TAK
DSK

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY
Department of Natural Resources

1313 Sherman St., Room 215
Denver, Colorado 80203
Phone: (303) 866-3567
FAX: (303) 832-8106

RECEIVED
JUL 03 2014
DIVISION OF RECLAMATION
MINING AND SAFETY

COLORADO DIVISION OF RECLAMATION MINING & SAFETY

Amd2

CONSTRUCTION MATERIALS
REGULAR (112) OPERATION
RECLAMATION PERMIT APPLICATION FORM

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

Permit # M -____-1977-036 (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 -1977-036-____ (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)**: Martin Marietta Materials, Inc.
   - 1.1 Type of organization (corporation, partnership, etc.): Corporation
2. **Operation name (pit, mine or site name)**: Greeley 35th Avenue Mine
3. **Permitted acreage (new or existing site)**: 381.38 permitted acres
   - 3.1 Change in acreage (+): 0 acres
   - 3.2 Total acreage in Permit area: 381.38 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 Aggregate
   - 5.1 Incidental commoditie(s) to be mined: 1. ____ - ____ 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 Materials
   - 5.3 Anticipated end use of incidental commoditie(s) to be mined: ____

√ **AF & Report**
√ **No Violations**

6. **Name of owner of subsurface rights of affected land**: Martin Marietta Materials, Inc.
If 2 or more owners, "refer to Exhibit O".

7. **Name of owner of surface of affected land**: Martin Marietta Materials, Inc.

8. **Type of mining operation**: ☑ Surface ☐ Underground

9. **Location Information**: The center of the area where the majority of mining will occur:

COUNTY: Weld

PRINCIPAL MERIDIAN (check one): ☑ 6th (Colorado) ☐ 10th (New Mexico) ☐ Ute

SECTION (write number): S 34

TOWNSHIP (write number and check direction): T 6 ☑ North ☐ South

RANGE (write number and check direction): R 66 ☐ East ☑ West

QUARTER SECTION (check one): ☑ NE ☐ NW ☐ SE ☐ SW

QUARTER/QUARTER SECTION (check one): ☑ NE ☐ NW ☐ SE ☐ SW

GENERAL DESCRIPTION: (the number of miles and direction from the nearest town and the approximate elevation):
1.75 miles North and 2 miles West of Greeley, CO, approximately 4,670 FAMSL

10. **Primary Mine Entrance Location** (report in either Latitude/Longitude **OR** UTM):

Latitude/Longitude:

Example: (N) 39° 44′ 12.98″
(W) 104° 59′ 3.87″

Latitude (N): deg 40 min 26 sec 45.74 (2 decimal places)

Longitude (W): deg 104 min 44 sec 5.76 (2 decimal places)

OR

Example: (N) 39.73691°
(W) -104.98449°

Latitude (N) _____._____ (5 decimal places)

Longitude(W) _____._____ (5 decimal places)

OR

Universal Tranverse Mercator (UTM)

Example: 201336.3 E NAD27 Zone 13
4398351.2 N

UTM Datum (specify NAD27, NAD83 or WGS 84) Nad 83 Zone 13

Easting _____

Northing _____

11. **Correspondence Information**:

APPLICANT/OPERATOR (name, address, and phone of name to be used on permit)

Contact's Name: Julie Mikulas Title: Land Manager
Company Name: Martin Marietta Materials, Inc.
Street/P.O. Box: 1800 N. Taft Hill Rd. P.O. Box:
City: Fort Collins
State: Colorado Zip Code: 80521
Telephone Number: (970) - 227-4041
Fax Number: (970) - 407-3900

PERMITTING CONTACT (if different from applicant/operator above)

Contact's Name: Jeremy Deuto Title: Project Manager
Company Name: GEI Consultants, Inc.
Street/P.O. Box: 2625 Redwing Dr., Suite 370 P.O. Box:
City: Fort Collins
State: Colorado Zip Code: 80526
Telephone Number: (970) - 224-7374
Fax Number: (303) - 662-8757

INSPECTION CONTACT

Contact's Name: Jeremy Deuto Title: Project Manager
Company Name: GEI Consultants, Inc.
Street/P.O. Box: 2625 Redwing Dr., Suite 370 P.O. Box:
City: Fort Collins
State: Colorado Zip Code: 80526
Telephone Number: (970) - 224-7374
Fax Number: (303) - 662-8757

CC: STATE OR FEDERAL LANDOWNER (if any)

Agency:
Street:
City:
State: Zip Code:
Telephone Number: ( ) -

CC: STATE OR FEDERAL LANDOWNER (if any)

Agency:
Street:
City:
State: Zip Code:
Telephone Number: ( ) -

12. **Primary future (Post-mining) land use (check one)**:

