Letter of Transmittal

DATE: August 11, 2022

TO: Division of Reclamation, Mining, and Safety
Rm 215, c/o Mr. Peter Hays
1001 East 62ND Avenue
Denver, Colorado 80216
(303) 866-3567

FROM: Bill Schenderlein
Blue Earth Solutions, LLC
P.O. Box 2427
Fort Collins, Colorado 80522
(970) 227-2803

WE TRANSMIT:	THE FOLLOWING:	FOR YOUR:
■ Attached	■ Originals	■ Use
☐ Information Below	■ Copy of Letter	☐ Approval
	☐ Applications	☐ Information
	☐ Specifications	☐ Review & Comment
	☐ Other	

Remarks:

Submission of this material is for review and approval of the Carr Pit East Mine Land Reclamation Board Regular 112 Operation Reclamation Permit Application. Blue Earth Solutions is providing application support for the applicant, Connell Resources, Inc., whose address and phone number is 7785 Highland Meadows Parkway, Fort Collins, Colorado 80528, (970) 223-3151.

- Applicant responses to DRMS adequacy review letter dated July 13, 2022 for Connell Resources, Inc., Carr Pit East (M-2022-005), Construction Materials Regular 112 Operation Reclamation Permit Application.

Signed: Will Schenderlein

August 10, 2022

Colorado Department of Natural Resources
Division of Reclamation, Mining and Safety
Attn: Mr. Peter Hays
1313 Sherman Street; Room 215
Denver Colorado, 80203

RE: Response to Second Adequacy Review Comments for Connell Resources, Inc.
Carr Pit East, Permit No. M-2022-005

Dear Mr. Hays:

The following discussion and attachments are submitted on behalf of our client, Connell Resources, Inc., in response to the Adequacy Review comments prepared by the Division of Reclamation, Mining and Safety (the Division) dated July 13, 2022 for the Carr Pit East 112 Construction Materials Reclamation Permit application. The information and discussion below addresses each comment as it was presented by the Division:

1.6.2 General Application Procedures

1. Acknowledged.

2. Acknowledged.

3.1.8 Wildlife

3. Acknowledged. Please contact us if you need additional information.

6.4.1 Exhibit A – Legal Description

4. Acknowledged. Please see attachments with revisions in bold italics.

6.4.2 Exhibit B – Index Map

5. Acknowledged.

6. Acknowledged.

6.4.3 Exhibit C – Pre-Mining and Mining Plan Map(s) of Affected Land

7. Acknowledged.

8. Acknowledged.

6.4.4 Exhibit D – Mining Plan

9. Acknowledged.

10. Acknowledged.

11. Acknowledged.

12. Acknowledged.

13. Acknowledged.

14. Acknowledged. Please see attachments with revisions in bold italics.

15. Acknowledged. Please see attachments with revisions in bold italics.

16. Acknowledged.

6.4.5 Exhibit E – Reclamation Plan

17. Acknowledged.

18. Acknowledged. Please see attachments with revisions in bold italics.

19. Acknowledged.

20. Acknowledged. Please see attachments with revisions in bold italics.

21. Acknowledged.

22. Acknowledged.

23. Acknowledged.

24. Acknowledged.

6.4.5 Exhibit G – Water Information

25. Groundwater aquifers occur below the Carr Pit East site. However, the aquifers are generally deep below the ground surface and the Carr Pit East operation is not expected to directly affect these groundwater systems. Groundwater on the site will not be exposed during mining or reclamation and no groundwater quantity or quality impacts are anticipated.

    Unlike major river systems along the Colorado Front Range, Lone Tree Creek does not have a significant alluvial aquifer system within the Carr Pit East property. Surface waters from the creek are generally part of a localized, perched system and are not stored or recharged substantially from an alluvial hydrogeologic structure.

Geologically, the Terry Bison Ranch and Carr Pit East property are located in the Cheyenne Basin, the northern sub-basin of the Denver-Julesburg Basin. Within this sub-basin, the Carr Pit East property appears to sit along the edge of the Northern High Plains Aquifer where Quaternary deposits generally occur up to about 200 feet in depth. Where they are saturated and are in contact with underlying aquifer units of Tertiary age, the Quaternary deposits form part of the Northern High Plains aquifer. Ephemeral flows in Lone Tree Creek may contribute to the recharge of the Quaternary sediments that include alluvial deposits, loess, dune sand, and valley-fill deposits. Below and near the Carr Pit East property, near the edge of the Northern High Plains aquifer, the Quaternary deposits are likely thin and discontinuous. Within this same area, the underlying Upper Laramie aquifer of Tertiary age ranges from about 200 to 1200 feet below the ground surface.

[The Exhibit G text has been revised with the above language from the adequacy response]

26. Acknowledged.

6.4.8 Exhibit H – Wildlife Information

27. Acknowledged. Please contact us if you need additional information.

28. Acknowledged. Please contact us if you need additional information.

29. Acknowledged. Please see attachments with revisions in bold italics.

6.4.9 Exhibit I – Soil Information

30. Acknowledged. Please see attachments with revisions in bold italics.

6.4.10 Exhibit J – Vegetation Information

31. Acknowledged.

6.4.12 Exhibit L – Reclamation Cost Estimate

32. Acknowledged.

[The Exhibit L text has been revised with the language from the adequacy response]

6.4.19 Exhibit S – Permanent Man-Made Structures

33. Acknowledged.

Additional Comments

34. Acknowledged. Please contact us if you need additional information.

If you have any questions regarding this application and adequacy comment responses, please call me directly at (970) 227-2803.

Sincerely,
Blue Earth Solutions, LLC

William Schenderlein, P.E.
Project Manager

Enclosures

Proof of Adequacy Review Response Delivery to Weld County Clerk to the Board

From:	Mariah Higgins
To:	William Schenderlein; CTB
Subject:	RE: Sand and Gravel Mining Materials for Public Review
Date:	Thursday, August 11, 2022 8:46:49 AM

Received. Thank you!

Mariah Higgins
Deputy Clerk to the Board
Clerk to the Board's Office
Weld County
1150 O Street
Greeley, CO 80631
Tel: (970) 400-4225
Email: mhiggins@weldgov.com

From: William Schenderlein <bill@blueearthsolutions.net>
Sent: Thursday, August 11, 2022 8:32 AM
To: CTB <CTB@co.weld.co.us>
Subject: Sand and Gravel Mining Materials for Public Review

The attached materials are associated with a sand and gravel mining operation being permitted through the Colorado Division of Reclamation, Mining and Safety in Weld County. Per State statute, we are required to post materials with the County Clerk and Recorder for public review. In Weld County, we have always posted material with the Clerk to the Board and emailed materials to this address.

Could you please return the transmittal page stamped 'received' or some other proof of posting the materials with you. Thank you for your assistance.

Bill Schenderlein, P.E.

Division of Reclamation, Mining and Safety Adequacy Comments Dated July 17, 2022

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

July 13, 2022

John M. Warren
Connell Resources, Inc.
7785 Highland Meadows Parkway, Suite 100
Fort Collins, CO 80528

Re: Carr Pit East, Permit No. M-2022-005; 112 Construction Materials Reclamation Permit Application Package Second Adequacy Review

Mr. Warren,

The Division of Reclamation, Mining and Safety (Division/DRMS/Office) reviewed the contents of the Connell Resources, Inc. 112c permit application adequacy response dated June 27, 2022 for the Carr Pit East, File No. M-2022-005 and submits the following comments. The Division is required to issue a recommendation no later than July 18, 2022, therefore a response to the following adequacy review concerns should be submitted to the Division as soon as possible.

