WSI Weiland, Inc.
Environmental & Engineering

07/30/2025

Patrick Lennberg
Environmental Protection Specialist
Colorado Division of Reclamation Mining & Safety
1313 Sherman Street, Room 215
Denver, CO 80203

Re: Response to Adequacy Reviews No. 2 and No. 3, 112c Construction Materials Amendment Application (AM-1) Kirtright Pit, Permit No. M-1986-123 dated April 7, and April 30, 2025

Dear Mr. Lennberg,

On behalf of Coulson Excavating Co., Inc. (CEC), I have formatted this letter response to carbon copy your April 7 comments numerically and your April 30 comments alphanumerically. Responses to both are given in bold italics. The responses also include specific reference to those exhibits and associated application materials which have been revised. A list of those items is given at the end of this letter under enclosures.

EXHIBIT C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):

1. On Map C-1 there is an area that is shaded as affected land in the pre-1981 Pond area. Please state the size of this area, in acres, that appears it will be part of the reclamation efforts.

Exhibit C-1 has been revised to specify acreages of all affected areas.

1a. During the inspection the Division noted there are three isolated piles of gravel material in the area north of the currently approved and proposed permit boundary. Two of the piles (Pile 1 and 2) are on the easternmost property owned by Randy Kirtright and the other (Pile 3) is on the O'Brien property. Two of the piles (Pile 1 and 3) are north of the proposed/current permit boundary. The other (Pile 2) appears to be on the proposed/current permit boundary. A review of historic aerial imagery, using Google Earth and the Larimer County Assessor's website, shows that these piles were generated during mining operations at the Kirtright Pit that occurred outside the approved permit boundary. Please see attachment 1. The Applicant must, at a minimum, expand the currently proposed permit boundary to the limits that were originally proposed (see response to incompleteness #2 dated June 7, 2024) to incorporate all areas that have been affected by the Operator during mining of the Kirtright Pit and to allow access to the three piles that need to be reclaimed and to address grading concerns discussed below.

The permit area and affected area has been expanded to include 14.35 additional acres northeast of the historical permit boundary (in addition to the 6.6 acres previously proposed, for a total of 20.95 acres beyond existing permit boundaries) as shown in the revised Exhibit C-1 (this 14.35 area, the "New Northeast Area"). Reclamation of the material piles have been addressed in the revised Exhibits E and F.

2. The current maximum affected acreage for the permit is 79.8 acres. Please clarify if it is the intent of the Amendment to reduce the maximum affected acreage from 79.8 acres to less than that amount? Please clearly state the new maximum affected acreage, the areas that make up the new affected area, and update Map C-1 to include a table that clearly indicates the areas and total that make up the affected area. The Division recommends the permit area and affected land area be equal, ensuring that any additional reclamation activities in other areas of the permit, if needed, will not require an amendment prior to initiating those activities.

Yes, it is the intention of this amendment to reduce the affected area from 79.8 acres to 51.84 acres. Per Rule 1.1(3) the affected land, "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." The rule also states, "All lands shall be excluded that would be otherwise included as land affected but which have been reclaimed in accordance with an approved plan or otherwise, as may be approved by the Board."

The areas included in the current affected area are shown in Exhibit C-1 and are shaded light grey. The areas removed from the affected area are not shaded and include Pond 2, Pond 3, Pond 4 (Ponds); the fields north of Lacey Lane that have never been mined or otherwise disturbed; the structures and land adjacent to Randy Kirtright and Linda O'Brien's residences; and the future site of residential structures proposed by Randy Kirtright. CEC contends that the areas removed from the historically defined affected area meets rule 3.1 Reclamation Performance Standards as follows;

1. ***<u>Ponds 2, 3 and 4 and Adjacent Lands</u>***
   Rule 3.1.5 Reclamation Measures - Materials Handling (7) states, "Maximum slopes and slope combinations shall be compatible with the configuration of surrounding conditions and selected land use. In all cases where a lake or pond is produced as a portion of the Reclamation Plan, all slopes, unless otherwise approved by the Board or Office, shall be no steeper than a ratio of 2:1 (horizontal to vertical ratio), except from 5 feet above to 10 feet below the expected water line where slopes shall be not steeper than 3:1. If a swimming area is proposed as a portion of the Reclamation Plan, the slope, unless otherwise approved by the Board or Office, shall be no steeper than 5:1 throughout the area proposed for swimming, and a slope no steeper than 2:1 elsewhere in the pond."

   A slope analysis of the pond slopes was done based on 2024 lidar based topography. The results are called out In Exhibit C-1. The majority of the slopes were found to be 3H:1V or flatter. Some areas do show steeper slopes, however they are not steeper than 2H:1V. It is understood that the rule requires 3H:1V slopes in these areas, however all of the slopes steeper than 3H:1V have well established willows and wetland plants which provide excellent slope

stabilization.

2. ***<u>The Undisturbed Fields North of Lacey Lane</u>***
   This land has never been mined and is currently used as productive grassland and pasture land.

3. ***<u>The Structures and Land Adjacent to Randy Kirtright and Linda O'Brien's Residences</u>***
   These areas have never been mined, have stable vegetative cover and have slopes flatter than 3H:1V.

4. ***<u>The Future Site of Residential Structures Proposed by Randy Kirtright</u>***

   The future site of Randy Kirtright's residential structures has been permitted by Larimer County Building Department (Permit #: 24-RES0338 Issued 04/14/2025) and as such this area is expected to meet or exceed reclamation performance standards.

2a Please update Map C-1 to include a table that clearly indicates the areas and totals that make up the affected area. The Division recommends the permit area and affected land area be equal, ensuring that any additional reclamation activities in other areas of the permit, if needed, will not require an amendment prior to initiating those activities.

The different areas of affected land have been added to the revised Exhibit C-1. Please see the response to number 2 above regarding affected land areas.

3. On Map C-1, Permit Boundary Points of Intersection, the coordinates provided for points 3 and 4 are incorrect. Please update the table with the correct coordinates, double check the remaining coordinates for accuracy, and resubmit with the map.

Please see the response to 3a below.

3a Please update Map C-1, Permit Boundary Points of Intersection, with the coordinates of the revised permit boundary.

Exhibit C-1 has been revised to include all of the new points of intersection for the proposed permit boundary. It should be noted that the CDOT parcel to the west has been removed from the permit boundary since the request for partial release has been approved for this land.

<u>EXHIBIT E – Reclamation Plan (Rule 6.4.5):</u>

4. The Reclamation Plan needs to be updated to provide details on how the area north of the PMJM variance area will be reclaimed and or affected. These details are needed to demonstrate there are no adverse impacts to the species and its habitat.

The narrative in Exhibit E has been updated to explain how this area will be reclaimed. Prior to the removal of surficial flood deposits, the area was a mowed field just like the variance area. The variance in the buffer was granted by the USFWS due to the fact that mowed grass is poor PMJM habitat. Similarly this area is poor PMJM habitat. The area will be reclaimed to the pre-disturbance state of mowed field. Similarly, the New Northeast Area being added to the permit boundary encroaches the PMJM buffer, however this area also has been historically mowed and provides poor PMJM habitat. It will also be reclaimed to

the pre-disturbance state of mowed field.

4a The Reclamation Plan needs to be updated to provide details on how the new areas north of the currently approved permit boundary will be reclaimed.

Exhibit E and Exhibit F have both been updated to include a narrative of reclamation for this area and the aerial extent of where those activities will occur.

5. In the Reclamation Plan it does not specifically state whether grading, topsoil placement and reseeding will occur in the pre-1981 Pond Area. Please clearly state if reclamation will occur here and if so, provide the details of what activities will occur. Include a statement regarding how reclamation activities in the pre-1981 area influence the standing of this area as qualifying as a pre-1981 area for the purposes of permanent augmentation.

The narrative in Exhibit E has been updated to provide an explanation of the reclamation activities proposed for this area as well as a statement regarding the standing of the pre-1981 status.

5a During the inspection the Division was presented with two different scenarios about how the site floods, specifically the flood in 2023. Please provide a hydrologic model or similar demonstration on how the site floods. The Applicant states that the site floods when Big Thompson River water backs up along the drainage swale along the western boundary of the site, on CDOT property, until it overtops the road, near the mine access point, and flows into the site near the area where Pond 1 was located. Ms. O'Brien states that the site floods when river water enters the site from a low area located in the northeastern corner of the eastern parcel adjacent to the Stroh Pit.

A technical analysis, including hydrologic modeling, was done to determine the issue of flooding on the western and eastern portions of the site. A detailed description has been added to the floodplain and drainage section of Exhibit G.

6. In the topsoil stockpile area, there is a large windrow of material that appears to be on the border between Mr. Kirtright's and CDOT properties. Will all this material be used for topsoiling and what measures will be in place to prevent going outside the permit boundary again if AR-1 is approved.

CDOT has constructed a Right of Way fence along the boundary of their property which will physically prevent encroachment onto their property. The proposed grading plan shown in Exhibit F shows the finished ground elevations will not exceed the adjacent ground elevations of the fence line which will insure stable ground.

6a Please describe how the area outside the currently approved permit boundary was affected by mining (as discussed in Item #1 above) and how it was reclaimed. Please provide a plan for reclaiming the area currently affected by the exiting stockpiles. Also, it appears to the Division that this area in question had an unmined surface elevation of around 4840' and now has an elevation of 4835'. This now low-lying area should be graded so the area positively drains back toward the river, please revise the reclamation plan and map to address this.

The reclamation narrative has been revised to include details of these reclamation activities. Exhibit G and G-1 have been added and revised to address mitigation of flooding in the low-lying areas.

7. Related to the topsoil windrow material, material has been removed from the southern portion of the windrow, who removed this material, where has it been deposited and how will this area be reclaimed?
Topsoil was removed from this area by the landowner. The reclamation plan has been revised to replace a portion of this material and thereby insuring the capacity of the CDOT drainage ditch. It should be noted that encroachment onto CDOT land will not be required for this.

7a The Applicant needs to perform an analysis of the pond banks to identify areas that do not meet the permit requirements of 3H:1V slopes. During the inspection the Division noted areas where the slopes did not meet this requirement. Examples of where this has occurred are the western edge of Pond 2 where Mr. Kirtright has expanded a flat area of his property, the road between Ponds 2 and 3, the southern bank of Pond 2, and the southern bank of Pond 4.

A detailed analysis of the slopes has been made by developing a 3D surface in Autodesk Civil 3D based on 2024 Lidar data from the USGS. The results are given in Exhibit C-1. Grading for those areas which do not meet the 3H:1V criteria has been specified in Exhibits E and F. There are some slopes around the Ponds which are steeper than 3H:1V, however those slopes have well established wetland vegetation which provides excellent slope stabilization.

8a In the responses to the Division's preliminary adequacy review the majority of the pre-1981 area is shaded to indicate the Applicant/Operator has never mined or affected this area. The Division noted during its inspection that a large pile of gravel was now located in this area that was not there during the 2023 inspection, please comment on the origins of this pile. A review of aerial imagery from May 2023 indicates that haul trucks are being loaded with material from the shaded pre-1981 area and that material used to backfill the Pond 1 area, attachment 2. Additionally, it appears other areas of the pre-1981 area where graded and contoured during this same time. These areas also need to be included into the affected area and details for their reclamation into the Reclamation Plan.

The stockpile of gravel was excavated by the landowner in an effort to clean out sand and gravel resulting from the 2013 flood. It is now understood that material was in fact excavated from this area and used to backfill Pond 1. These areas have been included in the Affected area. Exhibits E and F have been revised to include reclamation of the area which includes grading some slopes, placing topsoil and re-seeding.

EXHIBIT G – Water Information (Rule 6.4.7):

9a. It is stated in the currently proposed reclamation plan that if permanent augmentation cannot be approved then the ponds will be lined. The Division considers lining of the ponds to be a significant change to the post mining land use and will require a separate amendment to be submitted for the Division's consideration. Please commit to submitting an amendment to revise the permit for lining the ponds as necessary.

It is understood that a separate amendment application will need to be submitted should the augmentation plan not prevail in water court.

8. Please describe how the scale house and associated structures will be reclaimed. Updated Ex L to account for any additional costs.

The narrative in Exhibit E has been updated to provide an explanation of the removal of the

scale house and scale as well as reclamation activities proposed for this area. Exhibit L has been updated accordingly.

9. Please provide a copy of the approved SWSP for the Kirtright Pit.

The SWSP approval letter has been enclosed. The SWSP was included with the last submittal.

10. Pursuant to Rule 1.6.2(2), please demonstrate that the applicant's response to these adequacy issues and the Preliminary Adequacy issues have been placed with the application materials previously placed with the County Clerk or Recorders Office and made available for public review.

A copy of the date stamped cover letter from the Larimer County Clerk & Recorder has been attached.

In addition, Exhibits N and O have been updated to reflect the removal of the CDOT parcel from the permit area

Peter Wayland

Peter Wayland
President

Encl. Revised Application page 1, Revised Text Exhibits, Revised Exhibits C-1, C-2, G-1 and F.

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY
Department of Natural Resources

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COLORADO DIVISION OF RECLAMATION MINING & SAFETY

CONSTRUCTION MATERIALS
REGULAR (112) OPERATION
RECLAMATION PERMIT APPLICATION FORM

CHECK ONE: ☐ **There is a File Number Already Assigned to this Operation**

Permit # M 1986 - 123 (Please reference the file number currently assigned to this operation)

☐ **New** Application (Rule 1.4.5) ☑ **Amendment** Application (Rule 1.10)

☐ **Conversion** Application (Rule 1.11)

Permit # M 1986 123 - (provide for **Amendments** and **Conversions** of existing permits)

The application for a Construction Materials Regular 112 Operation Reclamation Permit contains three major parts: (1) the application form; (2) Exhibits A-S, Addendum 1, any sections of Exhibit 6.5 (Geotechnical Stability Exhibit; and (3) the application fee. When you submit your application, be sure to include one (1) complete signed and notarized **ORIGINAL** and one (1) copy of the completed application form, two (2) copies of Exhibits A-S, Addendum 1, appropriate sections of 6.5 (Geotechnical Stability Exhibit, and a check for the application fee described under Section (4) below. Exhibits should **NOT** be bound or in a 3-ring binder; maps should be folded to 8 1/2" X 11" or 8 1/2" X 14" size. To expedite processing, please provide the information in the format and order described in this form.

GENERAL OPERATION INFORMATION

Type or print clearly, in the space provided, ALL information requested below.

