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COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY

1313 Sherman Street, Room 215, Denver, Colorado 80203 ph(303) 866-3567

REQUEST FOR TECHNICAL REVISION (TR) COVER SHEET

File No.: M- 1980-183 Site Name: Pit 29

County Adams TR# 05 *(DRMS Use only)*

Permittee: Brannan Sand and Gravel Company, LLC

RECEIVED
NOV 13 2015
DIVISION OF RECLAMATION
MINING AND SAFETY

Operator (If Other than Permittee):

Permittee Representative: Alex Schatz

Please provide a brief description of the proposed revision:

Revise Exhibit E to clarify cross-section design of french drain, including geometry of fabric wrap, specification of granular material, and trench width.

As defined by the Minerals Rules, a Technical Revision (TR) is: "a change in the permit or application which does not have more than a minor effect upon the approved or proposed Reclamation or Environmental Protection Plan." The Division is charged with determining if the revision as submitted meets this definition. If the Division determines that the proposed revision is beyond the scope of a TR, the Division may require the submittal of a permit amendment to make the required or desired changes to the permit.

The request for a TR is not considered "filed for review" until the appropriate fee is received by the Division (as listed below by permit type). Please submit the appropriate fee with your request to expedite the review process. After the TR is submitted with the appropriate fee, the Division will determine if it is approvable within 30 days. If the Division requires additional information to approve a TR, you will be notified of specific deficiencies that will need to be addressed. If at the end of the 30 day review period there are still outstanding deficiencies, the Division must deny the TR unless the permittee requests additional time, in writing, to provide the required information.

There is no pre-defined format for the submittal of a TR; however, it is up to the permittee to provide sufficient information to the Division to approve the TR request, including updated mining and reclamation plan maps that accurately depict the changes proposed in the requested TR.

Required Fees for Technical Revision by Permit Type - Please mark the correct fee and submit it with your request for a Technical Revision.

Permit Type	**Required TR Fee**	**Submitted** (mark only one)
110c, 111, 112 construction materials, and 112 quarries	$216	☑
112 hard rock (not DMO)	$175	☐
110d, 112d(1, 2 or 3)	$1006	☐

BRANNAN
Sand and Gravel Co. / Ready Mix
Founded 1906

13 November 2015

Tyler O'Donnell
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

Hand Delivered

Re: Pit 29, M-1980-183, Submittal of Technical Revision

Dear Tyler:

In the month since Brannan's amendment to implement a French drain was approved by the Division, we have spoken about the construction schedule and various details of the French drain project. Based on approved plans, the operator has explored various strategies with its contractor to ensure that the construction schedule, the functionality of the French drain, and safety and structural integrity near the affected area are all maintained through the completion of the project. Meeting all those objectives is paramount, but also challenging. As you know, the ground in the project area is wet, and the available space for the French drain is very narrow, especially considering the type of equipment and depth of trenching that will be required.

After an exhaustive review of alternatives, including my prior conversation with you concerning the Trench Section, Brannan has concluded that the Division should review the attached revised plan for trenching along the French drain, which shows a preferred alternative. This Technical Revision represents a minimal variation from the currently approved plan for the French drain. As detailed below, the operator believes this Technical Revision best serves all the relevant objectives.

Summary

This technical revision amends the Reclamation Plan for Construction Materials Permit No. M-1980-183. Specifically, Amendment 2.2 contained information related to the implementation of a perimeter French drain along a portion of the permitted site. This technical revision clarifies the manner in which the French drain will be implemented, a change that is expected to have no effect on the planned performance of Amendment 2.2 or the Reclamation Plan generally.

Enclosed is a revised drawing showing the cross-section of the French drain. This drawing replaces the detail drawing labeled "Trench Section," submitted with Amendment 2.2. Exhibit E is revised by this technical revision to clarify the following:

1. The trench detail is specifically applicable to the east-west alignment of perforated pipe; thus, the detail is labeled "French Drain Trench Section."
2. The column of granular material above and surrounding the perforated pipe is composed of various sizes of clean sand and gravel.
3. The fabric wrap enclosing the perforated pipe forms a column to a height of 2 feet above the top of pipe.
4. The trench width is adjusted to reflect actual excavation conditions.

