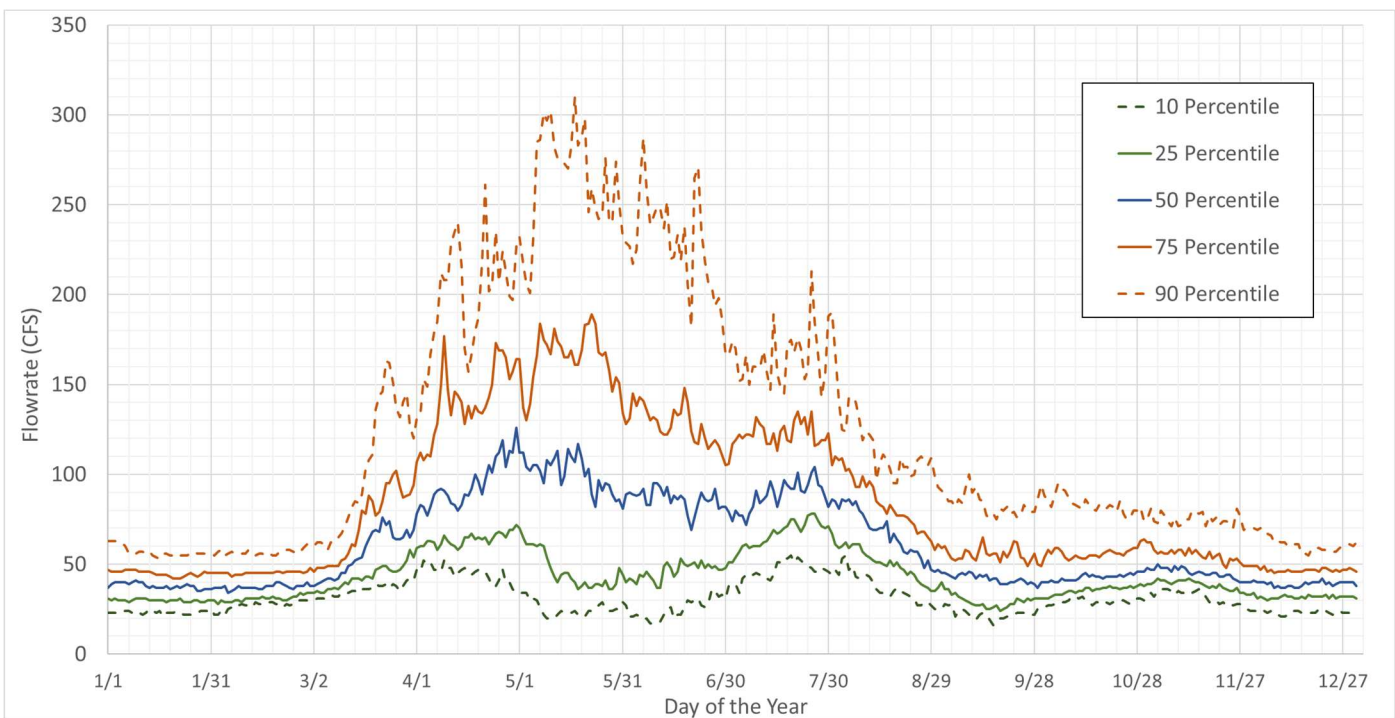


Figure 2.11-1: Flow Rate Statistics at Project Site

SECTION 3 BEST MANAGEMENT PRACTICES

3.01 GENERAL

The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for installation, maintenance and inspection of all on shore and in-channel BMPs. Within the Project Limits all disturbed surfaces shall utilize best management practices such as Turbidity Curtains, Silt Fences, Construction Sequencing, Care of Water, etc.; to minimize potential environmental damage, turbid conditions, locations of ponding, sediment loading in any flow path, dust, noise, light, etc. Adequate numbers, locations and properly functioning BMPs and erosion control are wholly the responsibility of the CONTRACTOR. CONTRACTOR is responsible for maintaining all BMPs during construction activities, and for the removal post-construction activities and/or adequate stabilization periods. All construction activities shall be performed in accordance with; guidelines set out in the project plans and specifications, specifications in applicable permits, and any local, state, and federal regulations. CONTRACTOR shall inspect all BMPs daily. The OWNER or ENGINEER may stop work in any area due to improperly installed, inadequate, or non-functioning BMPs based on OWNER's or ENGINEER's sole discretion. CONTRACTOR is responsible for coordinating and participating in any inspections of BMPs by appropriate regulatory authorities.

