

From: [Heather Sackett](#)
To: [Vaiasicca, Andrea L CIV USARMY CESPCK \(USA\)](#)
Subject: Re: [URL Verdict: Unknown][Non-DoD Source] FOIA request question
Date: Friday, April 8, 2022 1:42:48 PM
Attachments: [Aspen Journalism USACE FOIA request April 8.pdf](#)

Hi Andrea,

Thanks for the speedy reply. Attached is the request. Appreciate your help.

Heather

On Fri, Apr 8, 2022 at 10:57 AM Vaiasicca, Andrea L CIV USARMY CESPCK (USA) <Andrea.L.Vaiasicca@usace.army.mil> wrote:

Hi Heather,

I am not sure what happened but I didn't get your request. Can you send it to me and I will get it processed as soon as possible. Thank you. Drea.

From: Heather Sackett <heather@aspjournalism.org>
Sent: Friday, April 8, 2022 9:44 AM
To: Vaiasicca, Andrea L CIV USARMY CESPCK (USA) <Andrea.L.Vaiasicca@usace.army.mil>
Subject: [URL Verdict: Neutral][Non-DoD Source] FOIA request question

Hi Andrea,

Hope you're doing well. I have a question for you. I made a FOIA request a few weeks ago and haven't heard back yet. I did not get confirmation that it had been received. I'm wondering if you have any suggestions of what I could do at this point to see what the status of the request is? It's regarding the Marble quarry in Gunnison County, Colorado, which previously had been in your region, but maybe that has changed? Let me know what you think. Thanks so much for your help.

--

Heather Sackett

Managing Editor/Water Desk Editor

Aspen Journalism

518-524-0076

aspenjournalism.org

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Heather Sackett

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

May 9, 2022

Office of Counsel

SUBJECT: Freedom of Information Act Request No. FA-22-0092; Copy of Documents Related to SPK-201900889, The Pride of America Mine Project

Ms. Heather Sackett
Aspen Journalism
Post Office Box 10101
Aspen, Colorado

Dear Ms. Sackett:

On April 8, 2022, our office received your Freedom of Information Act (FOIA) request for copies of documents listed below:

- The standard individual permit
- A Technical Memorandum: Yule Creek Functional Assessment and Yule Creek Mitigation Plans, dated March 22, 2021
- The Section Water Quality Certification dated January 21, 2021
- Proposed Improvements to the Mud Gulch and County Road 3c, Marble Colorado dated September 17, 2021
- A response to request for additional information dated June 17, 2021
- Addendum to that response dated August 8, 2021

I have determined that your request meets all statutory requirements for a complete fee waiver; therefore, no payment is required for this request

As requested, a redacted copy of the documents listed above is enclosed.

Although the bulk of the requested information has been provided, the names of Department of Defense (DoD) employees contained in the headers of e-mails and other similar lists of names within the records have been redacted pursuant to 5 U.S.C. § 552 (b)(6) of the Freedom of Information Act. In response to the terrorist attacks on the United States in the fall of 2001, DoD revised its policies which implement the Freedom of Information Act. At that time, the decision was made to withhold lists of names of all DoD employees. The court upheld this policy decision stating, "The privacy interest protected by exemption six of the Freedom of Information Act encompasses not only the addresses, but also the names of federal employees." See Judicial Watch, Inc. v. United States, 84 Fed. Appx. 335 (4th Cir. (2004)).

This office will conduct another search if you can provide additional information which may assist us in locating the requested material such as date, title or name, author, recipient, and subject matter of the record sought/title of court case, the court in which the case was filed, and the nature of case/file designations or descriptions for records sought.

Additionally, because your request has been partially denied, you are advised of your right to appeal this determination through this office to the Secretary of the Army (ATTN: General Counsel). Your appeal must be postmarked or electronically transmitted within 90 days of the date of this letter. The envelope containing the appeal should bear the notation "Freedom of Information Act Appeal" and should be sent to U. S. Army Corps of Engineers, Sacramento District, ATTN: CESPCK-OC, 1325 J Street, Room 1440, Sacramento, California 95814.

For any further assistance or to discuss any aspect of your request, you have the right to contact the U.S. Army Corps of Engineers FOIA Public Liaison. Additionally, you have the right to contact the Office of Government Information Services (OGIS) to inquire about FOIA mediation services they offer. Contact Information:

U.S. Army Corps of Engineers
FOIA Public Liaison
441 G. Street, NW
ATTN: CECC-L (Emily Green)
Washington, DC 20314-1000
Email: foia-liaison@usace.army.mil
Phone: 202-761-4791

Office of Government Information Services
National Archives and records Administration
8601 Adelphi Road-OGIS
College Park, MD 20740-6001
E-Mail: ogis@nara.gov
Phone: 202-741-5770 or
Toll Free: 877-684-6448

If you have any questions regarding the provided information, please contact Ms. Andrea Vaiasicca, FOIA Specialist, at the above letterhead address or by calling (916) 550-9104.

Sincerely,



A. L. Faustino
Initial Denial Authority
District Counsel

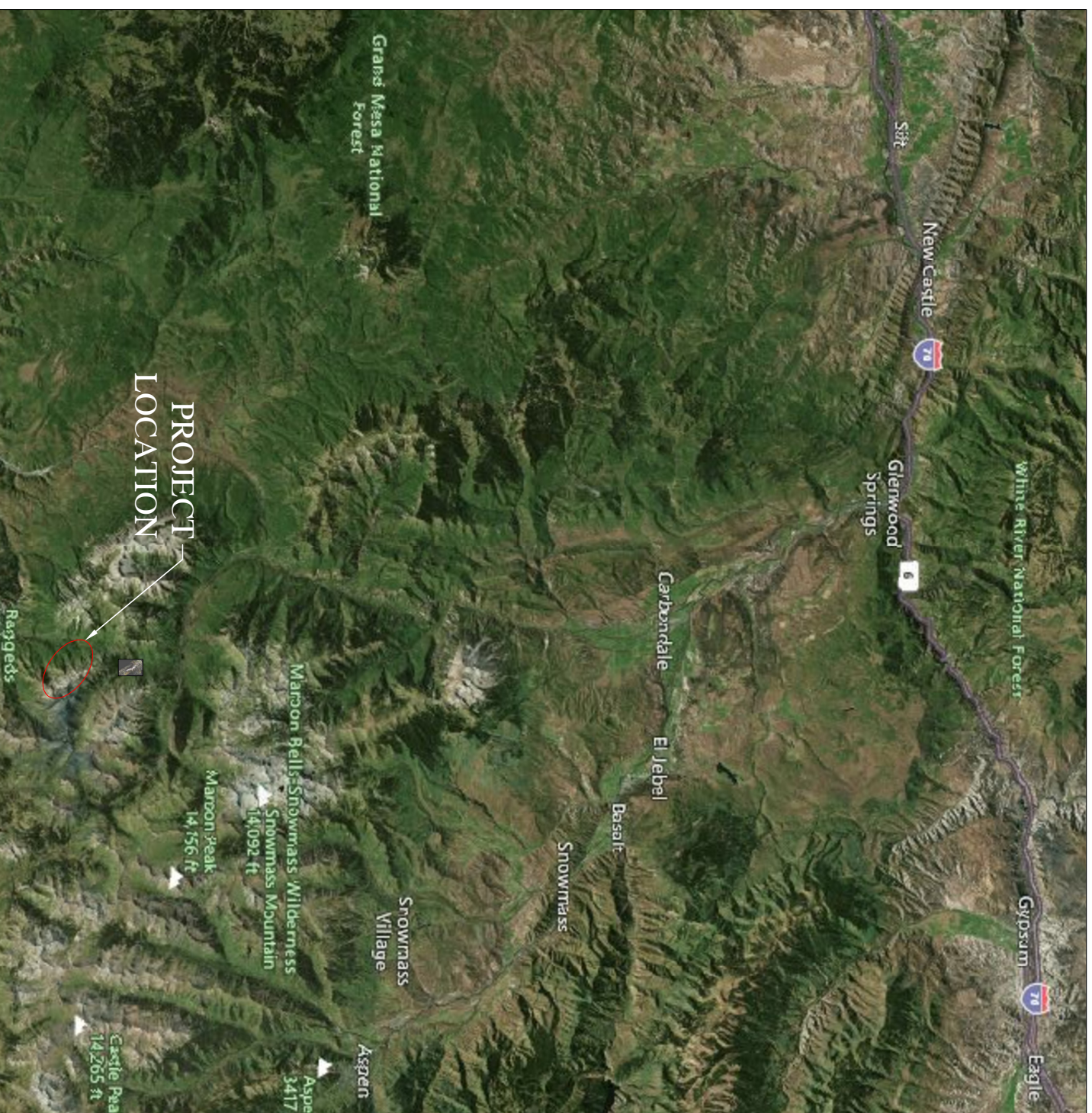
COLORADO STONE QUARRIES, INC.

PROJECT: SPK-2019-00889

YULE CREEK MITIGATION PLAN

MARCH 2021

LOCATION MAP:



Sheet List Table	
Sheet Number	Sheet Title
01	COVER SHEET & LOCATION MAP
02	OVERALL PLANVIEW
03	PLAN & PROFILE 1
04	PLAN & PROFILE 2
05	PLAN & PROFILE 3
06	PLAN & PROFILE 4
07	SECTION & DETAILS 1
08	SECTION & DETAILS 2
09	SECTION & DETAILS 3
10	SECTION & DETAILS 4

NOTES:

1. THIS PLAN HAS BEEN PREPARED ON BEHALF OF COLORADO STONE QUARRIES, INC. (CSQ) AS COMPENSATORY MITIGATION ASSOCIATED WITH US ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT COLORADO WEST REGULATORY SECTION PERMIT SPK-2019-0089. THIS PLAN AND ALL ACTIVITIES ARE SUBJECT TO CONDITIONS OF THE PERMIT.
2. CONTACTS FOR THIS PLAN:
 - APPLICANT: CSQ-MARCO PEZZICA, 1734 HWY 50E, DELTA, CO 81416 970-874-6118
 - DESIGNER: ECOLOGICAL RESOURCE CONSULTANTS, INC. (ERC) DAVID BLAUCH 303-679-4820.
3. PROJECT IS LOCATED ON YULE CREEK AT THE PRIDE OF AMERICAN MINE, APPROXIMATELY 3 MILES SOUTH OF THE TOWN OF MARBLE, AT LATITUDE 39.036826°, LONGITUDE -107.168673°, GUNNISON COUNTY, COLORADO.
4. COMPENSATORY MITIGATION PRESENTED IN THIS PLAN HAS BEEN DEVELOPED TO PROVIDE ECOLOGICAL FUNCTIONAL UPLIFT IN ACCORDANCE WITH COLORADO STREAM QUANTIFICATION TOOL (VERSION 1) (CSQT) AS PRESENTED IN ERC CSQT DATED 3-19-21 (ERC CSQT).
5. SPECIFIC COMPONENTS OF THIS PLAN THAT MUST BE ACHIEVED TO ENSURE ADEQUATE ECOLOGICAL FUNCTIONAL UPLIFT AS DETERMINED IN ERC CSQT FOLLOW.
 - A. CONCENTRATED FLOW PATHS INTO YULE CREEK MUST BE MINIMIZED NOT TO EXCEED 3 LOCATIONS.
 - B. ENTRENCHMENT RATIO MUST ACHIEVE A FIELD VALUE OF 1.5.
 - C. LARGE WOODY DEBRIS MUST BE PRESENT IN POOLS WITH A MINIMUM OF 2 ROOTWAD LOGS PER POOL AND A MINIMUM TOTAL OF 40.
 - D. POOL DEPTH RATIO SHALL BE 2.
 - E. STREAM CHANNEL SHALL BE BETWEEN 68% AND 78% RIFLE (CASCADE) AND BETWEEN 22% AND 32% POOL.
 - F. RIPARIAN EXTENT SHALL BE DEVELOPED WITH WOODY VEGETATION COVER (WILLOW PLANTINGS) ALONG 2,600 LINEAR FEET OF YULE CREEK BANKFULL EDGE COVERING APPROXIMATELY 13,000 SQUARE FEET OF THE RIPARIAN PLANTING ZONE.
6. OTHER COMPONENTS OF THIS PLAN WHICH ARE NOT DIRECTLY ACCOUNTED FOR IN ERC CSQT THAT SHOULD ALSO BE IMPLEMENTED FOR OVERALL ECOLOGICAL INTEGRITY FOLLOW.
 - A. CASCADES SHALL BE MODIFIED/DEVELOPED FOR A MORE NATURAL, IRREGULAR AND RANDOM CONFIGURATION AS DEPICTED HEREIN.
 - B. OUTSIDE OF THE FLOOD PRONE RIPARIAN PLANTING ZONE ERODED UPLAND SIDE SLOPES (TRANSITION STABILIZATION ZONE) SHOULD BE STABILIZED WITH SLOPE GRADING, SEEDING AND EROSION CONTROL BLANKET WHERE APPROPRIATE.
 - C. THE EXISTING PIPE CULVERT ROAD CROSSING SHALL BE REPLACED WITH A NATURAL OPEN BOTTOM CULVERT. THE WEIR SHALL BE REMOVED.
 7. EXISTING LARGE CUT MARBLE BLOCKS WITHIN THE CHANNEL BOTTOM SHALL BE INCORPORATED INTO CASCADES, BANKS AND BURIED BELOW THE CHANNEL BOTTOM SURFACE AS NEEDED. HOWEVER, REMAINING LARGE BLOCKS SHOULD BE RANDOMLY PLACED OUTSIDE OF THE BANKFULL WIDTH AND NATURAL ON SITE COBBLE/RUBBLE SUBSTRATE USED. EXPOSED PORTIONS OF LARGE BLOCKS THAT ARE USED WHEN FEASIBLE SHALL HAVE SMOOTH SURFACES "ROUGHENED" AND "IRREGULARLY SHAPED" WITH SHARP EDGES ROUNDED OR CHAMFERED.
 8. COMPONENTS OF THIS PLAN WILL REQUIRE SITE SPECIFIC FIELD ADJUSTMENTS AND VERIFICATION PRIOR TO IMPLEMENTATION. ERC HIGHLY RECOMMENDS FURTHER COORDINATION, DESIGN LAYOUT AND VERIFICATION PRIOR TO ANY IMPLEMENTATION. ALL DESIGN COMPONENTS, LOCATIONS ELEVATIONS AND TYPICAL DETAILS ARE SUBJECT TO CHANGE UPON FIELD VERIFICATION.

REV#	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL



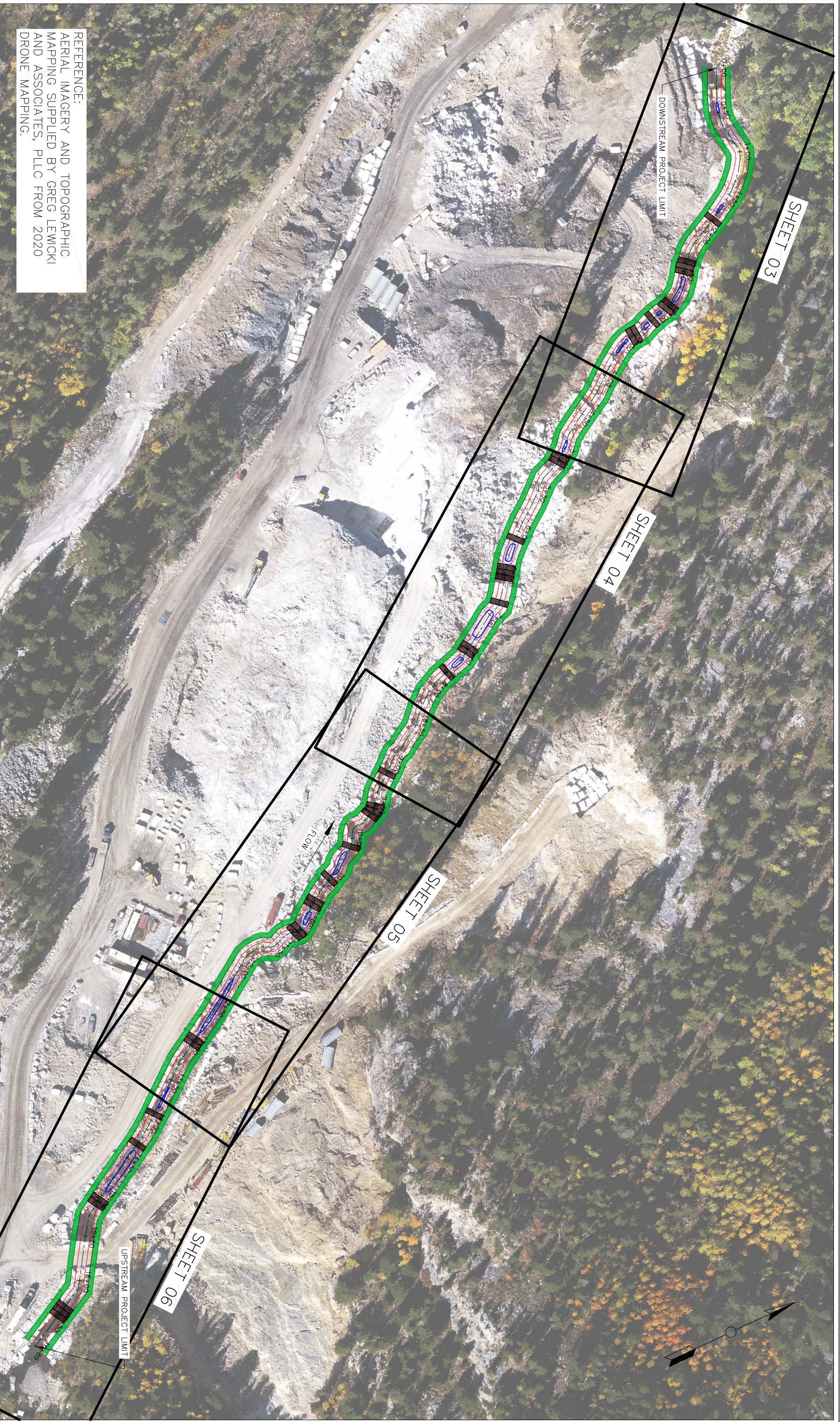
PREPARED BY
 ECOLOGICAL RESOURCES CONSULTANTS, INC
 225 UNION BLVD, SUITE 325
 LAKEWOOD, CO 80228

CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE
 COVER SHEET & LOCATION MAP

SHEET
 01



REFERENCE:
 AERIAL IMAGERY AND TOPOGRAPHIC
 MAPPING SUPPLIED BY GREG LEWICKI
 AND ASSOCIATES, PLLC FROM 2020
 DRONE MAPPING.

REV#	DATE	DESCRIPTION

A	03-22-21	PLAN FOR SUBMITTAL
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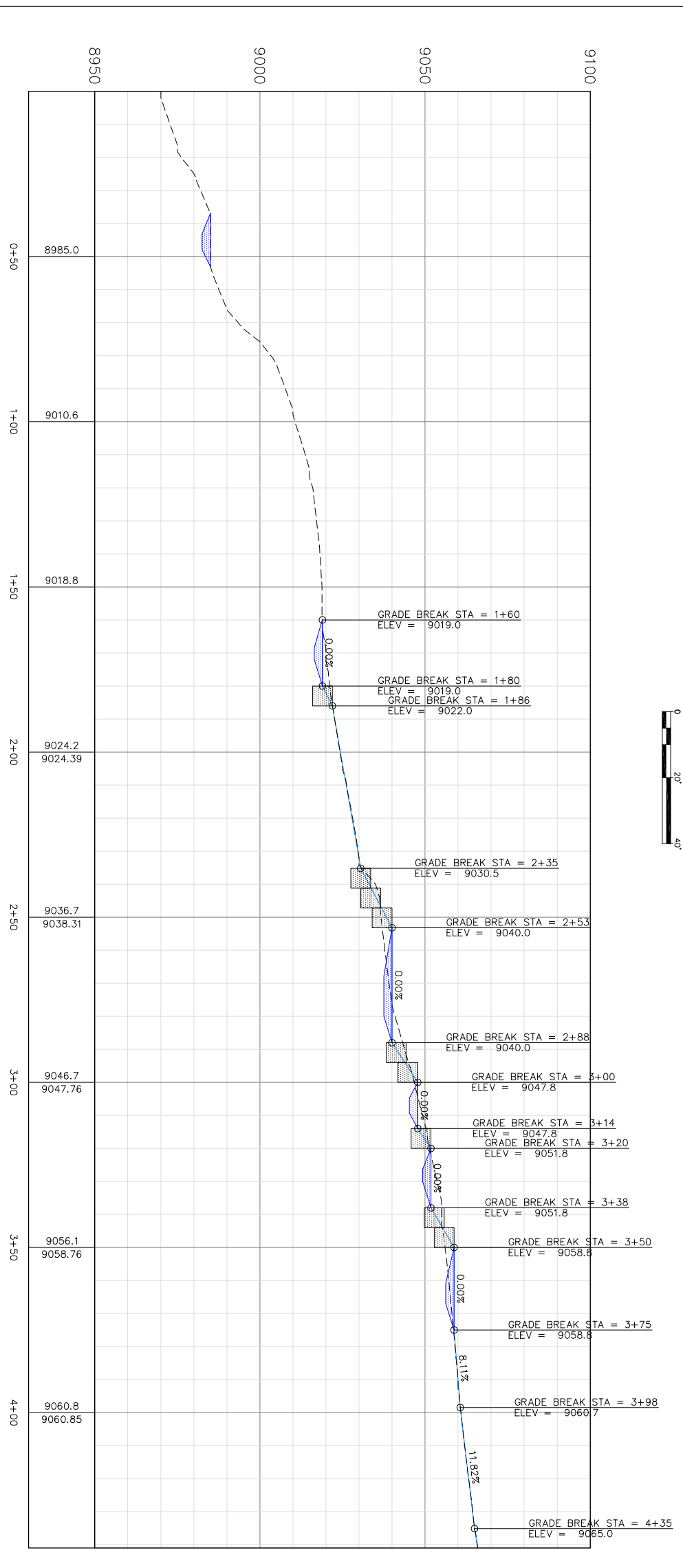
CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE
 OVERALL PLANVIEW

SHEET
 02





LEGEND:

	CENTERLINE AND STATIONING
	CHANNEL BOTTOM
	BANKFULL EDGE
	FLOOD PRONE EDGE
	POOL (PROFILE)
	POOL (PLAN)
	CASCADES
	RIPARIAN PLANTING ZONE

REFERENCE:
 AERIAL IMAGERY AND TOPOGRAPHIC
 MAPPING SUPPLIED BY GREG LEWICKI
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 DRONE MAPPING.

REV#	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL



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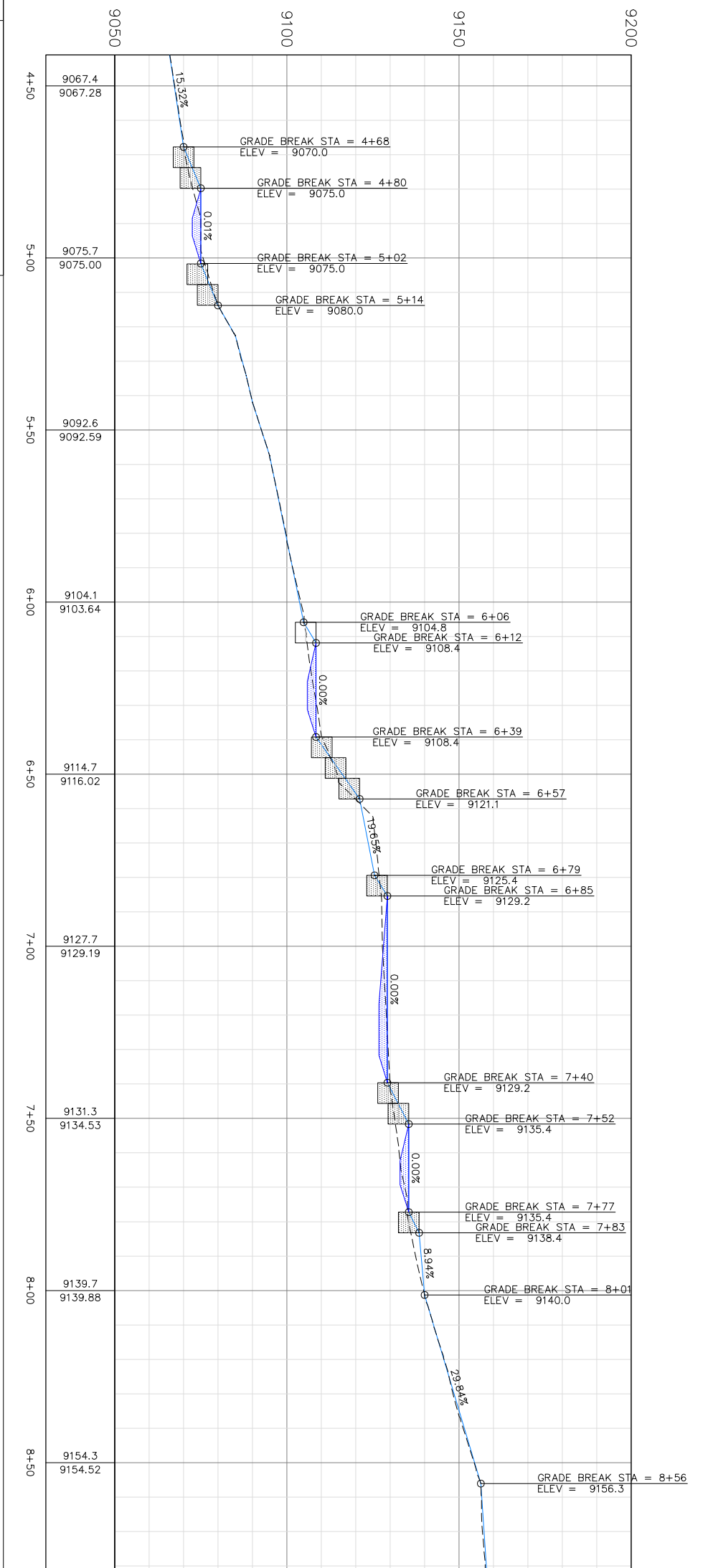
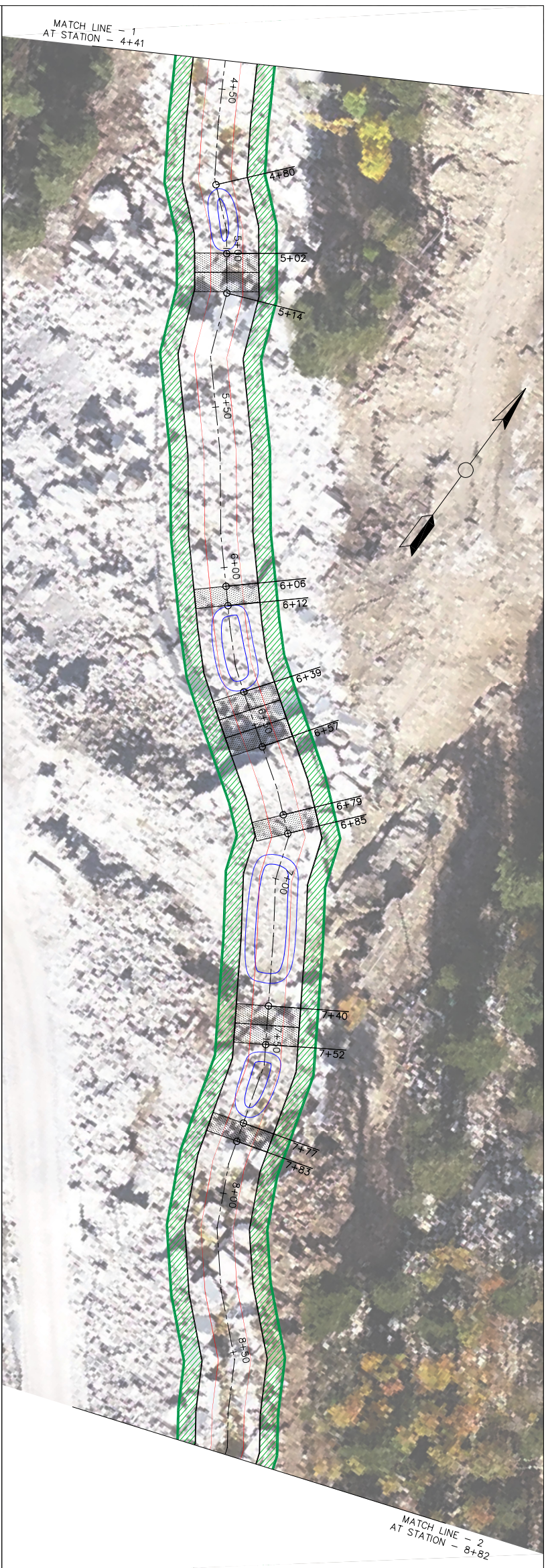
CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE

PLAN & PROFILE 1

SHEET
 03



LEGEND:

	CENTERLINE AND STATIONING
	CHANNEL BOTTOM
	BANKFULL EDGE
	FLOOD PRONE EDGE
	POOL (PROFILE)
	POOL (PLAN)
	CASCADES
	RIPIARIAN PLANTING ZONE

REFERENCE:
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 DRONE MAPPING.