2500 East Brannan Way | Denver | CO 80229 | 303.534.1231 Tel | 303.534.1236 Fax
www.brannan1.com

Background

These changes are based on a review of plans by construction professionals as the operator prepared to implement the French drain. This review concluded that the approved trench section would be impractical to implement and that a standard detail would perform equally as well, if not better.

Given the soil conditions and narrow space available for construction equipment, as well as a 15-foot limit to the width of available fabric wrap, the implementation of the approved trench section would involve 10-12 foot segments of overlapping fabric strips, cut lengthwise in 20-foot strips (or longer) sufficient to wrap the column height and width in each segment. Mending the overlapping segments is problematic, creating many potential discontinuities in the relative flow of groundwater and the effectiveness of the barrier. In addition, a monolithic column of large rock is unnecessary to conduct groundwater at the required rate and is less stable over time.

Consistency with applicable standards

The French drain is designed to alleviate high groundwater conditions in its vicinity. The revised French Drain Trench Detail achieves all objectives related to this purpose and will not reduce the effectiveness of the French drain.

It should be noted that the French drain as approved is installed inside the permit boundary, in the only available area outside the slurry wall, in the side of its embankment. Thus, the surface elevation of the adjacent property is lower than the ground elevation above the French drain. Even if the wrapped column were deemed necessary for all points beneath the ground surface affected by high water, the relevant surface elevation is actually below grade at the French drain alignment.

As a result, it is unnecessary to extend the wrapped column of granular material to a relative elevation that is above the surface elevation of surrounding property, as shown in the current detail. The wrapped column is intended to prevent silt and other debris from entering the perforated pipe, and a stable column of mixed granular material on top of the wrapped column promotes this function, as well as promoting lateral movement of groundwater from the adjacent property rather than redirecting surface flow from above into the French drain system.

Conclusion

In its application for Amendment 2.2, the operator noted that, "The trench will be backfilled with gravel from the present mining of Pit 29. The gravel will extend to within 1-2 feet of the surface. Native soil will be used to fill to the surface. The pipeline portion of the excavation will be backfilled to the surface and reseeded." This basic plan continues to define the appropriate approach to implementation of the French drain. As clarified by this technical revision, the Reclamation Plan will alleviate groundwater mounding, maintain water quality, and achieve hydrologic standards.

Please let me know if you have any questions or comments related to this Technical Revision. I look forward to continuing my work with you on Pit 29.