3.02 CHANNEL ACCESS

Berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed banks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw Bales and/or wattles shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the body of water.

3.03 CONSTRUCTION SEQUENCING

Prior to starting construction, the CONTRACTOR shall notify the ENGINEER, and the OWNER of the date the CONTRACTOR intends to start construction with a written notice delivered a minimum 5 days in advance. Additionally, Two Week Look-Ahead schedules and updates shall be submitted every 7 days during active construction periods as described in Section 2.03E.

Seven calendar days prior to the start of the project, the CONTRACTOR shall provide the ENGINEER an overall schedule for the project implementation, including setup, staging, material delivery, in-channel construction and phasing, upland improvements, revegetation/irrigation, and site restoration.

3.04 EQUIPMENT OPERATING IN WET CHANNELS

Equipment shall be allowed to operate in the wet channels. Equipment operating in or adjacent to any wet channels shall be free of any fluid leaks and in excellent operating condition. **Biodegradable hydraulic fluids shall be utilized for any equipment operating in the flowing**

river channel. CONTRACTOR shall submit a list of equipment operating with certified bio-degradable hydraulic fluids to the OWNER and ENGINEER prior to use of the equipment in the flowing channel. No equipment shall be left unattended at any time in any wet channel or below the Ordinary High-Water Mark. Any and all fueling and oiling of equipment shall be in a designated upland location, with adequate BMPs to contain any potential spill.

All equipment shall be cleaned prior to being on-site to minimize potential for spreading of invasive species. Equipment shall be power-sprayed and free of weeds, soil and untreated water. If any equipment being used for the Project has been previously working in another stream, river, lake, pond or wetland, one of the following disinfection practices is necessary prior to construction to prevent the spread of whirling disease, New Zealand mud snails, zebra mussels, didymosphenia, and other aquatic hitchhikers. These practices are also necessary after project completion, prior to the equipment being used in another stream, river, lake, pond, or wetland, for the same purpose:

Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and spray/soak equipment in a 1:15 solution of Sparquat institutional cleaner and water. Keep equipment moist for at least 10 minutes and thoroughly rinse with potable water; or

Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and thoroughly spray/soak equipment with water greater than 140 degrees Fahrenheit for at least 10 minutes.

Excavators and backhoes may need to be cleaned on site to remove excess native sediments stuck to the track or hoes. Sediments that are removed with a shovel shall be placed in designated clean fill material storage areas. Sediments removed with clean water shall be washed into the dewatering area. All dewatering areas shall have erosion control logs staked at flow lines before discharge into.

3.05 OIL BOOM

An adequate number of oil boom SPC 5510 manufactured by SPC (<http://www.sorbentproducts.com>) or equivalent shall be placed in a designated location onsite, visible and unobstructed at all times. Any spills shall be contained and cleaned by the CONTRACTOR. Oil booms shall be installed across the channel at the downstream end of the Project Limits at all times equipment is working in or crossing the flowing river. All Booms shall be replaced as needed, approximately weekly with new Oil Booms.

3.06 PERMEABLE TURBIDITY BARRIER

All exposed bank excavations not contained by coffer dams and disturbances shall be separated from the main flow of the river by a Permeable Turbidity Curtain. The turbidity curtain shall have a non-woven 8 oz filter fabric (Mirafi 180N or equivalent) for at least 50% of the curtain area between the float and the ballast.

3.07 STRAW BALES

Straw Bales shall be certified “Weed-Free” and not hay bales. Bales shall be secured with wood or metal stakes driven 2 feet into ground. Four (4) inches of 3 inch minus washed gravel shall be placed on the up-gradient toe of the bales. Bales can be removed when vegetation is established.

3.08 SILT FENCE

Silt Fences shall be placed to contain construction activities on land. Silt Fence shall be constructed with 4oz. Non-Woven Filter Fabric (Mirafi 140N or equivalent) with a 6 inch by 6-inch anchor trench up-grade (i.e. uphill) of the fence line and fence posts on 6 ft centers. The anchor trench shall be backfilled to existing grade with native material compacted to 95% of maximum as determined by the Standard Proctor Method (ASTM D-698-66T or AASHTO T 99).