REV	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL

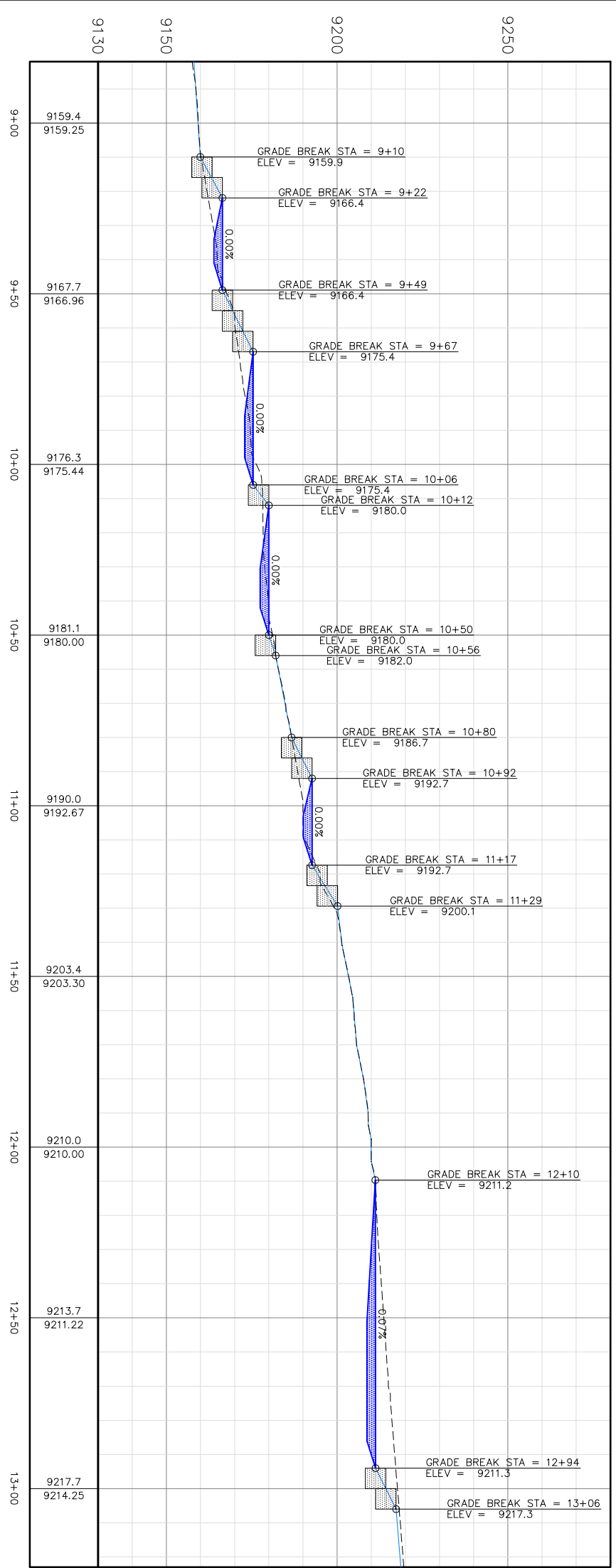
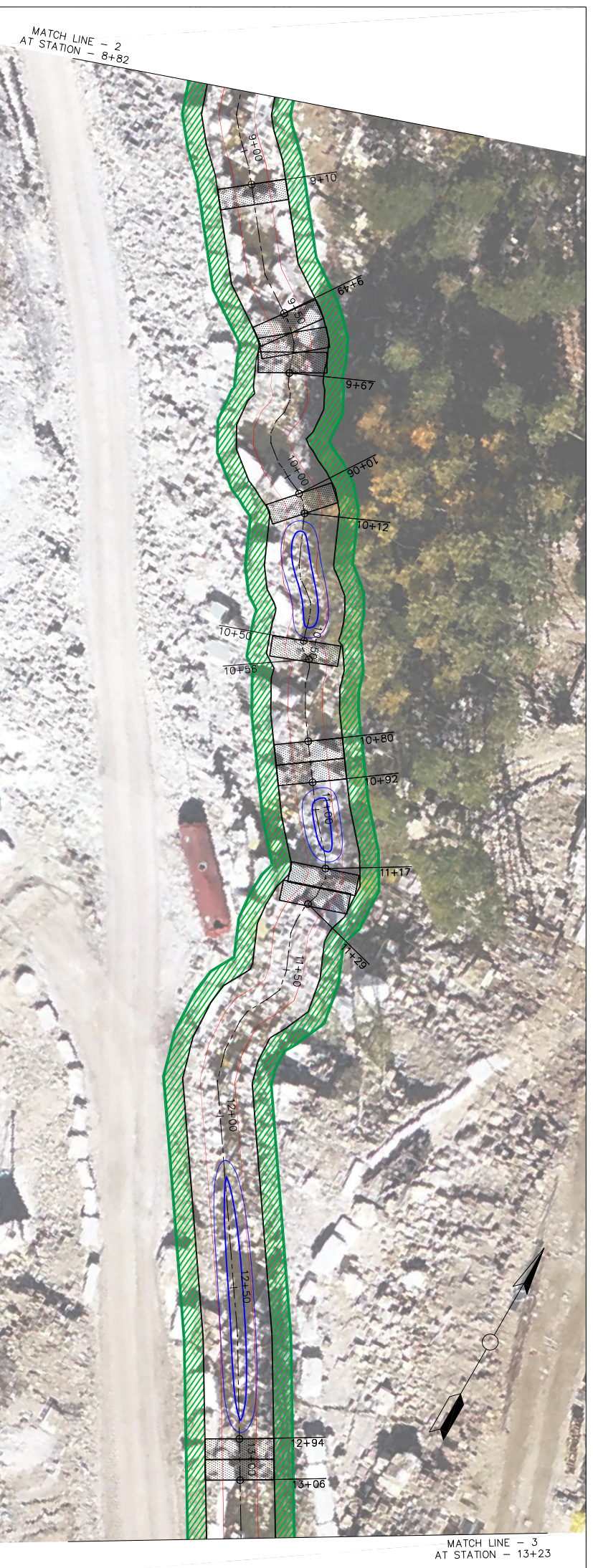
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 LAKEWOOD, CO 80228

CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE
 PLAN & PROFILE 2

SHEET
 04



LEGEND:

- 8+00 — CENTERLINE AND STATIONING
- CHANNEL BOTTOM
- BANKFULL EDGE
- FLOOD PRONE EDGE
- POOL (PROFILE)
- POOL (PLAN)
- CASCADES
- RIPARIAN PLANTING ZONE

REFERENCE:
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REV#	DATE	DESCRIPTION
A	03-23-21	PLAN FOR SUBMITTAL



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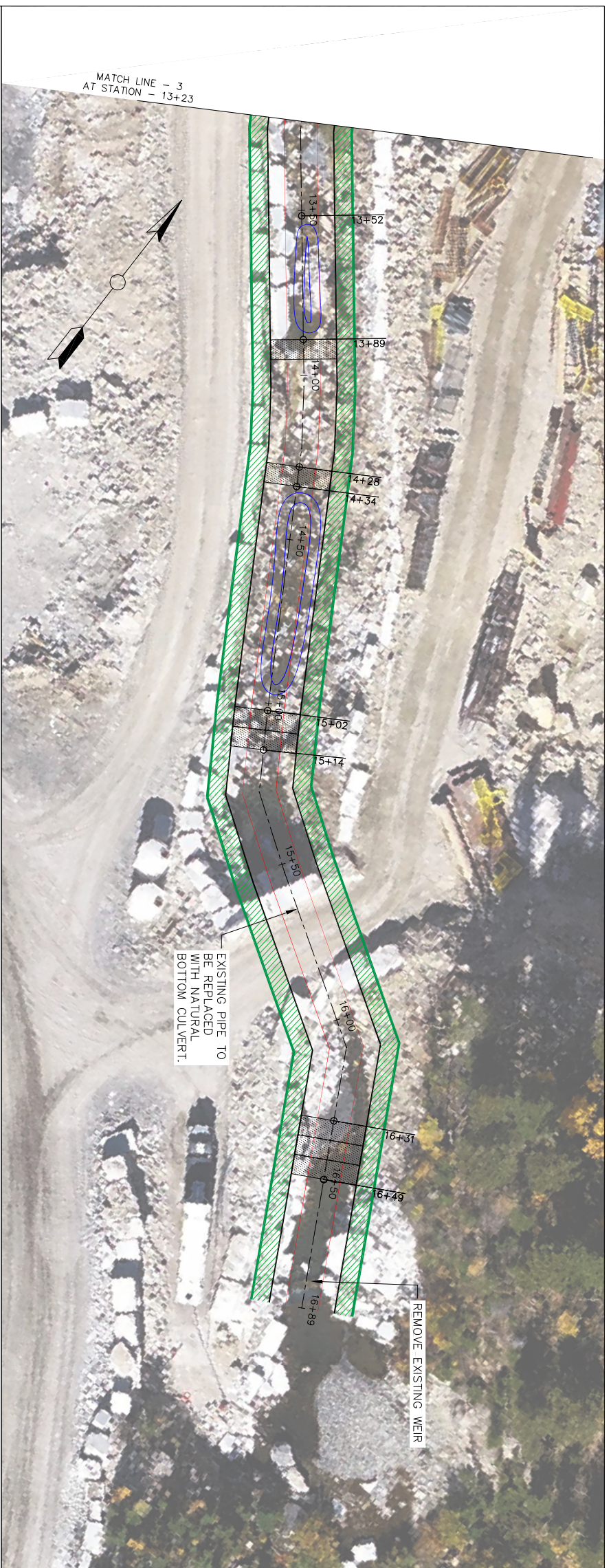
CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE

PLAN & PROFILE 3

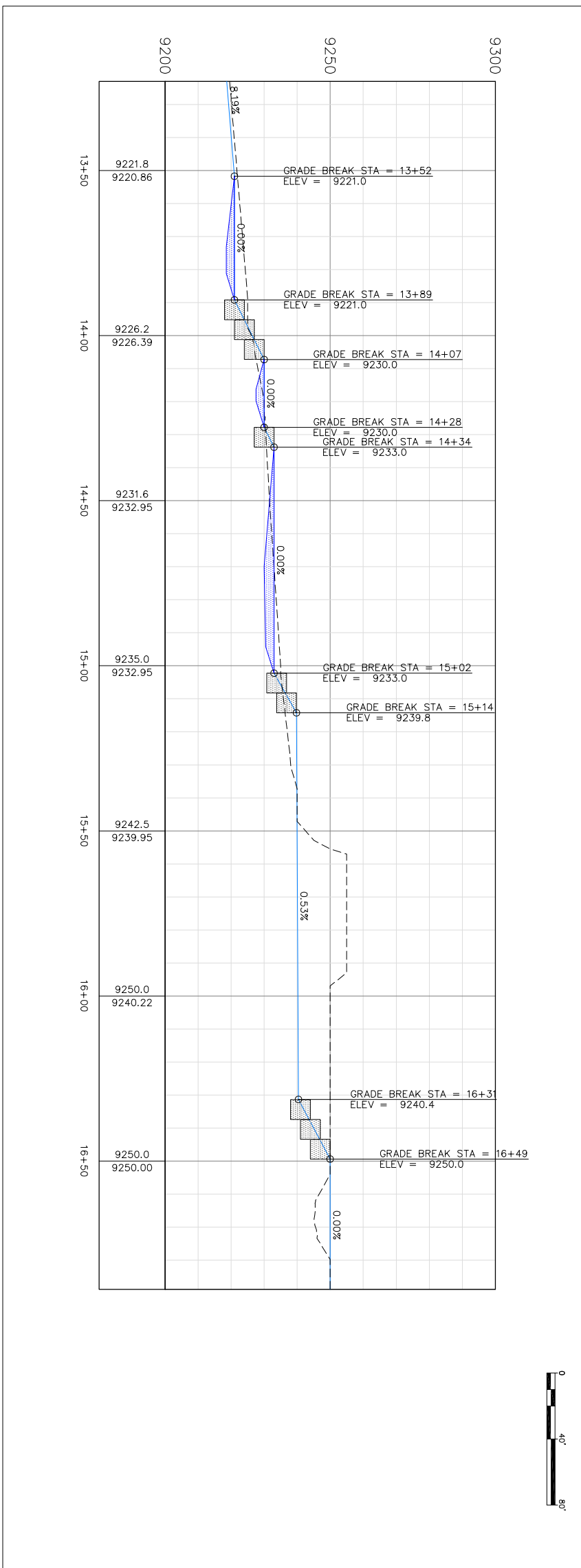
SHEET
 05



LEGEND:

8+00	CENTERLINE AND STATIONING
—	CHANNEL BOTTOM
—	BANKFULL EDGE
—	FLOOD PRONE EDGE
—	POOL (PROFILE)
—	POOL (PLAN)
—	CASCADES
—	RIPARIAN PLANTING ZONE

REFERENCE:
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 MAPPING SUPPLIED BY GREG LEWICKI
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 DRONE MAPPING.



REV	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL



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CLIENT
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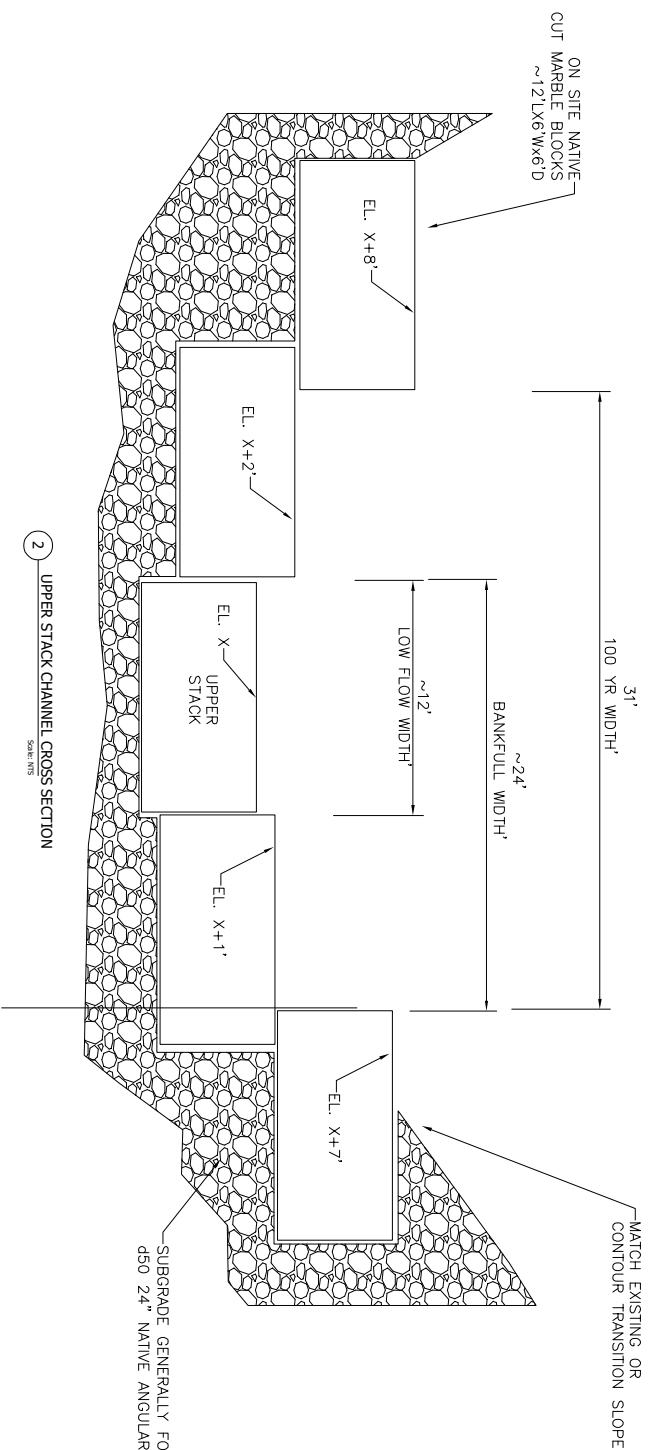
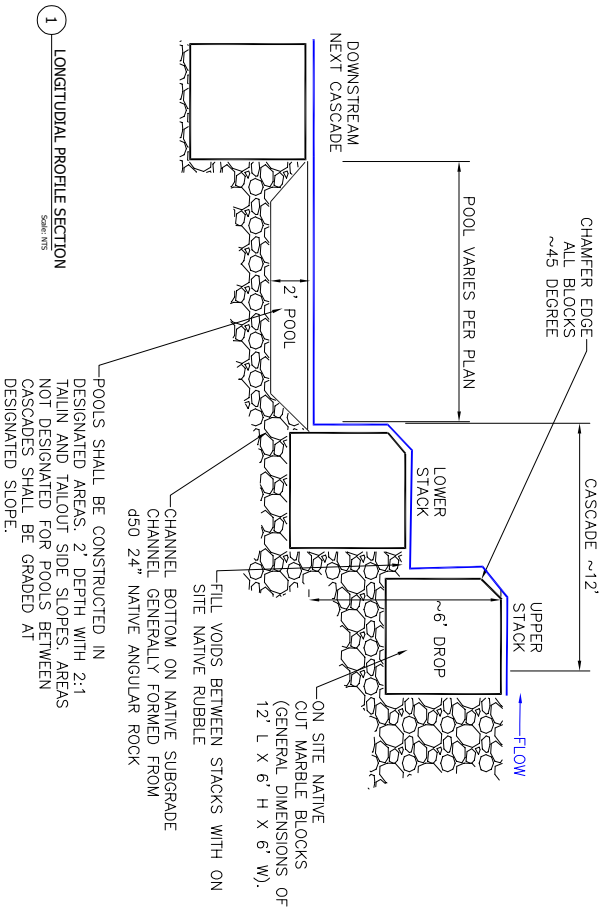
PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE

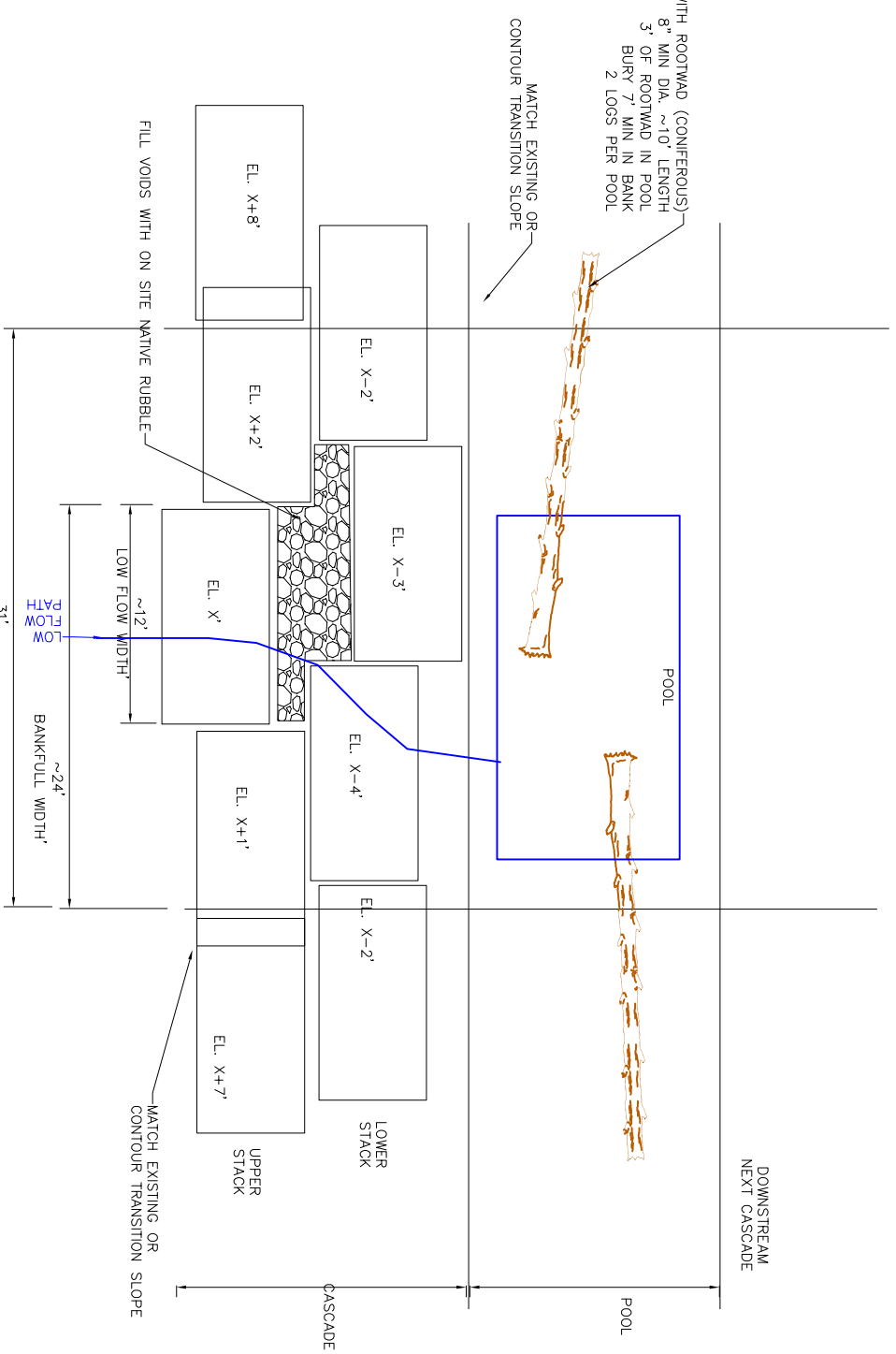
PLAN & PROFILE 4

SHEET
 06

NUMBER OF STACKS FOR EACH CASCADE VARY BETWEEN 1 AND 3. ADJUST ACCORDINGLY AS DEPICTED ON PLAN.



LOG WITH ROOTWAD (CONIFEROUS) 8" MIN DIA. ~10' LENGTH 3' OF ROOTWAD IN POOL BURY 7" MIN. IN BANK 2 LOGS PER POOL



EXPOSED PORTIONS OF LARGE BLOCKS THAT ARE USED WHEN FEASIBLE SHALL HAVE SMOOTH SURFACES. ROUGHENED* AND IRREGULARLY SHAPED* WITH SHARP EDGES ROUNDED OR CHAMFERED. CASCADES SHALL BE MODIFIED/DEVELOPED FOR A MORE NATURAL, IRREGULAR AND RANDOM CONFIGURATION AS DEPICTED HEREIN.

FUNCTIONAL UPLET REQUIREMENT IN ORDER TO ACHIEVE MITIGATION FUNCTIONAL UPLET STREAM CHANNEL SHALL BE BETWEEN 68% AND 78% RIFLE (CASCADE) AND BETWEEN 22% AND 32% POOL.