The review consisted of comparing the application contents with the specific requirements of Rules 1, 3, 6.1, 6.2, 6.4 and 6.5 of the Minerals Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials effective date July 15, 2019. Any inadequacies are identified under the respective exhibit heading along with suggested actions to correct them.

1.6.2 General Applicant Procedures

1. The Applicant's response is adequate.

1.6.5 Specific Provisions - 112 Reclamation Permit Application

2. The Applicant's response is adequate.

3.1.8 Wildlife

3. The Applicant's response is under further review by the Division.

6.4.1 Exhibit A - Legal Description

4. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit A text with the language from the adequacy response.

6.4.2 Exhibit B - Index Map

5. The Applicant's response is adequate.

6. The Applicant's response is adequate.

6.4.3 Exhibit C - Pre-mining and Mining Plan Map(s) of Affected land

7. The Applicant's response is adequate.

8. The Applicant's response is adequate.

6.4.4 Exhibit D - Mining Plan

9. The Applicant's response is adequate.

10. The Applicant's response is adequate.

11. The Applicant's response is adequate.

12. The Applicant's response is adequate.

13. The Applicant's response is adequate.

14. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit D text with the language from the adequacy response.

15. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit D text with the language from the adequacy response.

16. The Applicant's response is adequate.

6.4.5 Exhibit E - Reclamation Plan

17. The Applicant's response is adequate.

18. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit E text with the language from the adequacy response.

19. The Applicant's response is adequate.

20. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit E text with the language from the adequacy response.

21. The Applicant's response is adequate.

22. The Applicant's response is adequate.

23. The Applicant's response is adequate.

24. The Applicant's response is adequate.

6.4.7 Exhibit G - Water Information

25. Known aquifers are not identified in accordance with Rule 6.4.7(2)(b). Please specify if there are any known aquifers such as the South Platte Aquifer the proposed permit area drains to within Exhibit G - Water Information in accordance with Rule 6.4.7(2)(b).

    The Applicant did not adequately address Item #25. Please identify all known aquifers.

26. The Applicant's response is adequate.

6.4.8 Exhibit H - Wildlife Information

27. The Applicant's response is under further review by the Division.

28. The Applicant's response is under further review by the Division.

29. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit H text with the language from the adequacy response.

6.4.9 Exhibit I - Soils Information

30. The Applicant's response is adequate. The Division requests the Applicant revises the Exhibit I text with the language from the adequacy response.

6.4.10 Exhibit J - Vegetation Information

31. The Applicant's response is adequate.

6.4.12 Exhibit L - Reclamation Cost Estimate

32. The Applicant's response is adequate.

6.4.19 Exhibit S - Permanent Man-made Structures

33. The Applicant's response is adequate.

Additional Comments

34. The Applicant's response is adequate for the Colorado Division of Water Resources and History Colorado comment letters. The Applicant's response to the Colorado Parks and Wildlife comment letter is under further review by the Division.

Please be advised the Carr Pit East application may be deemed inadequate, and the application may be denied on July 18, 2022, unless the above mentioned adequacy review items are addressed to the satisfaction of the Division. If more time is needed to complete the reply, the Division can grant an extension to the decision date. This will be done upon receipt of a written waiver of the Applicant's right to a decision by July 18, 2022 and request for additional time. This must be received no later than the decision date.

If you have any questions, please contact me at peter.hays@state.co.us or (303) 866-3567 Ext. 8124.

Sincerely,

Peter S. Hays
Environmental Protection Specialist

Ec: Jared Ebert; Division of Reclamation, Mining & Safety
Bill Schenderlein; Blue Earth Solutions, LLC

Revised Application Exhibits

- Exhibit A, Legal Description
- Exhibit D, Mining Plan
- Exhibit E, Reclamation Plan
- Exhibit G, Water Information
- Exhibit H, Wildlife Information
- Exhibit I, Soil Information
- Exhibit L, Reclamation Cost Estimate

EXHIBIT A

Legal Description

The proposed permit area is a tract of land located approximately ½ mile north of the community of Carr in Weld County, Colorado. The proposed permit area includes 166.1 acres.

According to the Weld County Assessor's Office, the permit area parcel is owned by Terry Grazing Association.

Quarter, quarter section description of the proposed permit area:

The project site is located in the NW¼, NE¼, SW¼, and SE¼ of the SW¼ of Section 22, Township 11 North, Range 67 West of the Sixth Principal Meridian, Weld County, State of Colorado.

Latitude/Longitude of main entrance:

The Carr Pit East site entrance shall be directly onto the Connell Carr Pit (M-2014-001) site.

40.90462° N

104.88714° W

To create the main Carr Pit East entrance from the Connell Carr Pit, the access road will pass under the Tri-State Generation and Transmission power lines and cross the 180-foot wide easement. Connell Resources is in the process of securing an easement crossing license from Tri-State Generation and Transmission (see attachment in Addendum 1).

Description of proposed permit boundary:

A parcel of land being the southwest quarter of Section Twenty-two (22), Township Eleven North (T.11N.), Range Sixty-seven West (R.67W.) of the Sixth Principal Meridian (6^{th} P.M.), County of Weld, State of Colorado. The proposed permit boundary contains approximately 166.1 acres.

EXHIBIT D

Mining Plan

The proposed Mined Land Reclamation Board (MLRB) Carr Pit East permit area is adjacent to the existing Connell Carr Pit (M-2014-001) operation, which supplies aggregate construction materials to much of northern Colorado. The proposed Carr Pit East permit area contains substantiated aggregate resources to continue the supply in this region of Colorado. As resources diminish in the Connell Carr Pit, new supplies from the proposed Carr Pit East will continue to provide construction materials to meet the northern Colorado demand.

Introduction and Overview

The proposed Carr Pit East permit area is currently owned by Terry Grazing Association (in association with JRT Limited Partnership) and consists of rangeland utilized by the owner's cattle and bison operations. The site contains short grass prairie upland areas and approximately 5,000 feet of Lone Tree Creek, an ephemeral drainage that flows from the west to east through the property.

In general, the channel of Lone Tree Creek, an ephemeral drainage, lies approximately 10 to 15 feet below the surrounding upland elevation. In areas, the drainage system is wide and contains terraces that drop gently from the surrounding rangeland to the drainage bottom. In other areas the drainage is narrow with a near vertical slope extending from the upland area to the creek channel. The upland rangeland is relatively flat with shallow landform terraces and bluffs rising to the north of Lone Tree Creek. The terraces and mining area north of the creek are patterned by swales and erosion gullies that drain toward Lone Tree Creek.

Permit Boundary Definition

The proposed permit boundary is consistent with the property parcel boundaries on the north, west, and south sides. The west and south parcel boundaries are also defined by the section lines for Section 22 (T11N, R67W). The east side of the proposed permit boundary follows the west side of the Union Pacific Railroad Company Right-of-Way limit. The proposed permit boundary includes lands on both the north and south side of the Lone Tree Creek drainage.

Since the proposed permit boundary will follow the section line and western site parcel line, the boundary will contact Section 21 (T11N, R67W) and adjacent western land parcel. Therefore, the proposed permit boundary will contact the Connell Carr Pit (M-2014-001) existing permit boundary allowing for the necessary site access road.

Affected Land Boundary Definition

The proposed permit boundary will encompass approximately 166.1 acres with only about 143.6 acres currently planned for mining. However, the affected land boundary essentially follows the permit boundary to allow for reclamation activities and future potential mining operations. Areas not disturbed by mining may be disturbed by access roads, stockpiles, material

processing, or backfilling and other reclamation related activities. The remaining area will consist of setbacks and road and utility right-of-ways.