1. **Applicant/operator or company name (name to be used on permit)**: Coulson Excavating Co., Inc.
   - 1.1 Type of organization (corporation, partnership, etc.): Corporation

2. **Operation name (pit, mine or site name)**: Kirtright Pit

3. **Permitted acreage (new or existing site)**: 79.8 permitted acres
   - 3.1 Change in acreage (+): 17.59 acres
   - 3.2 Total acreage in Permit area: 97.39 acres

4. **Fees**:
   - 4.1 New Application: $2,696.00 application fee
   - 4.2 New Quarry Application: $3,342.00 quarry application
   - 4.4 Amendment Fee: $2,229.00 amendment fee
   - 4.5 Conversion to 112 operation (set by statute): $2,696.00 conversion fee

5. **Primary commoditie(s) to be mined**: SAND GRAVEL
   - 5.1 Incidental commoditie(s) to be mined: 1. N/A - lbs/Tons/yr 2. / lbs/Tons/yr
     3. / lbs/Tons/yr 4. / lbs/Tons/yr 5. / lbs/Tons/yr
   - 5.2 Anticipated end use of primary commoditie(s) to be mined: CONSTRUCTION
   - 5.3 Anticipated end use of incidental commoditie(s) to be mined: NA

6.4.1 Exhibit A – Legal Description

The permit area includes four separate parcels of land. The western two parcels and the easternmost parcel are owned by Randy Kirtright and the middle parcel is owned by The O'Brien Living Trust.

The Permit Boundary is more specifically described as:

Beginning at a point whose Northing is 1387588.698 and whose Easting is 3143868.605 ;

thence bearing S 0-5-45.924 E a distance of 1302.715 ;

thence bearing S 89-29-8.134 W a distance of 2547.674 ;

thence bearing N 0-8-6.865 E a distance of 798.688 ;

thence bearing N 0-8-3.789 E a distance of 201.413 ;

thence bearing N 3-35-27.954 E a distance of 316.757 ;

thence bearing N 3-35-27.954 E a distance of 56.666 ;

thence bearing N 39-4-56.147 E a distance of 279.295 ;

thence bearing N 55-32-36.796 E a distance of 127.198 ;

thence bearing N 59-27-20.775 E a distance of 164.681 ;

thence bearing N 64-57-33.084 E a distance of 48.746 ;

thence bearing N 79-17-56.848 E a distance of 166.432 ;

thence bearing S 35-37-55.355 E a distance of 295.003 ;

thence bearing S 35-57-34.892 E a distance of 123.876 ;

thence bearing S 8-1-43.679 E a distance of 138.537 ;

thence bearing N 89-47-5.330 E a distance of 248.192 ;

thence bearing N 34-50-17.485 E a distance of 290.593 ;

thence bearing N 54-48-34.096 E a distance of 339.410 ;

thence bearing N 59-50-26.107 E a distance of 247.920 ;

thence bearing N 89-49-59.974 E a distance of 599.533 ;

thence bearing N 26-8-2.938 E a distance of 93.240 ;

thence bearing S 65-23-55.248 E a distance of 85.402 ;

thence bearing S 0-5-45.924 E a distance of 603.475 to the point of beginning.

The permit boundary includes 97.39 acres of land.

The affected land includes 51.84 acres and is shown in Exhibit C-1.

The mine entrance is located at the following UTM NAD83 (2011), Zone 13 (meter) coordinates:

6.4.5 Exhibit E - Reclamation Plan

Description of the Type of Reclamation

Background

Reclamation was completed in around 2008 and the site has remained under the jurisdiction of the Mined Land Reclamation Board due to long term augmentation obligations for the 4 ponds. In 2023, work began to backfill Pond 1 with onsite materials primarily from floodplain deposits left from the 2013 Big Thompson flood. There are some Pre-1981 Ponds located within the permit area which have not been affected by CEC. It is however understood that the landowner cleaned out some of the ponds in 2023. Since the ponds occur within the permit area, an analysis was done to compare the pre-1981 pond surface area to the current pond surface areas. There was no material change.

Reclamation Narrative

Reclamation will consist only of backfilling Pond 1, replacing topsoil and revegetation, and weed control as needed. The source of topsoil will be from the topsoil stockpile area shown in Exhibit C-1. This stockpile was excavated from the mined areas to the east and placed in that location in the 1990's.

Specifically, the areas shown in Exhibit C-1, which occurs in the PMJM buffer zone and outside of the variance area, will be reclaimed to native grasses which will be kept short by mowing. Following removal of the remaining 6"-8" of 2013 flood deposits, the area will be re-seeded. It is important to note that this area was never mined and that there is good native topsoil underneath the flood deposit. Once the grasses are established, it will be kept mowed as it has been historically. This area as well as the PMJM variance area were previously considered poor PMJM habitat due to short mowed grass. Reclamation will restore the areas to the pre disturbance short grass condition.

In the area of the pre-1981 ponds, some flood deposits were also previously excavated from the surface and that material was used to backfill a portion of Pond 1 in the summer of 2023. Excavation of the surficial flood deposits in this area did not go below the water table and as such, that activity did not affect the pre-1981 pond surface areas or the ponds exempt status with regards to permanent augmentation. Reclamation will occur in that area and will consist of placing topsoil from the topsoil stockpile area and re-seeding per the specifications given below.

In the topsoil stockpile area, 6"-8" of topsoil will remain following removal of the stockpile and the area will be re-seeded.

The areas shown on Exhibit F where the slopes are steeper than 3H:1V will be graded to 3H:1V. Those areas will have topsoil replaced and will be re-seeded per the specifications given below.

The scale and scale house will be removed from the site with a small crane and lowboy flatbed trailer. The embankment approaches will be graded to approximately the adjacent grade and the area will be topsoiled and re-seeded per the specifications given below.

In the area north Ponds 2, 3 and 4, the 18" Corrugated Metal Pipe (CMP) culvert in the NE corner of the permit area will be fitted with a slide gate (see detail #1 Exhibit G-1, Sheet-4). A drainage ditch with 2ft bottom and 6:1 side slopes will then be constructed to drain the low lying areas following flooding. The specifications for the ditch are given in Exhibit G-1 Sheets 1-4. All of the small stockpiles of materials within the permit area will be removed from the site. Finally, the areas shown in Exhibit F will be disked and re-seeded per the specifications given below.

Backfilling of Pond 1 will leave Ponds 2, 3, and 4 unlined. The unlined ponds allow for seepage of groundwater and subsequent evaporative losses to the atmosphere. Since this water is tributary to the Big Thompson River, a permanent augmentation plan has been developed for the site as part of the Division 1 water court case # 19CW3157. The permanent plan will replace water in time and amount to the river in order to prevent injury to downstream vested water rights.

The primary post mining land use for the reclaimed affected areas will be residential, open water, and agricultural

(a) Reclamation Earthwork Sequence and Timetable

The sequence of reclamation activities will follow the narrative given above. Reclamation earthwork will consist of backfilling Pond 1 with alluvial floodplain deposits left from the 2013 flood in the borrow area shown on Exhibit C-1. Specifically, a dozer will be used to scrape an average of 6" of surface deposits from the borrow area, which will be pushed into Pond 1.

Table 6.4.5-1 Reclamation Earthwork Summary Table

Activity	**Acres**	**Volume**	**Source Area**
Backfill Pond 1	~0.98	~9,000 yd^3	Borrow Area
Remove Stockpiles	~0.20	~250 yd^3	Affected Areas
Grade Swale	~0.55	~1,775 yd^3	NE of Ponds 2, 3,4
Cut Slopes to 3:1	~0.93	~3,000 yd^3	W. of Pond 2 & Pre-1981 Pond Area
Replace Topsoil	~8.90	~7,180 yd^3	Topsoil Stockpile

The sequence of reclamation activities will occur in the order above. The timetable to complete this reclamation work is approximately 1.5 years.

Table 6.4-2 Reclamation Sequence Timetable

Area	**Time to Complete**
Backfill Pond 1	1 month

Replace Topsoil	2 Months
Revegetation	1 year

(b) Post Mining Land Use Comparison

Post mining land use will continue as agricultural and residential as it was prior to mining activity.

(c) Description of How the Reclamation Plan will Meet the Requirements of Section 3.1.

The reclamation plan specifications described herein have been designed to meet the requirements of Section 3.1 of the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board. Completion of the reclamation plan in accordance with these specifications will therefore meet the requirements of Section 3.1.

(d) Topsoil Segregation

Topsoil was previously segregated and is located in the area shown in Exhibit C-1 as the Topsoil Stockpile Area.

(e) Reclamation Sequence and Timetable

An estimate of the sequence and periods of time for each reclamation activity is given above.

(f) Descriptions and Specification of Reclamation Activities

(i) Final Grading

Final slopes will be graded to 3H:1V

(ii-v) Seeding, Fertilization, Revegetation, Topsoil Placement

Topsoil Replacement / Revegetation

Topsoil will be replaced to an approximate depth of 6” ft for the areas shown as Topsoil & Revegetation Areas in Exhibit F.

Seeding and Fertilizing

The proposed seeding areas are shown on Exhibit F. The recommended seeding method is by drill and seeding rates assume this method. The species composition of the seed mixture recommended for reclamation is shown in **Table 6.4.5-2. Recommended Seed Mixture**

Table 6.4.5-2. Recommended Seed Mixture

Species (Variety)	***Rate – pure live seed (PLS) lbs/ac***	***Native/ Introduced***	***W/C Season***
Thickspike wheatgrass (Critana)	8.0 to 10.0	Native	Cool
Sideoats grama (Vaughn)	5.0 to 7.0	Native	Warm
Switchgrass (Nebraska-28)	4.0 to 6.0	Native	Warm
Alfalfa (Nomad)	3.0 to 5.0	Introduced	NA

TOTAL	20.0 to 28.0

Based on this seed mixture, an application rate of approximately 20.0 to 28.0 lbs PLS/ac will be used. Topsoil should be disked prior to seeding. It is recommended that fertilizer be utilized for reclamation. A standard application of fertilizer will be used and applied at a rate of 250 lbs/ac as shown in **Table 6.4.5-3. Fertilizer Application**

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Table 6.4.5-3. Fertilizer Application

Fertilizer	***Standard rate lbs/acre***
Diammonium phosphate (18-46-0) (46-53% available P_2O_5 with 18-21% N)	250

Fertilizer will not be used near the edge of the reservoir, since there is a possibility of nitrate contamination in the pond water. The total disturbed area to be seeded is approximately 24.06 acres. The total area to be fertilized is approximately 24.06 acres. Seeding and fertilizing will be completed after the overburden and topsoil is replaced, smoothed to conform to the existing topography and disked. Optimal periods of seeding are in the fall (after November 1st) or in the spring from late March until April 30th. Mulching will not be completed as the quality soils and availability of water should facilitate the rapid establishment of perennial grasses.

Following revegetation, weed management strategies will be implemented to facilitate and achieve native grassland. Years 1 through 1.5 following revegetation will include an aggressive mowing program to prevent the growth and establishment of weeds, specifically, eight noxious weeds including: Canada thistle (*Cirsium arvense*), Dalmation toadflax (*Linaria dalmatica*), Diffuse knapweed (*Centaurea diffusa*), Leafy spurge (*Euphorbia esula*), Musk thistle (*Carduus nutans*), Russian knapweed (*Centaurea repens*), Spotted knapweed (*Centaurea maculosa*) and Yellow toadflax (*Linaria vulgaris*) as mandated by Colorado State Law (35-5.5CRS1990, 1996). Herbicide application will be applied as needed to further control these weeds. Herbicides will also be used to control Salt cedar (*Tamarix* spp.) if it becomes established in the reclaimed area. **Table 6.4.5-4 Recommended Herbicide Application** defines recommended herbicides, application rate, and time of application for each of the 9 species. It may be necessary to replant treated areas.

Table 6.4.5-4 Recommended Herbicide Application

Weed Species	***Herbicide***	***Application Rate***	***Application Time***

Canada thistle	Curtail	2-3 qt/ac	October or 1 month after last mowing
	Clopyralid	2/3 - 1 pint/ac	Spring or fall, during rosette to bud growth stages in spring
	2,4-D	1lb ai/ac	Spring prebud to early early bud growth stages
	picloram	1lb ai/ac	Spring prebud to early early bud growth stages
Dalmation toadflax	picloram	0.5 - 1 lb ai/ac	Fall
	picloram + 2,4-D		Pre-bloom or fall
Diffuse knapweed	Tordon	1 pint/ac	Spring rosette to early-bolt growth stages
	Banvel/Vanquish/ Clarity + 2,4-D	0.5 + 1 qt/ac	Spring rosette to early-bolt growth stages
	Curtail	2-3 qt/ac	Spring rosette to early-bolt growth stages
	Transline	2/3 - 1 pint/ac	Spring rosette to early-bolt growth stages
Leafy spurge	Tordon	1 qt/ac	Fall 1 month after last mowing
	Tordon + 2,4-D	0.5 - 0.75 + 1 qt/ac	Fall 1 month after last mowing
	Vanquish/Clarity	1 qt/ac	Fall 1 month after last mowing
Musk thistle	Curtail	0.25 lb ai/ac	Spring 10-14 days before bolting
	dicamba	1 lb ai/ac	Spring 10-14 days before bolting
	picloram	0.25 lb ai/ac	Fall, apply to rosettes when other plants are dormant
Russian knapweed	Curtail		Fall for dormant plants, need to re-apply during following year
	picloram	1 lb ai/ac	Anytime
Spotted knapweed	picloram	1 lb ai/ac	Anytime
	dicamba or 2,4-D	1 lb ai/ac	

Yellow toadflax	picloram or dicamba	1 lb ai/ac	Spring during flowering
Saltcedar	imazapyr		Late summer early fall foliar application
	imazapyr or triclopyr		To resprouted stems
	imazapyr or triclopyr		To perimeters of cut stems immediately after cutting

Sources: Colorado Natural Areas Program. 2000. Creating an Integrated Weed Management Plan.

http://parks.state.co.us/cnap, and Colorado State University Cooperative Extension. No date.

Weed Management for Small Rural Acreages. No. 3.106.
http://www.ext.colostate.edu/PUBS/Natres/03106.html

Alternative Reclamation Plan

Despite significant progress with the Division 1 water court to finalize a decree for permanent augmentation of Ponds 2 , 3 and 4, and little risk that a decree will not be issued, if that were to occur, an alternative reclamation plan would be to line the ponds with a compacted clay liner to prevent exposure of groundwater.

6.4.7 Exhibit G - Water Information

The operation will affect groundwater systems through evaporation and pumping. Predicted depletions to groundwater which are tributary to the Big Thompson River are mitigated by implementation of a Temporary Substitute Water Supply Plan (SWSP). The current SWSP was included with the previous response to AR-1. The plan was approved through December 31, 2025 (see Exhibit G-2 SEO approval letter).

Prior to backfilling Pond 1, the pond will be dewatered by pumping dewatering effluent to the Big Thompson River. Pump rates are expected to be approximately 500 gallons/min.