3.09 FILTERING OF PUMPED WATER

Any pumped water being returned to the main flow of the river or other drainage shall first be processed through a filter. Turbid waters that are clean of contaminants or concrete residue shall be filtered to prevent excessive turbidity. Waters with contaminants or concrete residue shall be filtered clean before returning to the natural flow. Dewatering permits may be required. It is the responsibility of the CONTRACTOR to obtain these permits.

3.10 REMOVAL OF BMPs

All BMPs below the Ordinary High-Water Mark are to be removed prior to the completion of the work. All BMPs above the Ordinary High-Water Mark are to remain in place until the establishment of vegetation, approximately one year. Any non- biodegradable BMPs shall be removed after the establishment of vegetation cover at least 70%, approximately one year. All non-biodegradable BMPs are the property of the CONTRACTOR. The locations of the BMP installations shall be graded, seeded and restored to preconstruction conditions after removal.

3.11 STRAW WATTLES

Straw Wattles (Wattles) shall be certified “Weed-Free” and in sound new condition. Temporary Wattles are to be removed within one year of installation. Any non-temporary Wattles shall be fully biodegradable and have Burlap or Jute fabric netting. Wattles shall be installed in an approximately 2” – 3” deep rounded trench. Spoils from the excavated trench should be deposited and “Knifed In” on the up-hill side of the Wattle to direct flow into the Wattle and prevent under-cutting. Ends should overlap by 1’. Wattles shall be staked at approximately 4’ o.c. and at every end with 1” width 16” long wood stakes.

3.12 RIPARIAN PROTECTION

Any and all riparian areas and riparian vegetation outside of the limits of excavation shall be

protected in place. No construction supplies, fuels nor oils shall be stored in riparian areas, no vehicles nor heavy equipment shall be allowed into riparian areas other than the designated channel access sites. No discharge of any materials shall be allowed into any riparian areas. Riparian areas shall be traversed only by foot and leak free hoses may cross riparian vegetation. Any incidentally disturbed riparian areas shall be restored to better than pre-construction conditions.

3.13 MATURE TREE PROTECTION

The preservation of existing mature trees is an important component of the work and a measure of the successful completion thereof. The healthy mature native trees that are adjacent to excavating activities shall be Protected in Place (PIP). The work shall include the preservation from injury or defacement of all vegetation that is NOT designated for removal by the ENGINEER in the field. ENGINEER shall mark all trees and large shrubs approved for removal prior to excavation work. Areas of tree removal shall be determined and marked in collaboration between the CONTRACTOR and the ENGINEER.

- a) As part of the ESC Plan, CONTRACTOR shall develop and submit details of the means, methods, and materials to be used to protect in place all mature vegetation not designated for removal.
- b) CONTRACTOR guarantees that care, caution and best management techniques are implemented to maximize the survivability of native mature trees not designated for removal.
- c) All Protect in Place trees shall have 100% success rate, showing vigor and general health, for one year after PIP measures are conducted.
- d) Post construction monitoring may recommend additional pruning, irrigation, or fertilizer to restore health to the marked tree. The CONTRACTOR is responsible for all measures to restore the health of trees for one year after construction disturbances around protect-in-place trees.
- e) If negligence results in potential mortality of trees, as determined by the ENGINEER, the CONTRACTOR shall replace all damaged trees with new native trees to reclaim an equivalent canopy cover at CONTRACTOR's sole expense.

CONTRACTOR shall notify the OWNER or ENGINEER if machine access is needed within the radius of a tree dripline, and approval is needed to proceed. Special care shall be applied when working under driplines or near the toe of the riverbank. The majority of critical roots are expected to run parallel to the Yampa River. The CONTRACTOR shall take great care when any earth disturbing activities beneath the drip line of trees are conducted. Protect in Place mature trees shall follow the below guidelines:

3.13.A. Hand Excavations Under the Drip Line

Under the drip line, or at a minimum of 10 feet from the base of a PIP Tree, all necessary excavating activities shall be done by hand to expose the roots.

- a. Expose all roots greater than 1” and preserve.
- b. If it is necessary for the removal of concrete litter, or for the installation of bank and

in-channel features, the roots may be cleanly cut, and shall not be ripped or torn.