Land Uses

The proposed permit area currently consists of rangeland utilized by the owner's cattle and bison operations. With the exception of the community of Carr, properties surrounding the proposed Carr Pit East site are primarily aggregate mining and rural agricultural non-irrigated rangeland. The community of Carr includes approximately 30 to 40 semi-rural residential home lots south of the site. Immediately to the west is a permitted aggregate mine (M-2014-001) and to the southeast is another permitted aggregate mining property (M-1988-048) and railroad load-out yard.

With the exception of the Tri-State Generation and Transmission Association high-voltage transmission lines and easement, the interior of the property does not contain structures, easements, or right-of-ways not owned by the applicant or property owner. There are no established oil and gas wells, tank batteries, or other associated facilities located on the property. Several utility structures and associated easements and right-of-ways are located on the edges of the property or immediately adjacent to the proposed permit boundary including Nunn Telephone Company communication lines, Weld County road right-of-ways, Poudre Valley REA power lines, and the Union Pacific railroad (see Exhibit C-1, Existing Conditions Map). None of the easements, right-of-ways, or associated structures are expected to be negatively affected by mining or reclamation operations.

Nature of Deposit to be Mined

The proposed permit area is located where the northern edge of the Colorado Piedmont transitions up to the High Plains of southern Wyoming. The western most boundary of the Lone Tree Creek basin originates in the Laramie Range of the Rocky Mountains and drains southeast across the relatively flat High Plains and down through the gently rolling topography of the Colorado Piedmont. Aggregate materials within the proposed permit area are composed of Pliocene and Pleistocene terrace deposits along the Lone Tree Creek drainage system. The terrace deposits generally extend from the surface or near-surface to a variable depth of 8 to 12 feet below the ground surface.

Deposition was most likely created by streams that had been rejuvenated as a result of uplift at the close of the Tertiary period and increased water supply during the Pleistocene epoch. The under-lying Tertiary sedimentary rocks that include consolidated sand and gravel conglomerates were eroded, and the process of cutting and filling of channels was so widespread that gravel and sand were deposited in sheet-like beds. The principal streams eroded into the bedrock, cutting and building terraces along the channels. More recent streams, such as Lone Tree Creek in the proposed permit area, have cut through the highly erodible over-lying unconsolidated material in most areas and do not generally have associated alluvial deposition.

Traditional organic topsoil on most of the site is thin or non-existent. Most of the soils are shallow to deep loams that are well drained. Over most of the identified sand and gravel deposit

is a loamy, wind-mixed veneer layer of soil overburden material varying in depth from less than one inch to over four feet. The soil overburden material likely developed from alluvial and eolian deposits of clay, silts, and sands. Over time, erosive forces of wind and water have influenced the soils on the site. Mobile soil particles, such as silt and clay, have eroded from higher topographic positions and have been re-deposited in lower areas. Therefore, swale areas may have finer textured soils than ridgetops. The aggregate deposits and loamy soil overburden material are underlain by a variable pattern of shale and sandstone parent materials.

Mine Phasing

Connell Resources anticipates mining and reclaiming the proposed Carr Pit East site in approximately 10 years. However, the rate of mining and overall life of the mine is dependent on several factors including product demand. Test pits have verified that commercial deposits of sand and gravel exist up to about 12 feet below the surface of the ground. In addition to the commercial sand and gravel materials, clay, silt, and other non-marketable materials excavated from the proposed permit area will be used on-site for reclamation.

The mining plan currently includes mining in two phases; the first phase north of Lone Tree Creek and the second phase south of the creek (see Exhibit C-5, Pre-Mining/Mining Plan Map). Phase I (greater than or equal to about 102.7 acres) will generally be mined from the northwest to the southeast. When Phase I is complete, Phase II (greater than or equal to about 23.2 acres), the area south of Lone Tree Creek, will be mined from north to south. All necessary permits will be obtained and any special construction techniques will be used to reduce impacts to the ephemeral drainage. Mining will not occur within the Lone Tree Creek channel.

The estimated duration of each mine phase is summarized in the following table. Ultimately, the duration of each mine phase is dependent upon market demand.

Mine Phasing Summary

Mine Phase	***Mine Area***	***Total Acreage (acres)***	***Duration (years)***
Phase I	***North***	***102.7***	***5-8***
Phase II	***South***	***23.2***	***1-2***
TOTAL		***125.9***	***6-10***

Even though the proposed permit area will be mined in only two phases, integration of mining and reclamation is still applicable. In general, as the pit reaches its maximum depth and edges are completed, they will be backfilled and reclaimed. In areas where the final pit depth has been achieved and operations are no longer present, backfilling and reclamation of pit walls will extend onto the floor.

Rough contouring of the pit floor with the Lone Tree Creek drainage will take place during mining while fine contouring and establishing final drainage patterns will be one of the last steps in the reclamation process. The contour blending will avoid steep transitions and create a

topography that produces a smooth, relatively low velocity flow from the mined area to the adjacent creek drainage system. Overland flow patterns will be incorporated into this transition so as to connect the pit floor with existing shallow drainage swales.

Mining Methods

Groundwater is not expected to be encountered during mining and the deposit will be dry mined. Mining will proceed by first stripping and stockpiling topsoils and overburden. The exposed gravel will then be removed in lifts and transported off-site for processing. Since the material is unconsolidated deposits, no blasting is required.

The Lone Tree Creek drainage does not have an associated regulatory floodplain within the proposed permit area. Because of the incised nature of the creek, wetland communities appear to be restricted to the channel and immediately adjacent areas, with a very steep and rapid transition to uplands. Mining will, therefore, occur adjacent to the creek drainage. A variable excavation buffer will leave enough elevation and distance to not disturb the creek channel and associated wetlands and minimize flooding of the pit floor during periods when the creek flows.

Unlike most rivers and streams along the Front Range of Colorado, very little or no alluvial sand and gravel deposits are associated with the Lone Tree Creek channel. However, in some areas, the terrace deposits occur right up to the high and steep embankment of the incised creek channel. In these upland areas, aggregate will be excavated from the embankment, lowering the adjacent land surface to match the depth of the pit floor without disturbing the creek channel (see Exhibit C-5, Pre-Mining/Mining Plan Map).

Earth Moving

Areas to be mined are prepared by removal of topsoil and overburden. Each preparation area may be as much as 100 feet wide. Usually, only enough area is stripped and prepared to provide the estimated needs for the next 10 to 14 months of mining. Where it is found, surface topsoil material will be stripped separate from the underlying, deeper subsoil or overburden material. This topsoil layer contains most of the soils organic matter and will be stockpiled separately for use in reclamation. Once the surface layer has been removed, the rest of the overburden will be stripped and stockpiled separate from the surface layer.

The active mining face will extend no more than 1,000 feet in length. During mining and prior to reclamation, the mine walls will be a nearly vertical to ½H:1V slope (see Exhibit C-5, Pre-Mining/Mining Plan Map). Mining will progress down to the depth of quality aggregate material or 8 to 12 feet below the surface. As the mining face progresses, pit sidewalls behind the mining activities will be reclaimed. So reclamation activities do not interfere with mining operations, pit sidewalls may extend 500 feet behind the active mining face without being reclaimed. The aggregate material will be recovered using equipment typical for sand and gravel mining operations. Earth moving equipment may include, but are not limited to dozers, loaders, scrapers, and excavators. The aggregate material from the pit will be temporarily stockpiled within the pit or transported directly off-site for processing. During mining and reclamation activities, watering trucks for dust control will be used as needed.

Setbacks from the mine pit top of slope to the proposed permit boundary will be 50 feet or greater. Setbacks from near vertical mining excavations to the permit boundary will be a minimum of three times the adjacent pit depth to mitigate stability risks. Setbacks will also be maintained for potential side slope reclamation if "cut and fill" sloping is required, as discussed further in Exhibit E, Reclamation Plan. The need for "cut and fill" reclamation will be determined during the operation once overburden quantities and general pit depths are verified.