Coulson has filed an application for an augmentation plan in Colorado Division Water Court, now pending in 19CW 3157. The application seeks approval to replace depletions caused by several unlined pits along the Big Thompson River, including up to 21.76 acres of exposed groundwater created after 1981, and associated with the subject permit. To the extent the augmentation requirement is decreased, this will be reflected in the judicially approved final decree, which Coulson hopes to obtain by the end of 2026.

Although this application was filed in 2019, it was necessary to amend the application in 2020 to incorporate additional sources of augmentation water, including municipal effluent made available pursuant to a second long-term lease entered with the City of Loveland.

The case was referred to the Water Court Judge and set for a trial in 2024. Unfortunately, Coulson was unable to obtain “dry-up” credit for historical irrigation shares that were being relied upon as augmentation supplies- and the Court approved their motion to vacate the trial and allow them time to investigate further additional sources.

Coulson has an extensive portfolio of water rights they own, including 5.5 irrigation shares in the Consolidated Hillsborough Ditch Company and 10 shares in the Big Thompson and Platte River Ditch. These ditches are strategically located near the Kirtright property and in combination would yield significantly more than is required

A status conference with the opposers and Water Court was held on July 21, 2025. Coulson will provide a draft decree and updated engineering report to the objectors by January 23, 2026. With the added supplies, Coulson is confident the case will be resolved. As a contingency, the Court has docketed the case for next spring.

(The description of the augmentation plan is based on information provided by CEC’s legal counsel in the matter of the Application for Approval of Plan for Augmentation, Change Of Water Right, and for Conditional and Absolute Underground and Surface Water Rights, Including Water Storage Rights, Coulson Excavating, Inc. Case No. 19CW3157.)

Hydrologic Balance

Ponds 1 is being backfilled to prevent exposure of groundwater to the atmosphere. A long term augmentation plan has been applied for with the Division 1 water court (19CW3157) to augment the remaining ponds on the site, with the exception of the ponds located in the southwest portion of the site. These southwestern ponds were historical mining sites which exposed approximately 5 acres of pond area prior to 1980. Currently approximately 2.8 acres of surface pond area occurs and will remain as such.

With regard to floodwater hydrologic balance, a Letter of Map revision will be filed with Larimer County Engineering following reclamation of this site and the Stroh Pit to the east. Overall, the earthwork proposed in this reclamation plan will not affect floodwater surface elevations due to the fact that pond areas are modeled as ineffective flow up to their spill elevations. The final backfill grade for Pond 1 will be at or just below that elevation.

Floodplain and Drainage

Currently, it is understood from observations by the operator and landowners that the site can flood along the western boundary area and the northeastern area north of Ponds 2, 3 and 4.

For the purpose of analyzing flooding at the Kirtright Pit, the river flood stage was modeled with HEC-RAS for the 5yr recurrence interval (2000 c.f.s.) flood event. The HEC-RAS model used for the simulation is the current effective model as adopted by FEMA. The only change to the model was to enter a 5yr discharge value (2000 c.f.s see A-1) for the steady flow data. The HEC-RAS cross section cut lines are shown in Exhibit G-1, Sheet-1. For reference, the 2023 flood event saw 1,600 c.f.s. at the Loveland gage, however the observed flooding of the Kirtright property would indicate flood discharge in the area was closer to 2,000 c.f.s.

With regards to flooding near the western boundary, the modeled flood water surface elevation in the vicinity of the CDOT drainage ditch was 4843 ft. resulting in partial inundation of the ditch as shown in Exhibit G-1 Sheet-1. At this flood water surface elevation, the river stage alone would not have resulted in flow to the Pond 1 area. It is believed that a combination of earthwork done by the landowner to the right bank of the CDOT ditch near the Kirtright driveway as well as a surcharge from roadway stormwater system created enough rise in the ditch to overtop the bank in that area and flow into the area previously occupied by Pond 1.

With regards to flooding in the eastern portions of the site, grounds north of Ponds 2, 3 and 4 were mined and backfilled in the late 1990’s and early 2000’s. The resulting ground surface is in fact lower than the historical grade in those areas creating a shallow basin for floodwater and stormwater to collect. In addition, a 32 ft long 18” CMP culvert was placed in the northeast corner of Randy Kirtright’s eastern parcel under the gravel road. This culvert allowed the operator to outfall mine dewatering flows to the river. This culvert was surveyed with high precision GPS referenced to the Johnson’s Corner NGS benchmark in July 2025. The invert elevations were measured to be 4835.5 ft (invert in)

and 4835.0 ft (invert out). The 5 yr HEC-RAS modeled flood water surface elevation in the vicinity of the culvert is 4839 ft. (see G-1) The gravel road over the culvert is just above the 4839 ft elevation. It is clear that the culvert is the conduit which allowed the 2023 floodwaters to inundate the low areas mentioned above. Without the culvert in place, the river would not have breached the bank in 2023.

Floodplain and Drainage Mitigation

For the purpose of mitigating flooding for the 5yr recurrence interval or less, potentially due to changes in elevation topography resulting from the mining operation, the following measures will be implemented.

To mitigate flooding in the western area of the site, the strategy will be to restore the right bank of the CDOT drainage ditch to the grade prior to the landowner removing material from that area. The proposed grading for the area is shown in Exhibit F.

To mitigate flooding in the eastern area, a slide gate valve (see Exhibit G-1, Sheet-4 detail #1) will be fitted to the upstream end of the culvert to prevent flood stages of the river below 4839 ft from entering the site.

For the purpose of mitigating prolonged ponding to the low areas north of Ponds 2, 3 and 4 following a flood event where the water surface elevation exceeds 4939 ft., CEC will construct a drainage swale with a 2ft bottom, 6:1 side slopes and an approximate grade of -0.05%. The swale will discharge into the culvert at the slide gate. The slide gate can be manually opened after floodwaters recede. The details of the swale are given in Exhibit G-1, Sheets 1-4 as well as in Exhibit F.

Table 2. Results of Flood Frequency Analysis for Big Thompson River

Exceedence Recurrence Interval (years)	Big Thompson at Loveland Gage (cfs)	Big Thompson at La Salle Gage (cfs)
2	760	660
5	2,000	1,683
10	3,620	2.897
50	11,800	8,260
100	18,700	12,310
200	29,200	17,980
500	51,500	28,963

Based on these FFA results, the 2013 flood was approximately a 100-year event at the Loveland gage. The FFA at the La Salle gage indicates that the 2013 flood was closer to a 500-year event, which is not unreasonable considering that the gage is located downstream of the Little Thompson River confluence and both rivers experienced considerable flooding at almost the same time. It should be noted that reliable flood-frequency relations are difficult to estimate when the contributing basins are heavily influenced by irrigation canals and reservoirs, particularly for semi-arid and arid basins in the western United States. The occurrence of high-outliers and low-outliers, mixed-population sources of flooding, non-stationarity (the effects of long-term variability on flood estimates), and other factors also contribute to uncertainty in flood-frequency estimates (Jarrett 2014).

2.4 Rainfall / Runoff Model for September 2013 Event

2.4.1 Overall Modeling Approach

A hydrologic analysis was performed on the Big Thompson watershed to evaluate and attempt to replicate the September 2013 flood event along the Front Range. The September 2013 flood event was modeled using the United States Army Corps of Engineers (USACE) Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) to calculate the peak runoff experienced during the flood. A calibrated HEC-HMS model was developed in Phase 1 of this hydrologic analysis for the Big Thompson River upstream of Glade Road (Big Thompson River, North Fork Big Thompson River, and Buckhorn Creek). Similarly, a HEC-HMS model for the entire Little Thompson watershed was developed by CH2M Hill. The model output, in the form of discharge hydrographs, from these two tributary models was then used as input to a separate model for the lower Big Thompson watershed (Confluence with Buckhorn Creek to the South Platte River).

Of the various hydrologic models accepted by FEMA, HEC-HMS version 3.5 was determined to be the best suited for modeling the rural mountainous watersheds included in the CDOT scope of work. During this study HEC-HMS version 4.0 was released, however version 3.5 was used to maintain consistency with the Phase 1 analysis. The primary reasons HEC-HMS was chosen are that it includes several different options to simulate the hydrologic response in a watershed including various infiltration loss methods (constant loss, exponential loss, CN method, Green-Ampt, Smith-Parlange, and soil moisture accounting), transform methods (kinematic wave and various unit hydrographs), and reach-routing methods (Modified Puls, Muskingum, Muskingum-Cunge, Lag, and Kinematic Wave). HEC-HMS also has a

TABLE G1 HEC-RAS Output DS of I-25 Bridge 5yr Recurance Interval

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
BigThompson	BT: Middle	106827	5yr	2131.62	4835.06	**4843.03**	4839.31	4843.15	0.00061	2.78	786.1	232.21	0.23
BigThompson	BT: Middle	106435	5yr	2131.62	4836.26	**4842.7**	4841.15	4842.84	0.00104	3.69	864	1191.9	0.3
BigThompson	BT: Lower	105621	5yr	2131.52	4834.03	**4841.48**	4839.86	4841.79	0.00165	5.34	602.5	190.41	0.4
BigThompson	BT: Lower	104990	5yr	1925.86	4831.23	**4840.21**	4837.03	4840.7	0.00175	5.75	412.6	197.47	0.4
BigThompson	BT: Lower	104063	5yr	1925.86	4829.84	**4838.86**	4835.48	4839.26	0.00129	5.46	494.2	236.82	0.35

COLORADO
Division of Water Resources
Department of Natural Resources

March 31, 2025

Peter Wayland

Weiland, Inc.

PO Box 18087

Boulder, CO 80308

Re: Coulson Excavating Company Combined Substitute Water Supply Plan

(WDID 0402560)

Plan IDs 3051, 3262, 3313, 4709, 5511, and 6167

Water Division 1, Water District 4, Weld and Larimer Counties

Approval Period: January 1, 2025 through December 31, 2025

Contact information for Mr. Wayland: 303-443-9521; pwayland@weilandinc.com

Dear Mr. Wayland:

We have reviewed your letter dated January 16, 2025 requesting renewal of a substitute water supply plan ("SWSP") in accordance with section 37-90-137(11), C.R.S., to cover depletions caused by sand and gravel mining operations at multiple mine sites operated by Coulson Excavating Company, Inc. ("Coulson" or "Applicant"). This request proposes to replace depletions to the Big Thompson River resulting from current and past mining operations at the six (6) sites specified in Table A below. Each of these sites were previously included in individual SWSPs. The required fee of $1,542 (6 sites × $257/site renewal fee) has been received (receipt nos. 10040261-10040266).

Table A – Pit Overview

Site Name	DRMS Permit No.	WDID	Current Well Permit No.	New Permit Required?	Exposed Surface Area (acres)
Brownwood Pit	M-1979-059	0403014	88260-F	No	15.2
Challenger Pit	M-1985-026	0403018	83868-F	No	22.7
Kirtright Pit	M-1986-123	0403017	76931-F	No	19.534[a]
Gardels Pit	M-2005-033	0403019	78896-F	No	8.8
Bonser Pit	M-2000-156	0403021	77571-F	No	22.2[b]
Amen Aggregate Resource Pit	M-2019-025	0405781	84303-F	No	1.38

[a]An additional 0.76 acres of groundwater were exposed to the atmosphere at the Kirtright Pit prior to January 1, 1981, and do not require replacement under this SWSP.

[b]An additional 9.93 acres of groundwater were exposed to the atmosphere at the Bonser Pit prior to January 1, 1981, and do not require replacement under this SWSP.

The general location for each of the mining sites is identified in Table B below and depicted on the attached “Figure 1—Site Locations”.

Table B – Pit Locations

Site Name	Location
Brownwood Pit	Sections 19 & 20, T5N, R68W
Challenger Pit	Section 29, T5N, R67W
Kirtright Pit	Section 15, T5N, R68W

Gardels Pit	Section 19, T5N, R68W
Bonser Pit	Sections 15 & 16, T5N, R68W
Amen Aggregate Resource Pit	Section 19, T5N, R67W

A summary of the mining operations at each of the six sites included in this substitute water supply plan is provided below:

Brownwood Pit

Status: Resource extraction and reclamation activities at the Brownwood Pit are complete. There are two unlined reservoirs located on the site. There is a lined reservoir, the Brownwood South East Reservoir, located on the site. The Brownwood South East Reservoir was approved as having been lined to the designed standard referenced in the August 1999 State Engineer Guidelines for Lining Criteria for Gravel Pits in a letter dated October 4, 2012. The site is anticipated to be released from the DRMS permit upon approval of an augmentation plan by the water court. Depletions covered under this SWSP are limited to evaporation from exposed groundwater surface areas.

Exposed Groundwater Surface: 15.2 acres

Active Dewatering: No

Challenger Pit

Status: Resource extraction and reclamation activities at the Challenger Pit are complete. There are three unlined ponds located at the Challenger Pit property. The site is anticipated to be released from the DRMS permit upon approval of an augmentation plan by the water court. Depletions covered under this SWSP are limited to evaporation from exposed groundwater surface areas.

Exposed Groundwater Surface: 22.7 acres

Active Dewatering: No

Kirtright Pit

Status: Resource extraction and reclamation activities at the Kirtright Pit are complete. There are five unlined ponds located at the Kirtright Pit property. The site is anticipated to be released from the DRMS permit upon approval of an augmentation plan by the water court. Depletions covered under this SWSP are limited to evaporation from exposed groundwater surface areas. The total surface area of groundwater exposed at the site is 20.294 acres, of which 0.76 acres were exposed to the atmosphere prior to January 1, 1981 ("pre-81"). According to previous information received by this office, a total of 2.99 acres of groundwater surface area was exposed within the Kirtright Pit reclamation permit boundary prior to January 1, 1981. Of those 2.99 acres, only 0.76 acres remain exposed. The 0.76-acre area exposed at the Kirtright Pit prior to 1981 is tied to the location as shown on the attached Figure 2—Exposed Groundwater Areas Kirtright Pit. The credits for the pre-81 area are tied to the location identified on that map and may not be re-allocated to other areas of groundwater exposure within the gravel pit permit boundary.

Exposed Groundwater Surface: 19.534 acres post-80, 0.76 acres pre-81

Active Dewatering: No

Gardels Pit

Status: Resource extraction and reclamation activities at the Gardels Pit are complete. There are two unlined reservoirs located on the site. There is a lined reservoir, the Gardels West Reservoir, located on the site. The Gardels West Reservoir was approved as having been lined to the designed standard referenced in the August 1999 State Engineer Guidelines for Lining Criteria for Gravel Pits in a letter dated October 4, 2012. The site is anticipated to be released from the DRMS permit upon approval of an augmentation plan by the water court. Depletions covered under this SWSP are limited to evaporation from exposed groundwater surface areas.