Sincerely,

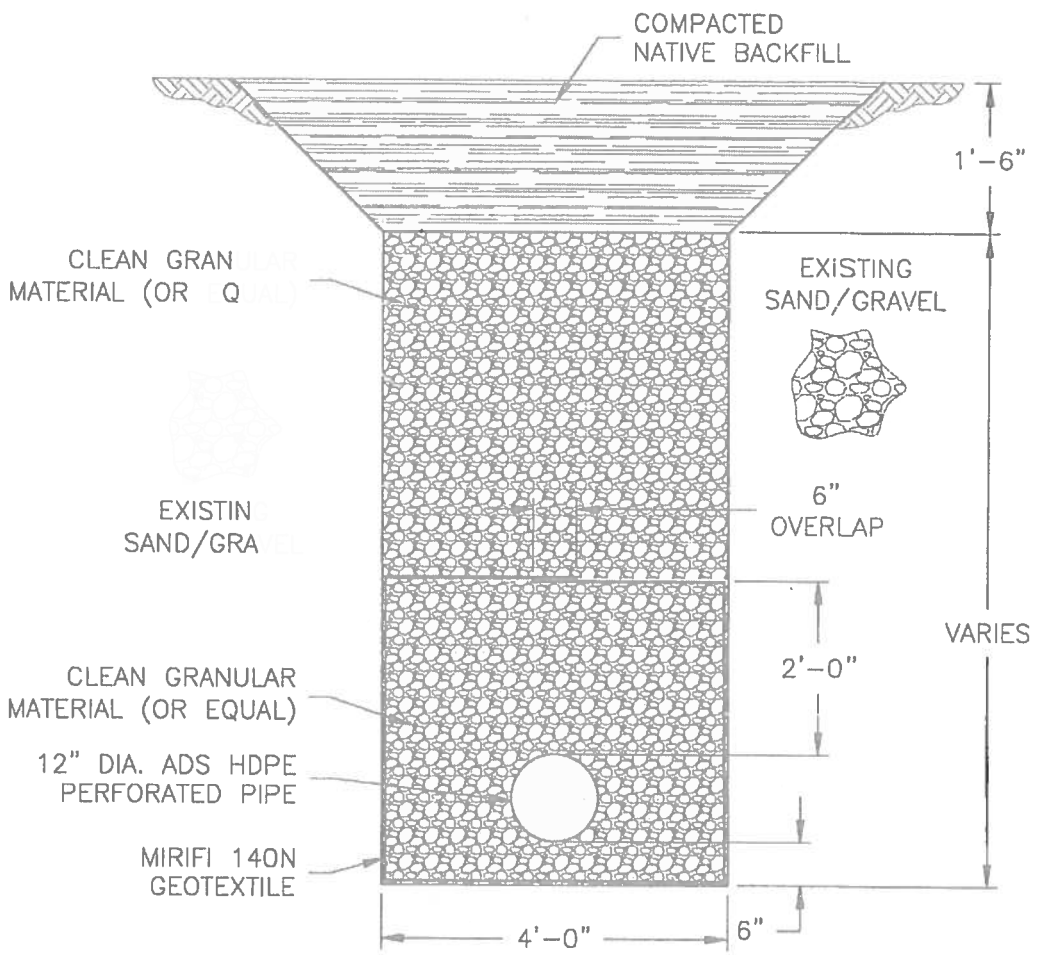
BRANNAN SAND AND GRAVEL COMPANY, LLC

Alex Schatz

cc: Gene Riordan
Tom Hatton

encl: French Drain Trench Section, detail sheet
Request for Technical Revision Cover Sheet
Application Fee Check for $216

2500 East Brannan Way | Denver | CO 80229 | 303.534.1231 Tel | 303.534.1236 Fax
www.brannan1.com



FRENCH DRAIN TRENCH DETAIL

SCALE 1" = 2'

NOTES:

1. HDPE PERFORATED PIPE SHALL BE ADS DUAL WALL PIPE WITH MINIMUM 1.42in²/ft OPEN AREA IN PERFORATIONS, PER AASMTO CLASS II.
2. PERFORATIONS SHALL BE CIRCULAR AT 60° SPACING.
3. LINEAR PIPE SLOPE SHALL BE A MINIMUM OF 0.22%.
4. THIS DETAIL REPLACES THE TRENCH DETAIL ON EXHIBIT E-2.

PREPARED IN CONFORMANCE WITH RULE 6.2(2)

Date:	11/13/15
Job No:	10-116
Drawn:	LD
Design:	CH
Checked:	
File:	Brannan Details
Scale:	As Noted

BRANNAN SAND AND GRAVEL

PIT 29 GROUNDWATER DEWATERING AND MITIGIATION

FRENCH DRAIN TRENCH DETAIL

Applegate Group, Inc.
Water Resource Advisors for the West
1490 West 121st Ave., Suite 100
Denver, CO 80234
(303) 452-6611
Fax: (303) 452-2759
email: info@applegategroup.com Website: www.applegategroup.com

Division of Reclamation, Mining, and Safety

Fee Receipt for M1980183

Brannan Sand and Gravel Company, L.L.C.

000000000

Receipt #: 20580
Date: 11/13/2015
Permit: M1980183

Payment Method	Revenue Code	Fee Description/Notes	Amount
0000355072 SD	4300-MTR0	Minerals Technical Revision M1980-183	$216.00
		Receipt Total:	**$216.00**