REV#	DATE	DESCRIPTION
A	03-23-21	PLAN FOR SUBMITTAL

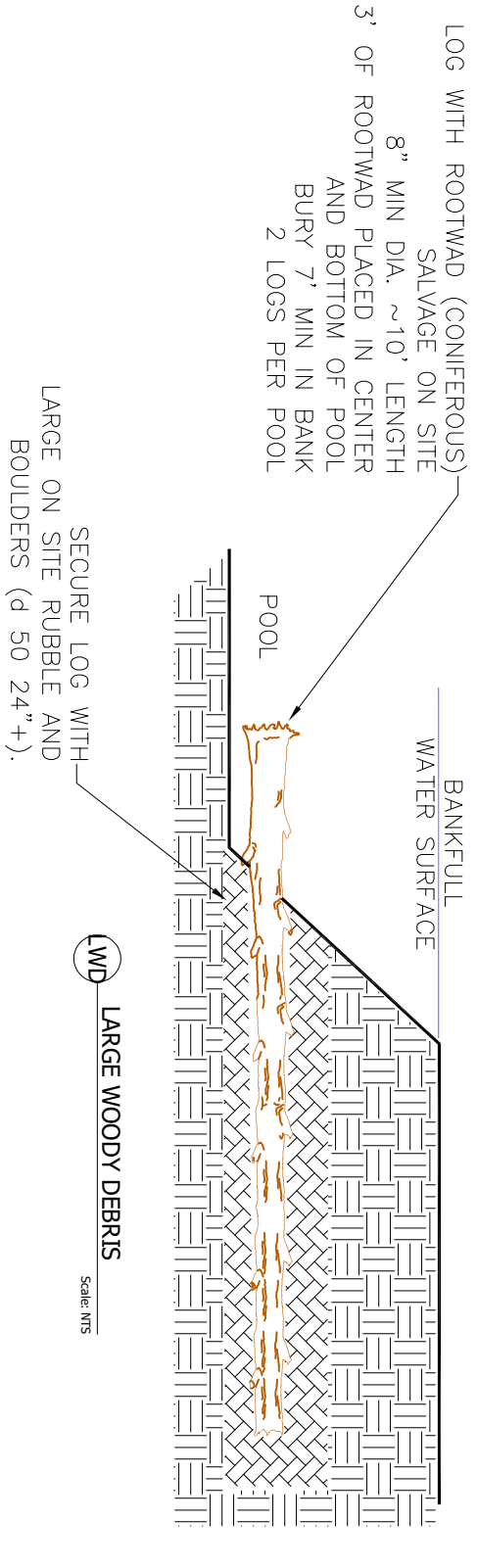
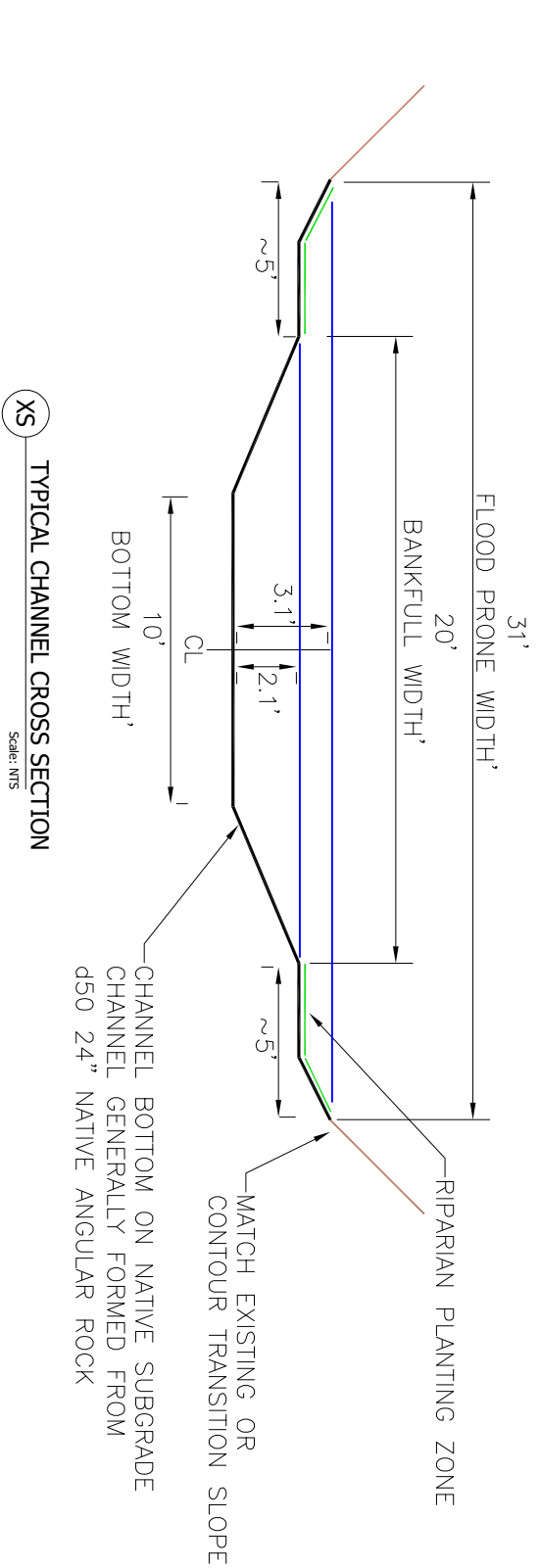
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LAKEWOOD, CO 80228

CLIENT
COLORADO STONE QUARRIES,
INC.

PROJECT
PROJECT: SPK-2019-00889 YULE CREEK
MITIGATION PLAN

TITLE
SECTION & DETAILS 1

SHEET
07



FUNCTIONAL UPLIFT REQUIREMENT
 IN ORDER TO ACHIEVE MITIGATION FUNCTIONAL UPLIFT, A MINIMUM OF TWO ROOTWAD LOGS MUST BE INSTALLED IN EACH POOL. A MINIMUM OF 40 ROOTWAD LOGS HAVE BEEN ASSUMED INSTALLED.

PROFILE LAYOUT TABLE

STATION	ELEVATION	FEATURE
38	9019.0	POOL
52	9019.0	
MATCH EXISTING GRADE		
160	9019.0	POOL
180	9019.0	
180	9019.0	SINGLE
186	9022.0	STACKED BLOCKS
MATCH EXISTING GRADE		
235	9030.5	TRIPLE
253	9040.0	STACKED BLOCKS
MATCH EXISTING GRADE		
253	9040.0	POOL
288	9040.0	
288	9040.0	DOUBLE
300	9047.8	STACKED BLOCKS
300	9047.8	
300	9047.8	POOL
314	9047.8	
314	9047.8	SINGLE
320	9051.8	STACKED BLOCKS
320	9051.8	
338	9051.8	POOL
338	9051.8	
338	9051.8	DOUBLE
350	9058.8	STACKED BLOCKS
MATCH EXISTING GRADE		
468	9070.0	DOUBLE
480	9075.0	STACKED BLOCKS
480	9075.0	
502	9075.0	POOL
502	9075.0	
502	9075.0	DOUBLE
514	9080.0	STACKED BLOCKS
MATCH EXISTING GRADE		
606	9104.8	SINGLE
612	9108.5	STACKED BLOCKS
612	9108.5	
612	9108.5	POOL
639	9108.5	
639	9108.5	TRIPLE
657	9121.1	STACKED BLOCKS
MATCH EXISTING GRADE		
679	9125.4	SINGLE
685	9129.2	STACKED BLOCKS
685	9129.2	
685	9129.2	POOL
740	9129.2	
740	9129.2	DOUBLE
752	9135.4	STACKED BLOCKS

PROFILE LAYOUT TABLE

STATION	ELEVATION	FEATURE
752	9135.4	POOL
777	9135.4	
777	9135.4	SINGLE
783	9138.4	STACKED BLOCKS
910	9159.9	DOUBLE
922	9166.4	STACKED BLOCKS
922	9166.4	
922	9166.4	POOL
949	9166.4	
949	9166.4	TRIPLE
967	9175.4	STACKED BLOCKS
967	9175.4	
967	9175.4	POOL
1006	9175.4	
1006	9175.4	SINGLE
1012	9180.0	STACKED BLOCKS
1012	9180.0	
1012	9180.0	POOL
1050	9180.0	
1050	9180.0	SINGLE
1056	9182.0	STACKED BLOCKS
MATCH EXISTING GRADE		
1080	9186.7	DOUBLE
1092	9192.7	STACKED BLOCKS
1092	9192.7	
1092	9192.7	POOL
1117	9192.7	
1117	9192.7	DOUBLE
1129	9200.1	STACKED BLOCKS
MATCH EXISTING GRADE		
1210	9211.2	POOL
1294	9211.3	
1294	9211.3	DOUBLE
1306	9217.3	STACKED BLOCKS
MATCH EXISTING GRADE		
1352	9221.0	POOL
1389	9221.0	
1389	9221.0	TRIPLE
1407	9230.0	STACKED BLOCKS
1407	9230.0	
1407	9230.0	POOL
1428	9230.0	
1428	9230.0	SINGLE
1434	9233.0	STACKED BLOCKS
1434	9233.0	
1434	9233.0	POOL
1502	9233.0	
1502	9233.0	DOUBLE
1514	9239.8	STACKED BLOCKS

REV#	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL

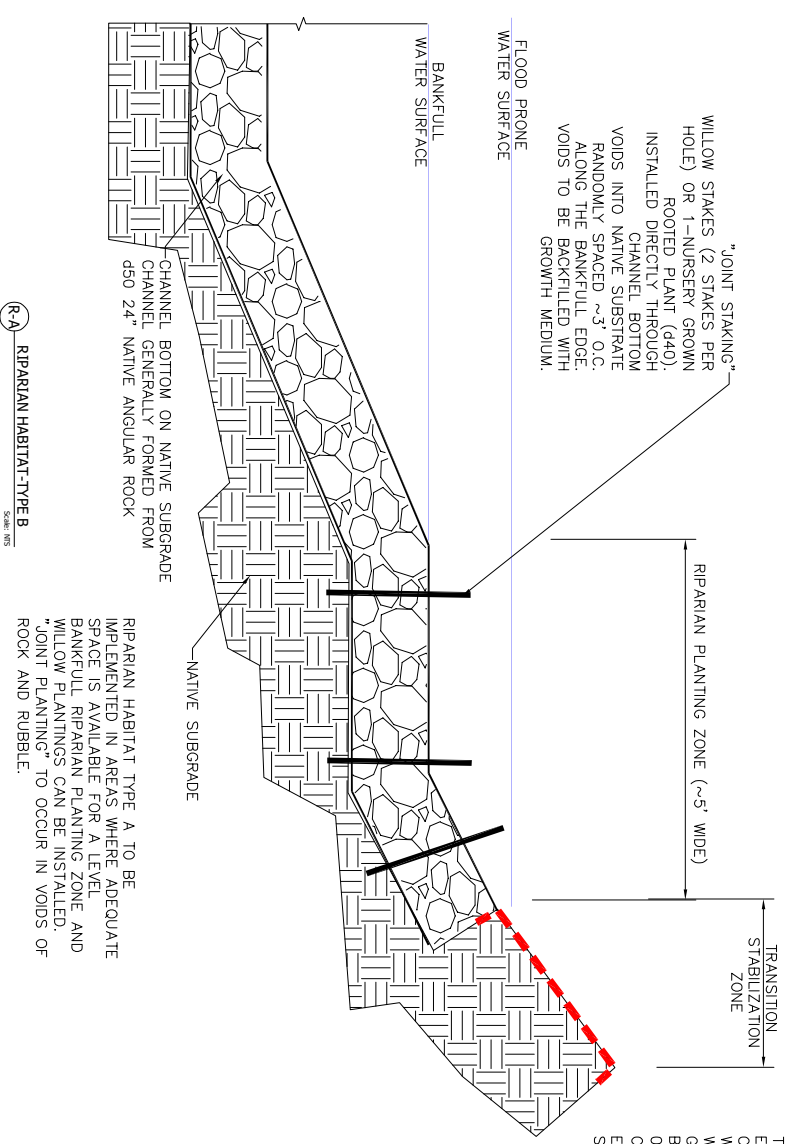
PREPARED BY ECOLOGICAL RESOURCES CONSULTANTS, INC
 225 UNION BLVD, SUITE 325
 LAKEWOOD, CO 80228

CLIENT COLORADO STONE QUARRIES, INC.

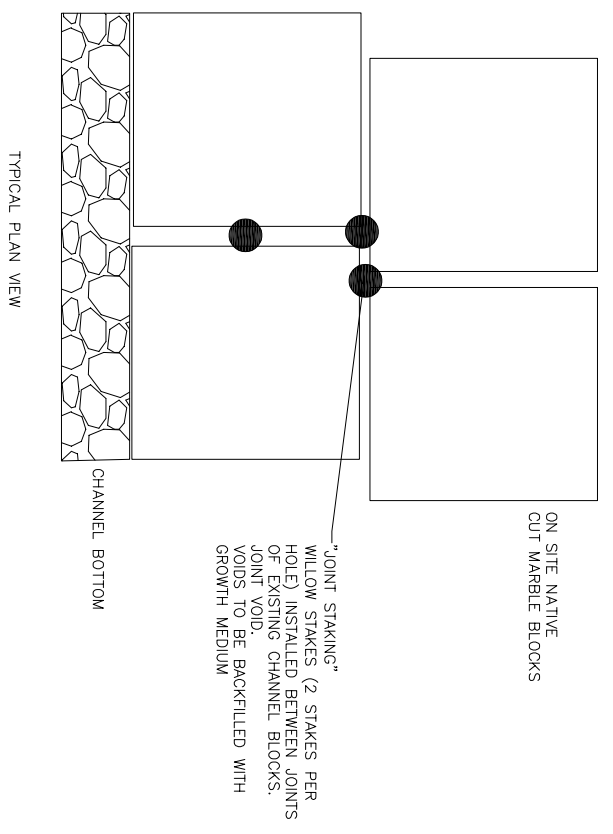
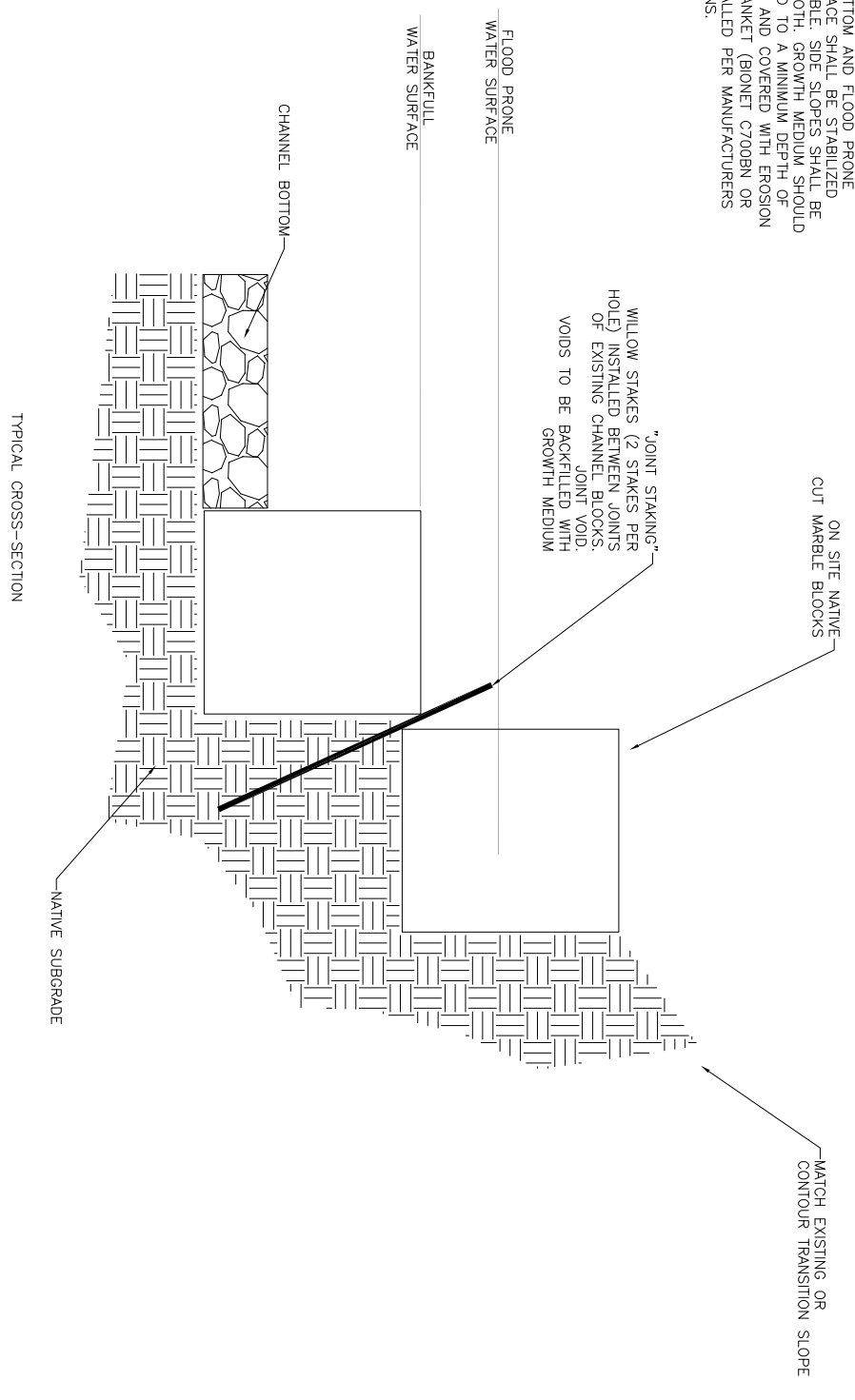
PROJECT PROJECT: SPK-2019-00889 YULE CREEK MITIGATION PLAN

TITLE SECTION & DETAILS 2

SHEET 08



TRANSITION STABILIZATION ZONE:
ERODED UPLAND SIDE SLOPES ABOVE THE CHANNEL BOTTOM AND FLOOD PRONE WATER SURFACE SHALL BE STABILIZED WHERE FEASIBLE. SIDE SLOPES SHALL BE GRADED SMOOTH. GROWTH MEDIUM SHOULD BE PREPARED TO A MINIMUM DEPTH OF 0.5', SEEDED AND COVERED WITH EROSION CONTROL BLANKET (BIONE1 C700BN OR EQUIV.) INSTALLED PER MANUFACTURERS SPECIFICATIONS.



RIPARIAN HABITAT TYPE B TO BE IMPLEMENTED IN AREAS WHERE NO HORIZONTAL SPACE IS AVAILABLE FOR A LEVEL BANKFULL PLANTING ZONE AND BLOCK WALLS MUST BE USED. "JOINT PLANTING" TO OCCUR IN VOIDS BETWEEN BLOCKS.

EXPOSED PORTIONS OF LARGE BLOCKS THAT ARE USED WHEN FEASIBLE SHALL HAVE SMOOTH SURFACES "ROUGHENED" AND "IRREGULARLY SHAPED" WITH SHARP EDGES ROUNDED OR CHAMFERED.

FUNCTIONAL UPLIFT REQUIREMENT
IN ORDER TO ACHIEVE MITIGATION FUNCTIONAL UPLIFT, 2,600 LINEAR FEET OF BANK STABILIZATION (TYPE A OR B) APPROXIMATELY 5 FEET WIDE MUST BE ACHIEVED. APPROXIMATELY 13,000 SQUARE FEET ALONG THE 2,600' LINEAR BANKFULL EDGE MUST BE DOMINATED BY WOODY PLANT COVER (WILLOWS).

REV#	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL



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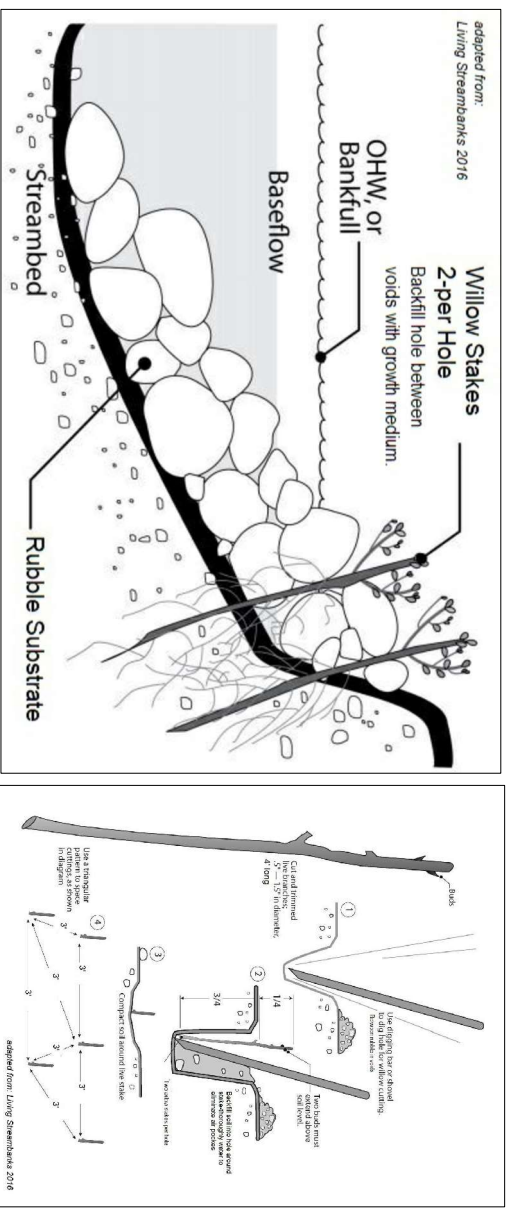
CLIENT
COLORADO STONE QUARRIES,
INC.

PROJECT
PROJECT: SPK-2019-00889 YULE CREEK
MITIGATION PLAN

TITLE
SECTION & DETAILS 4

SHEET
09

WILLOW STAKES- JOINT STAKING



Willow Stakes:

1. On site willows have been identified as Booth's willow (*Salix boothii*).
2. Willow stakes shall be harvested during the dormant season (before leaf-out).
3. Willow stakes shall be harvested on site or at other local pre-approved locations.
4. Willow stakes shall be approximately 4' long and 0.5"-1" diameter, healthy (green-live) stems.
5. The bottom 6-8 inches of the willow stakes shall be installed below the expected dry-season water table with 50-80% of the cutting below ground depending on the presence and depth of topsoil.
6. All branches and leaves shall be trimmed.
7. Willow stakes shall be pre-soaked completely submerged for 48 (minimum)-96 hours.
8. Willow stakes shall be kept in water until installation without freezing.
9. Willow stake are intended to be installed through cobble/rubble and in between rock slabs with a mechanical stinger (dibble bar or similar) creating a hole to accommodate two stakes to a depth of 2-3 feet.
10. Each hole shall be backfilled to the surface with native soils around the stake and water compacted (saturated) to eliminate air pockets (filling all voids around the stake).
11. Approximately 1' of the stake shall extend above the ground surface. Trim willow stake accordingly.

Nursery Potted Willows:

1. Nursery Potted Willows (*Salix boothii*) (d60 pot size) can be substituted as an alternative for Willow Stakes. Potted willows have a well developed rootball and typically have better survivability at higher elevation project sites.
2. Nursery Potted Willows can be secured and obtained from a Colorado native plant nursery.
3. The rootball shall be installed flush with the ground surface and above ground parts extending upwards.
4. Nursery Potted Willows shall be installed in designated locations along the bankfull edge within the riparian planting zone approximately at 3' on center spacing. Backfill as needed with growth medium around rootball and thoroughly water upon installation to ensure no air pockets.

Growth Medium:

1. Growth Medium can be developed from salvaged on site fine grain mineral soil generally screened to ¾" minus or existing in place soil. Soil shall be placed loose and clod free to a minimum depth of 0.5'. Soil amendments shall be added to growth medium (dry top dressing). Soil amendments should include 2000 pounds per acre of Biosol Forte, 200 pounds per acre of Humates and 60 pounds per acre of mycorrhizae. Adjust as needed based on soil nutrient analysis.

Table 1. Transition Stabilization Zone Seed Mix

Scientific Name	Common Name	% of Mix	Pt's per Acre
<i>Bromus maritimus</i>	Mountain brome	15	21
<i>Festuca saximontana</i>	Rocky Mountain fescue	15	3
<i>Elymus elymoides</i>	Squirrel-tail bottlebrush	10	5
<i>Elymus trachycalvus</i>	Slender wheategrass	15	9
<i>Koeleria macrantha</i>	Lunegrass	10	1
<i>Poa fendleriana</i>	Muttongrass	15	2
<i>Poa secunda</i>	Big bluegrass	10	1
<i>Trisetum spicatum</i>	Spoked trisetum	10	42
Total			100

Notes:
 Quantity assumes 200 seeds per square foot broadcast seeded.
 Quantity assumes 1.0 acre of upland reclamation, adjust as needed.
 Intended for transition side slope stabilization areas above the channel bottom and rubble/cobble areas.

Table 2. Willow Stakes

Scientific Name	Common Name	Stakes (2 per hole)
	Spacing	3 ft. on center
<i>Salix boothii</i>	Booth's willow	2888
	Total	2888

Notes:
 Willow stakes harvest assumed available on site.
 Quantity assumes 2,600 linear ft. along the bankfull edge and 13,000 sq. ft. of riparian habitat.

Table 3. Nursery Potted Willows (Alternate to Stakes)

Scientific Name	Common Name	D60 (1 per hole)
	Spacing	3 ft. on center
<i>Salix boothii</i>	Booth's willow	1444
	Total	1444

Notes:
 Nursery potted willows available at Colorado native plant nurseries or contract grown.
 Quantity assumes 2,600 linear ft. along the bankfull edge and 13,000 sq. ft. of riparian habitat.

REV#	DATE	DESCRIPTION
A	03-22-21	PLAN FOR SUBMITTAL

PREPARED BY
 ECOLOGICAL RESOURCES CONSULTANTS, INC
 225 UNION BLVD, SUITE 325
 LAKEWOOD, CO 80228

CLIENT
 COLORADO STONE QUARRIES,
 INC.

PROJECT
 PROJECT: SPK-2019-00889 YULE CREEK
 MITIGATION PLAN

TITLE
 SECTION & DETAILS 3



Ecological Resource Consultants, Inc.

2820 Wilderness Place Suite A Boulder CO 80301

Technical Memorandum Yule Creek Functional Assessment

Date: March 22, 2021

To: U.S. Army Corps of Engineers
Grand Junction Regulatory Office (Sacramento District)

From: Ecological Resource Consultants, Inc.

Project: Yule Creek Functional Assessment, Yule Creek Mitigation, Marble, Gunnison County, CO (U.S. Army Corps of Engineers Project Number: SPK-2019-00889)

On behalf of Greg Lewicki and Associates and Colorado Stone Quarries, Inc. (applicant), Ecological Resource Consultants, Inc. (ERC) has completed a Functional Assessment of Yule Creek using the Colorado Stream Quantification Tool (CSQT, Version 1.0, July 7, 2020). Per letter request dated February 18, 2021 (Request for Additional Information or RAI), the U.S. Army Corps of Engineers (Corps) is requiring a functional or condition assessment to be completed remotely, using the best available information and professional experience. During a project conference call on March 9, 2021, the Corps approved the use of the CSQT for this project. The CSQT model satisfies this requirement (Item #1 of the RAI), and this assessment addresses the functional impacts sustained by filling the western alignment of Yule Creek, provides a functional evaluation of the proposed eastern alignment Mitigation Plan (ERC 3-22-21) (Mitigation Plan), and is applicable for use for future post-construction assessments (e.g., Monitoring Plan) of Yule Creek.