Exposed Groundwater Surface: 8.8

Active Dewatering: No

Bonser Pit

Status: Resource extraction at the Bonser Pit is complete and reclamation activity is underway. There are seven unlined ponds and a settling pond located at the Bonser Pit property. Depletions covered under this SWSP are limited to evaporation of evaporation from exposed groundwater surface areas. The total surface area exposed at the site is 32.11 acres, of which 9.93 acres were exposed to the atmosphere prior to January 1, 1981. The 9.93-acre area exposed at the Bonser Pit prior to 1981 is tied to the location as shown on the attached Figure 2— Exposed Groundwater 2011 Bonser Pit. The credits for the pre-1981 area are tied to the location identified on that map and may not be re-allocated to other areas of groundwater exposure within the gravel pit permit boundary.

Exposed Groundwater Surface: 22.18 acres post-80, 9.93 acres pre-81

Active Dewatering: No

Amen Aggregate Resource Pit

Status: Applicant intends to continue to actively mine the Amen Aggregate Resource Pit during this plan period. Depletions covered by this SWSP include water lost due to evaporation from exposed groundwater surface areas, aggregate production, and dust control.

Exposed Groundwater Surface: 1.67 acres maximum anticipated during plan period

Active Dewatering: Yes

Depletions

The lagged depletions resulting from evaporation, water lost in mined product, dust control, and dewatering operations at each site are shown in Table C below:

Table C – Depletion Summary (all amounts in acre-feet)

Site Name	Evaporation	Water Lost in Mined Product	Dust Control	Total CU	Lagged Depletions	Lagged Dewatering Depletions Impacting the River	Total Lagged Depletions
Brownwood Pit	33.64	0	0	33.64	33.64	0	33.64
Challenger Pit	52.77	0	0	52.77	52.77	0	52.77
Kirtright Pit	43.94	0	0	43.94	43.94	0	43.94
Gardels Pit	19.45	0	0	19.45	19.47	0	19.47
Bonser Pit	49.92	0	0	49.92	49.92	0	49.92
Amen Aggregate Resource Pit	3.21	8.80	6.48	18.48	18.66	0[a]	18.66
Total	--	--	--	--	218.40	0	218.40

[a] So long as the pit is continuously dewatered, the water returned to the stream system is considered to be adequate to offset depletions attributable to the dewatering.

Gross evaporation for each site was obtained from atlases in NOAA Technical Report NWS 33, distributed monthly as explained in the State Engineer's *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits* for gravel pits at elevations below 6,500 feet. Net evaporation may be used in calculating the volume of water lost to evaporation from groundwater exposed by sand and gravel mining operations. Net evaporation is defined as gross evaporation less the consumptive use of water by vegetation that naturally occurred at

the site prior to construction of the pits. The historical consumptive use credit for native vegetation was assumed to be equal to the effective precipitation, which was estimated based on the data from the Loveland NCWCD weather station (1989-2018).

Based on monthly average temperatures reported for the Loveland NCWCD weather station, ice cover was assumed for the months of December and January. The ice covered periods may be used to reduce the amount of evaporative losses that need to be replaced; however, for the purpose of this SWSP, the Applicant shall replace the net evaporation depletions from the exposed groundwater surface area that may occur during the ice covered period (December and January) for any time that a pit is not completely covered by ice. Computation of the net evaporation during any time that a pit is not completely covered by ice shall be determined as the pro-rata amount of the monthly gross evaporation rate distribution amount identified in the State Engineer's *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits*, subtracting the pro-rata amount of the effective precipitation for that period.

The IDS AWAS stream depletion model, which uses the Glover method, was used to calculate the lagged depletions to the river. The Glover method uses four aquifer input parameters for each site as follows: 1) X - distance (ft) from centroid of exposed groundwater to river, 2) W - distance (ft) from the aquifer boundary through the centroid to the river channel, 3) T - transmissivity of the alluvial aquifer (in gallons per day per foot) between the site and the river, and 4) S - specific yield (0.2 was used for all sites). The parameters used in the model for each site are given in Table D below.

Table D – Aquifer Characteristics

Site Name	Pond Name	T (gal/day/ft)	X (ft)	W (ft)
Brownwood Pit	Pond 1	40,137	633	4,171
	Pfeif Addition	20,000	807	1,400
Challenger Pit	Pond 1	40,000	653	1,700

	Pond 2	40,000	641	1,700
	Pond 3	40,000	424	1,700
Kirtright Pit	Pond 1	20,115	1,158	3,500
	Pond 2	20,115	1,610	3,500
	Pond 3	20,115	1,436	3,500
	Pond 4	20,115	1,436	3,500
Gardels Pit	Pond 1	20,000	410.5	770
	Pond 2	20,000	254.7	770
Bonser Pit	Pond 1	25,000	971	3,000
	Pond 2	25,000	1,466	3,000
	Pond 3	25,000	2,081	3,000
	Pond 4	25,000	332	3,000
	Sediment Pond	25,000	588	3,000
Amen Aggregate Resource Pit	-	40,000	445.9	2,180

Depletions from each site/pond are assumed to impact the Big Thompson River at a point perpendicular to the site/pond.

Replacements

Table E – Replacement Sources

Replacement Sources	**Projected Yield (acre-feet)**	**Comments**

Hill and Brush Ditch	69.69	11 shares
Big Thompson Ditch and Manufacturing Co. Ditch	27.64	⅝ shares total; 0.318 shares to be used for replacement purposes in this SWSP
City of Loveland	150	Existing lease for 100 acre-feet, and proposed lease for 50 acre-feet

Note: Actual 2025 yield may vary from projected yields due to the computed return flow obligations based on the previous year's actual water deliveries.

Hill & Brush Ditch

The Hill & Brush Ditch (WDID 0400522) was decreed in 1866 for 61.801 cfs, of which 34.801 cfs was abandoned in case no. 84CW204, leaving 27.0 cfs. The historical point of diversion is located in the NE ¼ of Section 24, T5N, R68W, 6th P.M. There are a total of 128 shares in the Hill & Brush Ditch. The Applicant has proposed to rely on a historical consumptive use analysis prepared by Williams and Weiss Consulting for the pending Division 1 Water Court application, case no. 19CW3157. A study period of 1955-1986 was selected. A review of the irrigation practices at the Pfeif/Challenger Farm indicates that a total of 26 shares of the Hill & Brush Ditch were used to irrigate approximately 114.5 acres between 1955 and 1968, 115.1 acres between 1969 and 1981, and 112.1 acres between 1982 and 1986. Irrigated crops included silage corn, alfalfa, barley, and pasture grass. The historical consumptive use was estimated using the Modified Blaney-Criddle methodology in the IDS Consumptive Use Model, using the average monthly diversion from 1955 through 1986. A 15% ditch loss was determined for the Hill & Brush Ditch based on discussions with the Hill and Brush Ditch superintendent and former tenant. The corn was irrigated using a row and furrow system, and the Applicant has claimed a maximum irrigation efficiency of 65% for the row and furrow system. The pasture grass, barley, and alfalfa crops were flood irrigated with bermed borders. The Applicant has claimed a maximum irrigation efficiency of 55% for the flood irrigated crops. Temperature and precipitation data were taken from the Fort Collins

weather station. For the purposes of this SWSP approval, the claimed maximum irrigation efficiencies will be accepted.

Of the irrigation water historically applied to the farm, a portion ran off the fields (surface return) and a portion seeped into the ground below the root zone of the crops (deep percolation). Return flows were assumed to consist of 55% surface return flow and 45% deep percolation. The timing of surface return flows was assumed to be instantaneous to the stream system. The timing of deep percolation return flows was estimated using the AWAS model with the alluvial aquifer boundary condition option and the following aquifer parameters: transmissivity (T) = 35,062 gallons per day per foot, specific yield (SY) = 0.2, the distance from the centroid of the farm to the stream (X) = 694 feet, and the location of the parallel impermeable boundary (W) was estimated to be 1,700 feet from the stream.

Water in excess of the crop irrigation requirement was added to the soil moisture bank, which was determined to have a water holding capacity of 1.65 inches/foot based on a weighted average of soil types. The depth to groundwater, based on monitoring wells in the vicinity, is estimated to be 6-7 feet in areas planted with corn, alfalfa, and barley and 4 feet in the areas planted with pasture grass. The crop irrigation requirement for the fields of pasture grass and alfalfa were reduced to account for the groundwater above the rooting depth of the crops. The crop irrigation requirement was reduced by 20% for pasture grass and 15% for alfalfa. Total return flow obligations from the use of the 26 shares were calculated as 182.90 acre-feet by subtracting the historical consumptive use from the pro-rata amount of diversions available at the farm headgate.

The results of the historical consumptive use ("HCU") analysis for the 26 Hill & Brush Ditch shares are summarized in Table F below.

Table F - HCU results for the 26 Hill and Brush Ditch shares (all amounts in acre-feet)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total

River Diversion	0	0	0	0	40.24	115.30	152.48	82.54	17.04	2.52	0	0	410.12
Farm Headgate Delivery	0	0	0	0	34.20	98.01	129.61	70.16	14.48	2.15	0	0	348.60
Consumptive Use	0	0	0	0	16.19	46.62	60.77	34.89	6.24	1.01	0	0	165.70
Total Return Flows	0	0	0	0	18.02	51.39	68.84	35.26	8.25	1.13	0	0	182.90

The historical accretions/depletions for Coulson's 11 shares were prorated from the 26 shares, and the HCU for the 11 shares was determined to be 70.10 acre-feet with a total of 77.38 acre-feet of return flow obligations. The applicant has estimated that a farm headgate delivery of 123.30 acre-feet will be required for replacement purposes as part of this SWSP. The monthly and annual volumetric limits for the farm headgate deliveries are shown in Table G below. For the purposes of this SWSP, diversions are limited to the period of April through September. The monthly return flow requirement for the months of October through April must be determined by multiplying the monthly return flow factor shown below in Table H by the total delivery during the previous 12 months. Monthly results shall be divided by the number of days in that month to determine the daily return flow obligation. The daily return flow requirement for the months of May through September will be determined by multiplying the daily delivery of the 11 Hill & Brush shares by the monthly return flow factor shown in Table H. Return flow obligations from the use of these shares are owed to the river at approximately the same location as they historically accrued to the river. After accounting for return flow obligations, the total consumptive use credit for 2025 is projected to be approximately 58.72 acre-feet.

Table G - Maximum Farm Headgate Delivery and Consumptive Use Credit for 11 Hill & Brush Shares (acre-feet)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Maximum Farm Headgate Delivery	0	0	0	0	14.47	41.47	54.84	29.68	6.13	0	0	0	146.58
Maximum Consumptive Use Credit	0	0	0	0	6.85	19.72	25.71	14.76	2.64	0	0	0	69.69

Table H - Monthly Return Flow Factors for the Hill & Brush Shares

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Return Flow Factors (%)	0.32	0.18	0.09	0.05	37.90	40.17	44.63	55.82	121.36	2.26	1.11	0.60

For the proper administration of this SWSP, adequate measuring devices acceptable to the water commissioner must be installed. This SWSP will not allow any historical consumptive use credits from these shares to be applied to this SWSP until such time as these shares are adequately diverted, measured, recorded, and accounted for to the satisfaction of the water commissioner. If the Applicant intends to use the Hill & Brush Aug Return (WDID 0402811) located in the SW ¼ of the SW ¼ of Section 20, T5N, R67W of the 6th P.M., the Applicant must coordinate with the water commissioner to ensure this structure accurately measures and records the flow of water. **If at any time the water commissioner determines that the**

augmentation return structure is not accurately measuring and recording the flow of water, the water commissioner will not authorize the use of that structure.

Big Thompson Ditch and Manufacturing Co.

The Big Thompson Ditch and Manufacturing Co. ("BTDM") Ditch (WDID 0400503) was decreed in the general adjudication decree entered in Boulder County by the District Court on May 28, 1883 four priority dates for a total of 146.25 cfs. Subsequent to the original adjudication, portions of the BTDM water rights have been transferred out of the ditch and have reduced the amount available for diversion at the headgate to 64.56 cfs. The original point of diversion was located in the SE ¼ of the NW ¼ of the SE ¼, Section 15, T5N, R69W, 6th P.M. Following a flood in 1981, the point of diversion was changed and then subsequently corrected to a point located in the NE ¼ of the SW ¼, Section 15, T5N, R69W, 6th P.M. There are a total of 20.792 shares in the Big Thompson Ditch and Manufacturing Co. For this SWSP, Coulson has chosen to rely on the historical consumptive use analysis of the BTDM ditch conducted for water court case no. 02CW392. Case no. 02CW392 relied on a ditch-wide analysis of the 20.792 total shares in the BTDM ditch. Based on a study period of 1920 through 1979, the water court found that the average annual gross river diversion was 3,753.8 acre-feet per year, or 180.54 acre-feet per share. The ditch-wide analysis determined that the average annual historical consumptive use of the BTDM water rights was 1,908.2 acre-feet or 91.78 acre-feet per share, assuming a conveyance loss of 15% and a farm efficiency of 60%.

For Coulson's 0.318 shares dedicated to this SWSP, the total average annual consumptive use would therefore be equal to 29.19 acre-feet per year and 54.63 acre-feet of total deliveries. The monthly and annual volumetric limits of the farm headgate deliveries are shown in the table below. Paragraph 9.3.6 of the 02CW392 decree limited future farm headgate deliveries to 5,066.56 acre-feet per share in any consecutive 30-year period, which equates to an annual diversion limit of 168.885 acre-feet per share or 53.705 acre-feet for the subject 0.318 shares. In addition, Paragraph 9.3.9 of the 02CW392 decree limited diversions during May to 200.122 acre-feet for any consecutive ten-year period, which equates to a monthly

diversion limit of 6.36 acre-feet for the subject 0.318 shares. Therefore deliveries of the 0.318 shares under this SWSP are limited to a 6.36 acre-feet in May and a one-year limit of 53.705 acre-feet.

Table I - Maximum Monthly and Annual Farm Headgate Diversions for 0.318 BTDM Shares

Month	Maximum Monthly Diversion (acre-feet)
May	6.36
June	12.87
July	16.84
August	12.83
September	5.61
Annual	53.705

The decree entered in case no. 02CW392 limited diversions to the historical diversion period of May 1 through September 30. The ditch-wide analysis utilized a return flow split of 50% surface and 50% subsurface return flows. The historical return flows associated with the 0.318 shares that are the subject of this SWSP shall be maintained in accordance with the return flow factors identified in case no. 02CW392 and restated below.

During the months of May through September, the Applicant will calculate the return flow obligations using the percentages shown in Table J below.