Topsoil and overburden material excavated from the pit will be stockpiled and used for backfilling mine pit slopes and other reclamation activities. The non-marketable material stockpiles will be created adjacent to the areas that will be backfilled, but not within the Lone Tree Creek drainage area susceptible to flooding. When sufficient material is available in the stockpile, the material will be backfilled into previously mined areas.

The side slopes of the mine pit will be backfilled, graded to a minimum 3H:1V slope, and seeded as mining progresses. Approximately 15,000 feet of pit side slopes will be created during mining. Since reclamation is anticipated to be concurrent with mining operations, the actual length of side slope requiring backfilling and grading at any point in time is expected to be far less than 15,000 feet. Although the pit depth is estimated to be between 8 and 12 feet, the average pit depth, and side slope, is anticipated to be near 10 feet. Once backfilling and final grading has been completed in an area, the top of the slope and the side slopes will be seeded as soon as practicable (based on first available seeding season).

Since reclamation will take place concurrently with mining, large and long-term topsoil and overburden stockpiling is not anticipated. Topsoil and overburden stockpiles will be configured to have side-slopes no steeper than 2H:1V. If the stockpiles are inactive for more than one growing season they will be seeded with the fast growing grass seed mixture in the table below. However, since the stockpile materials will continually be used for reclamation, the stockpiles will likely be disturbed on a frequent basis and seeding the stockpiles may not be practical during the course of the operation. If stockpile seeding is not used, surface roughening will be maintained to limit wind and water erosion.

Stockpile Grass Seed Mixture

Grass Species	Rate (lbs PLS/acre)
Intermediate Wheatgrass	5.0
Blue Grama	1.0
Triticale	1.25
Rates are for broadcast seeding.	

The applicant's experience aggregate mining in the Carr Pit East area has shown that, to abate dust and stormwater suspended sediment runoff in the dry and windy northern Colorado environment, areas disturbed by excavation must be minimized. Since the deposit being mined is above the groundwater table, reclamation is not hindered by mine dewatering operations and can proceed quickly after excavation is complete. To minimize material handling,

overburden stripped from a new excavation area is typically placed immediately on rough graded, previously mined areas. Once soil and overburden growth medium are placed and graded, the area is seeded as soon as is practical to stabilize the material from wind and stormwater erosion.

In order to gain an understanding of the extent of the mining operation, it is helpful to know the acres disturbed by different aspects of the mining operation. Each aspect is listed in the following table with associated disturbed area. The table illustrates a point in time where the mining disturbance could be at its maximum. At the proposed Carr Pit East site, it is assumed that the mining disturbance will be at its greatest ***nearing the end Phase I mining***. During this scenario, no reclamation will have been performed on the active mining face, approximately 500 feet of side slope on both sides of the mining face, and about half of the exposed pit bottom. ***Partial reclamation, including backfilling, will have been performed on pit side slopes outside of the active mining area. Finally, large areas of Phase I (approximately 74.4 acres outside of the active and partially reclaimed areas) will have been rough graded, covered with growth medium, final graded, and seeded for final reclamation. This area may require additional reclamation action if seed growth is disturbed by drought, bison and antelope grazing, etc. Reseeding typically involves 20 percent of the originally seeded area.*** Since backfilling side slopes and the active mining face to a minimum 3H:1V slopes is more costly than "cut and fill" sloping, backfilling will be used to estimate reclamation costs (see Exhibit L).

Mine Operation Aspects and Disturbance Areas

Aspect	Mining Operation	Disturbed Area (acres)
A	***Active Mining Area***: 1. Near vertical active mining face (1,000 linear feet). 2. Pre-stripped area in anticipation of mining (1,000 feet by 100 feet = 2.3 acres). 3. Near vertical un-reclaimed pit side slopes (500 linear feet on each side of mining face). 4. Un-reclaimed pit floor (11.5 acres).	13.8
B	***Partially Reclaimed Mining Area***: 1. Pit side slopes (2,000 linear feet) dozed/backfilled to 3H:1V. 2. Partially reclaimed pit floor.	12.5
C	***Previously Mined and Reclaimed Area:*** 1. Previously seeded (74.4 acres) 2. Re-seeding (20% of previously seeded area)	14.9
D	***Miscellaneous Disturbed Areas***: 1. Internal haul roads. 2. Main access road to Connell Carr Pit (M-2014-001). 3. Other areas disturbed by mining activities.	2.0
E	***Final Reclamation***: 1. Seeding. 2. Re-seeding	NA
Total Disturbed Area		**43.2**

Diversions and Impoundments

The existing grade of the proposed permit area generally drains to the existing Lone Tree Creek drainage. Stormwater that falls directly on disturbed areas will be generally drain to the mine pit and allowed to infiltrate. The active mine pit will effectively contain stormwater flows and prevent surface runoff from disturbed areas of the site. Stormwater not encountering disturbed areas will be allowed to drain to Lone Tree Creek.

Material Processing and Associated Facilities

Excavated materials will not be processed on-site. Pit run material will be hauled or conveyed to the adjacent Connell Car Pit (M-2014-001) for processing or hauling off-site as pit run for direct use or processing elsewhere.

No structures will be established on-site. Employee parking, equipment maintenance, and equipment storage shall take place on the Connell Carr Pit site (M-2014-001).

Commodities to be Mined and Intended Use

Sand and gravel for use as construction materials will be the primary products produced from the proposed Carr Pit East site. Test pits have verified that commercial deposits of sand and gravel exist up to about 12 feet below the surface of the ground. In addition to the commercial sand and gravel materials, clay, silt, and other non-marketable topsoil and overburden materials will be used on-site to for reclamation.

Use of Explosives

Since the material is unconsolidated deposits, no explosives or blasting is required.

EXHIBIT E

Reclamation Plan

This plan covers the proposed Carr Pit East and does not change the existing Connell Carr Pit (M-2014-001) reclamation plan.

Final Proposed Land Use

The current land use for the Carr Pit East property is rangeland. The use of this land is not expected to change. Most of the land surrounding the proposed permit area has similar uses of rangeland and open space. With so much open, undeveloped land in the surrounding area, maintaining this land as rangeland is consistent with the more regional land uses.

General Overview of the Reclamation Plan

Reclamation of the proposed permit area is fairly straightforward. Much of the pit, after mining, will contain a pit floor that gently slopes toward Lone Tree Creek. The pit floor will be blended into the Lone Tree Creek valley and drainage and will be connected to existing drainages. Reclaimed mine pit side slopes will be created from backfill with overburden and, if necessary, a combination of "cut and fill" so as to preserve overburden for use in establishing a plant growth medium elsewhere in the reclamation. All areas disturbed by mining activities will be prepared with topsoil and overburden and revegetated during reclamation. Revegetation will generate a blend of grass species and, given suitable precipitation, should produce good vegetation cover over much of the reclaimed site.

In general, shallower reclaimed slopes will provide easier access during reclamation and safer access for ranching equipment following mining. Shallower slopes will also aid in establishing vegetation growth and minimize erosion. Although pit side slopes will be backfilled and graded to blend into the adjacent topography, no slopes will be reclaimed any steeper than 3H:1V. Grading of pit side slopes and the pit bottom will attempt to adhere to the surrounding natural drainage patterns.

Roads not necessary for future access and other disturbed areas will be reclaimed with topsoil and overburden replacement and vegetative cover to stabilize the areas and minimize erosion.