The CSQT model is a spreadsheet-based estimator used to inform permitting and compensatory mitigation decisions within the Clean Water Act Section 404 program (CWA 404). The CSQT model utilizes Microsoft Excel worksheets to characterize and quantify stream ecosystem functions by assessing indicators that represent structural or compositional attributes of a stream and hydrologic processes. Parameters assessed with the model represent stream functional indicators that may be impacted by CWA 404 authorized projects and/or improvements made through restoration/mitigation activities. As such, the CSQT model was used to evaluate pre-impact (e.g., western alignment) conditions of Yule Creek as well as the post-impact (e.g., eastern alignment) mitigation scenario. The parameters assessed with the CSQT model are based on the Stream Functions Pyramid Framework (SFPF, Harman et al. 2021) which utilizes metrics within four functional categories to obtain condition scores and to estimate overall functional uplift in stream condition. The four functional categories are: hydrology and hydraulics, geomorphology, physicochemical, and biology. For Yule Creek, CSQT metrics within each category were estimated based on site knowledge, historical and current aerial photography and high-resolution drone imagery, and topographic mapping. The Corps pre-approved the use of the CSQT using modeled parameter data since field-based or empirical data could not be collected due to seasonal snowpack conditions.

Using the four SFPF categories, function based parameters and metrics were used to quantify stream condition for the western alignment and the proposed Mitigation Plan for the eastern alignment. The proposed Mitigation Plan has been contemporaneously submitted to the Corps under separate cover to

this Functional Assessment and CSQT summary. A numeric index is created by CSQT using available reference curves and site data based on the Yule Creek stream type. Yule Creek is characterized as a Rosgen Aa+ stream type (Rosgen 1996), which is very steep (>10%), well entrenched, has a low width/depth ratio, and is laterally contained by bedrock. The bedform of Yule Creek is composed of step/pool morphology with cascades, chutes, debris flows, and waterfalls. The Aa+ stream type of Yule Creek occurs in debris avalanche terrain, zones of deep deposition such as glacial tills, and bedrock landforms that are structurally controlled or influenced by faults, joints, or other structural contact zones. Yule Creek is a high energy, high gradient stream. Once the site information and reference stream reach information were selected (based on site knowledge and remote sensing data), data for each parameter and metric were inputted into the quantification tool. The function based parameters and metrics are listed by functional category, starting with Reach Hydrology and Hydraulics. Field values are derived for each metric, which represent function based parameters for each of the four SFPF functional categories. The table below provides a summary of metrics that were used for the Yule Creek CSQT model.

Table 1. Yule Creek CSQT Metrics (X = used in CSQT; NA = data not available or not applicable for Yule Creek stream type per CSQT manual).

Functional Category	Function Based Parameter	Metric	Yule Creek CSQT Use
Reach Hydrology & Hydraulics	Reach Runoff	Land Use Coefficient	X
		Concentrated Flow Points (#/1000 LF)	X
	Baseflow Dynamics	Average Velocity (fps)	NA
		Average Depth (ft)	X
	Floodplain Connectivity	Bank Height Ratio	X
		Entrenchment Ratio	X
		Percent Side Channels (%)	NA
Geomorphology	Large Woody Debris	LWD Index	NA
		No. of LWD Pieces/ 100 meters	X
	Lateral Migration	Greenline Stability Rating	NA
		Dominant BEH/NBS	NA
		Percent Streambank Erosion (%)	X
		Percent Armoring (%)	NA
	Bed Form Diversity	Pool Spacing Ratio	NA
		Pool Depth Ratio	X
		Percent Riffle (%)	X
		Aggradation Ratio	NA
	Riparian Vegetation	Riparian Extent (%)	X
		Woody Vegetation Cover (%)	X
		Herbaceous Vegetation Cover (%)	NA
Percent Native Cover (%)		X	
Physicochemical	Temperature	Daily Maximum Temperature (°C)	NA
		MWAT (°C)	NA
	Dissolved Oxygen	Dissolved Oxygen Concentration (mg/L)	NA
	Nutrients	Chlorophyll α (mg/m2)	NA

Biology	Macroinvertebrates	CO MMI	NA
	Fish	Native Fish Species Richness (% of Expected)	NA
		SGCN Absent Score	NA
		Wild Trout Biomass (% Change)	NA

CSQT scores are averaged for each level of the stream function pyramid framework. Metrics are averaged to calculate parameter scores and parameter scores are then averaged to calculate category scores. All calculations are automated in the spreadsheet. The category scores are then weighted and summed to calculate overall scores. Categories are additive so a score of 1.0 is only feasible when parameters within all four categories area evaluated.

For the Yule Creek CSQT, parameters and metrics were assessed for the filled (impacted) channel (western alignment) as well as proposed Mitigation Plan (eastern alignment). Functional feet (FF) are calculated for each reach based on stream length and the existing (ECS) and proposed reach (PCS) condition scores. The change represented by the PCS or Mitigation Plan (ERC 2021) is the difference between the existing (pre-impact) and proposed (mitigation) overall scores. Functional lift is achieved when the PCS scores (mitigation) are greater than the baseline ECS (pre-impact) scores.

The Mitigation Plan was specifically developed to address non-functional and functional-at-risk CSQT metrics of the impacted channel (as well as to maintain existing functional metrics) and to replicate natural (unimpacted) reference conditions. The Mitigation Plan developed replicates a Rosgen Aa+ stream type with steep cascade-pool sequences, laterally constrained by rock, large woody debris and narrow woody dominated riparian/upland vegetation fringe among boulders, rubble and bedrock. Refer to **Photos 1-2** below for reference stream characteristics within undisturbed portions of Yule Creek.



Photo 1. View south of reference conditions of Yule Creek (Rosgen Aa+ stream) upstream of project reach showing large boulders and bedrock, and step-pool cascade sequence. Large woody debris present in photo center (Photo: 6/25/20).



Photo 2. View north of reference conditions of Yule Creek upstream of project reach, narrow (4-5 foot) riparian fringe present along left side of photo, bedrock and cascade present (Photo: 6/25/20).

Refer to **Photos 3-8** below for historic characteristics of the impacted western alignment of Yule Creek. Photos show poor channel morphology, significant erosion, very little riparian vegetation, debris/rubble within stream channel, and lack a natural cascade-pool sequence.



Photo 3. View north of the western alignment of Yule Creek (Photo: 8/30/18, pre-impact).



Photo 4. View south/southeast of the western alignment of Yule Creek (Photo: 8/30/18, pre-impact).



Photo 5. View south of the western alignment of Yule Creek (Photo: 9/18/18, pre-impact).



Photo 6. View west of the western alignment of Yule Creek (Photo: 8/30/18, pre-impact).



Photo 7. View north of the western alignment of Yule Creek (Photo: 7/12/16, pre-impact).



Photo 8. View south of the western alignment of Yule Creek (Photo: 7/12/16, pre-impact).

For Yule Creek, the overall results of the CSQT model (Quantification Tool) are summarized in **Tables 2** through **5** below. Based on the PCS condition (Mitigation Plan) scores, the proposed mitigation design for Yule Creek represents an uplift of 92.5 functional feet (FF). Implementation of the Mitigation Plan represents a functional increase over the ECS. The CSQT output worksheets are provided in **Attachment A** to this memo. Drone imagery, parameter calculations, and the impact analysis map from the Aquatic Resources Delineation (ERC 2020) are provided in **Attachment B** to this memo.

Table 2. Mitigation Summary

MITIGATION SUMMARY	
Perennial First Order Stream	
92.5	(FF) Lift

Table 3. Functional Change Summary

FUNCTIONAL CHANGE SUMMARY	
Change in Overall Condition	0.07
Existing Stream Length (ft)	1748
Proposed Stream Length (ft)	1689
Change in Stream Length (ft)	-59
Existing Functional Feet (FF)	713.2
Proposed Functional Feet (FF)	805.7
Proposed FF - Existing FF (Δ FF)	92.5
Yield (Δ FF/ Proposed LF)	0.05
Δ FF from Flow Alteration Module	
Total Proposed FF - Existing FF (Δ FF)	92.5

Table 4. Function Based Parameters Summary

FUNCTION BASED PARAMETERS SUMMARY			
Functional Category	Function-Based Parameters	Existing Parameter	Proposed Parameter
Reach Hydrology & Hydraulics	Reach Runoff	0.50	0.72
	Baseflow Dynamics	1.00	1.00
	Floodplain Connectivity	0.25	0.37
Geomorphology	Large Woody Debris	1.00	1.00
	Lateral Migration	1.00	1.00
	Bed Form Diversity	0.65	0.79
	Riparian Vegetation	0.49	0.76

Note: Red = Not Functioning, Yellow = Functioning At Risk, Green = Functioning

Table 5. Functional Category Report Card

FUNCTIONAL CATEGORY REPORT CARD				
Functional Category	ECS	PCS	Change in Condition Scores	ΔFF
Reach Hydrology & Hydraulics	0.58	0.70	0.12	50.5
Geomorphology	0.78	0.89	0.11	41.9

Attachment A:

- CSQT Microsoft Excel Workbook, worksheets include:
 - Project Assessment,
 - Catchment Assessment,
 - Quantification Tool; and
 - Yule Creek Field Values – this table provides the input parameters and metrics used for the CSQT modeling.

Attachment B:

- Drone imagery used for cascade-pool (channel morphology) estimates; and
- Aquatic Resources Delineation impact analysis map showing eastern and western alignments of Yule Creek.

**ATTACHMENT A
CSQT WORKSHEETS**

Programmatic Goals

Select:

Voluntary Restoration or Enhancements

Reach Description			
Reach ID:	Yule Creek Eastern Alignment, Pride of America Mine		
<p>Describe this reach: The approximately 123.6-acre survey area includes the area within the Pride of America mine permit boundary and is located south of the Town of Marble in Gunnison County, Colorado. Approximately 1,748 feet of Yule Creek, which flows north through the survey area, was diverted and impacted in 2018 (e.g., "eastern alignment") during the construction of a temporary mining road over the original stream channel (e.g., "western alignment"). Yule Creek is characterized as a Rosgen Aa+ stream type, which is very steep (>10%), well entrenched, has a low width/depth ratio, and is laterally contained by bedrock.</p>			
Lat:			
Long:			
Process Drivers Information:			
Geology	Source	Erosion Resistance:	High
	Bedrock		
Hydrology	Free Flowing	Stream Power:	Moderate
	Snow-dominated		
Biology		Biotic Interaction:	Low
Reference Stream Type:	A		
Bed Material:	Bedrock		
Existing Sinuosity:	1.1		
Proposed Sinuosity:	1.1		
<p><i>The reference stream type is the stream type that should occur in a given landscape setting given the processes occurring at the watershed and reach scales. User should rely on process driver information and restoration end points to inform the reference stream type selection.</i></p>			

Restoration Approach	
<p>1) Expand on the programmatic goals of this project: The approach for the restoration (mitigation) Plan focused on natural channel design principles considering on site materials, conditions/constraints and reference conditions. Specific parameters targeted include floodplain connectivity, large woody debris, bed form diversity and riparian vegetation.</p>	
Restoration Potential:	Full
<p>2) Explain the restoration potential of this project based on the programmatic goals (based on catchment assessment form): The mitigation Plan for the eastern alignment will provide uplifts of ecological function by enhancing, restoring, preserving, protecting, or creating aquatic resources. Specifically, the Plan will restore lost function within the western (impacted) alignment of Yule Creek. Improvements will include re-establishing riparian (woody) vegetation, placement of Large Woody Debris (LWD), and re-establishing a natural cascade/pool sequence (these parameters are considered Not Functioning or Functioning At Risk within the western (impacted) alignment of Yule Creek). Existing functional parameters will be maintained.</p>	
<p>3) Explain the goals and objectives for this project:</p> <p>Goals: The overall goal of the project is to provide ecological uplift to the eastern alignment of Yule Creek by implementing the Plan. Objectives:</p> <ol style="list-style-type: none"> 1. Establish geomorphic characteristics appropriate of the stream type. 2. Minimize anthropogenic sources. 	

Insert Aerial Photo of Project Reach



Applicable Reach(es)*: Yule Creek, Marble, Gunnison County, Colorado

*If the Catchment Assessment form applies to multiple reaches within the project, the form only needs to be filled out once.

If the form is not filled out below, list the name of the workbook that contains the filled out form in the space above.

Date: 3/22/2021

Overall Watershed Condition	G	Describe how any Categories rated as Poor were considered in the selection of the restoration potential of the reach: Due to the high level of disturbance (e.g., marble quarry) adjacent to Yule Creek, catchment condition is rated as "poor". Overall watershed condition is "good".
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CATCHMENT ASSESSMENT				
Categories	Description of Catchment Condition			Rating (P/F/G)
	Poor	Fair	Good	
1 Impoundments	Project area located less than 1 mile upstream or downstream of an impoundment; or impoundments are less proximate, but have adverse effects within the project area.	Project area is located 1 mile or more upstream or downstream of an impoundment.	No impoundment upstream or downstream of project reach.	G
2 Flow Alteration	Substantial reduction or augmentation to one or more aspects of natural flow regime.	Moderate reduction or augmentation to one or more aspects of natural flow regime.	Little or no reduction or augmentation of natural flow regime.	G
3 Urbanization	Urban or rapidly urbanizing with ongoing or imminent large scale development.	Low density or rural communities or slow urban or suburban growth.	Predominantly natural land cover; or rural.	G
4 Fish Passage	Reach isolated by upstream and downstream anthropogenic barriers within 10 miles; or barriers otherwise severely affect fish populations within the project reach.	Reach isolated by upstream OR downstream anthropogenic barrier within 10 miles; or barriers otherwise have moderate effects on fish populations within the project reach.	No anthropogenic barriers within 10 miles upstream or downstream of the reach; or barriers otherwise have no effect on fish populations within a project reach.	F
5 Organism Recruitment	Channel immediately upstream or downstream of project reach (i.e., within 1 km or 0.62 mi) is concrete, piped, or hardened.	Channel immediately upstream or downstream of project reach (i.e., within 1 km or 0.62 mi) has native bed and bank material that is highly embedded by fine sediment.	Channel immediately upstream or downstream of project reach (i.e., within 1 km or 0.62 mi) has native bed and bank material.	G
6 Colorado Integrated Report (305(b) and 303(d)) status	In Category 5 due to nonsupport of aquatic life uses OR in Category 4 and aquatic life impairment not actively being mitigated.	In Category 4 due to nonsupport of aquatic life uses and aquatic life impairment actively being mitigated.	In category 1, 2, or 3 or aquatic life uses not evaluated.	G
7 Development: Oil, Gas, Wind, Pipeline, Mining, Timber Harvest, Roads	High development in contributing watershed or some within 1 mile of project reach, or >1 mile but available information indicates high potential for impacts to project reach.	Moderate development or moderate potential for impacts and none within 1 mile of project reach.	No development or no potential for impacts.	P
8 CDPS Permits	CDPS permitted facilities comprise a high percentage of the baseflow in the project reach OR 1 or more facilities present within 2 miles upstream of project reach have a high potential to threaten aquatic life.	CDPS permitted facilities comprise a low to moderate percentage of the baseflow in the project reach AND no facilities are located within 2 miles upstream of project reach.	No CDPS permitted facilities upstream of the project reach.	G
9 Riparian Vegetation	Natural plant community is limited within the floodplain (~100 yr) and riparian corridor is absent for substantial portions of the contributing stream length.	Natural plant community occurs in portions of the floodplain (~100 yr) and moderate gaps in the riparian corridor vegetation occur in the contributing stream length.	Natural plant community extends throughout majority of floodplain (~100 yr) and riparian corridor is mostly contiguous along contributing stream length.	F
10 Sediment Supply	High anthropogenic-caused sediment supply from upstream bank erosion and surface runoff.	Moderate anthropogenic-caused sediment supply from upstream bank erosion and surface runoff.	Low anthropogenic-caused sediment supply. Upstream bank erosion and surface runoff is minimal.	F

Site Information and Reference Selection	
Project Name:	Yule Creek
Reach ID:	Eastern Alignment
Restoration Potential:	Full
Project Reach Stream Length - Existing (ft):	1748
Project Reach Stream Length - Proposed (ft):	1689
Drainage Area (sq.mi.):	9
Flow Permanence:	Perennial
Strahler Stream Order:	First
Ecoregion:	Mountains
Biotype:	2
Proposed Bankfull Width (ft):	20
Stream Slope (%):	10
River Basin:	Colorado
Stream Temperature:	CS-I
Reference Vegetation Cover:	Woody
Stream Productivity Class:	Moderate
Valley Type:	Bedrock
Reference Stream Type:	A
Sediment Regime:	Source

Notes
1. Users input values that are highlighted based on restoration potential
2. Users select values from a pull-down menu
3. Leave values blank for field values that were not measured and/or autopopulate.

FUNCTIONAL CHANGE SUMMARY	
Change in Overall Condition	0.07
Existing Stream Length (ft)	1748
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Change in Stream Length (ft)	-59
Existing Functional Feet (FF)	713.2
Proposed Functional Feet (FF)	805.7
Proposed FF - Existing FF (Δ FF)	92.5
Yield (Δ FF/ Proposed LF)	0.05
Δ FF from Flow Alteration Module	
Total Proposed FF - Existing FF (Δ FF)	92.5

MITIGATION SUMMARY	
Perennial First Order Stream	
92.5	(FF) Lift

FUNCTION BASED PARAMETERS SUMMARY			
Functional Category	Function-Based Parameters	Existing Parameter	Proposed Parameter
Reach Hydrology & Hydraulics	Reach Runoff	0.50	0.72
	Baseflow Dynamics	1.00	1.00
	Floodplain Connectivity	0.25	0.37
Geomorphology	Large Woody Debris	1.00	1.00
	Lateral Migration	1.00	1.00
	Bed Form Diversity	0.65	0.79
	Riparian Vegetation	0.49	0.76
Physicochemical	Temperature		
	Dissolved Oxygen		
	Nutrients		
Biology	Macroinvertebrates		
	Fish		

FUNCTIONAL CATEGORY REPORT CARD				
Functional Category	ECS	PCS	Change in Condition Scores	Δ FF
Reach Hydrology & Hydraulics	0.58	0.70	0.12	50.5
Geomorphology	0.78	0.89	0.11	41.9
Physicochemical				
Biology				

EXISTING CONDITION ASSESSMENT					Scoring		
Functional Category	Function-Based Parameter	Metric	Field Value	Index Value	Parameter	Category	Category
Reach Hydrology & Hydraulics	Reach Runoff	Land Use Coefficient	55	1.00	0.50	0.58	Functioning At Risk
		Concentrated Flow Points (#/1000 LF)	5.7	0.00			
	Baseflow Dynamics	Average Velocity (fps)		--	1.00		
		Average Depth (ft)	2	1.00			
Floodplain Connectivity	Bank Height Ratio	2	0.00	0.25			
	Entrenchment Ratio Percent Side Channels (%)	1.3	0.50				
Geomorphology	Large Woody Debris	LWD Index			1.00	0.78	Functioning
		No. of LWD Pieces/ 100 meters	30	1.00			
	Lateral Migration	Greenline Stability Rating			1.00		
		Dominant BEHI/NBS Percent Streambank Erosion (%) Percent Armoring (%)	0	1.00			
Bed Form Diversity	Pool Spacing Ratio			0.65			
	Pool Depth Ratio Percent Riffle (%) Aggradation Ratio	1.5 78	0.29 1.00				
Riparian Vegetation	Riparian Extent (%)	15	0.07	0.49			
	Woody Vegetation Cover (%) Herbaceous Vegetation Cover (%) Percent Native Cover (%)	40 100	0.40 1.00				
Physicochemical	Temperature	Daily Maximum Temperature (°C)					
		MWAT (°C)					
	Dissolved Oxygen	Dissolved Oxygen Concentration (mg/L)					
Biology	Nutrients	Chlorophyll α (mg/m2)					
	Macroinvertebrates	CO MMI					
Biology	Fish	Native Fish Species Richness (% of Expected)					
		SGCN Absent Score					
		Wild Trout Biomass (% Change)					

PROPOSED CONDITION ASSESSMENT					Scoring		
Functional Category	Function-Based Parameter	Metric	Field Value	Index Value	Parameter	Category	Category
Reach Hydrology & Hydraulics	Reach Runoff	Land Use Coefficient	55	1.00	0.72	0.70	Functioning
		Concentrated Flow Points (#/1000 LF)	1.8	0.44			
	Baseflow Dynamics	Average Velocity (fps)		--	1.00		
		Average Depth (ft)	2	1.00			
Floodplain Connectivity	Bank Height Ratio	2	0.00	0.37			
	Entrenchment Ratio Percent Side Channels (%)	1.5	0.74				
Geomorphology	Large Woody Debris	LWD Index			1.00	0.89	Functioning
		No. of LWD Pieces/ 100 meters	50	1.00			
	Lateral Migration	Greenline Stability Rating			1.00		
		Dominant BEHI/NBS Percent Streambank Erosion (%) Percent Armoring (%)	0	1.00			
Bed Form Diversity	Pool Spacing Ratio			0.79			
	Pool Depth Ratio Percent Riffle (%) Aggradation Ratio	2 73	0.58 1.00				
Riparian Vegetation	Riparian Extent (%)	75	0.56	0.76			
	Woody Vegetation Cover (%) Herbaceous Vegetation Cover (%) Percent Native Cover (%)	75 100	0.73 1.00				
Physicochemical	Temperature	Daily Maximum Temperature (°C)					
		MWAT (°C)					
	Dissolved Oxygen	Dissolved Oxygen Concentration (mg/L)					
Nutrients	Chlorophyll α (mg/m2)						
	Macroinvertebrates	CO MMI					
Biology	Fish	Native Fish Species Richness (% of Expected)					
		SGCN Absent Score Wild Trout Biomass (% Change)					