Table J - Diversion Season Return Flow Requirements

Month	May	June	July	August	September
Percentage	38.0%	32.7%	31.2%	37.9%	61.8%

During the months of October through April, the Applicant will calculate the return flow obligations by multiplying the previous irrigation season's total diversion of the 0.318 BTDM shares by the percentages shown in Table K below.

Table K - Non-Diversion Season Return Flow Requirements

Month	October	November	December	January	February	March	April
Percentage	0.1%	2.5%	2.0%	1.7%	1.4%	1.1%	0.6%

The BTDM water rights will continue to be diverted at the BTDM headgate during the historical irrigation season of May 1st through September 30th. For the proper administration of this SWSP, adequate measuring devices acceptable to the water commissioner must be installed. This SWSP will not allow any historical consumptive use credits from these shares to be applied to this SWSP until such time as these shares are adequately diverted, measured, recorded, and accounted for to the satisfaction of the water commissioner. If the Applicant intends to use the 12" Parshall flume located at the northwest corner of the Brownwood property adjacent to the river, the Applicant must coordinate with the water commissioner to ensure this structure accurately measures and records the flow of water. **If at any time the water commissioner determines that the augmentation return structure is not accurately measuring and recording the flow of water, the water commissioner will not authorize the use of that structure.**

City of Loveland Lease

Coulson has entered into a water lease agreement with the City of Loveland for 100 acre-feet of fully consumable water. A copy of the lease agreement, dated October 25, 2022, is attached. The duration of the lease is for a term of twenty-five years ending on December 31, 2047. Coulson entered into a second water lease agreement with the City of Loveland for 50 acre-feet of fully consumable water. A copy of the lease agreement, dated April 17, 2024, is attached. The duration of the lease is for a term of fifteen years ending on December 31, 2038. The replacement water will be delivered to the Big Thompson River at

Loveland's wastewater treatment plant (WDID 0402300), located in the NE ¼ of the SW ¼ of Section 19, T5N, R68W, 6th P.M.

Under the terms of the leases, replacements can be made using a variety of water rights owned by Loveland including, but not limited to, Windy Gap reusable effluent, Loveland Storage Reservoir water pursuant to the terms and conditions of the decrees for change of water rights for the City of Loveland entered in case nos. 03CW354 and 02CW392, and Colorado-Big Thompson ("C-BT") Project water. **In the event that Loveland plans to use C-BT Project water as a replacement source, Loveland must comply with the Interim Rule issued by the Northern Colorado Water Conservancy District ("Northern District") in May 2005, regarding the use of C-BT Project water in substitute water supply plans.** Prior to the use of C-BT Project water, Loveland is required to notify this office, the division engineer and the water commissioner of the amount of C-BT Project water dedicated to this plan and provide a copy of the Northern District's approval letter as required by paragraph I(g) of the Northern District's May, 2005 Interim Rule.

Brownwood SE Reservoir/Bonser Pit Pond/Amen Pond 2 Reservoir

Coulson's Brownwood SE Reservoir (WDID 0403398) releases at a point located in the SE ¼ of the SE ¼ of Section 19, Township 5 North, Range 68 West of the 6th P.M, at a distance of 1194 feet from the north section line and 0 feet from the west section line of said Section 19. The Brownwood SE Reservoir was lined with clay, and was approved as having been lined to the design standard referenced in the August 1999 State Engineer Guidelines for Lining Criteria for Gravel Pits in a letter dated October 4, 2012. Releases from the Brownwood SE Reservoir are not anticipated for this plan period, however the Applicant requests the ability to provide replacement water from this structure in the event they are able to store water in the reservoir during this water year.

The Bonser Pit Pond (WDID 0403730), also known as the Bonser South Reservoir, is located in Sections 15 and 16, Township 5 North, Range 68 West of the 6th P.M. The Bonser Pit Pond was lined with clay, and was approved as having been lined to the design standard referenced in the August 1999 State Engineer Guidelines for Lining Criteria for Gravel Pits in a letter dated

May 11, 2023. Releases from the Bonser Pit Pond are not anticipated for this plan period, however the Applicant requests the ability to provide replacement water from this structure in the event they are able to store water in the reservoir during this water year.

The Amen Pond 2 Reservoir is located in Section 19, Township 5 North, Range 67 West of the 6th P.M. The Amen Pond 2 Reservoir is currently undergoing a clay liner leak test. Pending approval of having been lined to the design standard, the Applicant requests the ability to provide replacement water from this structure. Releases from the Amen Pond 2 Reservoir for replacement purposes are not anticipated during this plan period.

Deliveries from the Brownwood SE Reservoir, Bonser Pit Pond, and Amen Pond 2 Reservoir must be measured and recorded using a Totalizing Flow Meter. **Coulson must coordinate with the water commissioner to ensure releases from the Brownwood SE Reservoir, Bonser Pit Pond, and Amen Pond 2 Reservoir are accurately measured and recorded. In addition, Coulson must obtain prior approval from the water commissioner before any releases are made from the Brownwood SE Reservoir, Bonser Pit Pond, or Amen Pond 2 Reservoir.**

Replacement Summary

The proposed depletions and replacements are shown in the attached "AV.7. Monthly Accounting Sheet". The transit loss for each stream was estimated as 0.25% per mile for the Big Thompson River. The stream miles for each source are found on the Transit Loss spreadsheet submitted as part of the Applicant's accounting. Any use of downstream replacement sources for replacement of upstream depletions can only operate when there is no intervening call for water within the impacted reach. The relative location of the replacement sources and pits is summarized in Table L below.

Table L - Replacement Source Location Summary

Replacement Source	Location of Deliveries	Relative Location
Hill and Brush Ditch	Section 20, T5N, R67W	Adjacent to Challenger Pit, downstream of all other pits
Big Thompson Ditch & Manufacturing Co.	Section 19, T5N, R68W	Downstream of Gardels Pit, adjacent to Brownwood Pit, and upstream of remaining pits
City of Loveland	Section 19, T5N, R68W	Upstream of all pits
Brownwood SE Reservoir	Section 19, T5N, R68W	Downstream of Gardels Pit, adjacent to Brownwood Pit, and upstream of remaining pits
Bonser Pit Pond	Sections 15 and 16, T5N, R 68 W	Downstream of Gardels and Brownwood Pits, adjacent to Bonser Pit, and upstream of remaining pits
Amen Pond 2 Reservoir	Section 19, T5N, R68W	Downstream of Gardels, Brownwood, Bonser, and Kirtright Pits; within Amen Aggregate Resource Pit, and upstream of Challenger Pit

Coulson must obtain prior approval from the water commissioner and coordinate the deliveries of changed shares back to the river from the Hill & Brush Ditch and the BTDM Ditch as required by the water commissioner. Coulson must track and provide the amount of

water available, the amount of water requested, and the amount of water delivered on a daily basis or as required by the water commissioner.

Dewatering

All sites that are actively dewatering have been equipped with a Totalizing Flow Meter to measure the dewatering discharge. Monthly dewatering volumes must be recorded monthly with the meter readings included on submitted accounting. As long as dewatering operations remain continual at approximately constant rates, the water returned to the stream system is assumed to offset the depletions attributable to the dewatering operations. Under this assumption, the Applicant is not claiming any dewatering credit. Once dewatering operations stop or are significantly reduced at specific sites, the monthly meter readings will be used to analyze post pumping depletions. The only site that will be actively dewatered during this SWSP period is the Amen Aggregate Resource Pit.

Long Term Depletions and Reclamation

In accordance with the letter dated April 30, 2010 (copy attached) from the Colorado Division of Reclamation, Mining, and Safety ("DRMS"), all sand and gravel mining operators must comply with the requirements of the Colorado Reclamation Act and the Mineral Rules and Regulations for the protection of water resources. The April 30, 2010 letter from DRMS requires that you provide information to DRMS to demonstrate you can replace long term injurious stream depletions that result from mining related exposure of groundwater. The DRMS letter identifies four approaches to satisfy this requirement, which are identified and described in the attached letter. A summary of the final reclamation and the approach for compliance with the DRMS letter for each site, including the current posted bond amount, is shown in Table M below.

Table M – Final Reclamation Summary

Site Name	Proposed Final Reclamation	Bond Amount	DRMS Approach No.	Comments
Brownwood Pit	Unlined Reservoirs and Augmentation Plan	$89,136	2	An augmentation plan to replace evaporative depletions is currently pending in Division 1 Water Court case no. 2019CW3157.
Challenger Pit	Unlined Reservoirs and Augmentation Plan	$218,637	2	An augmentation plan to replace evaporative depletions is currently pending in Division 1 Water Court case no. 2019CW3157.
Kirtright Pit	Lined Reservoir/Lakes	$58,400	2	An augmentation plan to replace evaporative depletions is currently pending in Division 1 Water Court case no. 2019CW3157.
Gardels Pit	Lined Reservoir	$291,800	2	An augmentation plan to replace evaporative depletions is currently pending in Division 1 Water Court case no. 2019CW3157.
Bonser Pit	Lined Reservoir	$659,234	2	An augmentation plan to replace evaporative depletions is currently pending in Division 1 Water Court case no. 2019CW3157.

Amen Aggregate Resource Pit	Lined Reservoir and Backfilling	$375,904	1, 3	The applicant has chosen to take a phased approach to surety bonding of reclamation costs. The applicant has posted a bond to cover the reclamation of Phase I activities, including the construction of a clay liner around Cell 2.

Conditions of Approval

I hereby approve this SWSP in accordance with section 37-90-137(11), C.R.S., subject to the following conditions:

1. This SWSP shall be valid for the period of January 1, 2025 through December 31, 2025, unless otherwise revoked or superseded by decree. Should a request for renewal of this SWSP be needed, such renewal request must be submitted to this office with the statutory fee (currently $257 per pit) no later than November 1, 2025, if extended). **If a renewal request is received after the expiration date of this SWSP, it may be considered a request for a new SWSP in which case the filing fee for a new SWSP will apply (currently $1,593 per pit).**

2. Well permits have been obtained for the current use and exposed groundwater surface area of each gravel pit in accordance with sections 37-90-137(2) and (11), C.R.S., as identified in Table A of this approval.

3. The total area of groundwater surface exposed after December 31, 1980 for each of the pits shall not exceed those values listed in Table A of this approval. Should the total surface area exposed exceed those amounts, an amendment will need to be filed with this office.

4. The total amount of groundwater to be consumed at each of the pits shall not exceed the values listed in Table C of this approval. Total consumption at each pit must not exceed these amounts unless an amendment is made to this SWSP.

5. Approval of this SWSP is for the purposes as stated herein. This office must first approve any additional uses for the water. Any future additional historical consumptive use credit given (e.g., agricultural water transfer) for these sites must consider all previous credits given.

6. The Applicant must replace all out-of-priority depletions resulting from operation under this SWSP, including those lagged depletions that occur to the stream after the expiration date of this SWSP. In addition, the Applicant must replace all return flows resulting from operations under this SWSP, including those return flows that are owed to the stream after the expiration date of this SWSP. Such out-of-priority depletions and return flow obligations must be included in the Applicant's accounting and projection.

7. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and must be made under the direction and/or the approval of the water commissioner(s). If approved prior, the release of replacement water may be aggregated to maximize beneficial use. The water commissioner(s) and/or the division engineer shall determine the rate and timing of an aggregated release.

8. Conveyance loss for delivery of replacement water is subject to assessment and modification as determined by the division engineer. The distance for assessment of conveyance loss will be based upon DWR stream miles or as approved by the Water Commissioner, and will be assessed from the point of release to the point of depletion/replacement.

9. All diversions shall be measured in a manner acceptable to the division engineer. The Applicant shall install and have approved by the Water Commissioner all structures prior to any credit or use in this SWSP. The Applicant shall maintain such measuring devices as required by the division engineer for operation of this SWSP.

10. **In the event that Loveland plans to use Colorado-Big Thompson ("C-BT") Project water as a replacement source, Loveland must comply with the Interim Rule**

issued by the Northern Colorado Water Conservancy District ("Northern District") in May 2005, regarding the use of C-BT Project water in substitute water supply plans. Prior to the use of C-BT Project water, Loveland is required to notify this office, the division engineer and the water commissioner of the amount of C-BT Project water dedicated to this plan and provide a copy of the Northern District's approval letter as required by paragraph I(g) of the Northern District's May, 2005 Interim Rule.

11. Approval of this SWSP does not in any way eliminate the obligation of the Applicant to comply with the by-laws that restrict the use of any of the shares identified in this SWSP. The use of any changed shares in this SWSP must be consistent with any applicable ditch and/or reservoir company by-laws.

12. Diversions of the 11 Hill & Brush shares and 0.318 Big Thompson Ditch and Manufacturing Co. shares changed in this SWSP are limited to the period of May 1 through September 30.

13. The replacement water, which is the subject of this SWSP, cannot be sold or leased to any other entity unless prior approval is obtained from the state or division engineer. As a condition of subsequent renewals of this SWSP, the replacement water must be appurtenant to these sites until a plan or plans for augmentation are decreed by the water court. All replacement water must be concurrent with depletions in quantity, timing, and locations.

14. The Applicant shall provide daily accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis. The accounting must be uploaded to the CDSS Online Reporting Tool within 30 days of the end of the month for which the accounting applies (https://dwr.state.co.us/Tools/reporting). Instructions for using the tool are available on the Division of Water Resources website on the "Services" → "Data & Information" page under the heading of Online Data Submittal. Accounting and reporting procedures are subject to approval and modification by the division engineer. Accounting forms need to identify the WDID

number for each structure operating under this SWSP. Additional information regarding accounting requirements can be found in the attached Augmentation Plan Accounting Protocol. **NOTE:** Monthly accounting, even during the winter non-irrigation season, is required.

In addition, the applicant shall verify that the City of Loveland (WDID 0402519) includes in Loveland's monthly accounting, a report on the reusable water released to provide replacement for this SWSP. It is the Applicant's responsibility to ensure Loveland releases the leased water in the correct time, place, and amount.

15. All return structures utilized in this SWSP must have a measuring device equipped with an electronic recording device and must be approved by the water commissioner prior to use. In addition, all charts or other output data associated with each measuring device utilized in this SWSP must be provided in a timely manner acceptable to all of the water commissioners identified herein.

16. The Applicant shall be required to notify and obtain approval of the water commissioners in writing a minimum of 48 hours, or as required by each individual water commissioner, of all planned releases and exchanges, including but not limited to, location, amount, and timing (start and end dates). In addition, the Applicant will coordinate deliveries of changed shares back to the river from the Hill & Brush Ditch and the Big Thompson Ditch and Manufacturing Co. Ditch with the water commissioner. Coulson will track and provide the amount of water available, the amount of water requested, and the amount of water delivered on a daily basis or as required by the water commissioner.