Reclamation phasing will generally follow mine phasing and will incorporate concurrent reclamation processes. As described in Exhibit D – Mining Plan, once the mining highwall has exposed approximately 500 feet (perpendicular to the highwall) of new excavation, reclamation begins on previously disturbed areas of the excavation with scarifying/rough grading and soil/growth medium placement as soon as material becomes available. Final grading and revegetation are typically timed to take advantage of the spring growing season.

The table below provides an overall summary of reclamation phasing. Because of the Carr Pit East site conditions and climate, several years may be needed to finalize reclamation as illustrated in the reclamation summary.

Reclamation Phasing Summary

Mine Phase	*Mine Area*	*Total Acreage (acres)*	*Duration (years)*
Phase I	***North***	***102.7***	***8-11***
Phase II	***South***	***23.2***	***4-5***
TOTAL		***125.9***	***12-16***

Reclamation Measures/Materials Handling

All available topsoil and overburden material will be used for reclamation. Similar to mining, earth moving equipment may include, but are not limited to dozers, loaders, scrapers, and excavators. Additional farm equipment for grading and seeding may be used for revegetation activities.

Materials Handling - Backfilling

The pit floor will receive only enough backfill to create final grading for drainage and to establish a growth medium for revegetation. The pit slopes will require backfilling to achieve final reclaimed slopes of at least 3H:1V (see Exhibit F, Reclamation Plan Map). Because of the pit size and possible limited overburden, it may not be possible to achieve complete side slope reclamation by backfilling with available overburden material. In addition to the side slopes, overburden material may also be required to cover the pit floor for drainage grading and to establish a vegetation growth medium. The result is, depending upon the amount of overburden material recovered and available for reclamation, side slope backfilling may need to be enhanced with an initial "cut and fill" of the near vertical side slopes (see Exhibit F, Reclamation Plan Map). The degree of "cut and fill" required, if any, will be determined during mining as overburden material quantities and pit depths are verified.

Materials Handling - Grading

The 3H:1V pit side slopes will be graded to transition into the relatively flat pit floor. Grading of the pit floor may leave a subtle rolling topography rather than a completely flat bottom depending on varying depths of the sand and gravel deposit. The variations in topography will not create water catchment areas, but shall be graded to drain freely. The gentle slope of the topography will control water flow and create a variety of microenvironments for vegetation growth.

The side slopes will also not be graded smooth, but will contain a low profile ridging pattern that follows the contour. Final grading that leaves this type of ridging pattern helps to capture water for plant growth as well as reduce the velocity of runoff and slope erosion. On these slopes, erosion may present a maintenance issue for the first year or two of revegetation if there are large drenching thunderstorms, but more normal low intensity thunderstorms should not create more than minor rilling.

Blending of the pit into the Lone Tree Creek drainage will be important to prevent pooling of water in the pit bottom and to avoid creating a steep slope at the pit edge that encourages erosion. The final grading of this transition area will blend the topographic contouring from the pit floor with the undisturbed topography beyond the pit edge. Some of this transition area will involve lowering the high, steep embankment associated with the incised creek channel, while other areas will transition into lower terraces that separate the mine excavation from the ephemeral channel (see Exhibit F, Reclamation Plan Map).

All backfilling and grading will be done to stabilize the material and control erosion. Final grading and seeding will be done as soon as possible after backfilling, grading, and topsoiling have been completed. There will not be known toxic or hazardous materials in the backfill material. The reclamation will not leave high walls on the property. In addition, there will be no auger holes, excavations, or shafts left on the property.

Topsoil and Revegetation

The growth medium for revegetation will be a combination of overburden and topsoils. Unfortunately, there is not a large quantity of quality topsoil available at the site. The topsoil is only marginally different from the overburden, with its main distinction being slightly higher in organic matter. Because of its thin and scarce occurrence, true topsoil stripping will likely incorporate some of the underlying silty clay overburden material. Every effort will be made to separate true topsoil stripping, but even with the incorporation of some overburden material, it is not anticipated that large quantities of the topsoil/overburden growth medium will be available for reclamation.

Because of its limited availability, the topsoil/overburden growth medium may not be placed evenly over the entire site. The floor of the pit will likely need less growth medium because moisture accumulation there will help vegetation growth and new soil development. Therefore, only about six inches of the topsoil/overburden growth medium will be placed on the pit floor. The same dressing will be used for areas where stockpiles, access roads, or mining structures have been removed and the underlying material has been scarified in preparation for reclamation.

A minimum of one foot of growth medium will be placed on backfilled or otherwise created pit slopes. The extra thickness of growth medium will help to retain moisture on the slopes and provide a deeper rooting zone to help protect against erosion. For slopes created by backfilling, growth medium will go on top of a considerable depth of overburden, but for slopes created from a “cut and fill” approach, the thickness of growth media will be an important top-dressing. When spreading growth medium on slopes, the same requirements for general grading will be followed. Final grading prior to seeding will only follow the contours of the slope, creating ridging patterns that follow the contour, and will never produce tracks up and down the slope.

Planting of the site will be done as areas are finished with preparation after grading and spreading topsoil/overburden growth medium. Planting will occur seasonally to allow for timely germination with available moisture and to provide the highest possibility for growth success. If possible, planting will be performed between mid-November and the end of April.

Drill seeding is the preferred method for revegetation. Grass seed should be planted with a drill equipped with depth bands and press wheels. On this site, broadcast seeding is not advisable as seed burial would be limited. If broadcast seeding is necessary on moist soils, steep slopes, or in excessively rocky areas, success can be encouraged by broadcasting onto growth medium that is very loose, such as occurs immediately after spreading the plant growth medium. If the seed is broadcast in those circumstances, then the seeded area will be dragged to help bury the seed.

At this time, no mulch or fertilizer is being proposed. On west and south facing slopes, mulch may be applied if desired, but only if the mulch is very strongly crimped into the soil. On this site, straw mulch, unless well anchored would most likely just blow away, providing little benefit. If mulch is used, certified weed-less straw mulch at a rate of 2,000 pounds per acre should be applied.

Fertilizer may be applied to re-soiled areas in a manner that will encourage emergence and survival of the grasses without encouraging competition from weeds. Starter fertilizer could be applied before, or at the time of, seeding. If necessary, full fertilization will be applied after emergence. However, any fertilization done following seeding should be done using a method that does not cause large scale disturbance of the surface. Fertilizer mixtures will be based upon soil tests made on samples taken from re-soiled areas prior to seeding.

Based on recommendations from the Natural Resources Conservation Service, the seed mixture for the proposed permit area is similar to, but expanded from, the current permitted Connell Carr Pit (M-2014-001) reclamation seed mix. The recommended seed mixture for lands in the region of the proposed permit area is listed below.

Revegetation Seed Mix	
Species	**Rate (lbs PLS/acre)**
Wheatgrass, Western	4.80
Grama, Sideoats	1.82
Grama, Blue	0.50
Green needlegrass	1.92
Buffalograss (bur)	1.65
TOTAL	**10.69**
Rates are for drill seeding. If broadcast seeding is used, double seeding rates.	

If a significant invasion of noxious weeds occurs after seeding, the weeds will be mowed before they can go to seed. The areas will be mowed periodically for additional control as needed. Mechanical control will be used as a first priority. Chemical methods will only be used if no other alternative produces acceptable results.