Metric	Explanation	Basis of Value	Source of Metric and is it Calculable for Yule Creek based on site knowledge or available data?	Western Alignment Field Value (existing)	Mitigation Field Value (proposed)
Land Use Coefficient	An area weighted land use coefficient serves as an indicator of runoff potential from land uses draining into the project reach between the upstream and downstream end points. Higher values, nearer 100, indicate more runoff potential while lower values, nearer 0, indicate less runoff.	Table 10 of CSQT Manual	Yes, use default values from Table 10 of CSQT - 55 for vegetated forests	55	55
Concentrated Flow Points (#/1000 LF)	Concentrated flow points are defined as storm drains, outfalls or erosional features, such as swales, gullies or other channels that are created by anthropogenic impacts.	$CFP / 1000 \text{ ft} = \frac{\# \text{ CFPs}}{\text{Proposed Reach length (ft)}} + 1000 \text{ ft}$	Based on historical photographs, western alignment is estimated to contain 10 CFPs/1000'. Existing channel contains 3 total permitted discharge points.	5.7	1.8
Average Velocity (fps)	Average velocity is the baseflow discharge divided by the area wetted at the baseflow discharge for a cross-section. Velocity measurements may be collected in order to develop a stage-discharge relationship and can serve as a quality check for the calculated values within the reach.	$Velocity = \frac{Q_{\text{baseflow}}}{A_{\text{wetted}}}$	Baseflow data not available. Category is NA.	na	na
Average Depth (ft)	Average depth is the area wetted at the baseflow discharge divided by the wetted width of the cross-section. The average depth is calculated from three surveyed cross-sections. This metric uses cross-section geometry to determine the average cross-section depth (d) at riffles within the reach for the baseflow discharge.	$\text{Mean depth } (d_{\text{bkr}}) = \frac{A_{\text{wetted}}}{W_{\text{wetted}}}$	Mean depth estimated at 2' based on site knowledge - surveyed cross-section data not available.	2	2
Bank Height Ratio	The bank height ratio (BHR) is a measure of channel incision and an indicator of whether flood flows can access and inundate the floodplain (Rosgen 2014). BHR is measured at riffles/cascades and calculated as the low bank height (LBH) divided by the bankfull riffle maximum depth (also referred to as bankfull maximum depth; dmax). The low bank height is defined as the left or right streambank that has a lower elevation, indicating the minimum water depth necessary to inundate the floodplain.	$BHR_{\text{weighted}} = \frac{\sum_{i=1}^n (BHR_i \cdot RL_i)}{\sum_{i=1}^n RL_i}$	LBH estimated at 4', bankfull cascade depth estimated at 2'. Therefore, BHR estimated to be 2.	2	2
Entrenchment Ratio	An entrenchment ratio characterizes the vertical containment of the river by evaluating the ratio of the flood-prone width to the bankfull channel width measured at a riffle cross-section (Rosgen 1996). This metric is described in detail by Rosgen (2014). The flood-prone width is the cross-section width at a riffle feature perpendicular to the valley at an elevation of two times the bankfull riffle maximum depth.	$ER = \frac{\text{Flood - Prone Width}}{\text{Bankfull Channel Width}}$	100-yr flood-prone width estimated to be 20' in western alignment and 30' in eastern alignment per the Plan, ER (western alignment) = 20/15 = 1.3, ER (eastern alignment per Mitigation Plan) = 30/15 = 1.5.	1.3	1.5
Percent Side Channels (%)	Side channels are small open water channels that are connected to the main channel at one or both ends. Floodplain channels can be included in this metric when one or both ends are connected to the main channel and the depth is at least one-half the bankfull riffle maximum depth.	$\text{Field Value} = 100 * \frac{\sum \text{Side channel length (ft)}}{\text{Reach length (ft)}}$	Based on historical and current photographs, as well as site knowledge, side channels are not present within the eastern and western alignment, therefore, this category is NA.	na	na
LWD Index	The Large Woody Debris Index (LWDI) is a dimensionless value based on rating the geomorphic significance of LWD pieces and dams within a 328-foot (100 meters) section of stream. This index was developed by the USDA Forest Service Rocky Mountain Research Station (Davis et al. 2001).	Identify the 328 feet (100 m) length of the project reach that contains the most LWD. Preferably this 328-foot reach is within the representative sub-reach. If the project reach is less than 328 feet, the LWDI should be determined using the entire reach length and the index value normalized to represent a value per 328 feet.	LWDI is based on empirical site data which are not available. Category is NA.	na	na
No. of LWD Pieces/ 100 meters	The LWD piece count metric is a count of the number of LWD pieces within a 328-foot (100 meters) section of stream.	Identify the 328 feet (100 m) length of the project reach that contains the most LWD. Preferably this 328-foot reach is within the representative sub-reach. If the project reach is less than 328 feet, count the number of pieces within the entire reach length and then normalize the value to represent a value per 328 feet.	Existing based on site knowledge/photos Proposed based on Mitigation Plan	30	50
Greenline Stability Rating	The greenline is a linear grouping of live perennial vascular plants on or near the water's edge. Greenline stability ratings (GSR) are calculated by multiplying the percent composition of each community type along the greenline by the stability class rating assigned to that type (per methods referenced below).	The Modified Winward Greenline Stability Rating procedures described in Riparian Area Management: Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation (USDOI 2011).	Not Applicable for this stream type. Must have perennial vascular plants that dominate bankfull perimeter.	na	na
Dominant BEH/NBS	Near-bank Stress (NBS) is an estimate of shear stress exerted by flowing water on the stream banks. Together, BEH and NBS are used to populate the Bank Assessment for Non-point source Consequences of Sediment (BANCS) model and produce cumulative estimates of stream bank erosion rates for surveyed reaches (Rosgen 2014).	Follow the guidance in Appendix D of the Function-Based Rapid Field Stream Assessment Methodology (Starr et al. 2015), or River Stability Field Guide, Second Edition (Rosgen 2014). Banks that are armored should not be assessed with the dominant BEH/NBS metric.	Not applicable for highly armored (i.e., bedrock dominated stream types).	na	na
Percent Streambank Erosion (%)	The percent streambank erosion is measured as the length of streambank that is actively eroding divided by the total length of bank (left and right) in the representative subreach.	$\text{Percent Streambank Erosion} = \frac{\text{Length of eroding bank}}{\text{Total length of streambank}_{\text{sub-reach}}} * 100$	Existing based on site knowledge/photos Proposed based on Mitigation Plan	0	0
Percent Armoring (%)	Bank armoring is defined as any rigid human-made stabilization practice that permanently prevents lateral migration processes. Examples of bank armoring include rip rap, gabion baskets, concrete, and other engineered materials.	$\text{Percent Armoring} = \frac{\text{Length of armored bank}}{\text{Total length of streambank}_{\text{reach}}} * 100$	Not applicable for bedrock dominated stream types.	na	na
Pool Spacing Ratio	The pool spacing ratio compares the stream length distance between sequential geomorphic pools to the bankfull width at a riffle (Rosgen 2014).	$\text{Pool Spacing Ratio} = \frac{\text{Distance between sequential geomorphic pools}}{\text{Bankfull channel width}}$	Index values not available for "Aa+" type streams.	na	na
Pool Depth Ratio	The pool depth ratio is a measure of pool quality, where deeper pools score higher than shallow pools. Pool depth ratio is calculated as the bankfull pool maximum depth divided by the bankfull mean depth. Pool depth represents the difference in elevation between the deepest point of each pool and the bankfull elevation.	$\text{Pool Depth Ratio} = \frac{D_{\text{max pool}}}{D_{\text{mean riffle}}}$	Estimated based on site knowledge/photos. Assume cascade = riffle. Estimated D(max) = 2'. Estimated D(mean cascade) = 2'. Pool= 3' (existing) and 4' (proposed)	1.5	2
Percent Riffle (%)	The percent riffle is the proportion of the representative sub-reach containing riffle and run features, as distinct from pool features. Riffle is defined in detail in the glossary, and generally refers to the plan form crossover section in between lateral scour pools in meandering channels and the cascade section of a mountain stream.	$\% \text{ Riffle} = \frac{\sum (\text{Riffle length}_{\text{sub-reach}})}{\text{Total length}_{\text{sub-reach}}}$	Existing based on site knowledge/photos Proposed based on Mitigation Plan	78	73
Aggradation Ratio	Channel instability can result from excessive deposition that causes channel widening, lateral instability, and bed aggradation. Visual indicators of aggradation include midchannel bars and bank erosion within riffle sections, and the deposition of gravel on the floodplain. The aggradation ratio is measured as the bankfull channel width at the widest riffle within the representative sub-reach divided by the bankfull mean depth (width/depth ratio [W/D]). This ratio is then divided by a reference W/D. This metric is described as W/D ratio state by Rosgen (2014).	$\text{Aggradation Ratio} = \frac{W_{\text{riffle}}}{D_{\text{mean riffle}} / \text{Reference WDR}}$	Not applicable for highly armored (i.e., bedrock dominated) stream types. Category is NA.	na	na
Riparian Extent (%)	The riparian extent metric describes the portion of the expected riparian area that currently contains riparian vegetation and is free from utility-related, urban, or otherwise soil disturbing land uses, fill, and development.	$\text{Riparian Extent} = \frac{\text{Observed Riparian Area}}{\text{Expected Riparian Area}} * 100$	Estimated based on site knowledge/photos, riparian extent calculated in GIS using percent of linear streambank occupied by riparian vegetation. Proposed based on Plan assuming 75% linear coverage along bank and 5' wide riparian planting zone along each bank.	15	75
Woody Vegetation Cover (%)	The woody vegetation cover field value for the CSQT is the sum of absolute percent woody plant cover from shrub and tree species, averaged across all plots within the representative sub-reach.	$\text{Woody vegetation cover} = \text{WoodyShrub Species Cover} + \text{WoodyTree Species Cover}$	Estimated based on site knowledge/photos, woody vegetation (%) calculated in GIS using percent of linear streambank occupied by woody riparian vegetation. Proposed based on Plan assuming 75% linear coverage along bank and 5' wide woody riparian planting zone along each bank.	40	75
Herbaceous Vegetation Cover (%)	The herbaceous vegetation cover field value for the CSQT is the sum of absolute percent herbaceous plant cover from herbaceous species averaged across all plots within the representative sub-reach.	$\text{Herbaceous vegetation cover} = \text{Herbaceous Ground Cover}$	Not applicable for woody vegetation reference types.	na	na
Percent Native Cover (%)	Percent native cover metric is the relative cover of native species averaged across all plots within the representative sub-reach. Relative cover is the absolute cover of a species, or group of species, divided by the total coverage of all species, expressed as a percent.	$\text{Percent Native Cover} = \frac{\text{Native Vegetation Cover}}{\text{Herb Vegetation Cover} + \text{Woody Vegetation Cover}} * 100$	Estimated based on site knowledge/photos, proposed based on Mitigation Plan	100	100

Metric	Explanation	Basis of Value	Source of Metric and Is it Calculable for Yule Creek based on site knowledge or available data?	Western Alignment Field Value (existing)	Mitigation Field Value (proposed)
Daily Maximum Temperature (°C)	The daily maximum (DM) temperature is the highest two-hour average water temperature recorded during a given 24-hour period (5 CCR 1002-31).	Install continuous temperature gages following Best Practices for Continuous Monitoring of Temperature and Flow in Wadeable Streams (USEPA 2014) or USFS's Measuring Stream Temperature with Digital Data Loggers: A Field Guide (Dunham et al. 2005). Record data and perform any necessary maintenance throughout the summer season.	No physicochemical data available. Category is NA.	na	na
MWAT (°C)	The Maximum Weekly Average Temperature (MWAT) is the largest weekly average stream temperature in the period of interest (5 CCR 1002-31).	Install continuous temperature gages following Best Practices for Continuous Monitoring of Temperature and Flow in Wadeable Streams (USEPA 2014) or USFS's Measuring Stream Temperature with Digital Data Loggers: A Field Guide (Dunham et al. 2005). Record data and perform any necessary maintenance throughout the summer season.	No physicochemical data available. Category is NA.	na	na
Dissolved Oxygen Concentration (mg/L)	The DO parameter assesses in-stream DO to determine suitable water quality during summer. There is one metric included in the CSQT for this parameter, the DO concentration, measured in milligrams per liter (mg/L).	Measure DO concentration in accordance with the CDPHE or USEPA Standard Operating Procedures. Deploy continuous recording DO loggers. Refer to sensor instructions for deployment, calibration, and instrument cleaning instructions.	No physicochemical data available. Category is NA.	na	na
Chlorophyll α (mg/m2)	Chlorophyll α is the pigment that allows plants (including algae) to use sunlight to convert simple molecules into organic compounds via the process of photosynthesis. Chlorophyll α concentration is directly affected by the amount of nitrogen and phosphorus in the stream. Chlorophyll α data should be expressed as milligrams of chlorophyll α per square meter of sampled rock substrate (mg/m2).	Methods for collecting chlorophyll α are included in Appendix A to CSQT manual. Chlorophyll α sample collection and processing should be conducted according to the CDPHE Standard Operating Procedure procedures outlined in CDPHE (2015).	No physicochemical data available. Category is NA.	na	na
CO MMI	The CO MMI is a statewide regionally calibrated macroinvertebrate-based multimetric index. According to CDPHE (2017), "[w]ithin the benthic macroinvertebrate assemblage, metrics are selected that represent some measurable aspect of the community structure and function. These measurements are grouped into five metric categories: taxa richness, composition, pollution tolerance, functional feeding groups, and habit (mode of locomotion). Combining metrics from these categories into a multi-metric index transforms taxonomic identifications and individual counts into a unitless score that ranges from 0-100."	Methods for collecting, processing, and identifying macroinvertebrates are included in Appendix A of CSQT manual and are consistent with the benthic macroinvertebrate sampling, processing, and identification procedures outlined in Policy Statement 10-1 and its appendices (CDPHE 2017).	Macroinvertebrate data not available. Category is NA.	na	na
Native Fish Species Richness (% of Expected)	This metric documents the diversity of the native fish community in comparison to reference expectations. The deviation of the observed from the expected taxa, a ratio known as the O/E value, is a measure of compositional similarity expressed in units of taxa richness.	Record the number of native fish species on the Field Value Documentation form in Appendix B of CSQT manual. Include the list of species and names of any aquatic biologists consulted in developing the list in the reference column.	Fish data not available. Category is NA.	na	na
SGCN Absent Score	Species of Greatest Conservation Need (SGCN) are identified in the SWAP (2015) as those species whose conservation status warrants increased management attention and funding. SGCN are also considered in conservation, land use, and development planning in Colorado. SGCN species are classified into tiers; tier 1 species have the highest conservation need while tier 2 species have less of a conservation need than tier 1.	Prior to calculating this metric, users need to determine the expected fish community and observed fish community following the methods outlined in the previous section for Native Fish Species Richness. Follow Table 13 of CSQT manual.	Fish data not available. Category is NA.	na	na
Wild Trout Biomass (% Change)	This metric measures the increase in wild trout biomass following a restoration project relative to the change observed at a control site.	The proposed condition field value and field values for all subsequent monitoring events are calculated as the percent increase in biomass compared with pre-project biomass data, after correcting for natural variability using control site data.	Fish biomass data not available. Category is NA.	na	na

**ATTACHMENT B
DRONE IMAGERY
AQUATIC RESOURCES IMPACT ANALYSIS**



Map Legend

▭ Mine Permit Boundary

Channel Morphology (by type)*

▭ Cascade

▭ Pool

Greenline Type

— Coniferous Upland (641.40 ft)

— Deciduous Riparian (513.97 ft)

— Rock (2,342.29 ft)

*Pools and cascades were identified in the 2018 aerial imagery by assessing the color changes within the channel. In general, if an area was over 50% white in color, then it was considered a cascade. Whereas, an area that was greater than 50% green, emerald, or a relatively darker color was considered a pool. The entire channel width was considered either a cascade or pool and smaller morphological types within only a portion of the channel's width were not delineated due to the resolution of the aerial image.

Prepared By:

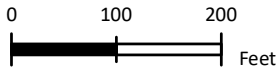


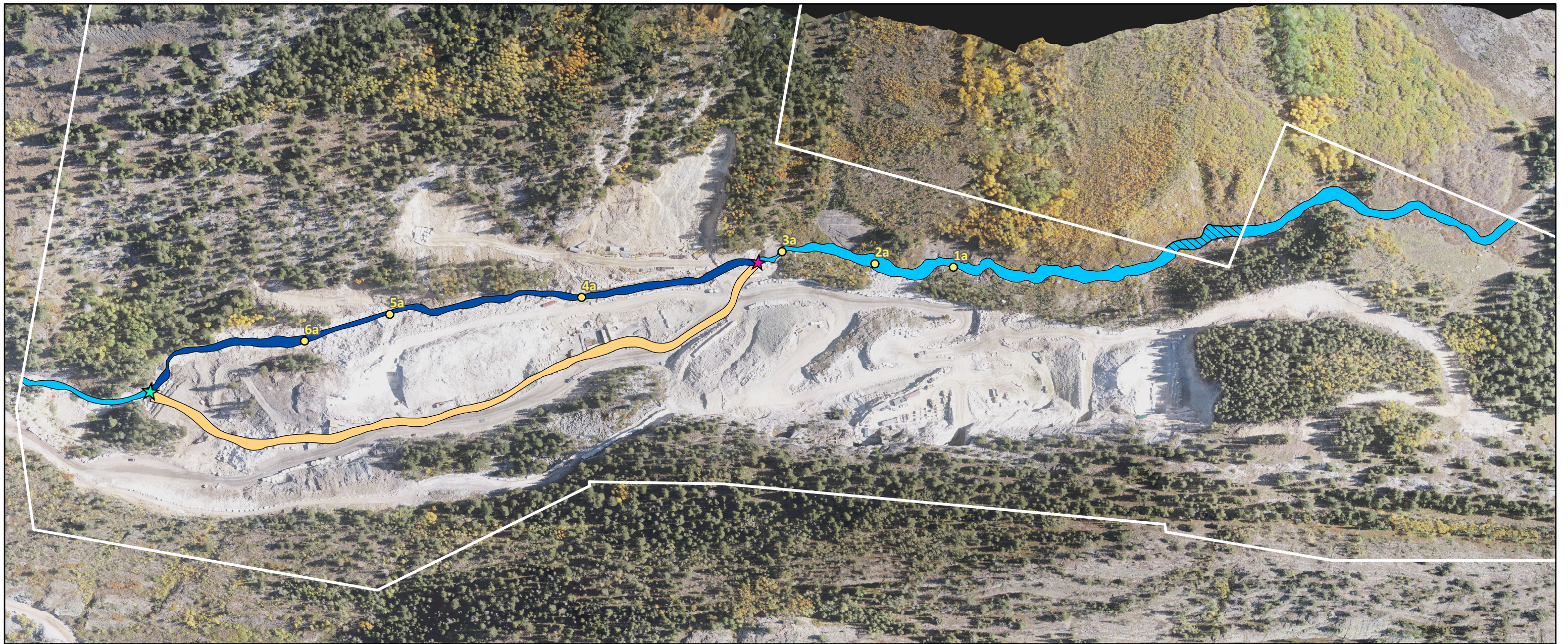
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 (303) 679-4820

ERC #: 1350-2001

YULE CREEK - 2018

**PRIDE OF AMERICA MINE
 COLORADO STONE QUARRIES
 MARBLE, GUNNISON COUNTY, COLORADO**





NOTES:

1. THE SURVEY AREA IS LOCATED IN GUNNISON COUNTY, COLORADO SECTIONS 1 & 12, TOWNSHIP 12 SOUTH RANGE 88 WEST.
2. AQUATIC RESOURCE LOCATIONS WERE FIELD DELINEATED BY ERC ON JUNE 25, 2020, USING THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: WESTERN MOUNTAINS, VALLEYS, AND, COAST REGION (VERSION 2.0) (MAY 2010).
3. THESE AREAS HAVE BEEN FIELD DELINEATED AND MAPPED WITH HAND-HELD SUB-METER ACCURACY GLOBAL POSITIONING SYSTEM (GPS) EQUIPMENT (+/-2 FEET). ORDINARY HIGH WATER MARK (OHWM) BOUNDARIES AND AQUATIC RESOURCE MAPPING WERE PREPARED BY ERC USING GEOGRAPHIC INFORMATION SYSTEMS (GIS).
4. SATELLITE IMAGERY WAS BY DRONE, DATED 2020.
5. THE PROJECTED COORDINATE SYSTEM FOR THE AQUATIC RESOURCE DELINEATION MAPPING IS: NAD_1983_STATEPLANE_COLORADO_CENTRAL_FIPS_050_FEET.









Stream Segment Length and Area		
Stream Segment	Linear Feet	Acreage
Yule Creek within Permit Boundary	2,272.50	1.22
Eastern Alignment Yule Creek	1,670.94	0.62
Western Alignment Yule Creek	1,748.87	0.83
TOTAL	5,692.31	2.67

Prepared By:




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ERC #1350-2001

MAP LEGEND

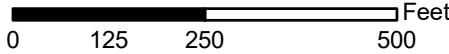
-  Mine Permit Boundary
-  Wetland Determination Point
-  Point of Diversion
-  Approximate Point of Confluence
-  Aquatic Resources A: Yule Creek (within permit boundary, 1.22 ac)
-  Aquatic Resources B: Eastern Constructed Channel of Yule Creek (0.62 ac)
-  Western Original Channel of Yule Creek (0.83 ac), Estimated
-  Yule Creek (outside permit boundary)

AQUATIC RESOURCES DELINEATION MAP

**PRIDE OF AMERICA MINE
COLORADO STONE QUARRIES
MARBLE, GUNNISON COUNTY, COLORADO**



1 inch = 250 feet





Ecological Resource Consultants, Inc.

2820 Wilderness Place Suite A Boulder CO 80301

Technical Memorandum Yule Creek Monitoring Plan

Date: March 22, 2021

To: U.S. Army Corps of Engineers
Grand Junction Regulatory Office (Sacramento District)

From: Ecological Resource Consultants, Inc.

Project: Yule Creek Monitoring Plan, Yule Creek Mitigation, Marble, Gunnison County, CO (U.S. Army Corps of Engineers Project Number: SPK-2019-00889)

On behalf of Greg Lewicki and Associates and Colorado Stone Quarries, Inc. (applicant), Ecological Resource Consultants, Inc. (ERC) has prepared this Monitoring Plan for the Yule Creek Mitigation Plan (ERC 3-22-21, Mitigation Plan). The Mitigation Plan was developed to provide compensatory mitigation and ecological functional uplift for impacts to the eastern channel of Yule Creek subject of SPK-2019-00889. This Monitoring Plan was developed to ensure ecological functional uplift of the Mitigation Plan is achieved as determined by the Yule Creek Functional Assessment technical memorandum (ERC 3-22-21, Functional Assessment).

This Monitoring Plan is based on field data summarized in the Functional Assessment and required as part of the Colorado Stream Quantification Tool (CSQT, Version 1.0, July 7, 2020). Per letter request dated February 18, 2021 (Request for Additional Information or RAI), the U.S. Army Corps of Engineers (Corps) is requiring a plan to monitor the eastern channel of Yule Creek to ensure that the reach is providing the proposed functions as designed (Item #3 of the RAI). During a project conference call on March 9, 2021, the Corps approved the use of the CSQT and/or modified CSQT to define existing baseline conditions of the impact area, assist in development of a mitigation plan, and to determine functional uplift success criteria for the implemented Mitigation Plan. This Monitoring Plan also includes an adaptive management approach to address any design or maintenance issues that may arise.

I. MONITORING OVERVIEW

The intent of the Monitoring Plan is to establish a process for evaluating whether the Mitigation Plan is successfully achieving stream functional uplift as determined per the Functional Assessment. The Monitoring Plan will help ensure that the compensatory mitigation is objectively evaluated to determine if it is developing into the desired stream type and providing the expected functions per the Functional Assessment (e.g., CSQT). The applicant (Colorado Stone Quarries, Inc.) will be responsible for monitoring the mitigation development. Annual field data collection, evaluation, and reporting will be submitted to the Corps for a period of five years (or as specified in the permit or until determined successful) in order to assess the status and success of the Mitigation Plan as well as provide information that can be used for corrective measures and/or adaptive management (as necessary). If the Mitigation Plan meets its success criteria in less than five years, the monitoring period length can be reduced, if there are at least two consecutive monitoring reports that demonstrate that success.

II. SUMMARY OF MONITORING PROTOCOL

Success of the Mitigation Plan shall be determined upon demonstrated benefit (i.e., uplift) in stream function compared to the pre-impacted condition based on assessment of input attributes to the CSQT. The specific monitoring parameters selected herein directly correlate to the CSQT to determine overall functional uplift of the Mitigation Plan.

Functional Categories to be monitored include:

- 1) **Reach Hydrology and Hydraulics**
- 2) **Geomorphology**

Table 1 provides a summary of the function based field parameters and monitoring methods. Field forms that will be used for monitoring data collection are provided in **Attachment A**.

Table 1. Summary of Measurement Methods for Annual Monitoring.

Function Based Field Parameter	Relevance to Restoration Objectives and Functions	Monitoring Method Field Form Used to Collect Data (Attachment A)
Reach Hydrology and Hydraulics		
Concentrated Flow Points	Concentrated flow points are defined as storm drains, outfalls or erosional features, such as swales, gullies or other channels that are created by anthropogenic impacts.	Project Reach Form
Average Depth	Average depth (ft) is the area wetted at the baseflow discharge divided by the wetted width of the cross-section. The average depth is calculated from three surveyed cross-sections. This metric uses cross-section geometry to determine the average cross-section depth (d) at riffles within the reach for the baseflow discharge.	Hydrology and Hydraulics
Bank Height Ratio	The bank height ratio (BHR) is a measure of channel incision and an indicator of whether flood flows can access and inundate the floodplain (Rosgen 2014). BHR is measured at riffles/cascades and calculated as the low bank height (LBH) divided by the bankfull riffle maximum depth (also referred to bankfull maximum depth; dmax). The low bank height is defined as the left or right streambank that has a lower elevation, indicating the minimum water depth necessary to inundate the floodplain.	Hydrology and Hydraulics
Entrenchment Ratio	An entrenchment ratio characterizes the vertical containment of the river by evaluating the ratio of the flood-prone width to the bankfull channel width measured at a riffle cross-section (Rosgen 1996). This metric is described in detail by Rosgen (2014). The floodprone width is the cross-section width at a riffle feature perpendicular to the valley at an elevation of two times the bankfull riffle maximum depth.	Hydrology and Hydraulics
Geomorphology		
Large Woody Debris	The Large Woody Debris (LWD) piece count metric is a count of the number of LWD pieces within a 328-foot (100 meters) section of stream.	Geomorphology

Function Based Field Parameter	Relevance to Restoration Objectives and Functions	Monitoring Method Field Form Used to Collect Data (Attachment A)
Percent Streambank Erosion	The percent streambank erosion is measured as the length of streambank that is actively eroding divided by the total length of bank (left and right) in the representative subreach.	Geomorphology
Pool Depth Ratio	The pool depth ratio is a measure of pool quality, where deeper pools score higher than shallow pools. Pool depth ratio is calculated as the bankfull pool maximum depth divided by the bankfull mean depth. Pool depth represents the difference in elevation between the deepest point of each pool and the bankfull elevation.	Geomorphology
Percent Riffle (Cascades)	The percent riffle (Cascade) is the proportion of the representative sub-reach containing riffle and run features, as distinct from pool features. Riffle generally refers to the plan form crossover section in between lateral scour pools in meandering channels and the cascade section of a mountain stream.	Geomorphology
Riparian Extent	The riparian extent metric describes the portion of the expected riparian area that currently contains riparian vegetation and is free from utility-related, urban, or otherwise soil disturbing land uses, fill, and development.	Riparian Extent Form, Greenline bank measurements
Woody Vegetation Cover	The woody vegetation cover field value for the CSQT is the sum of absolute percent woody plant cover from shrub and tree species, averaged across all plots within the representative sub-reach.	Riparian Veg Form
Percent Native Cover	Percent native cover metric is the relative cover of native species averaged across all plots within the representative sub-reach. Relative cover is the absolute cover of a species, or group of species, divided by the total coverage of all species, expressed as a percent.	Riparian Veg Form
General	Observations, permanent photo documentation and assessment for Adaptive Management that may not be captured in other Field Parameters.	General observations, notes and photos

III. ADAPTIVE MANAGEMENT

The implementation of an adaptive management plan is essential for evaluating whether the Mitigation Plan is developing properly during the critical establishment period (1-5 years after creation). The project may be vulnerable to inadequate geomorphology, bank erosion, and/or poor riparian vegetation establishment which could lead to the incorrect development of desired functioning per the CSQT. An adaptive management plan as part of the Monitoring Plan is to be used as a more general tool to predict potential downward trends of project components in order to determine necessary corrective measures prior to failure during the early stages of establishment to ensure the desired goals are met.

Once the Mitigation Plan is implemented, the Monitoring Plan, including adaptive management, will be initiated. As part of the adaptive management site-specific evaluation (typically completed as part of routine visual observations), potential concerns/problems will be assessed, and appropriate remediation measures will be implemented. The applicant will commit to the annual Monitoring Plan and implementation of adaptive management, as required. Typical problems or concerns that could arise as part of the Mitigation Plan may include channel instability/cascade failure, pool filling (deposition), bank erosion, lack of woody plant establishment, wildlife herbivory, weed establishment and upland slope failures into the flood prone area. Remedial actions that may need to be considered and implemented include heavy equipment operations to repair cascades/instability, in-channel (pool) sediment removal, replanting of vegetation, wildlife herbivory prevention, weed management, and slope stabilization.

IV. PERFORMANCE STANDARDS AND DETERMINATION OF PROJECT SUCCESS

The success of this Monitoring Plan will be determined based on an observable and measurable increase of functional change. Function based parameters defined in CSQT must show an increase in functional value from the Existing Condition Scores (ECS) versus the Proposed Condition Scores (PCS) as part of the Mitigation Plan and at a minimum provide a positive Total Proposed Functional Feet of 92.5 (per the Functional Assessment). Each functional category is assessed by the CSQT by inputting metrics to calculate scores. The scores are then weighted and summed to calculate overall scores.

The Monitoring Plan is designed to consider key elements related to the specific function parameters as part of the Mitigation Plan and CSQT PCS. It is intended to be used to evaluate the stability and natural evolution of the stream as it adjusts to flows and natural development. Upon completion of the project, routine monitoring will document each of the function parameters and physical habitat development per the methods outlined above. The routine monitoring results will then be compared to the baseline data collected in 2021. **Table 2** below lists the metrics evaluated and the target values used to development the Mitigation Plan for each parameter.

Table 2. CSQT Field Values for Success.

Function Based Field Parameter	Target CSQT Field Values* of the Mitigation Plan	Baseline CSQT Field Values (Impacted Western Alignment)
Reach Hydrology and Hydraulics		
Concentrated Flow Points	1.8	5.7
Average Depth	2	2
Bank Height Ratio	2	2
Entrenchment Ratio	1.5	1.3
Geomorphology		
Large Woody Debris	50	30
Percent Streambank Erosion	0	0
Pool Depth Ratio	2	1.5
Percent Riffle (Cascades)	73	78
Riparian Extent	75%	25
Woody Vegetation Cover	75%	40
Percent Native Cover	100%	100

Note: Target field values represent modeled conditions per the Mitigation Plan to achieve 92.5 functional feet (FF) uplift per CSQT.

V. ANNUAL MONITORING REPORT FORMAT.

A Monitoring Report will be prepared after each annual monitoring event. Each report will summarize the resulting data collected and present conclusions and trends for each CSQT parameter and calculated Functional Feet. The report will include graphs and maps for visual comparisons, and permanent photo points to evaluate site development over the monitoring period.