3.13.B. Treatment of Cut and Exposed Roots

Backfill all cut and exposed roots the same day of root cutting, and water until backfilling is accomplished.

3.13.C. Root Care

Roots can be up to 2-3 times the diameter of the drip line.

The CONTRACTOR shall take as much care as possible to preserve roots.

- a. All roots that are necessary to remove for excavation activities shall be cleanly cut.
- b. The CONTACTOR shall apply all root cuts with approved root stimulator.

3.13. D. Areas of Fill near PIP Trees

- a. If necessary, any fill material shall be held away from PIP trees with a boulder retaining wall with a discontinuous footing.
- b. If fill is necessary adjacent to the PIP tree, then air vents shall be installed.
- c. No soils shall be compacted under the drip line without ENGINEER approval.

3.14 ENVIRONMENTAL PROTECTION

The construction site shall be maintained to minimize dust, noise, erosion, and water ponding. Any and all fuel operated equipment near or within drainage areas, wetlands, riparian areas or open water areas shall be leak-free and in excellent operational condition. Equipment operating in the riparian zone shall also use biodegradable fluids when feasible. The CONTRACTOR is wholly responsible for any environmental damage directly or indirectly related to storage of supplies and equipment, equipment operation, any fluid spills or any other construction activities.

3.15 BARRIERS

The CONTRACTOR shall furnish, install and maintain suitable barriers, as required to prevent public entry, and to protect the work, facilities, trees and wetland areas from any associated construction activities. Remove temporary barriers at the completion of work.

3.16 PROJECT SITE REHABILITATION

After all other construction activities are completed; all disturbed areas are to be rehabilitated to pre-construction conditions. Clean the site of trash and debris and remove all construction measures, equipment and supplies. Permanent riparian plantings and seeding shall be installed immediately after the final design grades are achieved, but no later than 14 days after construction activities have permanently ceased at the disturbed area.

3.17 CULTURAL RESOURCES

No cultural resources are anticipated to be impacted by the project. If potential cultural resources in the project area are discovered during construction and cannot be avoided, CONTRACTOR shall suspend construction activities in that area until the properties can be evaluated for listing in the National Register of Historic Places in consultation with Colorado State Historical Preservation Office. The CONTRACTOR shall notify the ENGINEER and OWNER immediately if potential cultural resources are discovered during construction.

SECTION 4 IN-CHANNEL AND BANK CONSTRUCTION

4.01 CONSTRUCTION OF IN-CHANNEL BOULDER STRUCTURES

All Boulder Structures constructed In-Channel or below the Ordinary High-Water Mark (OHWM) shall be constructed with Footer Rocks and Keying Techniques (See Project Drawings). Construction of Boulder Structures shall include selection, rotation, placement, and adjustment of each individual rock to minimize void spaces and maximize interlocking of boulders.

Boulder Structures shall be constructed by placing individual boulders in designed cross-sections of the channel. Each cross-section has specific elevations and alignments for the placement of rock as shown on the Project Drawings. Each structure shall include footer boulders extending to the depths shown in the plans. Stacked boulders shall have a minimum 0.5:1 horizontal to vertical slope with the footer offset in the upstream direction when buried and footer offset in all directions when exposed.

Each individual boulder shall be set with the “B” axis in the direction of flow when exposed or the “A” or “B” axis when the boulder is interlocked between other boulders (See Drawing Details). Minimum acceptable boulder size is 36 inches along the B-axis. Larger boulder sizes are required in specific areas as shown in the plans.

4.02 IMPORTED BOULDERS SPECIFICATION

Imported Boulders may be quarried or excavated and generally smooth in shape with the largest rock faces being approximately flat. Boulders shall be of a consistent material for the entire project and shall be a color that is aesthetically neutral with the native landscape. Boulder gradations shall conform to Table 4.1 by number, and measurement of the intermediate axis (“B”-Axis). The minor axis (shortest dimension or “C”-Axis) shall not be less than indicated in Table 4.1. Boulders exposed in the grade controls and keyed into the toe of each structure shall have a minimum intermediate axis (B-Axis) of 48 inches unless specified in the plans.