Periodic inspection for noxious weeds, at least once a year early in the season, will be done. The weed inspection will search for not only the expected species but also any new List A or B species introductions. It is likely that non-noxious and List C species will also be found. ***Non-noxious weeds and List C weed species, which are often native invaders, will be controlled during reclamation, primarily if they impact the development of the desired reclamation species.*** List C noxious species are problematic but are usually not as serious as List B species. List B species in Colorado and utilized for Weld County weed management include, but may not be limited to: Absinth wormwood, Black henbane, Bouncingbet, Bull thistle, Canada thistle, Chinese clematis, Common tansy, Common teasel, Corn chamomile, Cutleaf teasel, Dalmatian toadflax, Dame's rocket, Diffuse knapweed, Eurasian watermilfoil, Hoary cress, Houndstongue, Jointed goatgrass, Leafy spurge, Mayweed chamomile, Moth mullein, Musk thistle, Oxeye daisy, Perennial pepperweed, Plumeless thistle, Quackgrass, Russian knapweed, Russian-olive, Salt cedar, Scentless chamomile, Scotch thistle, Spotted knapweed, Spurred anoda, Sulfur cinquefoil, Venice mallow, Wild caraway, Yellow nutsedge, and Yellow toadflax.

All List A species must be eradicated by law. These weeds include African rue, Bohemian knotweed, Camelthorn, Common crupina, Cypress spurge, Dyer's woad, Elongated mustard, Giant knotweed, Giant salvinia, Hydrilla, Japanese knotweed, meadow knapweed, Mediterranean sage, Medusahead, Myrtle spurge, Orange hawkweed, Purple loosestrife, Rush skeletonweed, Squarrose knapweed, Tansy ragwort, and Yellow starthistle. The current complete list of noxious weed species and local management plans is available from the Weld County Weed Division.

Wildlife

Current wildlife conditions and potential impacts are described in Exhibit H, Wildlife Information.

Water – General Requirement

No groundwater is expected to be encountered in the mining and therefore groundwater in the area should not be affected.

Although the pit floor will have a gentle, possibly rolling, topography as described above, discharge from the pit to the Lone Tree Creek drainage will still occur. Since the retention of water in the pit is not allowed under Colorado water law without prior approval, pit floor configurations will keep water draining without reaching high velocities that can cause rapid erosion.

The discharge from the pit will be intentionally directed into existing drainageways associated with Lone Tree Creek. Thus, the edge of the pit will likely have not only a horizontal blending to produce smooth slope transitions, but it will be vertically variable to match rises and falls in the topography just beyond the pit edge.

Initially, silt fence or other sedimentation best management techniques shall be installed in all significant drainages within about 50 feet of the edge of the affected land. Until the vegetation develops on the pit floor there will be a fair amount of sediment discharge from the regraded and

seeded pit floor. These best management practices will aid in reducing the amount of sediment that leaves the affected land.

No irrigation will be used in establishing the vegetation, so no water rights are required for those purposes. No water storage will occur in the pit.

To minimize the effect on the prevailing hydrologic balance, the operator shall:

a. Comply with all applicable Colorado water laws.

b. Comply with all applicable Federal and State water quality laws and regulations.

c. Comply with all Federal and State requirements for dredge and fill.

d. Perform all work to minimize erosion and sediment transport.

Current water resource conditions and potential surface water and groundwater impacts are described in Exhibit G, Water Information.

Buildings and Structures

There are no existing buildings or structures in the proposed permit area and no structures will be left following reclamation.

Signs and Markers

Permit notification signs will be placed and maintained at the entrance to the operation. The permit boundary will be identified where it is not already identified by fences or suitable markers. All signs and markers will be removed upon permit release.

EXHIBIT G

Water Information

The proposed permit area is located in the southwest quarter of Section 22, Township 11 North, Range 67 West of the 6th Principal Meridian, Weld County, Colorado. The proposed permit area includes 166.1 acres.

Introduction

Lone Tree Creek, an ephemeral drainage system, bisects the southern portion of the proposed permit area from west to east. There are no other surface water resources near the site (see Exhibit C-4, Water Resource Map).

The Lone Tree Creek drainage does not have an associated regulatory floodplain within the proposed permit area. Because of the incised nature of the creek, wetland communities appear to be restricted to the channel and immediately adjacent areas, with very steep and rapid transitions to uplands. Several shallow swales and head-cut erosion gullies drain to Lone Tree Creek within the proposed permit area, but no apparent defined channels or wetlands exist within these swales and gullies.

Groundwater aquifers occur below the Carr Pit East site. However, the aquifers are generally deep below the ground surface and the Carr Pit East operation is not expected to directly affect these groundwater systems. Groundwater on the site will not be exposed during mining or reclamation and no groundwater quantity or quality impacts are anticipated.

Unlike major river systems along the Colorado Front Range, Lone Tree Creek does not have a significant alluvial aquifer system within the Carr Pit East property. Surface waters from the creek are generally part of a localized, perched system and are not stored or recharged substantially from an alluvial hydrogeologic structure.

Geologically, the Terry Bison Ranch and Carr Pit East property are located in the Cheyenne Basin, the northern sub-basin of the Denver-Julesburg Basin. Within this sub-basin, the Carr Pit East property appears to sit along the edge of the Northern High Plains Aquifer where Quaternary deposits generally occur up to about 200 feet in depth. Where they are saturated and are in contact with underlying aquifer units of Tertiary age, the Quaternary deposits form part of the Northern High Plains aquifer. Ephemeral flows in Lone Tree Creek may contribute to the recharge of the Quaternary sediments that include alluvial deposits, loess, dune sand, and valley-fill deposits. Below and near the Carr Pit East property, near the edge of the Northern High Plains aquifer, the Quaternary deposits are likely thin and discontinuous. Within this same area, the underlying Upper Laramie aquifer of Tertiary age ranges from about 200 to 1200 feet below the ground surface.

Known Colorado Division of Water Resources registered and/or unregistered groundwater wells within 600 feet of the proposed affected area are illustrated on Exhibit C-4, Water Resource Map. However, the proposed mining operation does not anticipate encountering groundwater and no impacts to the surrounding groundwater hydrology are expected. Review of the

construction logs from wells within 600 feet of the proposed permit area indicate static groundwater levels during well construction and pump installation to be between 20 feet and 50 feet below the ground surface. As stated previously, the aggregate deposit on the Carr Pit East site is expected to be relatively shallow, reaching a maximum depth of only about 12 feet below the ground surface. Additionally, non-mining related excavations on the property that extend to a depth below the aggregate deposit did not encounter groundwater.

Groundwater on the Carr Pit East site will not be exposed during mining or reclamation. If groundwater is encountered, the area will be backfilled to a minimum two (2) feet above the normal groundwater elevation and a well permit and approved augmentation plan will be obtained from the Colorado Division of Water Resources before groundwater is exposed.

Potential Mining and Reclamation Impacts

The proposed mining operation will have no effect on site water resources. Water is primarily used for dust control and shall be trucked from off-site sources, including a permitted well on the existing Tucker Aggregate Pit (M-1980-002). See attached Office of the State Engineer well permit application and revised conditions of approval. Water use for washing of product materials is not anticipated. As discussed in previous sections, the operation is not expected to encounter groundwater during mining and stormwater will not be retained in the active mine pit or in the reclaimed pit area.

Water Quality

Mining and reclamation operations shall comply with Colorado Department of Public Health and Environment Colorado Discharge Permitting System (CDPS) for stormwater management. A permit will be obtained that includes the continued updating and implementation of a site Stormwater Management Plan designed to prevent the contact and transport of potential contaminants to surface waters by stormwater flows.

Due to the absence of large quantities of potential pollutants on site, the mining and reclamation operations will not affect groundwater quality on or off the site. As stated above, mining and reclamation activities shall operate under a CDPS permit and Stormwater Management Plan. The plan provides for regular inspections of potential contaminant areas such as mobile equipment and fuel or lubricant storage locations. Inspections and best management practices are incorporated into the plan to protect both surface and groundwater quality.