17. In order to prevent injury to other water rights, the division engineer and water commissioner must be able to administer Applicants' replacement water past headgates on the river at times when those headgates would otherwise be legally entitled to divert all available flow in or "sweep" the Big Thompson River or its tributaries. Applicant shall not receive credit for replacement of depletions to the Big Thompson River below such diversion structures unless bypass and measurement

structures are in place to allow the division engineer and water commissioner to confirm that Applicant's replacement water is delivered past the headgates. In the event that delivery past dry-up points requires the use of a structure for which a carriage or use agreement with a third party is required, Applicant shall be responsible for securing such agreement. Until such time as the Applicant provides a copy of the carriage or use agreement to the division engineer and water commissioner, no credit will be allowed for replacement of depletions to the Big Thompson River below such diversion structure.

18. The Division of Water Resources will not be responsible for any enforcement or administration of third party agreements that are not included in a decree of the water court.

19. The name, address, and phone number of a contact person who will be responsible for the operation and accounting of this SWSP must be provided to the water commissioner(s) and the division engineer.

20. Subject to prior approval by the division engineer, the Applicant may lease or purchase additional replacement water as identified in this SWSP request. Such additional sources of replacement water may only be used in this SWSP if the Applicant complies with the attached Use of Replacement Sources Not Specifically Identified in an SWSP or Augmentation Plan Protocol.

21. The Applicant shall perform an inspection of the dried up parcel, submit a Dry-Up Report - Verified Statement of that inspection, and provide a zipped GIS shapefile of the dried-up land as follows:

    - The Applicant's inspection of dry-up must be submitted on the Dry-Up Report - Verified Statement form at the beginning of the irrigation season indicating planned dry-up and then again in the fall after the irrigation season confirming the planned dry-up was accomplished. A pdf map may be attached to that report. The Dry-Up Report - Verified Statement form is available for download

from the Division of Water Resources' website at: https://drive.google.com/drive/folders/1TF0alNt6f5fla0Xz_n1_iAGCg4xusRN2

(Water Administration Documents/South Platte River Basin Forms). The Dry-Up Report - Verified Statement must be signed by an individual with personal knowledge of the dry-up for the entire irrigation season for each parcel of land associated with the change of water right in this SWSP.

- GIS shapefiles in a file format *.zip outlining the dry-up shall also be submitted at the same time as the Dry-Up Report. The GIS files must include any accompanying attribute data and the datum must be NAD83 and the UTM projection must be Zone 13N.

- Submittals shall be made by May 31, 2025 for planned dry-up and by October 31, 2025 for dry-up confirmation. Submittals shall be made through the CDSS Online Reporting Tool (https://dwr.state.co.us/Tools/reporting). Instructions for using the tool are available under Services / Data and Information in the Online Data Submittal Section. Two new Reporting Submittal Tool elements will be created for this SWSP: (1) Dry-up shapefile and (2) Dry-up Report - Verified Statement. For additional assistance with Online Reporting Submittals, contact Priscila Bajadali in the Division 1 office at dnr_div1accounting@state.co.us.

22. Dewatering at the Amen Aggregate Resources Pit will produce delayed depletions to the stream system. As long as the pit is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions attributable to the dewatering operation. Once dewatering at a site ceases, the delayed depletions must be addressed. Accordingly, dewatering is required to continue at the Amen Aggregate Resources Pit during the term of this approval. At least three years prior to completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions (including refilling of the pit) will be replaced, in time, place and amount.

23. Prior to claiming any credit for the water returned to the stream system from dewatering in excess of lagged dewatering depletions (a net accretion), the applicant must install a totalizing flow meter that accurately measures the quantity of water being pumped and returned to the stream system via dewatering operations and account on a real time basis for the actual dewatering depletions and accretions. No net accretion credits are sought by the Applicant for this approval period.

24. If dewatering of the Amen Aggregate Resources Pit discontinued, the pit would fill, creating additional depletions to the stream system due to increased evaporation. To ensure that additional depletions to the river do not occur, a bond has been obtained through the DRMS for lining or backfilling of the lakes. Therefore, if the dewatering is discontinued these bonds can finance the completion of the lining of these pit or the backfilling, thus preventing depletions to the stream system.

25. If a lined pond results after reclamation, replacement of lagged depletions shall continue until there is no longer an effect on stream flow.

26. The Applicant should consider the effects of groundwater mounding and the need for interceptor drains due to construction of the liners around the pits.

27. The approval of this SWSP does not relieve the Applicant and/or landowner of the requirement to obtain a Water Court decree approving a permanent plan for augmentation or mitigation to ensure the permanent replacement of all depletions, including long-term evaporation losses and lagged depletions after gravel mining operations have ceased.

28. If reclamation of the mine sites will produce a permanent water surface exposing groundwater to evaporation, an application for a plan for augmentation must be filed with the Division 1 Water Court at least three (3) years prior to the completion of mining to include, but not be limited to, long-term evaporation losses and lagged depletions. If a lined pond results after reclamation, replacement of lagged depletions shall continue until there is no longer an effect on stream flow. According to the SWSP request, mining of material has ceased at the Brownwood Pit, Kirtright

Pit, Challenger Pit, Gardels Pit, and Bonser Pit. Since material mining has ceased at these sites, either the lakes must be lined or backfilled, or an application for a plan of augmentation for the sites must be filed with the water court. In addition, all lagged depletions shall continue to be replaced under a SWSP until there is no longer an effect on stream flow or a court approved augmentation plan is approved by the water court. A permanent plan for augmentation to replace depletions from the Brownwood Pit, Kirtright Pit, Challenger Pit, Gardels Pit, and Bonser Pit is pending in Division 1 Water Court case no. 2019CW3157. Granting of this SWSP does not imply approval by this office of any such court application(s).

29. The state engineer may revoke this SWSP or add additional restrictions to its operation if at any time the state engineer determines that injury to other water rights has occurred or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all excavation of product from below the water table, and all other use of water at the pits under this SWSP, must cease immediately.

30. In accordance with amendments to section 25-8-202(7), C.R.S. and Senate Bill 89-181 Rules and Regulations adopted on February 4, 1992, the state engineer shall determine if this substitute supply is of a quality to meet requirements of use to which the senior appropriation receiving the substitute supply has normally been put. As such, water quality data or analyses may be requested at any time to determine if the requirement of use of the senior appropriator is met.

31. The decision of the state engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in any water court case or any other legal action that may be initiated concerning the SWSP. This decision shall not bind the State Engineer to act in a similar manner in any other applications involving other SWSPs or in any proposed renewal of this SWSP, and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant.

Should you have any comments or questions, please contact Michael Hein, Lead Assistant Division Engineer, in Greeley at 970-352-8712 or Kate Fuller in Denver at 303-866-3581 ext. 8245.

Sincerely,

for Joanna Williams, P.E.

Water Supply Chief

Attachments: Figure 1— Site Locations

Figure 2—Exposed Groundwater Areas Kirtright Pit (8/20/2018)

Figure 2— Exposed Groundwater 2011 Bonser Pit (12/14/2012)

AIV.1. Total Loss and Replacements Summary Worksheet

Loveland Leases (10/25/22 and 4/17/24)

Letter from DRMS dated April 30, 2010

Augmentation Plan Accounting Protocol

Use of Replacement Sources Not Specifically Identified in an SWSP or Augmentation Plan Protocol

Ec: Michael Hein, Lead Assistant Division Engineer, Michael.Hein@state.co.us

1809 56th Avenue, Greeley CO 80634, (970) 352-8712

Jean Lever, Northern Tributary River Coordinator, Jean.Lever@state.co.us

Priscila Bajadali, Augmentation Coordinator, Priscila.Bajadali1@state.co.us

Louis Flink, Tabulation/Diversion Records Coordinator, Louis.Flink@state.co.us

Alison Keener, GIS Analyst, Alison.Keener@state.co.us

Colorado Division of Reclamation Mining and Safety

6.4.12 Exhibit L- Reclamation Costs

DIRECT COSTS (ACTUAL COSTS ESTIMATED BY THE OPERATOR)

Item #	*Location*	*Task Description*	*Area*	*Volume*	*Volume*	*Hours*	*Unit Cost*	*Extension*
			[acres]	*[yd^3]*	*[acre-ft]*	*[hrs]*	*[$/]*	*[$]*
1	Pond 1	Dewatering			3.41		$300.00	$1,023.00
2	Pond 1	Backfilling		9,000			$2.50	$22,500.00
3	NE	Construct Drainage Swale		1,775			$2.50	$4,437.50
4	NE	Install Slide Gate					$2,000.00	$2,000.00
5	NE, SW	Remove Stockpiles	0.20	250			$2.50	$625.00
6	W of Pond 2 & Pre-1981 Pond Areas	Re-Grade Slopes to 3:1	0.93	3,000			$2.50	$7,500.00
7	See Exhibit F	Topsoil Replacement 6" Depth	8.90	7,180			$2.50	$17,950.00
8	W	Remove Scale House					$7,500.00	$7,500.00
9	See Exhibit F	Revegetate, Monitor and Implement Weed Control for Disturbed Area	46.35				$550.00	$25,492.50
10		Mobilization/Demobilization					$3,500.00	$2,000.00
						Total Direct Costs		$91,028.00

INDIRECT COSTS

OVERHEAD AND PROFIT

Liability Insurance (1.55% of Direct Costs)				$1,410.93
Performance Bond (1.05% of Direct Costs)				$955.79
Job Superintendent Costs	5.5	$50.00		$275.00
Profit @10% of Direct Costs				$9,102.80
Total Overhead and Profit				$11,744.53
Contract Amount (Direct Costs plus Overhead and Profit)				$102,772.53
Engineering work and/or contract/bid preparation @4.25% of contract				$4,367.83
Reclamation management and/or administration @5.00% of contract				$5,138.63
				$21,250.99

TOTAL BOND AMOUNT **$124,023.51**

6.4.14 Exhibit N – Source of Legal Right to Enter

1. Kirtright Property

A legal right to enter from Randy Kirtright is on file with the DRMS.

2. O'Brien Property

With regard to the O'Brien property, the applicant is the successor beneficiary of a 1930 deed (included as Attachment N-1) granting a right of way from the land owned by the applicant across both the Kirtright and O'Brien parcels. This right of way has been in use since it was first granted, including under the ownership of Linda O'Brien.

The applicant's right of access to conduct reclamation activities also is established by a 1986 agreement between the applicant and Virgil Kirtright, who was the original owner of the O'Brien property (see Attachment N-2; the "1986 Agreement")

1986 Agreement

The 1986 Agreement provided the applicant with the right to enter and remove gravel from the Kirtright property and was executed a few months before DRMS's approval of the applicant's original mining and reclamation permit in 1986. The 1986 Agreement functioned as the applicant's source of a legal entry right at the time of the original 1986 permit and continues to operate as a legal right of entry today; when Linda O'Brien took title to the O'Brien property six years after the execution of this agreement, she took ownership subject to this entry right. The warranty deed establishing her title specifically provides that her title is subject to "easements, covenants, restrictions and reservations of record, or in use, if any" (see Attachment N-3). The 1986 Agreement was unrecorded but the applicant's use pursuant to this agreement was in place prior to the execution of Linda O'Brien's deed, as the applicant has accessed the O'Brien property for mining, and subsequently reclamation, since 1986. This was done with Linda O'Brien's full knowledge. It is only in the recent past that Linda O'Brien has questioned the applicant's right to access the land.

3. CDOT Property

The applicant sent a request to DRMS via certified mail on February 27, 2025 to release the CDOT property from within the permit boundaries and this was approved by DRMS on June 12, 2025; CDOT is no longer an owner of record of any of the property.

6.4.15 Exhibit O – Owner (s) of Record of Affected Land (Surface Area) and Owners of Substance to be Mined

The owners of record of the land and surface minerals are as follows:

KIRTRIGHT RANDY A
260 SE FRONTAGE RD
JOHNSTOWN, CO 80534

OBRIEN LIVING TRUST THE
PO BOX 920
JOHNSTOWN, CO 80534

6.4.16 Exhibit P – Municipalities Within Two Miles

The Municipalities within 2 miles of the permit area are as follows:

1. Town of Loveland
   500 E. 3rd St.
   Loveland, CO 80537

2. Town of Johnstown
   450 South Parish Avenue
   Johnstown, CO 80534

6.4.19 Exhibit S – Permanent Man-Made Structures

The following table gives permanent man-made structures within 200ft of the affected land. The map key references **Exhibit C-1 Pre-Mining Plan Map.**

A structure agreement was signed between CDOT and Coulson on February 24, 2025. Requests for execution of a structure agreement were sent to owners of the other permanent man-made structures within 200 feet of the affected lands on June 25, 2025, by certified mail along with the official notification letter. Due to no response from owners of S-1 through S-4, a Geotechnical Slope Stability Report has been included, which demonstrates that there is little to no risk of these structures being undermined due to existing slopes or proposed earthwork.

Table 6.4.19-1 Permanent Man-Made Structures within 200ft of the Affected Land

MAP KEY	STRUCTURE	OWNER
S-1	FENCE	WIENS ENTERPRISES LLC
S-2	FENCE	THOMPSON CROSSING METRO DISTRICT No. 3
S-3	HOUSE	LUNA MARIA AZUCENA
S-4	HOUSE	JOHNSON DWIGHT E/KAREN K
S-5	HOUSE	KIRTRIGHT RANDY A
S-6	FENCE	CDOT ASSET MANAGEMENT
S-7	ROADWAY	CDOT ASSET MANAGEMENT

GEOTECHNICAL SLOPE

STABILITY REPORT

KIRTRIGHT PIT

Prepared For:
Coulson Excavating Co., Inc.
3609 N. County Rd 13
Loveland, CO 80538

Prepared By:
Weiland, Inc.
PO Box 18087
Boulder, CO 80308

July, 28 2025

Table of Contents

1.0 INTRODUCTION

For the purpose of demonstrating safe setbacks from permanent man-made structures at the Kirtright Pit, this analysis utilizes standard geotechnical engineering practices and standards to model a “worst case scenario” slope, which for this site will be the slope closest to those structures. This slope will be flattened to less than 3H:1V during final reclamation and as such the existing condition is considered the worst case scenario. The location of the slope is given in **Exhibit S-1**.

1.1 METHODOLOGY

The digital software application HYRCAN 3.0 is utilized for this study. The program utilizes the Bishop analytical solution to slope failure. The model also uses finite element methods to model pore pressure due to groundwater, which is then utilized in the slope failure solutions. The slope geometry cross section is based on the actual slope profile of the steepest slope in the southeastern part of the Pre-1981 Pond area closest to the residential structures. The soil profile is taken from the closest test hole to the cross section (TH C-6) drilled by Hogan & Olhausen Inc.in 1981 (see Appendix I **Hogan & Olhauseb Inc. Subsurface Investigation 5/12/1981)**

2.0 MODEL INPUT DATA

2.1 SOIL STRENGTH PARAMETERS

The density and internal angle of friction soil strength parameters used in the model are based on a similar site in the front range of Colorado (see Appendix II **Soil Strength Parameters, CTL Thompson 2011**). In the absence of site specific data, all cohesion values were set to 0 pcf. This is considered to be a very conservative approach.