Table 4.1 B-Axis Rock Gradations (inches)

Percent of Stones	Indicator	24 inch (2 foot)	36 inch (3 foot)	48 inch (4 foot)	60 inch (5 foot)
< 10%	Greater	36	48	60	72
> 75%	Between	32 & 18	42 & 30	54 & 36	54 & 72
0%	Less	15	21	28	48
C-Axis	Greater	10	15	20	30

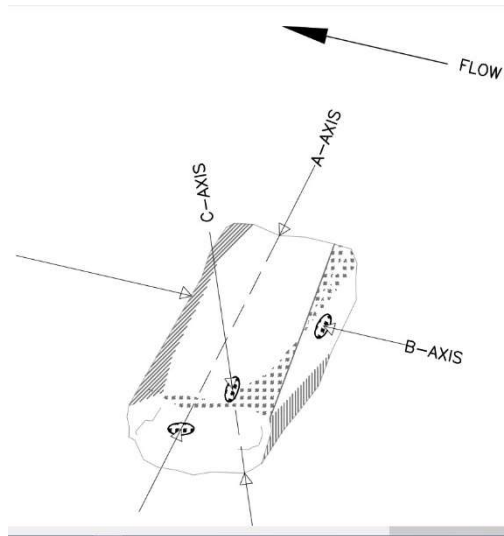


Fig 4.02-1 Dimensional axes of a boulder

Natural Boulders shall consist of hard, dense durable stone, resistant to weathering. Surface stones must have an aesthetic, neutral color and be consistent material throughout the project unless specified in plans. Stone shall be suitable for incidental human contact. CONTRACTOR shall submit source information and samples to ENGINEER.

The Engineer may require Contractor to furnish laboratory results if, in the Engineer's opinion, the material is marginal or unacceptable. At the request of the Engineer, the Contractor shall furnish laboratory test results indicating that the material meet the requirements including those for abrasion resistance and soundness as indicated below:

---Boulders shall have a minimum specific gravity of 2.65.

---Abrasion resistance by Los Angeles Machine; Test Method ASTM C535; Specification Requirement: 20% loss, maximum.

--Soundness by use of Sodium/Magnesium Sulfate, Test Method ASTM D5240-04 Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate; Specification Requirement: 5% loss, maximum.

--Soundness by Freezing and Thawing, Test Method ASTM D5312-04 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions; Specification Requirement: 5% loss, maximum.

4.03 FILTER FABRIC SPECIFICATION

An undamaged Filter Fabric with Geo-Composite shall underlie all Exposed earthen embankment materials. Filter Fabric shall be placed to eliminate migration of fines through the boulder structures and allow water to drain from structure. A composite that provides drainage, Hydrodrain 300 or approved equivalent shall be used at a minimum of 4 feet width on 10 feet

center (approximately 40% of total Filter Fabric coverage). An acceptable non-woven 8oz filter fabric, Mirafi 140N or equivalent, may be used for the bank coverage not overlaid by drainage. Filter Fabric shall be placed to have intimate contact with intact bank material. Washed Gravel bedding or native alluvium may be used to protect Filter Fabric from damage during boulder placement.

4.04 COARSE ALLUVIUM

- A. Coarse alluvium is required in designated areas as shown on plans. If size requirement is not achievable from onsite materials, imported Coarse Alluvium will be required.
- B. Coarse Alluvium shall be installed in areas shown on plans to a minimum thickness of 12-inches. Excavation of existing alluvium and replacement with Coarse Alluvium may be required to achieve the finished grade elevations shown on plans.
- C. Excavated, clean, native alluvium may be utilized if it meets the requirements of the associated alluvium material specification. The native material will be produced by sorting excavated alluvium through a grizzly or other mechanical device. The spacing between the bars shall be set to 6 inches. Material not passing through the grizzly (i.e. diameter greater than 6 inches) shall be collected and used as Coarse Alluvium. Alluvium may be imported if an insufficient quantity of adequate material is present onsite. Imported Alluvium shall consist of clean, hard, durable, rounded, and well graded material. Imported Alluvium may be screened or crushed material.
- D. Physical Requirements: Coarse Alluvium shall have a minimum specific gravity of 2.55 and shall have a maximum of 28% loss when abrasion resistance is tested per ASTM C535. All boulders shall have a maximum loss of 10% when soundness is tested using sodium sulfate or magnesium sulfate per ASTM D5240-04. All boulders shall also have a maximum loss of 10% when rock durability under freezing and thawing conditions is tested per ASTM D5312-04.
- E. Gradation Requirements: Coarse Alluvium shall meet the gradation requirements of Table 02300-2, unless specified in plans.