EXHIBIT H

Wildlife Information

To evaluate potential wildlife habitat impacts from the proposed operation, information was gathered from the Natural Diversity Information Source (NDIS) as well as publications associated with the Pawnee National Grasslands to the east of the site. The NDIS combines plant and animal abundance data from the Colorado Division of Wildlife (CDOW) and other Colorado natural resource agencies to be used for land-use analyses and decisions. ***Additional sources of information include comments from Colorado Parks and Wildlife (CPW) staff, the Colorado State Wildlife Action Plan, CPW's Species and Associated High Priority Habitat publication, Colorado Natural Heritage Program (CNHP) Level 4 Potential Conservation Area Report – Lone Tree Creek, the Colorado State Conservation Board Lower South Platte Watershed Plan, and the Nature Conservancy's Southern Rocky Mountains: An Ecological Assessment and Conservation Blueprint.***

The proposed permit area is managed rangeland with mining activities on adjacent properties. The site primarily contains upland rangeland with isolated areas of water, riparian, and wetland habitats. Upland areas consist primarily of native and introduced grasses while isolated stands of cottonwood and other riparian and wetland vegetation are found along Lone Tree Creek.

There are no known federally threatened, endangered, or candidate species within the proposed site boundary. Federally threatened, endangered, or candidate species that could potentially be found in Weld County or that could potentially be affected by projects in Weld County include the Preble's meadow jumping mouse, interior least tern, Mexican piping plover, whooping crane, pallid sturgeon, Colorado butterfly plant, Ute ladies'-tresses orchid, and the western prairie fringed orchid. None of these species have been observed or documented within the proposed site boundary.

Colorado state threatened, endangered, and species of concern that could potentially be found in Weld County or that could potentially be affected by projects in Weld County include the black-tailed prairie dog, Northern river otter, swift fox, American peregrine falcon, bald eagle, ferruginous hawk, greater sandhill crane, long-billed curlew, mountain plover, Western burrowing owl, Western snowy plover, plains minnow, suckermouth minnow, brassy minnow, common shiner, Iowa darter, stonecat, common garter snake, and Northern leopard frog. For many of these species, potentially suitable habitat does not exist within the proposed project area.

Potentially suitable habitat does exist within the proposed amendment area for mammal and bird species such as, the black-tailed prairie dog, swift fox, mountain plover, and Western burrowing owl. ***However, black-tailed prairie dogs and their burrows have not been observed on the proposed site; nor have related species such as swift fox and the Western burrowing owl. Mountain plover has also not been observed within the project area.*** No potential raptor nests were found in or near the project area.

The Lone Tree Creek drainage within the proposed permit area could provide potential habitat for some Colorado state threatened, endangered, and species of concern including the common garter snake. According to CPW, several Species of Greatest Conservation Need (SGCN) could occur within the project area. The Lone Tree Creek drainage is presumed to be a likely important corridor for the Northern leopard frog. Additionally, the Brassy minnow is known to occur downstream of the project site and an introduced population of Northern redbelly dace occur upstream of the proposed project area.

The CPW SGCN that occur within the Lone Tree Creek drainage will not be significantly disturbed by mining and reclamation activities. The CPW species listed are exclusively associate with aquatic or associated wetland/riparian habitats. These habitats within the proposed project area will be isolated from the mining and reclamation activities. In many places, the Lone Tree Creek channel is less than a couple feet wide or even nonexistent. Through the proposed project area the creek is ephemeral or intermittent at best, flowing primarily in response to substantial stormwater events or snow melt. The narrow channel and pools are generally located in the middle of the drainage bottom which varies from approximately 50 to 100 feet wide. The bottom of the drainage is commonly covered with a mix of wetland and facultative (equally likely to occur in wetlands and non-wetlands) grass species. From the drainage bottom, slopes typically rise abruptly at a 10 percent grade or steeper to the upland plain over 5 to 15 feet above.

The temporary mining and reclamation disturbances will take place offset from the Lone Tree Creek drainage the top of bank and will not impact the Lone Tree Creek channel or associated wetlands. Where the mining and reclamation disturbances are anticipated to occur, suitable habitat for the noted SGCN does not exist.

Many birds may use habitats similar to those found at the proposed project area, either year-round, seasonally for nesting, or temporarily for roosting during migration. Some of the common or abundant species could include robins, orioles, starlings, swallows, magpies, wrens, longspurs, lark bunting, doves, kingbirds, and blackbirds. Because of the lack of open water habitat within and near the proposed permit area, shore birds and waterfowl are not likely to be present.

It could be expected that most mammals common or abundant in Weld County would not be found near or within the proposed permit area. ***Lack of appropriate habitat including suitable forage (including agricultural crops), trees and shrubs for browsing and shelter, open water, and availability of prey species likely limit or eliminate species from the proposed project area that may occur in other areas of Weld County.*** Smaller mammals that might be found at the proposed project site might include mice, voles, gophers, rabbits, raccoons, and skunks ***in limited populations***. Some of the larger mammals could include both mule and white-tailed deer, antelope, coyote, and fox. ***These species may use the proposed project area as part of their overall range, but would not likely be year-round or seasonal dependent on the site due to the lack of suitable forage, available shelter, and lack of prey species. CPW has stated that the proposed project area could provide a winter concentration area for deer and pronghorn antelope. Although pronghorn antelope are commonly seen in the project area, often grazing on reseeded reclamation areas of the Carr Pit (M-2014-001), a substantial population of deer are not known to occur in the area. Additionally, significant seasonal increases in population of either species has not been observed in undisturbed or otherwise reclaimed areas near the***

project site. The Carr Pit (M-2014-001) and proposed Carr Pit East site are also temporary disturbances within the Lone Tree Creek watershed and impacts following final reclamation are expected to be minimal.

The mining and reclamation activities may disturb some of the wildlife within the proposed permit area and adjacent area. However, the activities will be confined to specific areas and total disturbance at one time will be limited. Impacts to wildlife following reclamation will be minimal.

After removal of the gravels and the creation of a basin within the mine pit, wildlife habitat could be better on the bottom of the pit where vegetation growth may be more abundant. Grading of the mine pit into the Lone Tree Creek drainage may also improve the creek's connection with the surrounding flood area, potentially creating better vegetation growth conditions and an increase in wildlife utilization. However, water availability will still be limiting. The Lone Tree Creek drainage will likely still be the primary wildlife habitat in the area.

EXHIBIT I

Soil Information

At the end of this exhibit are some printouts from the NRCS website that describe many of the typical characteristics of the soils present on the site. Please refer to Exhibit C-2, Soils Map, for an illustration showing the distribution of the soils.

According to the *Web Soil Survey* (United States Department of Agriculture, NRCS, 2004) of the proposed permit area, there are three major soil types within the proposed project site:

1. Altvan and Ascalon fine sandy loams and
2. Peetz gravely sandy loam.
3. ***Cascajo Gravely Sandy Loam***

The location of these soil types is illustrated on Exhibit C-2, Soils Map.

Traditional organic topsoil on most of the site is thin or non-existent. Most of the soils are shallow to deep loams that are well drained. Over most of the identified sand and gravel deposit is a loamy, wind-mixed veneer layer of soil overburden material varying in depth from less than one inch to over four feet. The soil overburden material likely developed from alluvial and eolian deposits of clay, silts, and sands. Over time, erosive forces of wind and water have influenced the soils on the site. Mobile soil particles, such as silt and clay, have eroded from higher topographic positions and have been re-deposited in lower areas. Therefore, swale areas may have finer textured soils than ridgetops.

Altvan and Ascalon Fine Sandy Loams

The Altvans and Ascalons are found on level and nearly level (0 to 6 percent slopes) land forms. Located on loamy plains throughout the area, these soil types are well drained and classified as Hydrologic Soil Group B. They are also the most dominant soil types within the proposed project site. The water table is typically more than 80 inches below the soils.