Silt (ML)

This upper 6.5 ft layer was modeled with 0 psf cohesion, a ϕ value of 34^0 and a density of 103 pcf.

Silty Sand (SM)

This 2 ft layer occurs under the ML layer and was modeled with 0 psf cohesion, a ϕ value of 30^0 and a density of 120 pcf.

Gravelly Sand (SP)

This 12.5 ft layer occurs under the SM layer and was modeled with 0 psf cohesion, a ϕ value of 39^0 and a density of 125 pcf. It should be noted that the saturated thickness of this layer is 11.5 ft.

Weathered Claystone (CL)

This 3 ft layer occurs at the bottom of the modeled section and was modeled with 0 psf cohesion, a ϕ value of 26^0 and a density of 116 pcf.

Table 2.2-1. Soils Strength Data

Stratigraphic Layer (in Stratigraphic Order)	Density (pcf)	Cohesion (psf)	Phi (ϕ)
Silt (ML)	103	0	34
Silty Sand (SM)	120	0	30
Gravelly Sand (SP)	125	0	39
Weathered Claystone (CL)	116	0	26

2.2 GROUNDWATER

A critical parameter contributing to the stability/failure of slopes is the presence of groundwater and more specifically, pore pressure exerted by groundwater within pore space of soils.

The groundwater table elevation used in the model is based on the water level of the adjacent pond.

3.0 MODEL OUTPUT

Appendix III **HYRCAN 3.0 Model Input and Output** gives the model input and output graphically. The output graphic shows the minimum factor of safety factor, which was modeled to be 1.585 and occurs down the slope.

4.0 DISCUSSION

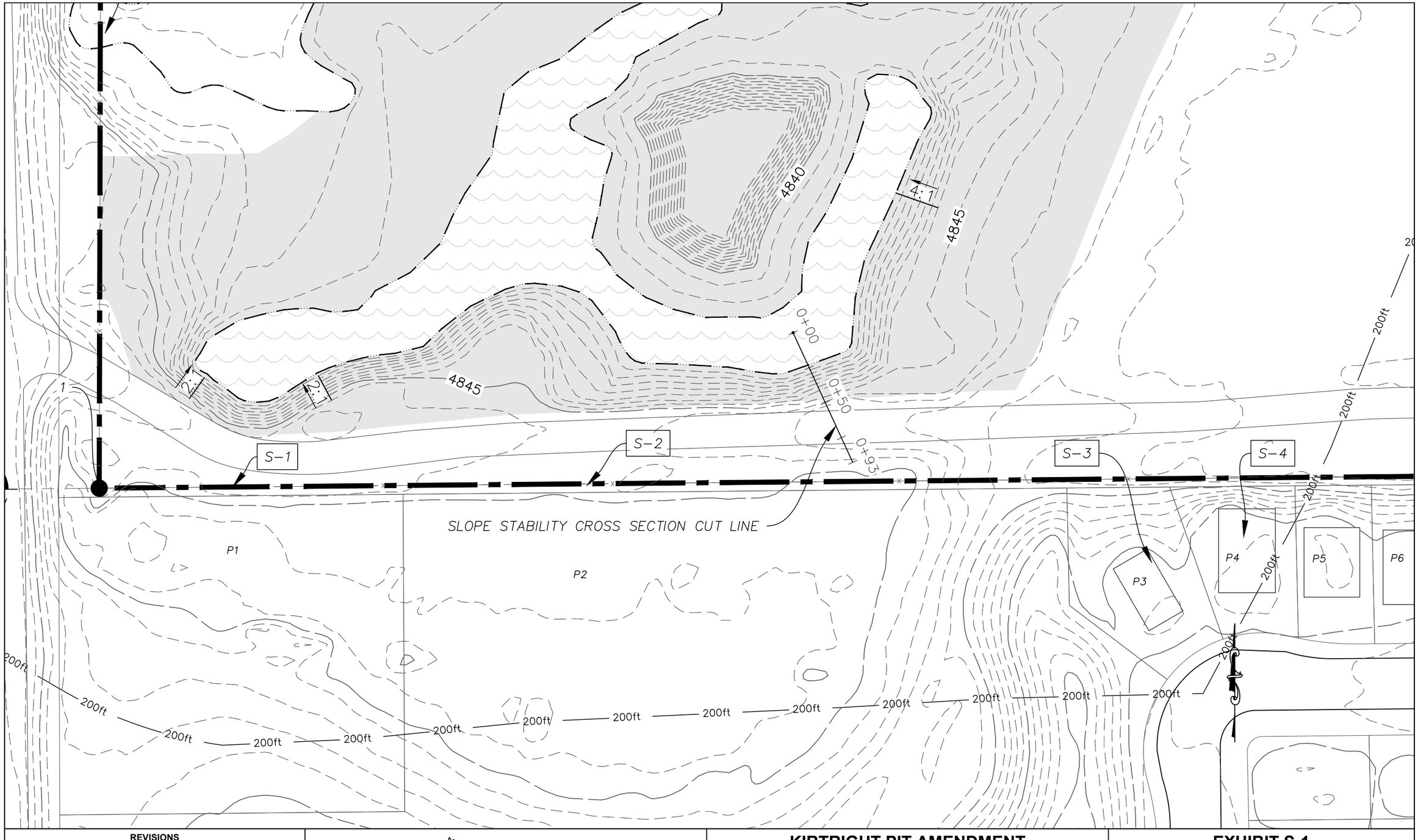
The stability of gravel pit slopes is primarily driven by the saturated sand and gravel layer and more specifically the value for the internal angle of friction value assigned to slope stability models. In this case, the internal angle of friction value used to model the gravel slope is based on a conservative value and the slope is almost entirely saturated.

Considering the lowest factor of safety was determined by the model to be 1.585, there is little danger of the slope failure adjacent to the permanent man-made structures labeled as S-1 through S-4 in Exhibit S. There are no excavations planned for slopes adjacent to other permanent man-made structures.

6.0 REFERENCES

Duncan, Michael J. and Wright, Stephen G. (2005) *Soil Strength and Slope Stability,* John Wiley & Sons, Inc. Hoboken, N.J. 309 pages.

US Bureau of Reclamation (2014), Design Standard 13 Chapter 7, Embankment Dams 2014 (DS13-7).



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

Weiland, Inc.
Environmental & Engineering
PO BOX 18087
BOULDER, CO. 80308
ph 303-443-9521
fax 303-443-9536

KIRTRIGHT PIT AMENDMENT
REGULAR 112 PERMIT APPLICATION

WELD COUNTY, CO

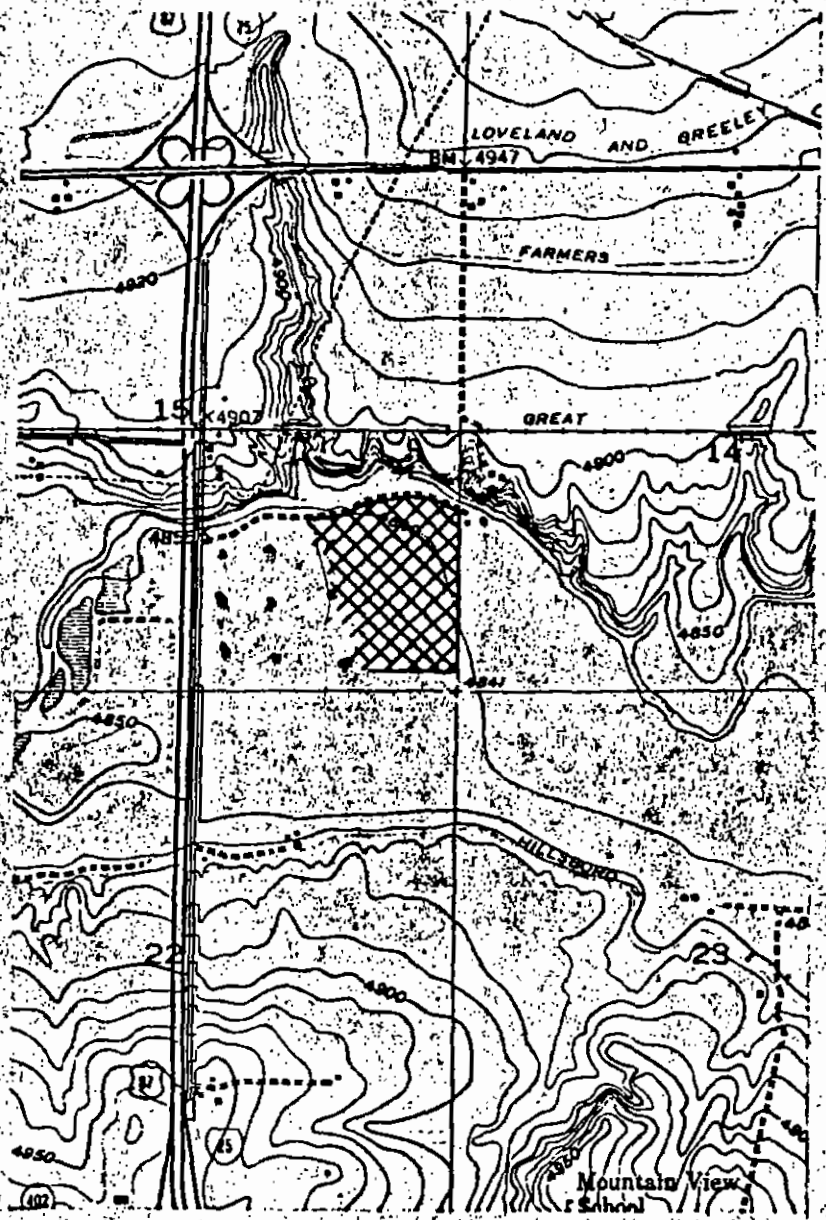
PREPARED FOR: COULSON EXCAVATING CO., INC

EXHIBIT S-1
CROSS SECTION LOCATION

SCALE	DWG NO.	REV.
1"=60'	EXHIBIT S-1.DWG	REV

DRAWN BY:	CHECKED BY:	DATE:	SHEET
CTW	PFW	07/28/25	1 OF 1

APPENDIX I SUBSURFACE INVESTIGATION



Hatched Area is Approximate Boundaries of Investigation Southeast 1/4, Section 15, Township 5 North, Range 68 West

HOGAN & OLHAUSEN INC.
CONSULTING ENGINEERS
2300 W. EISENHOWER
LOVELAND, COLORADO

Subsurface Investigation			
Coulson Excavating			
Vicinity Map - Figure 1			
0057-37-01-01			
DATE 5-12-81	DRAWN SLJ	CHECKED	FILE

LEGEND OF SOILS SYMBOLS

APPENDIX I SUBSURFACE INVESTIGATION

CALCAREOUS

ORGANIC CONTENT

FILL

GRAVEL (GP)

SAND (SP)

SILT (ML)

CLAY (CL)

GRAVELY SAND

GRAVELY SILT

GRAVELY CLAY

SANDY SILT

SANDY CLAY

SILTY SAND (SM)

CLAYEY SAND (SC)

SILTY CLAY (ML-CL)

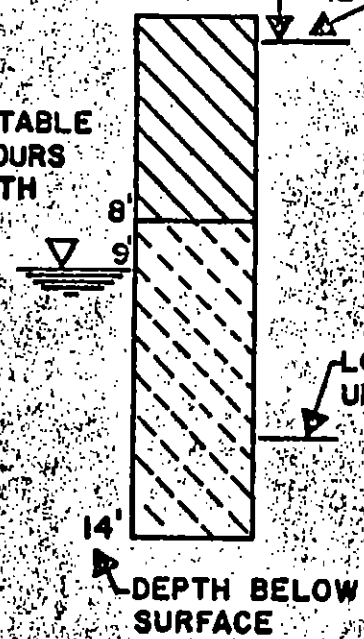
WEATHERED CLAYSTONE or SILTSTONE

CLAYSTONE BEDROCK

SILTSTONE BEDROCK

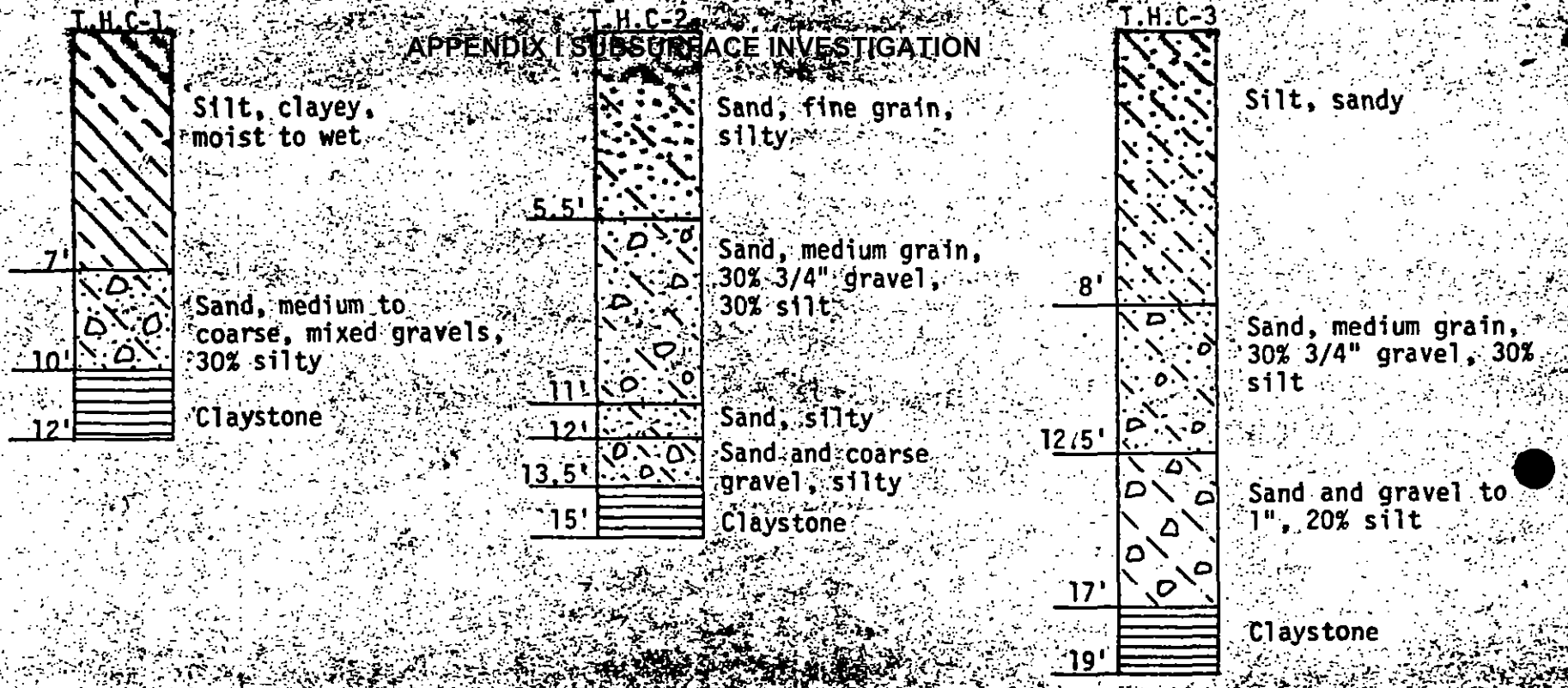
SANDSTONE BEDROCK

LOCATION OF SPLIT-SPOON SAMPLE AND NUMBER OF BLOWS OF 140# HAMMER REQUIRED TO DRIVE THE SAMPLER A GIVEN DISTANCE. EXAMPLE SHOWN: 8 BLOWS FOR 12" INCHES.