Weight	Indicator	Coarse Alluvium
100%	Passing	18"
80%-95%	Passing	12"
65%-85%	Passing	10"
35%-65%	Passing	6"
10%-35%	Passing	3"
0%-5%	Passing	1"

Weight	Indicator	Coarse Alluvium
	D ₈₅	12"
	D ₅₀	6"
	D ₃₀	2.5"

B. Contractor shall submit source information and samples to Engineer. If, in the Engineer's opinion, the material is marginal or unacceptable, the Engineer may require Contractor to furnish laboratory results for the material. If laboratory tests are required, material must demonstrably meet the physical requirements for the appropriate alluvium material type.

4.05 EMBANKMENT

Embankment fill shall satisfy one of the following unified soil classifications: GM, GC, SM, SC, CL, ML, sML, sCL, gML, or gCL. and shall be free of any particles larger than 6" in diameter. Embankment subgrade shall be cleared, grubbed, stripped of organic matter, compacted to 95% of maximum dry unit weight, and then scarified to 3" prior to placing embankment. Subgrade shall not contain any soft soils, and soils found to exhibit pumping or rutting shall be removed and replaced with embankment fill material. Place embankment fill in maximum 12-inch loose continuous, horizontal lifts and compact to at least 95% of maximum dry unit density. Lightly scarify previously compacted embankment layers to 3" in depth prior to placement of subsequent fill. Use small hand operated compacters when compacting adjacent to concrete structures.

If requested by the ENGINEER, the following tests will be required:

- Gradation testing in accordance with ASTM C136 (1x per source).
- Standard Proctor testing for max dry unit weight in accordance with ASTM D698 (1x per source)
- In-situ density testing in accordance with ASTM D2922 (1x per lift)

4.06 PROPOSED GRADING

CONTRACTOR shall establish and identify required lines, levels, contours and datum. Grade site to match all lines, elevations and grades shown on the Project Drawings. CONTRACTOR is required to accomplish all site grading through the use of GPS Control. The ENGINEER will provide a proposed XML compatible digital surface model and alignments to the CONTRACTOR. The CONTRACTOR shall have the means to load the alignments and surface into field survey controllers to establish proposed elevations and grades.

4.07 ACCEPTABLE AS BUILT ELEVATION VARIATIONS (feet)

Average Elevations across each Cross-Section shall be exact according to Plans. With natural building materials variances are expected and shall be allowed for average locations of individual particles. The following As-Built Variances are allowed.

Table 4.07-1. Acceptable As-Built Variances for Average Locations of Individual Particles (feet)

<u>Description</u>	<u>Variance Elevation</u>	<u>Variance Horizontal</u>
Concrete Structure	+/- 0.05'	+/- 0.25'
Boulder Grade Control Structure Crest	+/- 0.1'	+/- 0.5'
Finished Grade – Riprap and Boulders	+/- 0.5'	+/-0.5'
Finished Grade – Alluvium	+/- 1.0'	+/-1.0'
Finished Grade - Embankment	+/- 0.5'	+/- 1.0'
Woody Debris Structures	+/- 1.0'	+/-1.0'
Pipe Inverts and Flume Structures	+/- 0.1'	+/- 0.5'

SECTION 5 CONSTRUCTION OF STRUCTURES

5.01 Reinforced Concrete Structure

See the Construction Drawings and notes for information on the reinforced concrete structure.

5.02 Culvert Pipe

See the Construction Drawings and notes for information on the culvert pipe.

5.03 Irrigation Structures Modifications

See the Construction Drawings and notes for information on the irrigation structure modifications.

SECTION 6 - NOT USED

SECTION 7 LANDSCAPE INSTALLATION

7.01 PLANTINGS

The CONTACTOR is responsible to provide water suitable for establishment of vegetation. Water shall be free from pollutants harmful to plants.

7.01.A Riparian Plantings

All riparian areas shown in the plans shall be seeded with riparian transitional mix. All mixes shall be Certified Seed that is weed free and native strands of Pure Live Seed (PLS). Table 7.01A provides the mix for these application areas.