An annual monitoring report which follows the *USACE Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources* will be submitted to the USACE prior to December 31 of the monitoring year. Per the USACE Minimum Monitoring Requirements, the monitoring report narrative (which does not include supporting data) will be less than 10 pages and include the following information:

- i. Project Overview (1 page)
- ii. Requirements (1 page)
- iii. Summary Data (maximum of 4 pages)
- iv. Maps and Plans (maximum of 3 pages)
- v. Conclusions (1 page)
 - Completion of Compensatory Mitigation Requirements
 - Special Conditions
- vi. Appendix with supporting data

Data to be summarized as part annual monitoring reports shall contain, at a minimum, the following:

- Monitoring methods,

- Performance standards,
- Annual monitoring data,
- Quantitative comparison of current year results with past years' results,
- Assessment of observed trends or trajectory of measured parameters,
- Site photos,
- A discussion of the success or failure of achieving performance standards for the individual parameters and the mitigation as a whole,
- Recommendations for adaptive management remedial actions, as necessary; and
- Monitoring Map depicting data locations, features, conditions, comments, and photo points.

**ATTACHMENT A
FIELD FORMS**

Project Name:
Reach ID:

**Colorado Stream Quantification Tool
Parameter Selection Checklist**

Function-Based Parameter	Metric(s)	Applicability
<input checked="" type="checkbox"/> Reach Runoff*	<input checked="" type="checkbox"/> Land Use Coefficient (D) AND Concentrated Flow Points (F)	All streams and flow types.
<input checked="" type="checkbox"/> Baseflow Dynamics	<input checked="" type="checkbox"/> Optional: Velocity AND Average Depth (D/F)	Use where hydraulic conditions during summer/fall baseflow periods may not support trout assemblages under existing or proposed conditions due to flow or channel alteration.
<input checked="" type="checkbox"/> Floodplain Connectivity*	<input checked="" type="checkbox"/> Bank Height Ratio AND Entrenchment Ratio (F)	Omit ER in multi-thread channels.
	<input type="checkbox"/> Optional: Percent Side Channels (F)	Metric can be used in alluvial valleys with single-thread channels that support side-channels.
<input checked="" type="checkbox"/> Large Woody Debris (LWD)	<input type="checkbox"/> Optional: LWD Index (F)	Use in systems with forested catchments, riparian gallery forests, or that otherwise naturally have a supply of LWD.
	or	
	<input checked="" type="checkbox"/> Optional: No. of LWD Pieces/ 100 meters (F)	
<input checked="" type="checkbox"/> Lateral Migration*	<input checked="" type="checkbox"/> Dominant BEHI/NBS AND Percent Streambank Erosion (F)	Use in single-thread channels.
	or	Likely more applicable in streams naturally in disequilibrium.
	<input type="checkbox"/> Greenline Stability Rating (F)	
	<input type="checkbox"/> Percent Armoring (F)	Use in addition to the other metric(s) when man-made armoring is present or proposed in the project reach.
<input checked="" type="checkbox"/> Bed Form Diversity *in perennial and intermittent single-thread channels	<input checked="" type="checkbox"/> Pool Spacing Ratio AND Pool Depth Ratio AND Percent Riffle* (F)	Omit pool spacing ratio in bedrock dominated systems.
	<input type="checkbox"/> Optional: Aggradation Ratio (F)	Use in meandering single-thread stream types in transport settings where the riffles are exhibiting signs of aggradation.
<input checked="" type="checkbox"/> Riparian Vegetation*	<input checked="" type="checkbox"/> Riparian Extent (D/F) AND Woody Vegetation Cover (F) AND Percent Native Cover (F)	Where absolute woody vegetation cover is/should be >20%.
	<input type="checkbox"/> Riparian Extent (D/F) AND Herbaceous Vegetation Cover (F) AND Percent Native Cover (F)	Where absolute woody vegetation cover is/should be <20%.
<input type="checkbox"/> Temperature	<input type="checkbox"/> Optional: Daily Maximum Temperature (F) AND Maximum Weekly Average Temperature (F)	Use these parameters and metrics for projects with goals related to water quality improvements.
<input type="checkbox"/> Dissolved Oxygen	<input type="checkbox"/> Optional: Dissolved Oxygen Concentration (F)	
<input type="checkbox"/> Nutrients	<input type="checkbox"/> Optional: Chlorophyll α (F)	
<input type="checkbox"/> Macroinvertebrates	<input type="checkbox"/> Optional: Colorado Multi-Metric Index (F)	Use for projects with goals related to biological improvements or where project may impact conservation areas or other valuable fish habitats.
<input type="checkbox"/> Fish	<input type="checkbox"/> Optional: Native Fish Species Richness AND SGCN Absent (F)	
		<input type="checkbox"/> Optional: Wild Trout Biomass (F)

* Include in all assessments
(D) indicates metrics are calculated using desktop methods
(F) indicates metrics are calculated or verified using field methods

Date:
Investigators:

I. Site Information

Project Name:	
Reach ID:	
Drainage Area (sq. mi.):	
Flow Permanence:	
River Basin:	
Valley Type:	
Stream Reach length (ft):	
Latitude:	
Longitude:	

Shading Key
Desktop Value
Field Value
Calculation

II. Reach Walk

A.	Difference between bankfull (BKF) stage and water surface (WS) (ft)							
	Difference between BKF stage and WS (ft) <i>Average or consensus value from reach walk.</i>							

B.	Number Concentrated Flow Points							
	Concentrated Flow Points/ 1,000 L.F.							

C.	Length of Armoring on banks (ft)							
	Total (ft)							
	Percent Armoring (%)							

D.	Length of Side Channels (ft)							
	Total (ft)							
	Percent Side Channels (%)							

E.	Valley length (ft)	
	Stream Length (ft)	
	Sinuosity	

III. Identification of Representative Sub-Reach

Representative Sub-Reach Length At least 20 x the Bankfull Width		20*Bankfull Width	
Latitude of downstream extent:			
Longitude of downstream extent:			

Sub-Reach Survey Method

- Rapid Survey
- Detailed (Laser Level, Standard Level, Total Station, Survey-grade GPS, Other)

Date:
Investigators:

Representative Sub-Reach Sketch

Notes

Date:

Investigators:

Project Reach Name:

Project Reach Length:

Aerial imagery mapped extent:	Expected (area):		Observed (area):	
Check Aerial Imagery indicators used to define Expected Area:			Riparian Area %:	
<input type="checkbox"/>	Valley Edge	<input type="checkbox"/>	Slope break/Terrace	Notes:
<input type="checkbox"/>	Change in Sediment	<input type="checkbox"/>	Meander Width Ratio	
<input type="checkbox"/>	Evidence of Flooding	<input type="checkbox"/>	Other:	
<input type="checkbox"/>	Change in Vegetation	<input type="checkbox"/>		

If Meander Width Ratio approach was used, enter the following information:

Valley Type:	<input type="text"/>	Meander Width Ratio Used:	<input type="text"/>	Additional width (ft):	<input type="text"/>
Valley Length (ft):	<input type="text"/>	Bankfull width (ft):	<input type="text"/>	Expected Area (ft ²):	<input type="text"/>

FIELD VERIFICATION				
Date of Field visit:				
Field measured extent:	Expected (area):		Observed (area):	
Check indicators observed in the field at Expected Riparian Area extent:			Riparian Area %:	
<input type="checkbox"/>	Valley Edge	<input type="checkbox"/>	Slope break/Terrace	Notes:
<input type="checkbox"/>	Change in Sediment	<input type="checkbox"/>	Other:	
<input type="checkbox"/>	Evidence of Flooding	<input type="checkbox"/>		
<input type="checkbox"/>	Change in Vegetation	<input type="checkbox"/>		

Insert Aerial Photo of Project Reach with Observed and Expected Riparian Area extents:

Shading Key
<input type="checkbox"/> Desktop Value
<input type="checkbox"/> Field Value
<input type="checkbox"/> Calculation

**Colorado Stream Quantification Tool
Riparian Vegetation Form**

Date:
Investigators:

Sub-Reach Name:
Sub-Reach Length:

#Plots/side: Random Start #(1-20):

Plot Information		Cover Type: Location: Station ID:	Cover Type: Location: Station ID:	Cover Type: Location: Station ID:	Cover Type: Location: Station ID:
Tree Plots	N/I	Left Plot __	Right Plot __	Left Plot __	Right Plot __
Tree Absolute Cover Subtotal		0	0	0	0
Shrub Plots	N/I	Left Plot __	Right Plot __	Left Plot __	Right Plot __
Shrub Absolute Cover Subtotal		0	0	0	0
Absolute Woody Cover (%)		0	0	0	0
Absolute Native Woody Cover (%)		0	0	0	0

N= Native
I = Introduced

Cover Type: H, S, F
Herbaceous, Scrub-shrub, Forested

Location = Geomorphic Location: I, O, S
Inside meander, Outside meander, Straight/riffle

Project Name:

Reach ID:

Bankfull Riffle Values used for CSQT Calculations:

Discharge (CFS):	
Cross-sectional area (SF):	
Width (FT):	
Maximum Depth (FT):	
Mean Depth (FT):	

If field verification was not possible, explain why.

(1) Line of Evidence:

- | | |
|----------------------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Surveyed Profile of WSEL and Bankfull | <input type="checkbox"/> H&H Modeling |
| <input type="checkbox"/> Return Interval Analysis | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Regional Curves | <input type="checkbox"/> Other: _____ |

BKF value calculated from this method:

Description:

(2) Line of Evidence:

- | | |
|----------------------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Surveyed Profile of WSEL and Bankfull | <input type="checkbox"/> H&H Modeling |
| <input type="checkbox"/> Return Interval Analysis | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Regional Curves | <input type="checkbox"/> Other: _____ |

BKF value calculated from this method:

Description

Project Name:

Reach ID:

(3) Line of Evidence:

- | | |
|----------------------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Surveyed Profile of WSEL and Bankfull | <input type="checkbox"/> H&H Modeling |
| <input type="checkbox"/> Return Interval Analysis | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Regional Curves | <input type="checkbox"/> Other: _____ |

BKF value calculated from this method:

Description

(4) Line of Evidence:

- | | |
|----------------------------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Surveyed Profile of WSEL and Bankfull | <input type="checkbox"/> H&H Modeling |
| <input type="checkbox"/> Return Interval Analysis | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Regional Curves | <input type="checkbox"/> Other: _____ |

BKF value calculated from this method:

Description

Project Name:

EXISTING or PROPOSED or Monitoring

Colorado Stream Quantification Tool

Reach ID:

(Select one)

Field Value Documentation

Item	Value	Value Source/Reference
Reach Hydrology & Hydraulics		
Reach Runoff		
Land Use Coefficient		
Lateral Drainage Area (total; Acres)		
Forested or scrub-shrub (Acres)		
Herbaceous (Acres)		
Open Water (Acres)		
Open Space (Acres)		
Impervious Surfaces (Acres)		
Pasture (Acres)		
Cropland (Acres)		
FIELD VALUE - Land Use Coefficient (%)		Calculated
Concentrated Flow Points (#/1000 LF)		
FIELD VALUE - Concentrated Flow Points		Pulls from project reach form.
Baseflow Dynamics		
Gage Sampling Period (start, stop, and sampling interval)		
Gage number (if applicable)		
Q baseflow (cfs)		
Area wetted (sf) - Riffle 1		
Area wetted (sf) - Riffle 2		
Area wetted (sf) - Riffle 3		
Average Velocity (fps)		
Average Velocity (fps) - Riffle 1		
Average Velocity (fps) - Riffle 2		
Average Velocity (fps) - Riffle 3		
FIELD VALUE - Average Velocity (fps)		Calculated
Average Depth (ft)		
Top Width wetted (ft) - Riffle 1		
Average depth (ft) - Riffle 1		
Top Width wetted (ft) - Riffle 2		
Average depth (ft) - Riffle 2		
Top Width wetted (ft) - Riffle 3		
Average depth (ft) - Riffle 3		
FIELD VALUE - Average Depth (ft)		Calculated

Project Name:

EXISTING or PROPOSED or Monitoring

Colorado Stream Quantification Tool

Reach ID:

(Select one)

Field Value Documentation

Item	Value	Value Source/Reference
Reach Hydrology & Hydraulics Floodplain Connectivity		
Riffle lengths - Riffle 1		
Riffle lengths - Riffle 2		
Riffle lengths - Riffle 3		
Riffle lengths - Riffle 4		
Bank Height Ratio		
BHR - Riffle 1		
BHR - Riffle 2		
BHR - Riffle 3		
BHR - Riffle 4		
FIELD VALUE - Weighted Bank Height Ratio (ft/ft)		Calculated
Entrenchment Ratio		
ER - Riffle 1		
ER - Riffle 2		
ER - Riffle 3		
ER - Riffle 4		
FIELD VALUE - Weighted Entrenchment Ratio (ft/ft)		Calculated
Percent Side Channels (%)		
FIELD VALUE - Percent Side Channels (%)		Pulls from project reach form.

Project Name:

EXISTING or PROPOSED or Monitoring

CSQT

Reach ID:

(Select one)

Field Value Documentation

Item	Value(s)	Value Source/Reference
Geomorphology		
Large Woody Debris		
LWD Index		
FIELD VALUE - LWDI		LWDI spreadsheet output
No. of LWD Pieces/ 100 meters		
FIELD VALUE - No of LWD Pieces / 100 m		Counted in field
Lateral Migration		
Greenline Stability Rating		
% Composition of Stability Class 1		
% Composition of Stability Class 2		
% Composition of Stability Class 3		
% Composition of Stability Class 4		
% Composition of Stability Class 5		
% Composition of Stability Class 6		
% Composition of Stability Class 7		
% Composition of Stability Class 8		
% Composition of Stability Class 9		
% Composition of Stability Class 10		
FIELD VALUE - Greenline Stability rating		Calculated
Dominant BEHI/NBS		
Total Length of Bank Assessed (ft)		
BEHI/NBS Category 1		
Total Bank Length for Category 1 (ft)		
BEHI/NBS Category 2		
Total Bank Length for Category 2 (ft)		
BEHI/NBS Category 3		
Total Bank Length for Category 3 (ft)		
BEHI/NBS Category 4		
Total Bank Length for Category 4 (ft)		
BEHI/NBS Category 5		
Total Bank Length for Category 5 (ft)		
BEHI/NBS Category 6		
Total Bank Length for Category 6 (ft)		
FIELD VALUE - Dominant BEHI/NBS		
Percent Streambank Erosion (%)		
Length of Eroding Streambanks (sum)		Sum from values above
Representative Sub-reach Length (ft)		Pulls from project reach form.
FIELD VALUE - Percent Streambank Erosion (%)		Calculated
Percent Streambank Armoring (%)		
FIELD VALUE - Percent armoring (%)		Pulls from project reach form.

Project Name:

EXISTING or PROPOSED or Monitoring

CSQT

Reach ID:

(Select one)

Field Value Documentation

Item	Value(s)	Value Source/Reference
Geomorphology		
Bed Form Diversity		
Pool Spacing Ratio		
Median of Pool Spacings		
Number of Geomorphic Pools		
Bankfull Riffle Width (ft)		
FIELD VALUE - Pool Spacing Ratio		Calculated
Pool Depth Ratio		
Average of measured pool depth		
Number of pools measured		
Mean Riffle Depth		
FIELD VALUE - Pool Depth Ratio		Calculated
Percent Riffle (%)		
Reach Length		
Bankfull Riffle Width		
Representative Sub-Reach Length		Pulls from project reach form.
Total Riffle Length in Representative Sub-Reach		
FIELD VALUE - Percent Riffle (%)		Calculated
Aggradation Ratio		
Bankfull width at max riffle (ft)		
Bankfull mean depth (ft)		
Reference width/depth ratio (ft/ft)		
FIELD VALUE - Aggradation Ratio		Calculated
Riparian Vegetation - Field Forms Required, values calculated from those forms.		
Riparian Extent (%)		
Meander width ratio		
Additional width (ft)		per User Manual
FIELD VALUE - Riparian Extent (%)		Calculated
Woody Vegetation Cover (%)		
FIELD VALUE - Average Woody Cover (%)		Calculated
Herbaceous Vegetation Cover (%)		
FIELD VALUE - Average Herbaceous Vegetation Cover (%)		Calculated
Percent Native Cover (%)		
FIELD VALUE - Native Cover (%)		Calculated

Date:
 Investigators:
 Reach ID:

I. Riffle Data (Floodplain Connectivity & Bed Form Diversity)

A. Representative Sub-Reach Length			20*Bankfull Width	
------------------------------------	--	--	-------------------	--

B. Bank Height & Riffle Data: Record for each riffle in the Sub-Reach

	R1	R2	R3	R4	R5	R6	R7	R8
Begin Station								
End Station								
Low Bank Height (ft)								
BKF Max Depth (ft)								
BKF Mean Depth (ft)								
BKF Width (ft)								
Flood Prone Width (ft)								
Riffle Length (ft) <i>Including Run</i>								
Bank Height Ratio (BHR) Low Bank H / BKF Max D								
BHR * Riffle Length (ft)								
Entrenchment Ratio (ER)								
ER * Riffle Length (ft)								
WDR BKF Width/BKF Mean Depth								

C. Total Riffle Length (ft) <i>Excludes Additional Pool Lengths</i>	
D. Weighted BHR $\frac{\sum(\text{Bank Height Ratio}_i \times \text{Riffle Length}_i)}{\sum \text{Riffle Length}}$	
E. Weighted ER	
F. Maximum WDR	
G. Percent Riffle (%)	

Shading Key
Field Value
Calculation

Date:
Investigators:

II. Pool Data (Bed Form Diversity)

A. Pool Data: Record for each pool within the Sub-Reach

	P1	P2	P3	P4	P5	P6	P7	P8
Geomorphic Pool?								
Station								
P-P Spacing (ft)								
Pool Spacing Ratio Pool Spacing/BKF Width								
Pool Depth (ft) Measured from BKF								
Pool Depth Ratio Pool Depth/BKF Mean Depth								

B. Average Pool Depth Ratio		C. Median Pool Spacing Ratio	
------------------------------------	--	-------------------------------------	--

III. Slope

	Begin	End	Difference	Slope (ft/ft)
Station along tape (ft)				
Stadia Rod Reading (ft)				

IV. Notes

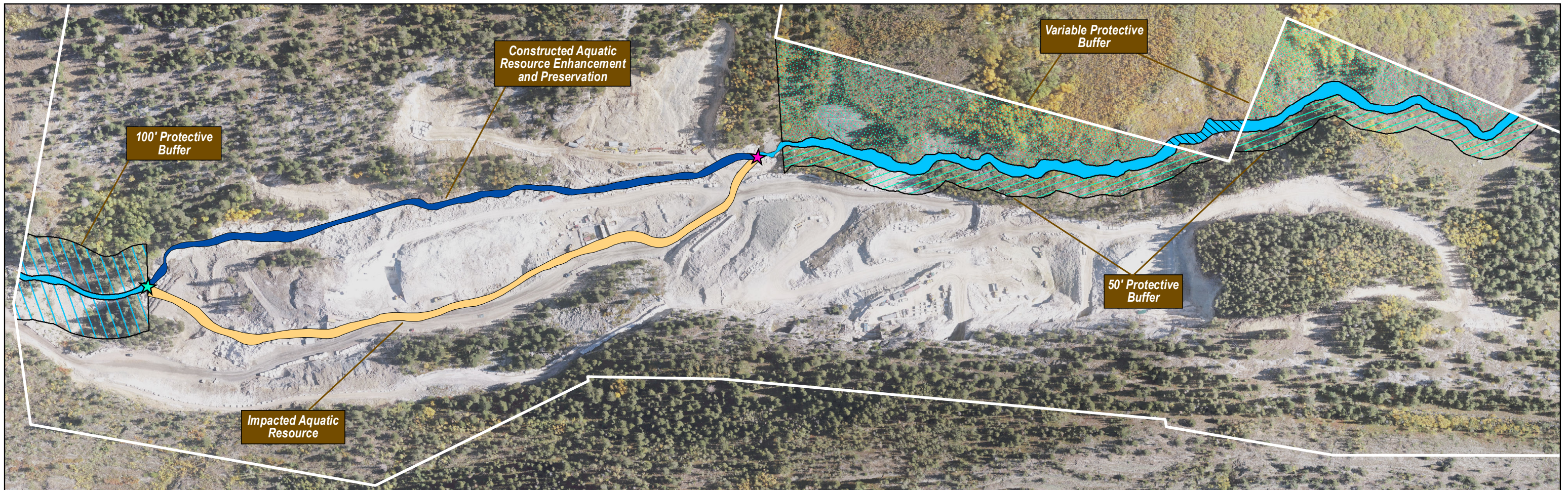


Table 1. Summary of Conceptual Compensatory Mitigation Plan (July 19, 2021)

Aquatic Resource Impact	Acre	Linear Feet	Type	Comment
Impacted Aquatic Resource (Western Alignment Yule Creek)	0.6	1,575.08	Riverine	Direct Fill
Proposed Mitigation				
1 Eastern Alignment of Yule Creek				
Constructed Aquatic Resource	0.58	1,670.89	Riverine	Establishment (Completed 2018)
Net Mitigation Difference from Impacted Aquatic Resource	-0.02	+95.81		
2 Yule Creek Mitigation Plan (March 2021)				
Channel Design	0.77	1,689	Riverine	Enhancement and Establishment to the active channel below the OHWM. (1,698 linear feet by 20' bankfull width)
Riparian Habitat Design	0.3		Riparian	Enhancement and Establishment to riparian habitat above the bankfull width.
Total:	1.07	1,689		Enhancement, Establishment and Preservation (1.7:1 Mitigation Ratio) (Mitigation 1.07 acres: Impact 0.6 acre)
Net Mitigation Difference from Impacted Aquatic Resource	+0.47			
3 Yule Creek Preservation Plan (July 19, 2021)				
Preservation of Unimpacted Portion of Yule Creek within the Mine Permit Boundary	1.22	2,307.98	Riverine	Preservation of Aquatic Resource
Protective Buffer along Unimpacted Portion of Yule Creek within the Mine Permit Boundary	9.86		Upland and Riparian	Preservation of Protective Buffer (exact acreage will be verified upon pending boundary survey)
Total Preservation:	11.08			Preservation (18.4:1 Mitigation Ratio) (Mitigation 11.08 acres: Impact 0.6 acre)

Base Aerial Imagery from Drone - September 28, 2020

Prepared By:



2820 Wilderness Place, Suite A
Boulder, CO 80301
(303) 679-4820
ERC #1350-2001

MAP LEGEND

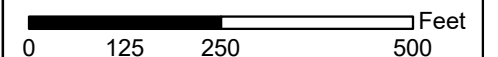
- Mine Permit Boundary
- Point of Diversion
- Approximate Point of Confluence
- Undisturbed Portion of Yule Creek
- Eastern Alignment of Yule Creek Constructed Channel (Establishment, Enhancement, and Preservation)
- Western Alignment of Yule Creek, Impacted Aquatic Resource
- Yule Creek (Outside Mine Permit Boundary)
- Preservation Area (100' Protective Buffer from OHWM)
- Preservation Area (Variable Protective Buffer from OHWM to Mine Permit Boundary)
- Preservation Area (50' Protective Buffer from OHWM)

**CONCEPTUAL COMPENSATORY
MITIGATION PLAN
JULY 19, 2021
SPK-2019-00889**

**PRIDE OF AMERICA MINE
COLORADO STONE QUARRIES
MARBLE, GUNNISON COUNTY, COLORADO**



1 inch = 250 feet



July 19, 2021

(b) (6)

Northwestern Colorado Branch
US Army Corps of Engineers
400 Rood Avenue, Room 224
Grand Junction, CO 81501

Delivered Via Email

RE: Response to June 17, 2021 USACE Additional Information Request (SPK-2019-00889)

(b) (6) :

On behalf of Colorado Stone Quarries, Inc. (CSQ), please allow this letter to serve as response to your June 17, 2021 letter to Marco Pezzica of CSQ.¹ Your letter and this response are part of the on-going communications between CSQ and the Corps regarding CSQ's October 1, 2020 application for a Clean Water Act, Section 404, Individual Permit (the "Application") for the Pride of America Mine (PAM) located near Marble, Colorado.² In your June 17, 2021 letter, you request CSQ provide additional information in support of its Application. The requested information is provided below preceded by each of your requests.

- 1. A proposal for further compensatory mitigation in addition to eastern channel improvements. Please know that your proposal to conduct maintenance activities on several culverts on County Road 3c and a bridge crossing the Crystal River as options for additional mitigation is not appropriate because proper maintenance is a requirement for structures located in all waters of the U.S., including the Crystal River and its tributaries. Improvements to these structures that seek to restore a site to natural reference conditions may be considered as part of your mitigation. Additional mitigation options may also include enhancement or restoration of aquatic resources on private or public lands and preservation of private property with valuable aquatic resources.***

To better understand and evaluate different locations and project types for compensatory mitigation as part of CSQ's Application, CSQ hosted the Corps for an on-site visit on Wednesday, June 30, 2021. Present were (b) (6), Chief, and yourself, Project Manager,

¹ Please address any future correspondence regarding CSQ's permit application to Mr. Jean St-Onge at the same CSQ address in Delta, CO with the email jean@csqmarble.com.

² Past correspondence regarding CSQ's permit application include the following materials: December 23, 2020 – USACE Request for Additional Information; January 22, 2021 – CSQ Response to December 23 USACE letter; February 18, 2021 – USACE Request for Additional Information; March 22, 2021 – CSQ Response to February 18 USACE letter, and; June 17, 2021 – USACE Request for Additional Information.

Northwestern Colorado Branch, USACE, Jean St-Onge (CSQ), myself (Lewicki and Associates (LA) f/k/a Greg Lewicki and Associates), and Dave Blauch (Ecological Resource Consultants (ERC)). During the site visit, various options for permanent compensatory mitigation within the Yule Creek and Upper Crystal River drainages were reviewed.

Following the site visit, CSQ, LA and ERC re-evaluated potential compensatory mitigation options, both on-site and off-site. As discussed more fully below, CSQ believes the greatest environmental benefit will arise from an expansion of on-site mitigation beyond those activities originally proposed. Focused on-site mitigation is consistent with Corps guidance and can be implemented in a more timely manner than off-site mitigation projects, particularly those located on U.S. Forest Service (USFS) property. Even if the proposed project is of initial interest to the Forest Service, the technical review process can be lengthy with associated time/implementation delays.³

To expedite compensatory mitigation implementation, CSQ is proposing additional preservation on-site in areas adjacent or contiguous to the discharge site as the preferred compensatory mitigation option. Such option is referred to hereinafter as the Yule Creek Preservation Plan. It is CSQ's understanding that such "in kind" preservation of undisturbed resources within the same watershed is preferred by the USACE (2008 USACE Mitigation Rule). The Yule Creek Preservation Plan, when paired with the commitments made in CSQ's March 22, 2021 submittal to enhance and establish the eastern channel of Yule Creek with +95.81-feet of functional uplift, represents a total of 11.08 acres of on-site restoration and preservation.