HOGAN & OLHAUSEN P.C.
2300 West Eisenhower Blvd.
LOVELAND, COLORADO
80537

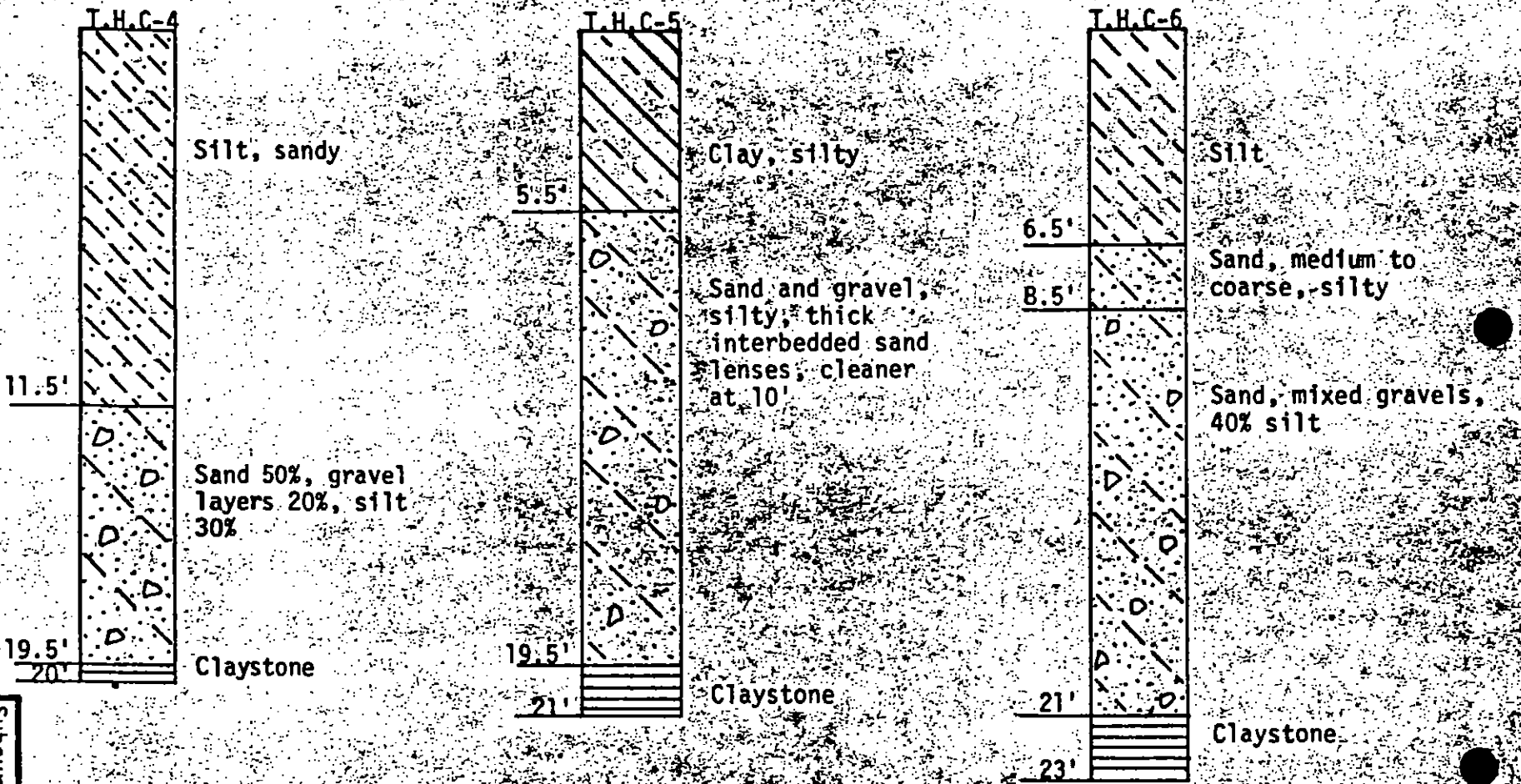
APPENDIX I SUBSURFACE INVESTIGATION



Subsurface Investigation
Coulson Excavating
Drill Logs & Hole Locations
Figure 2
DRAWN SLJ
CHECKED
FILE
5-12-81

HOGAN & OLHAUSEN INC.
CONSULTING ENGINEERS
2300 W. EISENHOWER
LOVELAND, COLORADO

0057-37-01-01

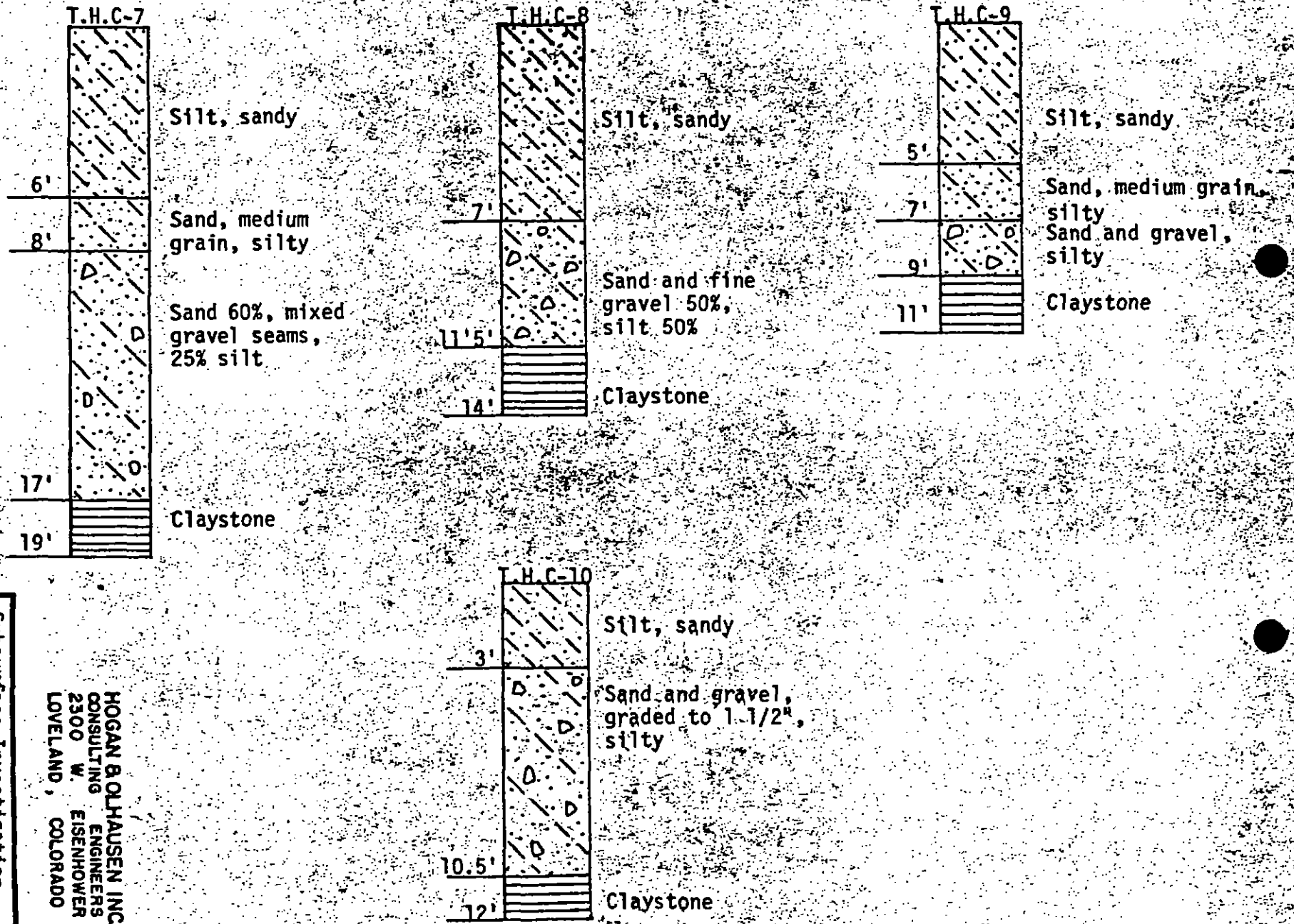


Subsurface Investigation	
Coulson Excavating	
Drill Logs	
Figure 3	
5-12-8	DRAWN SLJ
	CHECKED
	FILE

HOGAN & OLHAUSEN INC.
CONSULTING ENGINEERS
2300 W. EISENHOWER
LOVELAND, COLORADO

0057-37-01-01

APPENDIX I SUBSURFACE INVESTIGATION



HOGAN & OLHAUSEN INC.
CONSULTING ENGINEERS
2300 W. EISENHOWER
LOVELAND, COLORADO

Subsurface Investigation	
Coulson Excavating	
Drill Logs	
Figure 4	
DATE 5-12-81	DRAWN SLJ
CHECKED	FILE

0057-37-01-01

APPENDIX II SOIL STRENGTH PARAMETERS

MATERIAL	UNIT WEIGHT γt	COHESION c	FRICTION ANGLE Φ
Clay (CL)	120	310	30
Silty Sand (SM)	120	100	30
Clayey Sand (SC)	120	200	30
Gravelly Sand (SP)	125	0	40
Sandy Gravel (GP)	127	0	45
Bedrock	142	8,000	0
Slurry Wall	90	100	0

Slope Stability - Legend

FIGURE C-1

McLAUGHLIN WATER ENGINEERS, LTD
GOOSE HAVEN RESERVOIR COMPLEX EXPANSION
CTL I T PROJECT NO. FC04797-145

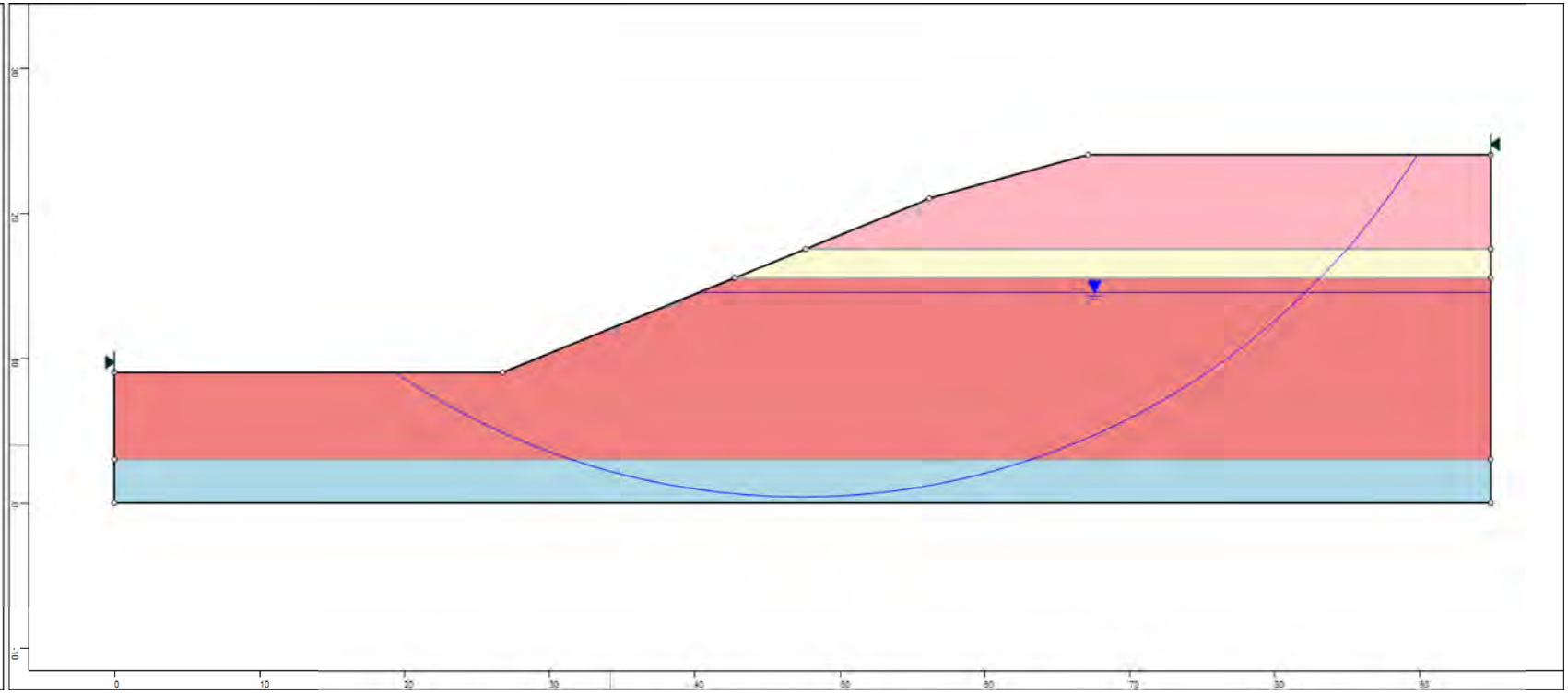
HYRCAN 3.0

Setting Information

Physical Unit: Imperial
Surface Type: Circular
Failure Direction:
Right to Left
Methods:
Bishop Simplified

Assigned Soil Material

- Claystone (MC)
- Sand & Gravel (MC)
- sand (MC)
- Silt (MC)



HYRCAN 3.0

Factor of Safety Info.

Method: Bishop Simplified
Min. FOS: 1.58514
Center: -20.6638,186.377
Radius: 182.324
Left Surface Endpoint: 41.3091,14.9082
Right Surface Endpoint: 54.812,20.4083