Table No 7.01.A. Type 1 Seed Mix

Species	PLS/Acre*
Western wheatgrass var. Arriba	20%
Tufted Hair Grass	20%
Slender Wheatgrass var. San Luis	20%
Fowl Manna Grass	10%
Bluegrass	10%
Bluejoint Reed Grass	10%
Wire Rush	10%
*drilled application = 19 lbs per acre, *broadcast application = 38 lbs. per acre.	

Same soil and surface preparation and application instructions as listed above.

Any willows or native vegetation disturbed shall be replanted in equivalent coverage, at equivalent elevations, in existing open areas.

7.01.B Transplanting On-site Vegetation

Live willow/cottonwood pole plant harvesting. All live stakes shall be harvested during the dormant season from the immediate vicinity of the project site. All live stakes shall be harvested from a healthy parent that does not have serious injuries, insect pests, diseases or shriveled. No more than one-third of the donor shrub should be harvested. The CONTRACTOR shall take care to not damage the donor shrub; cuts shall be made smooth without damage to the bark of the donor shrub. Cuts shall be made at an angle of approximately 45 degrees, 6 to 8 inches above the ground, to assist rapid regeneration of donor plants. The diameter of the cuttings should be between 0.5 inches and 1 inch. The length should be between 24 and 40 inches; larger live stakes contain a greater amount of the stored energy required to form leaves, stems and roots. The top ends shall be blunt; butt ends shall be angled at 45 degrees. Stakes shall be stripped of all stems, leaders, and dry leaves, taking care to minimize scarring or bruising of the stakes. Immediately upon cutting, stakes shall be bundled and stored in a cool, dark, dry area at approximately 45°F or buried in snow.

To increase success rates for planting, the harvested poles should be protected from exposure to wind or direct sunlight.

Live willow/cottonwood pole planting installation. All dormant willow/dogwood stakes shall be stored for less than 120 days and must remain free of mold and mildew. Stakes shall be soaked in water for 2-10 days prior to installation. Stakes shall be installed angle end down to a depth equal to six inches below the low groundwater table (end of summer) and should not be planted in areas where there is no soil moisture. Stake should protrude above ground 6 inches and be firmly held in place by soil.

7.01.C. Fertilizers

Planted trees shall be fertilized with a slow-release fertilizer, and placed deep into the planting hole and backfilled with soil to minimize fertilizer absorption by weeds and turf. Use a complete slow release fertilizer in a NPK ratio of 1:2:1, nitrogen, phosphate, and potash.

7.02 EROSION CONTROL BLANKET

All-natural biodegradable Erosion Control Blankets (ECB) shall be placed on all cut bank slopes as shown in DRAWINGS or as directed by the ENGINEER.

Material shall be North American Green (800-772-2040) C700BN, or approved equivalent that is multilayer with a nonwoven coconut fiber matrix and heavy woven coir top net. Material shall be all-natural coir fabric with a tensile strength 1271 lbs./ft, permissible shear force of 2.3 lbs./sqft, and mass of 26.61 oz./sqyd. No plastic components or netting permissible.

<https://nagreen.com/erosion-control-products/RollMax/BioNet>

Install per manufactures recommendations. Store all coir fabric elevated off the ground and ensure that it is adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the CONTRACTOR expense. The ENGINEER shall inspect and approve all materials prior to installation.

7.03 TOPSOIL

Topsoil shall be salvaged a minimum of 6 inches in depth from all disturbed areas. Salvaged topsoil shall be stockpiled in areas that shall not interfere with construction phases and at least 15 feet away from areas of concentrated flows or pavement. The slopes of the stockpile shall not exceed 2:1 horizontal to vertical. A silt fence or other adequate erosion control shall be installed around the perimeter of each stockpile.

7.03. A. Topsoil Application

Topsoil shall be applied to all areas for seeding and planting. Topsoil shall be applied at a minimum of 6 inches depth on all seeded areas and shall be used to backfill all shrub and tree plantings to the depth and twice the width of the root ball. Topsoil shall not be placed when

the ground or Topsoil is frozen, or excessively wet. Following the spreading operation, the Topsoil surface shall be raked to final grades without surface irregularities that could contribute to concentrated waterflow downslope. Topsoil shall be raked with 0.5 inch undulations for a seed bed.