As is discussed in greater detail in ERC's July 19, 2021 Conceptual Compensatory Mitigation Plan and its responses to the USACE June 17th letter, a copy of which is Attachment A to this letter, multiple lines of on-site compensatory mitigation are being proposed. Those are summarized below along with tentative timelines:

- Establishment of the eastern alignment of Yule Creek (completed)
- Replacement of the diversion area culvert with a bottomless design (to be completed Sept-Oct 2021)
 - Detailed herein as response to #2.b.
- Enhancement and further establishment of the eastern alignment of Yule Creek to increase aquatic resource function (to be completed Sept-Oct 2021; greater detail is presented in the March 2021 Yule Creek Mitigation Plan)
 - Increased definition of the thalweg
 - Cascades will be modified/developed for a more natural and irregular sequence

³ Following the site visit, LA researched the ownership of certain properties that had been identified as potential locations for off-site compensatory mitigation. It was determined that the USFS was either the owner of potential mitigation sites or was party to an easement across the proposed area. LA subsequently contacted Mark Weinhold, White River National Forest, to discuss whether such properties could be used as mitigation sites. In particular, the culverted area along County Road 3c commonly referred to as "mud gulch" was discussed as a potential location for fill removal, restoration of upland bank species, and construction of a barricade to prevent future fill migration. Mr. Weinhold advised that the proposed sediment removal/wetland restoration proposal was likely not a viable option as it would only be temporary in nature (e.g., five years or so) due to constant sediment transport and deposition in the area as a result of naturally occurring upstream seasonal erosion.

- Alterations to block placement to achieve a pool depth ratio of 2
 - Stream channel configuration to 68-78% riffle and 22-32% pool
 - Large woody debris installations (further detailed herein as response to #2.c.)
 - Development of the riparian edge with woody vegetative cover to bankfull elevation (total of 13,000 square feet)
- Preservation of the unimpacted portions of Yule Creek within CSQ's mining permit boundary (pending USACE approval)
 - Preservation of 1.22 acres of undisturbed Yule Creek (in channel)
- Preservation of variable buffers along Yule Creek within CSQ's mining permit boundary (pending USACE approval)
 - Preservation of 9.86 acres of variable width protective buffer on either side of the undisturbed Yule Creek
 - 100-foot buffer on either side of the undisturbed portion of Yule Creek north of the confluence point between the two paleo-channels of Yule Creek
 - 50-foot buffer on the west side of the unimpacted reach of Yule Creek south and upstream of the diversion point
 - Variable width buffer of the east side of the unimpacted reach of Yule Creek south and upstream of the diversion point from the creek bank to the eastern property line

Following authorization from the USACE, implementation of the Yule Creek Preservation Plan will protect these additional portions of Yule Creek and adjacent land from mining impacts. CSQ has committed to not disturb the proposed preservation areas throughout the life of the mine without first obtaining express authorization from the USACE. The preservation areas are delineated on the aerial photograph captioned "Conceptual Compensatory Mitigation Plan" which is a part of ERC Conceptual Compensatory Mitigation Plan (Attachment A). Preservation areas include undisturbed segments of Yule Creek north of the active mining area as well as south of the diversion point.

Preservation buffers along Yule Creek are variable and were chosen based on CSQ's current site disturbance and property boundaries. Following additional consultation with USACE and at their request, preservation buffers were expanded from 50-foot to 100-foot where possible. Buffer area extents are limited by current site disturbance as well as the extent of CSQ's property. The northern extent of the site will host a 100-foot buffer on either side of Yule Creek while the southern and larger extent adjacent to Yule Creek will feature a 50-foot buffer to the west of the creek with a variable width buffer on the east side of the creek to CSQ's property line. Signage will be appropriately placed at an approximate 50-foot interval to identify the restricted area (e.g. "Do Not Enter, Preservation Area" or a similar warning).

CSQ's commitment to establish the additional preservation areas goes well beyond any current restrictions governing its mining activities at the PAM. Although CSQ is currently mining the Franklin Quarry and is authorized to disturb all of the acreage (except waters of the US) within its Division of Reclamation, Mining and Safety (DRMS) reclamation permit boundary, CSQ is not conducting any active mining in the proposed preservation areas. Should CSQ's proposed mitigation plan be acceptable to the Corps, future surface mining plans would no longer encompass the areas included in the Yule Creek Preservation Plan, regardless of whether marketable stone may be present in those areas. As noted above, if CSQ desired to enter those

surface areas during the life of the mine, CSQ would seek prior express written approval from the Corps.

Additionally, pending USACE prior approval, notice of 'preservation acreage' will be included in the next Technical Revision (TR) to CSQ's reclamation permit. The TR will be submitted to the DRMS and will incorporate the results of this 404-permitting effort into CSQ's reclamation permit, as is required by the DRMS. By doing so, another governmental agency with regulatory authority over the site will be involved in overseeing on-site activities. If the DRMS determines that disturbances have occurred in the preservation areas, it has the ability to require that such activities cease and restoration activities be conducted. The DRMS also can raise the amount of the reclamation bond to cover any additional site disturbances. Also, by including the preservation areas in the reclamation permit, any subsequent owners/operators of the quarry operating under the permit would be subject to the same mining restrictions arising from the preservation areas, thus effectively protecting the preservation areas regardless of a change of ownership. That said, e, a change of ownership is neither currently anticipated nor planned for the PAM quarry. Financial assurances meant to protect the restoration of the eastern channel of Yule Creek, as well as the compensatory mitigation options discussed above, are addressed in response 2.e. below.

2. Edit and augment the mitigation plan for the proposed improvements of the eastern channel to include;

a. Timeline for conducting mitigation work in Yule Creek with a description regarding how that timeline avoids and minimizes impacts to aquatic resources.

CSQ is prepared and proposes to commence construction activities within the eastern alignment of Yule Creek during September/October 2021. Prior to doing so, authorization from both the Corps and DRMS (in the form of a TR – see response to 2.e. below) will be required. CSQ's goal is to complete all construction required to implement the Yule Creek Mitigation Plan (dated March 2021) prior to the onset of winter weather. Vegetation planting will occur as detailed in the Mitigation Plan and under the direction of a technically qualified party. This schedule is contingent on USACE's approval of CSQ's 404 Individual Permit application in the near future. Given the short construction season, delayed permit approval would push the start of mitigation to the fall of 2022. Following the completion of in-creek construction and vegetation installations, ERC will monitor the site's restoration as outlined in the Yule Creek Monitoring Plan.

As noted above, the timeline to conduct mitigation work within Yule Creek is extremely limited due to the site's location in a sub-alpine environment that experiences strong variation between seasonal weather regimes. Therefore, construction activities may only occur during the lowest flow conditions that annually occur during September through October. Occasionally this window may be pushed into November; however, the onset of winter usually occurs mid-October and thus, construction in November is not a reliable option.

By completing construction during the low water season, potential impacts to aquatic resources, if any, will be mitigated in that the low flows have limited capacity to entrain and transport disturbed sediments. Additionally, low flows can be managed to further prevent downstream disturbances and turbidity. Further, construction using heavy equipment may only occur during low flow seasons to allow for safe work conditions and for the equipment to move large block and boulders to create the required channel geometries.

b. Design drawings for the bottomless culvert proposed to replace the culvert crossing near the upstream(south) end of the project area.

CSQ commits to not constructing any additional surface structures within the design mitigation corridor of the eastern alignment of Yule Creek, except for crossing structures. All crossing structure (e.g., the new bottomless culvert that will replace the current corrugated steel culvert) will be wide enough to span the full 31-foot wide 100-year flood width of the designed channel as detailed in the March 22, 2021 Yule Creek Mitigation Plan designed by ERC and previously submitted to USACE.

As shown in Figures 1 and 2, a flatbed railcar bridge or equivalent will be used to span the creek and will be anchored to marble blocks on both side of the crossing. The bridge will have the load capacity required for CSQ's equipment. Marble blocks will be cut to size on site and backfilled to both side slope elevations to ensure stability.

Upper Stack Channel Cross Section

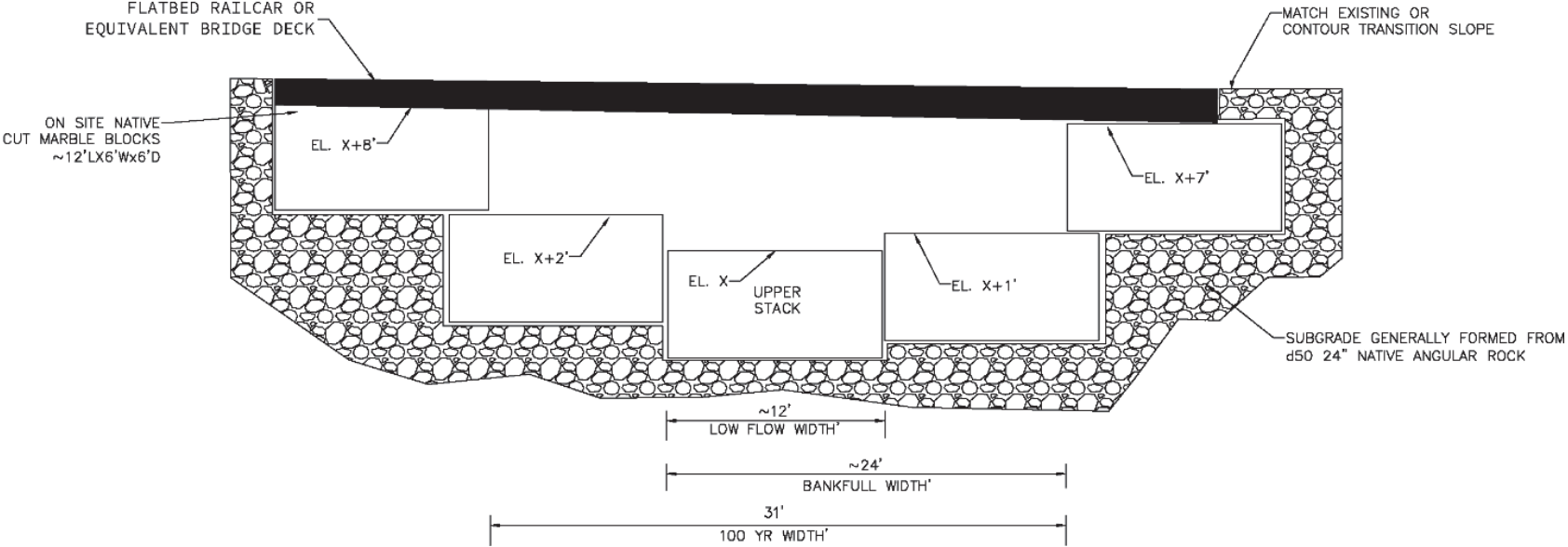


Figure 1. Design of a flatbed railcar bridge over Yule Creek near the diversion point. This crossing design image was annotated from ERC’s March 2021 Yule Creek Mitigation Plan.



Figure 2. Example of a flatbed railcar bridge in use in Idaho courtesy of Redi-Rock. Note that the bridge is anchored in concrete while CSQ's crossing will use marble blocks.

- c. Narrative description of how the log root wads will be anchored into the streambed or bank, including any additional design drawings that were not provided.***

Please refer to ERC's description #11 in the attached Conceptual Compensatory Mitigation Plan, dated July 19, 2021, for further detail. In the attached plan, ERC details how large woody debris will be anchored into the channel of the eastern alignment of Yule Creek via marble block and boulders. This work was originally proposed in March 2021 as part of the Yule Creek Mitigation Plan. An image is included that shows the process in cross sectional and plan views.

- d. Please revisit and specify the proposed design goals and provide specific performance standards related to the extent and cover of the woody riparian species along the banks of the eastern channel. Any changes to the proposed design goals would need to be incorporated into an updated report of the SQT assessment. Performance standards should be in accordance with the South Pacific Division Uniform Performance Standards (enclosed).***

Please refer to ERC's description #12 in the attached Conceptual Compensatory Mitigation Plan. In its attached plan, ERC details how willow stakes or nursery potted willows will be planted to achieve 75% coverage over the bankfull edge, a total of 13,000 square feet. Assessment of performance standards and determination of success are further detailed in ERC's March 22, 2021 Yule Creek Monitoring Plan. Also, it is CSQ's understanding based on comments made by you and (b) (6) during the July 30, 2021 site visit, that you agree that ERC's March 22, 2021 proposed design goals are achievable given comparison to unimpacted and heavily vegetated areas adjacent to the undisturbed Yule Creek corridor within CSQ's DRMS permit boundary.

- e. Proposal to establish a financial assurance for the mitigation efforts in the form of a letter of credit, escrow account, or other appropriate instrument. The amount of the assurance shall be of sufficient value to remediate or replace the mitigation project(s) in the event that the project fails.**

CSQ currently has an active reclamation permit for the PAM issued by the DRMS (M-1999-058 – Reclamation Permit). The Reclamation Permit covers mining activities within the permit boundary and includes a financial warranty, held by the State of Colorado, in the amount of \$404,857.00 as of August 20, 2020, the permit anniversary date. The bond is intended to ensure that, if CSQ was unable to reclaim the site, the State of Colorado would have the financial resources available to successfully conduct the reclamation as provided for in the Reclamation Permit. The bond amount was calculated by the DRMS during the last permit amendment and is eligible for increase or decrease depending on site specific conditions. Typically, as more acreage is disturbed, a site's bond increases. As disturbed grounds are reclaimed, the bond may be partially released.

As noted in CSQ's March 22, 2021 submittal, CSQ plans to file a TR with the DRMS to bring the Yule Creek Mitigation Plan and Yule Creek Preservation Plan (collectively, the Plans) into the DRMS permit. The TR, however, cannot be filed until after the USACE has approved CSQ's IP application. Once an IP is awarded, CSQ will take immediate steps to bring the Plans into the Reclamation Permit, including appropriate modification of the bond amount to reflect the proposed mitigation activities. The TR can include express provisions that DRMS will contact and consult with the USACE prior to approving any changes to the Plans.

The TR will also include a proposal regarding how the bond should be modified to reflect any additional financial assurance required in regard to the Plans. Once a TR is filed with the DRMS, a DRMS site inspector will complete an on-site inspection that evaluates the changes proposed in the TR. Following the site inspection, DRMS will make its own evaluation of the appropriate bond amount and will require CSQ to modify its financial assurance as appropriate as a condition of approval to the TR. Only after CSQ has posted the bond to cover implementation of the Plans, will the TR be approved.

Table 1 details an initial calculation of changes that may be added to CSQ's current bond pending USACE and DRMS TR approvals.

Table 1. Financial Warranty Increase

Task	Description	Units		Unit Cost (\$)	Cost (\$)
1	<i>Eastern channel of Yule Creek Restoration (Mitigation Plan)</i>				
	Excavator work within Yule Creek	80	hr	200.00	16,000.00
	Drum cutter work within Yule Creek	40	hr	200.00	8,000.00
	Installation of large woody debris (Excavator)	40	hr	200.00	8,000.00
	Seeding	0.3	acre	2,000.00	600.00
	Planting (root stock and tubelings)	1500	plants	16.00	24,000.00
2	<i>Eastern channel of Yule Creek Monitoring</i>				
	Annual ERC inspection and report - up to 5 years	5	year	12,000.00	60,000.00
3	<i>Follow-up revegetation (as needed - 2 years included)</i>				
	Seeding (50% year 1 rate)	0.15	acre	2,000.00	300.00
	Planting (root stock and tubelings; (50% year 1 rate))	750	plants	16.00	12,000.00
4	<i>Replacement of culvert with bottomless crossing</i>				
	Flatbed railcar bridge	1	bridge	30,000.00	30,000.00
	Excavator work (bridge and footings)	40	hr	200.00	8,000.00
5	<i>Establishment and Protection of preservation area</i>				
	Signs (e.g. Do NOT Enter) and posts	50	sign	100.00	5,000.00
	Preservation area signage insallation	20	hr	60.00	1,200.00
6	<i>Franklin north opening</i>				
	Stripping and sediment control	2	acre	2,000.00	4,000.00
	Seeding east of Creek	2	acre	2,000.00	4,000.00
Subtotal					181,100.00
DRMS Administrative Costs (30%)					54,330.00
Total					235,430.00

f. Proposal to establish long-term site protection of the mitigation site in the form of a conservation easement, deed restriction, or other acceptable legal protective instrument.

Given the regulatory powers currently vested in the Corps pursuant to Section 404 of the Clean Water Act and its implementing regulations, CSQ believes that no additional mitigation protections are necessary. That said, if the Corps believes additional protection is required, such protection could be afforded through specific terms and conditions in CSQ's IP. As the fee owner of the entire on-site mitigation project, including all aquatic habitats and riparian buffers, CSQ will work cooperatively with the Corps to establish such terms and conditions to protect the proposed mitigation site (eastern channel and preservation areas). Such an approach is consistent with applicable USACE regulations and guidance regarding compensatory mitigation site protection. Generally speaking, such terms and conditions could include the following provisions:

- A description of the compensatory mitigation site's location, including preservation buffers;
- A representation from CSQ that it is the fee simple owner of the mitigation site, including the surface and mineral estates, and that the site is not otherwise subject to pre-existing legal entitlements that, if exercised, could compromise the performance of on-site mitigation activities;

- A description of the on-site conservation resources, by reference to prior materials submitted to USACE through the permit application process;
- A listing of permitted and prohibited uses of the mitigation areas, to include prohibitions on quarry or other surface activities within the mitigation areas (the described restoration in the eastern channel of Yule Creek and the compensatory mitigation preservation buffers); and
- USACE's right of enforcement, to include its right to enter the site upon reasonable notice to inspect conditions and the establishment of the remedy of specific performance for CSQ's obligations related to site protection.

Alternatively, but less efficiently, such terms and conditions could be set forth in a mutually agreeable stand-alone agreement between the Corps and CSQ.

Please do not hesitate to contact me with questions or concerns. CSQ appreciates the Corps continued cooperation and guidance in regard to CSQ's permit application.

Regards,



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(b) (6), USACE
Jean St-Onge, Colorado Stone Quarries, Inc.
Ben Miller, Lewicki and Associates, PLLC
David Blauch, Ecological Resource Consultants, Inc.
Marlene Crosby, Gunnison County
Emilee Gaebler, Gunnison County
Dustin Czapl, DRMS

Attachments:

- A: ERC Conceptual Compensatory Mitigation Plan and response to June 17, 2021 USACE letter (CCMP_7-19-21_SPK-2019-00889-v2a.pdf)

August 6, 2021

(b) (6)

Northwestern Colorado Branch
US Army Corps of Engineers
400 Rood Avenue, Room 224
Grand Junction, CO 81501

Delivered Via Email

RE: Addendum to CSQ's July 19, 2021 Response to USACE's June 17, 2021 Additional Information Request (SPK-2019-00889)

(b) (6)

On behalf of Colorado Stone Quarries, Inc. (CSQ), please allow this letter to serve as an addendum to CSQ's July 19, 2021 response to your June 17, 2021 letter to Marco Pezzica of CSQ (the "Addendum"). The Addendum is part of the on-going communications between CSQ and USACE regarding CSQ's October 1, 2020 application for a Clean Water Act, Section 404, Individual Permit (the "Application") for the Pride of America Mine (PAM) located near Marble, Colorado.¹

USACE recently advised CSQ that additional mitigation (beyond those mitigation measures presented in CSQ's July 19, 2021 response) would likely be required. In order to expedite the permitting process and in view of the short construction season at the PAM, CSQ agreed to submit an addendum to its July 19 submittal identifying additional mitigation measures.

1. Offsite Mitigation

On July 30, 2021, you, Dave Blauch of Ecological Resource Consultants (ERC) and I spoke by phone to determine if additional mitigation would be required over and above the mitigation proposed in CSQ's July 19 submittal (i.e., eastern channel restoration and preservation acreage). Although CSQ believes the mitigation measures set forth in its July 19 submittal satisfy any obligations that may have arisen as a result of the relocation of Yule Creek to the eastern channel, at the request of USACE and in the spirit of cooperation, CSQ agrees to include an off-site mitigation location as part of its proposed mitigation package, as described more fully below.

¹ Past correspondence regarding CSQ's permit application include the following materials: December 23, 2020 – USACE Request for Additional Information; January 22, 2021 – CSQ Response to December 23 USACE letter; February 18, 2021 – USACE Request for Additional Information; March 22, 2021 – CSQ Response to February 18 USACE letter; June 17, 2021 – USACE Request for Additional Information; and July 19, 2021 – CSQ Response to June 17 USACE letter.

CSQ proposes to replace the current 42-inch diameter culvert at Mud Gulch, which is located approximately 0.6 miles north of the PAM's gated entrance along County Road 3c, with a larger diameter culvert (e.g., >72-inch diameter) with an increased grade. The installation of the larger, steeper culvert would allow for higher volume, efficient stormwater transport, as well as increased sediment transport without significant deposition when compared to the current culvert. Additionally, replacement of the culvert would promote the return of the Mud Gulch drainage to its native state as a main sediment transportation pathway from the shale cliffs above the road (~10,800-foot elevation) to Yule Creek (~ 8,600' elevation).

CSQ previously considered replacing the current 42-inch diameter culvert with a 72-inch culvert, marble block sediment barriers, and restoring wetland plantings within certain portions of the Mud Gulch drainage immediately downgradient from the existing culvert. The proposal, however, was deemed unacceptable by the USFS as it believes the proposed changes (i.e., a 72-inch diameter culvert and marble block sediment barriers) would not address the predominant problem at Mud Gulch, i.e., naturally-occurring, seasonal sediment flow from the drainage upgradient of the road. USFS was concerned that such proposed improvements would be short-lived. As discussed briefly below, the Forest Service's prediction was accurate.

CSQ's current proposal will address the primary concern with the earlier proposal, and based on recent discussions with USFS representatives, it is CSQ's understanding that USFS agrees with CSQ's current proposal as provided in this Addendum. While final conceptual designs for sediment and water passing are currently being discussed with the USFS, both the USFS and CSQ are committed to working cooperatively to reach a solution that accommodates CSQ's operation of the site as well as returns the Mud Gulch drainage system back closer to its native state.

Construction of a bottomless culvert, as previously considered, is not necessary as no fish pathways or habitat exists in the area. As noted above, the culvert will be installed with a steeper dip than the current orientation such that flow through the culvert is less likely to become clogged with fines and vegetative debris. According to Mark Weinhold, Hydrology/Hydraulic Engineering, White River National Forest, the USFS plans to complete an onsite inspection to view the drainage, take measurements, conduct a drone flight, and discuss potential solutions with CSQ and its consultants. This onsite meeting will occur during the week of August 16, 2021 with a final date chosen pending the weather forecast. Final design distances, installation depths, and overburden placement will be field verified and altered, as needed. Additionally, a qualified consultant will be present during installation to oversee and approve any deviations for the plan.

CSQ plans to complete the entirety of the work itself, and in accordance with CSQ's Road Maintenance Agreement (RMA) with Gunnison County, it will seek final authorization and approval from Gunnison County prior to initiating any temporary road closures or disturbance. During a July 22, 2021 site visit, representatives from the Gunnison County Public Works Department advised that more extensive improvements, like those proposed with the new culvert, will be needed in the future, i.e., beyond those activities currently conducted by CSQ pursuant to RMA. Therefore, CSQ believes Gunnison County will be supportive of the proposed mitigation.

This proposed mitigation to the Mud Gulch drainage, as provided herein, comes at an opportune time as the month of July 2021 brought heavy rain and mud slides to much of western Colorado. During the week of July 19, multiple large scale >30-year mud slide events occurred at Mud

Gulch and the drainage ~1,000-feet north of Mud Gulch along County Road 3c (Figure 1). Each slide deposited more than three to four feet of saturated shale sediment, woody debris, and shale rocks the size of basketballs across the road and filled the natural drainage below the road, including the area that was previously proposed for mitigation. The slides caused multiple small culverts to clog and resulted in >6-inches of stormwater sheet flow impacting the downhill reaches of the County Road. Currently the 42-inch culvert has been cleared of sediment; however, this event has proven the need for an upsized culvert at the Mud Gulch location.

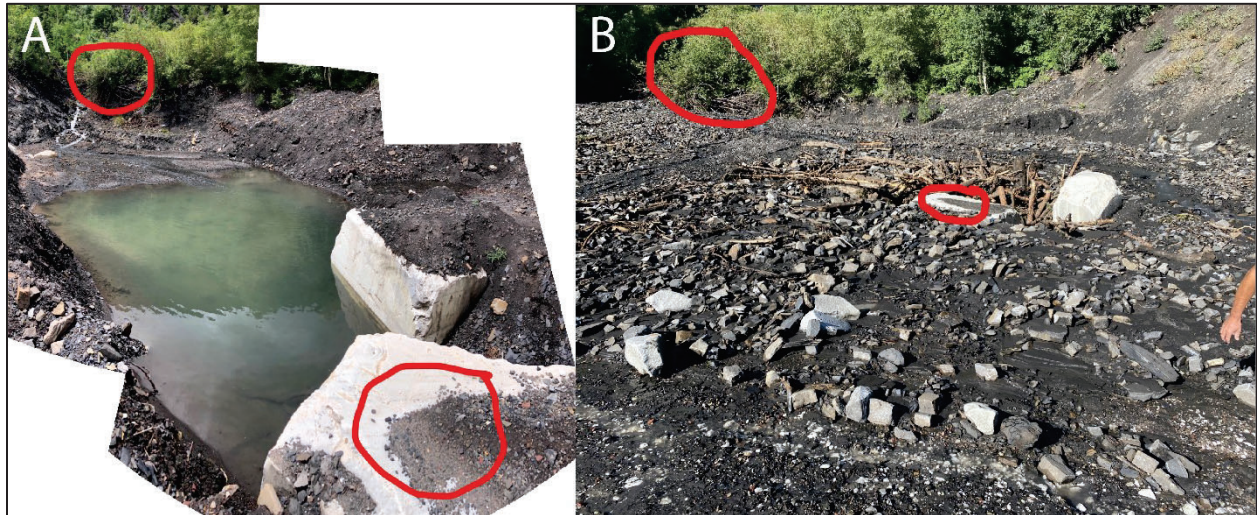


Figure 1. View of the uphill edge of Mud Gulch looking west-southwest. Image A (left) was captured June 30, 2021. Image B (right) was captured July 21, 2021 the morning after the first big slide and after the road was opened via loader and grader. Notice the woody debris, rocks, and fine shale comingled in the sediment debris flow. Areas in red show corresponding locations. The human arm on the right side of image B serves as scale of the magnitude of the event.