Areas containing these soils are used mainly for rangeland and wildlife habitat. Their water holding capacity is low to moderate and typically do best as seeded rangeland. These soils produce low plant densities of Blue Grama/Buffalo Grass sod with excessive ground litter.

Peetz Gravely Sandy Loam

The Peetz is found on 5 to 20 percent slopes and located on land form breaks and ridges. This soil type is somewhat excessively drained and classified as Hydrologic Soil Group A. The water table is typically more than 80 inches below the soil.

Areas containing this soil type are used mainly for rangeland and wildlife habitat. Its water holding capacity is low and typically supports Blue Grama sod with bare ground, cryptogam, and annual plant communities.

Cascajo Gravely Sandy Loam

The Cascajo gravely sandy loam is found on 5 to 20 percent slopes and located on land form breaks and ridges. This soil type is somewhat excessively drained and classified as Hydrologic Soil Group A. The water table is typically more than 80 inches below the soil. Its water holding capacity is low and areas containing this soil type are not prime farmland.

EXHIBIT L

Reclamation Costs

In order to calculate maximum potential reclamation liability to the State, we have selected a point in time where reclamation costs could be at a maximum. It is assumed that the time of maximum mining disturbance will be ***near the end of Phase I mining***. During this scenario, no reclamation will have been performed on the active mining face, pit side slopes on both sides of the mining face, and about half the exposed pit bottom. ***Partial reclamation, including backfilling, will have been performed on pit side slopes outside of the active mining area. Finally, large areas of Phase I will have been rough graded, covered with growth medium, final graded, and seeded for final reclamation. This area may require additional reclamation action if seed growth is disturbed by drought, bison and antelope grazing, etc. Reseeding typically involves 20 percent of the originally seeded area.*** Since backfilling side slopes and the active mining face to a minimum 3H:1V slopes is more costly than "cut and fill" sloping, backfilling is used to estimate reclamation costs. Stockpiles with available topsoil/overburden for backfilling will be near the pit and areas for reclamation, so haul distances will generally be less than 1,000 feet. Each aspect is listed in the following table with associated disturbed area. Please refer to Exhibit D, Pre-Mining/Mining Plan, for a listing of disturbed areas that total ***43.2*** acres. This estimate will follow the same order as the listing in Exhibit D. Connell Resources Inc. is an earth moving and construction contractor and unit costs for reclamation activities were provided from bidding documents associated with similar projects. Since all structures used in the mining operation are portable, it is assumed that removal of the structures do not have associated costs.

The active mining area will include the active mining face, un-reclaimed pit side slopes, un-reclaimed pit floor, and partially reclaimed pit side slopes and pit floor. The active mining face will be near vertical with a maximum length of 1,000 feet and an average height of 10 feet. In front of the active mining face, an area 100 feet wide will have been pre-stripped in anticipation of mining (2.3 acres). In addition, a maximum 500 feet of un-reclaimed pit side slopes may be adjacent to each end of the active mine face. These side slopes will also be near vertical with an average height of 10 feet. Framed by the active mining face and pit side slopes, the pit floor (11.5 acres) will be un-reclaimed, contain overburden, raw material, and product stockpiles. Following backfill, the areas are rough graded in preparation for topsoil/overburden growth medium placement, final grading, and seeding for revegetation.

In addition to the active mining area, parts of the mine pit will be partially reclaimed. A maximum of 2,000 feet of pit side slopes dozed or backfilled to 3H:1V, and an area of pit floor backfilled with a layer of topsoil/overburden growth medium, will require final reclamation. Since backfilling and grading may occur several seasons before final reclamation, the areas will be rough graded prior to additional reclamation activities. Final reclamation for these areas will include topsoil/overburden growth medium placement, final grading, and seeding for revegetation.

Approximately 74.4 acres outside of the active and partially reclaimed areas in Phase I will have been rough graded, covered with growth medium, final graded, and seeded for final reclamation. This area may require additional reclamation action if seed growth is disturbed by drought, bison and antelope grazing, etc. Reseeding typically involves 20 percent of the originally seeded area.

Miscellaneous disturbed areas at the point of maximum disturbance will include the main site access road, internal haul roads, and other areas disturbed by mining activities. These areas will be tilled in preparation for topsoil/overburden growth medium placement, final grading, and seeding for revegetation. It is estimated that the combined area of these disturbances will be approximately two (2) acres.

Since quality topsoil is scarce on the Carr Pit East site, vegetation growth medium will include the best quality topsoil/overburden material available. If available, a minimum of 6 inches of growth medium will be placed on all disturbed areas following backfilling, scarifying, and/or rough grading. Final grading of the topsoil/overburden growth medium will prepare the surface for seeding. After initial seeding and the first season's growth, it is estimated that approximately 20 percent of the seeded area will need to be re-seeded.

Aspect		Reclamation Operation	Quantity	Units	Unit Cost ($)	Cost ($)
	Active Mining Area					
A	A1	Dozer active mine face to 3H:1V slopes [1,000' x 0.5(10' x 30')]	5,556	CY	$0.50	$2,778
	A2	Rough grade mine pre-stripped area (2.3 acres x 0.5')	1,855	CY	$0.50	$928
	A2	Dozer two un-reclaimed pit side slopes to 3H:1V [(2 x 500) x 0.5(10' x 30')]	5,556	CY	$0.50	$2,778
	A3	Rough grade dozed slopes and active mining pit floor to drain (11.5 acres x 0.5')	9,277	CY	$0.50	$4,639
	A4	Place growth medium on all Aspect A areas (13.8 acres x 0.5')	11,132	CY	$1.05	$11,689
	A5	Final grade all Aspect A areas (13.8 acres x 0.5')	11,132	CY	$0.50	$5,566
	Partially Reclaimed Mining Area					
B	B1	Rough grade 2,000 linear feet of previously dozed/backfilled side slopes and pit floor graded to drain (12.5 acres x 0.5')	10,083	CY	$0.50	$5,042
	B2	Place growth medium on all Aspect B areas (12.5 acres x 0.5')	10,083	CY	$1.05	$10,587
	B3	Final grade all Aspect B areas (12.5 acres x 0.5')	10,083	CY	$0.50	$5,042
	Final Reclamation					
C	C1	Previously seeded areas in Phase I not included in Aspects A, B, and C [102.7-(13.8+12.5+2)] acres	74.4	Ac	$675	na
	C2	Re-seed 20% of all areas in Phase I not included in Aspects A, B, and C	14.9	Ac	$675	$10,044
	Miscellaneous Disturbed Areas					
D	D1	Access road to Connell Carr Pit (M-2014-001), internal haul roads, and other areas disturbed by mining activities	na			
	D2	Scarify all Aspect C areas	2	Ac	$500.00	$1,000
	D3	Place growth medium on all Aspect C areas (2 acres x 0.5')	1,613	CY	$1.05	$1,694
	D4	Final grade all Aspect C areas (2 acres x 0.5')	1,613	CY	$0.50	$807
	Final Reclamation					
E	E1	Seed all areas in Aspects A, B, and C (13.8+12.5+2) acres	28.3	Ac	$675	$19,103
	E2	Re-seed 20% of all areas in Aspects A, B, and C	5.7	Ac	$675	$3,821
Total Reclamation Costs						$85,514
Contractor Mobilization/Demobilization Costs (8%)					0.08	$6,841
Overhead (18.5%)					0.185	$15,820
Administration (5%)					0.05	$4,276
Total Proposed Financial Warrenty						**$112,451**
Disturbed Acreage						43.2
Financial Warrenty per Acre						$2,603