7.03. B. Topsoil Material

Imported topsoil shall be a natural sandy loam that is weed free. Imported Topsoil shall be properly stored and protected, and shall be free of roots, hard clay and stones which shall not pass through a 1-inch square opening. It shall be a loamy mixture having at least 90 percent passing No. 10 sieve. Below list the soil properties:

1. Contain no less than 2 percent nor more than 13 percent organic matter, as determined by the test for organic matter in accordance with ASTM D2974.
2. Contain no less than 12 percent or more than 40 percent clay, as determined in accordance with ASTM D422.
3. Sand content shall not exceed 55 percent, as determined in accordance with ASTM D422.
4. The pH shall not be lower than 5.0 or higher than 8.0. The pH shall be determined with an acceptable pH meter on that portion of the sample passing the No. 10 sieve, in accordance with the —Suggested Methods of Tests for Hydrogen Ion Concentration (pH) of Soils, included in the ASTM Procedures for Testing Soils issued December 1964.
5. One hundred percent shall pass the 1-inch screen; 97-100 percent shall pass the 1.5-inch screen, and 40-60 percent shall pass the No. 100 mesh sieve.
6. Topsoil shall be free of clods, gravel, and other inert material. It shall be free of thistle, reed canary grass, creeping foxtail, noxious vegetation and seed. Should such regenerative material be present in the soil, the CONTRACTOR shall remove, at his expense and in a manner satisfactory to the Owner's Representative, all such growth, both surface and root, which may appear in the imported Topsoil within 1 year following acceptance of the work.
7. All soil to be seeded shall be amended with Humate and fertilizer product. The method of incorporation of amendments shall result in a uniform application of material as approved. Humate shall be applied at a rate of 1500 pounds per acre. The humate shall be applied using approximately 1 gallon of water for 1 pound of dry powder. The fertilizer product shall be applied at a rate of 2000 pounds per acre.

SECTION 8 MODIFICATIONS TO TIME OF COMPLETION

8.1 CONSTRUCTION WINDOW

In-channel construction will be prohibited from April 1 – July 1. Outside of this period, construction is permitted as site conditions allow. Contractor will be responsible for monitoring stream flows and weather forecasts to anticipate high flow events.

No construction activities shall be performed on soil during periods when the soil is too wet to adequately support construction equipment as measured by ruts greater than 4 inches deep.

The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed. The Contractor will proceed with the work at such rate of progress to ensure full completion within the Contract time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract time for the completion of the work described herein is a reasonable time, taking into consideration the climatic and other factors prevailing in the locality of the work. Every effort shall be made by the Contractor to complete the project within the "Contract Time" shown in the bid, quote or proposal. The "Contract Time" anticipates "Normal" weather and climate conditions in and around the vicinity of the Project site during the times of year that the construction will be carried out, which may include freezing conditions or high water.

SECTION 9 DEFINITIONS

B-Axis - The intermediate (and overturning) axis on a boulder.

Best Management Practices (BMPs) - Water and Soil Care Measures designed to prevent sediment soil erosion, minimize turbidity and protect wetlands.

Coffer Dam - Structure used to isolate an area for dewatering.

Ordinary High Water Mark (OHWM) - Approximate Water Surface Elevation at the 1 ½ year Flood.

In-Channel Work - All construction work occurring below the ordinary high-water mark or one and a half year flood or in a wet channel.

Invert - The cross-section that controls water flow.

On-Shore Work - All construction work occurring above the ordinary high-water mark or one and a half year flood.

Protect-In-Place (PIP) - Protection of Structures or Vegetation by not disturbing them with adjacent construction activities.

Thalweg - Lowest elevation of the river channel in cross section perpendicular to the direction of the main current flow.

Toe - Point where a ground slope meets a low point and flattens out. Most commonly in rivers it refers to the point where the bank slope meets the channel bottom slope.

River Right - The right side of the channel when looking downstream.

River Left - The left side of the channel when looking downstream.

Riparian Vegetation - Vegetation which is rooted in the water table of the adjacent river.

Water Surface Elevation - Elevation on the project datum, of the surface of water at a specified location and flow rate.