During the June 30th site visit, there was discussion of potentially removing the fill that was partially within the Gunnison County ROW and on USFS property, as well as within the channel of the drainage on the downhill edge. Parts of the limited historical fill area, however, are now buried beneath and co-mingled with mud and debris as a result of the July 2021 mudslide discussed above. Removal of the fill material is impractical given the fact that similar hydrological events are likely to occur within the Mud Gulch drainage in the future.

2. Long-Term Site Protection

USACE has proposed that conditions be placed in CSQ's Colorado Division of Reclamation, Mining and Safety (DRMS) reclamation permit that would protect any mitigation measures to be implemented by CSQ. While CSQ believes such conditions are unnecessary given the USACE's statutory and regulatory authority under the Clean Water Act, in the spirit of cooperation, CSQ is willing to include protective measures within its DRMS permit. This will result in the DRMS, the primary State agency with regulatory authority over the site, having authority to monitor CSQ's restoration and preservation activities.

As noted in Section 2.e. of CSQ's July 19, 2021 response, a Technical Revision (TR) to CSQ's permit will be needed to bring the onsite mitigation plans presented in the USACE 404 permit into the DRMS permit. In addition to including the eastern channel of Yule Creek restoration

plan and resultant bond recalculation in the DRMS permit, CSQ will include the preservation acreage, as outlined in its July 19 submittal. The TR will include language that CSQ will promptly notice the USACE of a violation of CSQ's DRMS permit concerning the preservation acreage.

A revised sitewide mine map will be included in the TR that clearly outlines the location of preservation acreages such that a 'no disturbance' boundary may be monitored and enforced by the DRMS. The preservation areas would be included within the DRMS permit boundary, but would not be included within the Affected Land boundary (i.e., the permitted disturbance area). Affected Land is defined, in part, in C.R.S. 34-32-103(1.5), "means the surface of an area within the state where a mining operation is being or will be conducted, which surface is disturbed as a result of such operation." By excluding the preservation areas from the Affected Land, mining activities would not be allowed in those preservation areas. Following the approval of the TR, any mining impact to the preservation acreage in violation of CSQ's reclamation permit would be subject to enforcement action and a likely bond increase to cover restoration of the impacted area. Furthermore, and as previously detailed to USACE in a prior submission, the PAM has >100 years of mine life left. Therefore, in the unlikely event that the PAM were to be owned and operated by an entity other than CSQ, the preservation acreage and eastern channel alignment restoration would remain protected under the DRMS permit.

As detailed in previous submittals to the USACE, eastern channel restoration construction activities are limited to the months of September and October during low-flow creek conditions and prior to the ground freezing due to the onset of winter conditions. Further, CSQ cannot begin any of the work proposed as part of its Application without first obtaining approval from the DRMS in the form of a TR. Accordingly, once the USACE has approved CSQ's Application, CSQ will promptly begin the TR process with the DRMS. Only after the DRMS has approved the TR and the DRMS's TR approval letter has been submitted to the USACE, may CSQ begin construction.

CSQ stands ready to proceed expeditiously with coordination with the DRMS and with implementation of USACE-approved mitigation measures following USACE's approval of CSQ's Application. At present, such construction/mitigation activities could likely be implemented in 2021. If CSQ is unable to begin construction this fall then such construction activities would be delayed until the fall of 2022.

Please do not hesitate to contact me with questions. CSQ appreciates the Corps continued cooperation and guidance in regard to CSQ's permit application.

Regards,



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(b) (6), USACE

Jean St-Onge, Colorado Stone Quarries, Inc.

Ben Miller, Lewicki and Associates, PLLC

David Blauch, Ecological Resource Consultants, Inc.

Marlene Crosby, Gunnison County

Emilee Gaebler, Gunnison County

Dustin Czapla, DRMS

September 17, 2021

Mark Weinhold
Hydrology/Hydraulic Engineering
United States Forest Service – White River National Forest
900 Grand Avenue
Glenwood Springs, CO 81601
(970) 945-3306

Delivered Via Email

RE: CSQ proposed major improvements to the Mud Gulch drainage and Country Road 3c, Marble, Colorado

Dear Mr. Weinhold:

On behalf of Colorado Stone Quarries, Inc. (CSQ), please allow this letter to serve as an initial plan detailing major improvements to the Mud Gulch drainage crossing along County Road 3c (Attachment A – County Road 3c Avalanche Paths and Culvert Locations). The proposed major improvements to the Mud Gulch area will serve as compensatory mitigation as part of CSQ's Clean Water Act, Section 404, Individual Permit application (SPK-2019-00889) with the United States Army Corps of Engineers (USACE).

First and foremost, CSQ would like to reiterate that while CSQ is responsible to maintain the County Road 3c via their Road Maintenance Agreement with Gunnison County, all final decisions regarding major repairs or improvements to the road and water transport structures beneath it must be approved by the Gunnison County Public Works Department prior to the commencement of any construction activities. Furthermore, the opinion and approvals by Gunnison County supersede the opinions and approvals of any other regulating body involved in the Mud Gulch repair plan included herein.

Thank you for meeting with myself, Ben Miller (Lewicki and Associates (LA)), and Jean St-Onge (CSQ) on August 24, 2021 for an onsite visit to discuss potential improvement methods. The onsite meeting served to clarify the USFS's stance on debris flow designs for drainage culverts. Our understanding of the requirements are:

- Grade of culvert should match the historic thalweg of the drainage.
- When the thalweg has been disturbed, measurements from above and below the disturbance should be used to determine the appropriate grade for the culvert.
- These measurements can be slope measurements of existing segments or elevation data from the undisturbed sections with a uniform slope applied between the sections.
- Width of the crossing is determined by the channel width measured within similar sloped sections of the channel.
- Height of crossing should be sufficient to allow for large debris such as trees to pass through the crossing.

Following our meeting on August 24th, myself and Ben Miller (LA) measured the channel above and below the existing culvert inlet to determine slopes and widths of those sections. Average slope measurements were taken with a Suunto Tandem precision compass and clinometer. Measurement stations are based on the start of the bedrock outcrop south of the channel and west of the road, see Table 1 for stationing and slope measurements. East of the bedrock outcrop is a depositional fan with slopes less than 10% from the outcrop to the western edge of the road (Figure 1). Depositional braids were present throughout the reach 0-93' and east to west. Debris piles resulting from the clean-up of the July 21st mud slides were intentionally omitted from evaluation.



Figure 1. Braided slate deposition resulting from the July 21, 2021 mud slides at Mud Gulch along County Road 3c. White marble surrounds the current 42" culvert inlet. View to the north; photo captured August 24, 2021.

The drainage from 93' to 208' steepened to 15% (Figures 2 and 3). This section of the drainage channel is bound on the south side by bedrock outcrop of Mancos Shale (locally metamorphosed to slate) with heavy vegetation on both sides (Figure 4). The channel bottom was relatively flat with a near vertical erosion surface on the northern bank. Vegetation that was not impacted by the recent mud flow event was 2-4' above the channel bottom with most being closer to the 2' high water mark. Sections with disturbance above the 2' mark appeared to be localized collapses resulting from under cutting of the bank from an unconstrained timeframe.

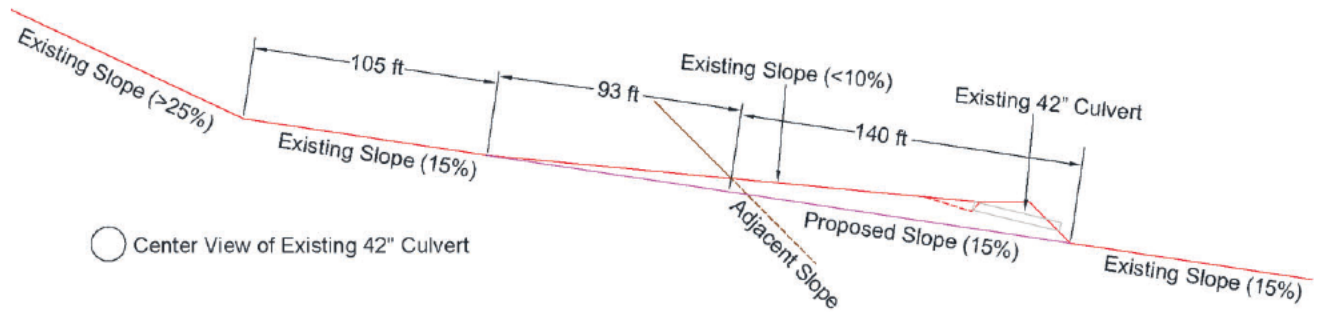


Figure 2. Existing Mud Gulch culvert and conditions.

REACH (FEET)	SLOPE (%)	WIDTH (FEET)
0	<10	Fan
10	<10	Fan
20	<10	Fan
30	10	14.33
40	10	14.17
50	10	13.67
60	10	14.50
70	10	15.00
80	10	15.17
90	10	13.08
100	15	9.58
110	15	11.67
120	15	9.33
130	15	8.42
140	15	10.00
150	15	11.08
160	15	12.83
170	15	14.50
180	15	13.33
190	15	15.33
200	15	16.42
210	15	13.42
208-300	20-25	Braided
300+	Cliff	End

Table 1. Stationing and drainage slope with 0 at the eastern most extent at the culvert inlet and 300+ at the western most drainage extent before turning north.



Figure 3. Existing channel slopes over a GoogleEarth image captured October 2019. North to top of image.



Figure 4. Existing channel slopes with bedrock Mancos Shale to the right and south with heavy vegetation throughout. View to the east; photo captured August 24, 2021.

The reach from 208' to approximately 300' was steeper with inclination measurements between 20-25%. The channel was poorly defined with deep (<4') braiding across the area. Above the 300' station is a bedrock cliff and sharp turn to the north that represents the end of the direct east-west drainage line. The average channel width in the 10% section is 14.3' while the average width for the 15% channel section is 12.2 feet.

In addition to channel measurements, we utilized public elevation data sets to determine local large-scale slopes and average flow line slopes in the drainage. County Road 3c is located along the slope break line between steep valley walls and the lower angle valley bottom. The Yule Creek drainage is a typical U-shaped glacial valley. West of County Road 3c are slopes exceeding 50% with areas steeper than 100%. To the east of the road, slopes are typically 10-25%. Slopes areas previously mapped by the USGS as quaternary alluvial deposits have slopes between 10-15%.

As detailed in the field, CSQ has an October 2021 scheduled topographic survey of the area in addition to their annual drone survey. Following the completion of these two survey activities, CSQ will have higher accuracy measurements to be included in final design plans for the Mud Gulch road crossing.

Preliminary field collected data indicates that a 12' wide or wider crossing will be required to allow for debris flows experienced by Mud Gulch to pass along a 15% slope. A crossing height of 6' would meet the USFS design criteria of allowing larger material to pass under the crossing and allow for maintenance and cleanout, as necessary. Headwall protection will be required to channel the debris flow from the bedrock outcrop to the crossing. Wingwall protection may be necessary along the outlet to provide a clean transition into the depositional fan area.

Prior to beginning initial designs, certain criteria were identified as necessary to maintain public access along County Road 3c as well as preserve CSQ's unique use of the roadway. Therefore, only scenarios that allow for public parking adjacent to Mud Gulch, continued winter maintenance (plowing), and preclude standing water from accumulating on the roadway were considered (e.g. no 'swale' alternative was considered).

Two crossing methods are currently being analyzed for Mud Gulch. The first design includes pre-cast box culverts that would provide the most conventional solution. A series of 12'Wx6'H prefabricated concrete box culverts could be utilized for the crossing. Alternatively, the second design includes a retaining wall constructed of waste marble blocks that would be topped with an engineered modularized steel bridge.

In both scenarios, the existing culvert would be excavated along with additional fill, as needed, to provide a smooth channel bottom to install retaining walls and/or culverts for the crossing. Excavation would seek to provide a 'natural' transition to the channel above and below the existing roadway and would be limited to east of the western bedrock outcrop. The channel bottom would be excavated below the existing profile such that a 15% slope from further upstream of the 10% reach is able to more smoothly transition to the 15% slope present below the crossing and east of the road. The debris material currently present in the channel bottom of the 10% reach was likely deposited due to the constriction of flow created by the current culvert installation and does not necessarily represent 'natural' deposition.

Figure 5 details a representative design utilizing 12'Wx6'Hx8'L box culverts for the crossing. The culverts will begin along the eastern edge of the roadway. Outlet protection may be provided by additional waste marble blocks. Current designs include four 8-foot-long culvert sections would provide sufficient space for the roadway totaling to a 32-foot culverted section beneath County Road 3c. West of the box culverts would be protected by a waste marble block retaining wall similar to the walls utilized within the quarry (Figure 6).

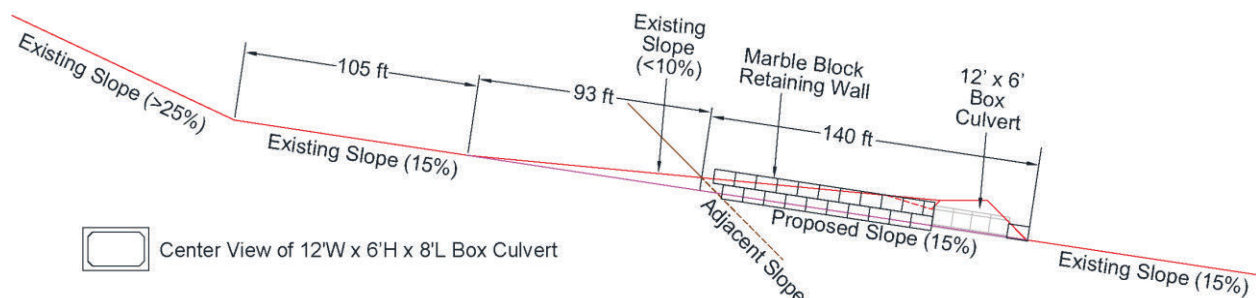


Figure 5. Design of 12'W x 6'H x 8'L prefabricated box culverts.



Figure 6. Example of marble block stacked to create a retaining wall. View to the northwest; photo captured August 30, 2018.

If a modularized bridge span is utilized, the same retaining wall would be utilized for the entire length of the project area (Figure 7). A modular engineered bridge would be laid across the span of the retaining wall to provide an adequate and certified crossing capable of carrying CSQ's heavy equipment and marble loaded flatbed haul trucks. The anticipated width of the bridge would be 16' with a span greater than 12'. The bridge design would be rated for the largest equipment utilized at the quarry ~75 tons.

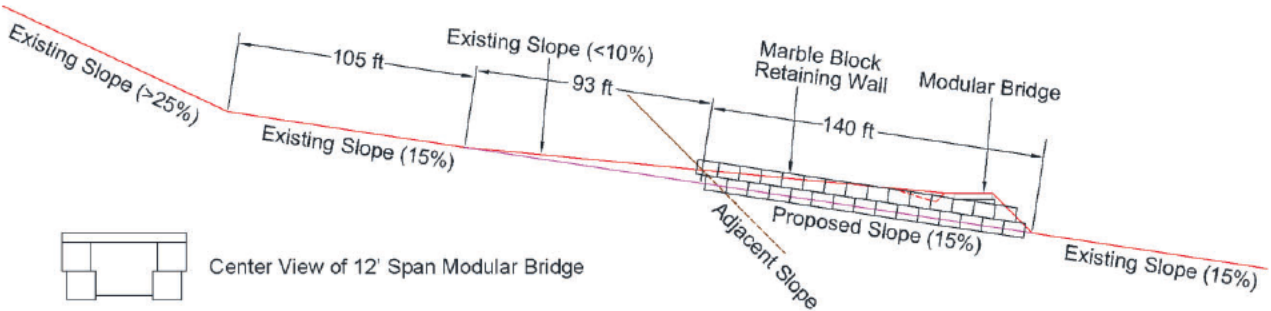


Figure 7. Modular bridge design.

Upon acceptance of these two design concepts but the USFS, further work will be undertaken to produce final designs for at least one of the two options. As a next step, LA proposes that the USFS, Gunnison County, CSQ and LA plan a virtual meeting to discuss the two tentative designs presented herein prior to completing additional design work. LA is happy to facilitate such a meeting this fall of 2021. CSQ and LA look forward to working with the USFS and Gunnison County to create a satisfactory solution to the Mud Gulch drainage with respect to each parties unique and not necessarily mutually exclusive prerogatives.

Please do not hesitate to contact me or Jean St-Onge of CSQ with questions.

Cheers,



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Cc:

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Ben Miller, Lewicki and Associates, PLLC
Marlene Crosby, Gunnison County
(b) (6), USACE

Attachments:

- Attachment A – County Road 3c Avalanche Paths and Culvert Locations (PAM County Road 3c 210909.pdf)



January 21, 2021

Colorado Stone Quarries, Inc.
1734 HWY 50E
Delta, CO 81416

Re: Section 401 Final Water Quality Certification
U.S. Army Corps of Engineers Permit No.: SPK-2019-00889
Colorado Certification No.: 4460

Dear Mr. Pezzica:

The Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division (Division) has completed its review of the U.S. Army Corp of Engineers (USACE) 404 Individual After-the-Fact Permit Application and associated documents. After further review of the application, which included the groundwater and surface water sampling and analysis plan, and an antidegradation review in accordance with Regulation No. 31, Basic Standards and Methodologies for Surface Water (5 CCR 1002-31), the Division concluded that both temporary and permanent impacts to water quality will occur as a result of this project. A groundwater and surface water sampling and analysis plan was previously approved by the Colorado Division of Reclamation, Mining and Safety, which oversees mining activities within the State of Colorado. In accordance with Regulation 82.5(A)(1)(g), "Water quality-related conditions in any applicable local, state, and federal permits, licenses or agreements", the commitments that were made by Colorado Stone Quarries, and approved by DRMS, are sufficient to monitor and mitigate predicted impacts. These commitments provide reasonable assurance that the project will comply with water quality requirements.

Based on the information provided by the applicant for the 401 water quality certification, the Division has determined to issue a Final Regular 401 Water Quality Certification (5 CCR 1002-82.5(A)(2)).

The Final 401 Water Quality Certification issued by the Division pursuant to 5 CCR 1002-82.3(C) shall apply to both the construction and operation of the project for which a federal license or permit is required, and shall apply to the water quality impacts associated with the project. This certification does not constitute a relinquishment of the Division's authority as defined in the Colorado Water Quality Control Act, nor does it fulfill or waive any other local, state, or federal regulations.



If you have any questions or need additional information, please contact me at scott.garncarz@state.co.us or at (303) 692-2374.

Sincerely,



Scott Garncarz
401 Water Quality Certifications/Water Quality Assessor
Water Quality Control Division

Enclosure

cc: Corps of Engineers, Western Colorado Regulatory Office
File Copy



DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
400 ROOD AVENUE, ROOM 224
GRAND JUNCTION, CO 81501-2520

DEPARTMENT OF THE ARMY PERMIT

Permittee: Colorado Stone Quarries, Incorporated (CSQ)
Attn: Jean St-Onge, General Manager
1734 Highway 50
Delta, Colorado 81416
jean@csqmarble.com

Permit Number: **SPK-2019-00889**

Issuing Office: U.S. Army Engineer District, Albuquerque
Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, NM 87109-3435

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

This permit authorizes the work activities that were conducted in November 2018, along with aquatic resource compensatory mitigation activities that are required by this permit. All future activities must be performed in accordance with the terms and conditions specified below. A notice of appeal options is enclosed.

Project Description:

The Marble Mine Expansion project work activities involved diverting 1,748 linear feet (0.60 acre) of Yule Creek into a constructed channel that travels 1,689 linear feet (0.58 acre) around the eastern side of a large marble outcropping known as the Franklin Ridge. A 5-foot-wide corrugated metal culvert was placed at the point of diversion to create access to the east side of the constructed (eastern) channel. CSQ then used explosive charges on the western hillside to fill the former western channel with 97,000 cubic yards of native fill materials. Additional materials were placed atop the western alignment of Yule Creek to create the primary access to the existing mining operation. A metal panel was also placed in the constructed channel, directly above the culvert, to facilitate understanding of stream flows.

Additional mitigation activities that are being required by special condition of this permit includes ecological enhancement of the constructed Yule Creek channel, replacement of the 5-foot-wide corrugated culvert with a 31-foot-wide span road crossing over Yule

Creek, removal of the metal panel within Yule Creek, and enhancement of Mud Gulch and adjacent wetlands at the Country Road 3c crossing.

Project Location:

The approximately 13-acre project site is located on Yule Creek at the Pride of America Mine, approximately 3 miles south of the Town of Marble, centered at Latitude 39.036826°, Longitude -107.168673°, Gunnison County, Colorado, and can be seen on the Marble USGS Topographic Quadrangle.

Permit Conditions:

General Conditions:

1. This permit is dated **February 24, 2022**. The time limit for completing the work activities required by this permit expires on **February 24, 2024**. However, permit requirements have more specific time limits. Mitigation activities may extend beyond the required timeframes, if approved by the Corps. If you find that you need more time to complete the mitigation activities, submit your request for a time extension to this office for consideration prior to permit expiration.
2. You must maintain the work activities and mitigation activities authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activities, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activities, or should you desire to abandon them without a good-faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activities authorized by this permit, you must immediately notify this office of what you have found. We will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is enclosed if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activities at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

Special Condition 1: You shall comply with all terms and conditions of the enclosed, January 21, 2021, *Section 401 Water Quality Certification*.

Special Condition 2: You shall implement the enclosed *Memorandum of Agreement Between the United States Army Corps of Engineers and the Colorado State Historic Preservation Office and Colorado Stone Quarries, Inc. Yule Creek Relocation Project* (MOA), executed on January 25, 2022, and signed by the Colorado Stone Quarries, the Colorado State Historic Preservation Officer, and the Corps. The Corps has been designated the lead federal agency responsible for implementing and enforcing the MOA as signed. If you fail to comply with the implementation and associated enforcement of the MOA, the Corps may determine that you are out of compliance with the conditions of your permit and suspend the permit. Suspension may result in modification or revocation of the authorized work.

Special Condition 3: You shall implement mitigation activities within the eastern channel as described in the March 22, 2021, Technical Memorandum: Yule Creek Functional Assessment and March 22, 2021, Yule Creek Mitigation Plans design drawings. To minimize impacts to aquatic resources during construction, you shall complete all mitigation activities within the active channel of Yule Creek between August 1 and September 15 and within 1 year following the date of this permit decision. You shall notify the Corps within 7 days following initiation of these mitigation activities and then again within 7 days following completion of these activities.

Special Condition 4: To ensure success of the mitigation activities required in Special Condition 3, you shall monitor the eastern channel for a minimum of 5 years or until the performance standards described in the March 22, 2021, Yule Creek Monitoring Plan are met, whichever is greater. This period shall commence upon completion of the construction of the required mitigation activities. You shall demonstrate continued success of the mitigation activities, without human intervention, for 3 consecutive years after the final performance standards have been met, which may run concurrent with the minimum 5-year monitoring period. If the mitigation activities are not meeting the required performance standards at any time, the permittee shall propose corrective or remedial action for Corps approval. The Corps may also determine that the mitigation activities are not in compliance and require remedial action, including the identification of additional compensatory mitigation.

Special Condition 5: To ensure successful enhancement of the eastern channel in accordance with 33 CFR 332.3(n), you shall establish a financial assurance in the form of the Colorado State held Financial Warranty with the Colorado Division of Reclamation, Mining, and Safety. The type, language, and amount of the financial assurance must be approved, in writing, by the Corps. You shall submit proof of the establishment of the financial assurance to this office for Corps review and approval prior to initiation of construction activities in waters of the United States authorized by this permit.

Special Condition 6: To compensate for the loss of aquatic resource impacts sustained during the diverting and filling of Yule Creek and the temporal impacts that have and will continue to occur until the eastern channel is enhanced, you shall conduct your compensatory mitigation activities as described in the September 17, 2021, Proposed Improvements to the Mud Gulch and County Road 3c, Marble, Colorado. The specific design details have not been finalized due to the need for approvals by both the U.S. Forest Service (USFS) and Gunnison County, but the newly aligned Mud Gulch channel must offer at least a 12-foot-wide, unimpeded flow path under County Road 3c and all temporarily disturbed areas shall be restored. Further, willow species shall be planted within all potential wetland areas adjacent to the new channel. Once the USFS and county approvals are acquired, you shall submit the final design plan to the Corps for approval prior to implementing the project. You shall gain the necessary approvals and conduct the mitigation activities associated with Mud Gulch within 1 year following the date of this permit decision. You shall notify the Corps within 7 days following initiation of these mitigation activities and then again within 7 days following completion of these activities.

Special Condition 7: To ensure success of the compensatory mitigation activities located at Mud Gulch and required in Special Condition 6, you shall provide the Corps with an as-built survey of the project within 30 days following completion of construction. You shall also monitor the project area for a minimum of 5 years by documenting the stability and function of the related structures to ensure that they are functioning as designed. This period shall commence upon completion of the construction activities at the Mud Gulch project area. If the compensatory mitigation site is not functioning as designed, the permittee shall propose corrective or remedial action(s) for Corps approval. The Corps may determine that the compensatory mitigation activities are not in compliance and require remedial action, including the identification of alternative compensatory mitigation.

Special Condition 8: You shall submit annual monitoring reports to the Corps by October 1st for each year of the 5-year monitoring period for both the eastern Yule Creek channel enhancement and compensatory mitigation required in Special Conditions 3 (Yule Creek) and 6 (Mud Gulch), respectively. Submittal of monitoring reports shall continue until the performance standards have been met as according to

Special Conditions 4 and 7, respectively.

Special Condition 9: To further compensate for the loss of aquatic resource impacts sustained during the diverting and filling of Yule Creek and the temporal impacts that have and will continue to occur until the eastern channel is enhanced, you shall establish a preserved area, where no future anthropogenic disturbance will occur, as shown on the Response to Request for Additional Information (June 17, 2021) dated July 19, 2021 and addendum dated August 8, 2021. The preserved area shall be established as part of your permit with the Colorado Division of Reclamation, Mining, and Safety. You shall submit proof of the establishment of the preserved area to this office for Corps review and approval prior to initiation of construction activities in waters of the United States authorized by this permit.

Special Condition 10: Your responsibility to complete the required enhancement and compensatory mitigation activities as set forth in Special Conditions 3 - 9 will not be considered fulfilled until you have demonstrated all mitigation success and have received written verification from this Corps office.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed federal projects.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant.

Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the work activities and mitigation activities authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activities or a

reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.



Jean St-Onge, General Manager
Colorado Stone Quarries, Incorporated

03/03/2022
Date

This permit becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below

(b) (6)
Date: 2022.03.03
11:34:14 -07'00'

(b) (6)
Chief, SW Colorado Branch

Date

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

Name _____
Title _____
Transferee

Date