- [ ] Cropland(CR)
- [ ] Pastureland(PL)
- [ ] General Agriculture(GA)
- [ ] Rangeland(RL)
- [ ] Forestry(FR)
- [ ] Wildlife Habitat(WL)
- [ ] Residential(RS)
- [ ] Recreation(RC)
- [ ] Industrial/Commercial(IC)
- [x] Developed Water Resources(WR)
- [ ] Solid Waste Disposal(WD)

13. **Primary present land use (check one)**:

- [ ] Cropland(CR)
- [x] Pastureland(PL)
- [ ] General Agriculture(GA)
- [ ] Rangeland(RL)
- [ ] Forestry(FR)
- [ ] Wildlife Habitat(WL)
- [ ] Residential(RS)
- [ ] Recreation(RC)
- [ ] Industrial/Commercial(IC)
- [ ] Developed Water Resources(WR)

14. **Method of Mining**: Briefly explain mining method (e.g. truck/shovel): Truck/shovel

15. **On Site Processing**: [x] Crushing/Screening

13.1 Briefly explain mining method (e.g. truck/shovel): Truck/shovel

List any designated chemicals or acid-producing materials to be used or stored within permit area: See attached Greeley 35th Avenue Mine Site Chemical Inventory

16. **Description of Amendment or Conversion**:

If you are amending or converting an existing operation, provide a brief narrative describing the proposed change(s).

Change in post-mining land use to Developed Water Resources (WR)

Maps and Exhibits:

Two (2) complete, unbound application packages must be submitted. One complete application package consists of a signed application form and the set of maps and exhibits referenced below as Exhibits A-S, Addendum 1, and the Geotechnical Stability Exhibit. Each exhibit within the application must be presented as a separate section. Begin each exhibit on a new page. Pages should be numbered consecutively for ease of reference. If separate documents are used as appendices, please reference these by name in the exhibit.

With each of the two (2) signed application forms, you must submit a corresponding set of the maps and exhibits as described in the following references to Rule 6.4, 6.5, and 1.6.2(1)(b):

EXHIBIT A	Legal Description
EXHIBIT B	Index Map
EXHIBIT C	Pre-Mining and Mining Plan Map(s) of Affected Lands
EXHIBIT D	Mining Plan
EXHIBIT E	Reclamation Plan
EXHIBIT F	Reclamation Plan Map
EXHIBIT G	Water Information
EXHIBIT H	Wildlife Information
EXHIBIT I	Soils Information
EXHIBIT J	Vegetation Information
EXHIBIT K	Climate Information
EXHIBIT L	Reclamation Costs
EXHIBIT M	Other Permits and Licenses
EXHIBIT N	Source of Legal Right-To-Enter
EXHIBIT O	Owners of Record of Affected Land (Surface Area) and Owners of Substance to be Mined
EXHIBIT P	Municipalities Within Two Miles
EXHIBIT Q	Proof of Mailing of Notices to County Commissioners and Conservation District
EXHIBIT R	Proof of Filing with County Clerk or Recorder
EXHIBIT S	Permanent Man-Made Structures
Rule 1.6.2(1)(b)	ADDENDUM 1 - Notice Requirements (sample enclosed)
Rule 6.5	Geotechnical Stability Exhibit (any required sections)

The instructions for preparing Exhibits A-S, Addendum 1, and Geotechnical Stability Exhibit are specified under Rule 6.4 and 6.5 and Rule 1.6.2(1)(b) of the Rules and Regulations. If you have any questions on preparing the Exhibits or content of the information required, or would like to schedule a pre-application meeting you may contact the Office at 303-866-3567.

Responsibilities as a Permittee:

Upon application approval and permit issuance, this application becomes a legally binding document. Therefore, there are a number of important requirements which you, as a permittee, should fully understand. These requirements are listed below. Please read and initial each requirement, in the space provided, to acknowledge that you understand your obligations. If you do not understand these obligations then please contact this Office for a full explanation.

PW 1. Your obligation to reclaim the site is not limited to the amount of the financial warranty. You assume legal liability for all reasonable expenses which the Board or the Office may incur to reclaim the affected lands associated with your mining operation in the event your permit is revoked and financial warranty is forfeited;

PW 2. The Board may suspend or revoke this permit, or assess a civil penalty, upon a finding that the permittee violated the terms or conditions of this permit, the Act, the Mineral Rules and Regulations, or that information contained in the application or your permit misrepresent important material facts;

PW 3. If your mining and reclamation operations affect areas beyond the boundaries of an approved permit boundary, substantial civil penalties, to you as permittee can result;

PW 4. Any modification to the approved mining and reclamation plan from those described in your approved application requires you to submit a permit modification and obtain approval from the Board or Office;

PW 5. It is your responsibility to notify the Office of any changes in your address or phone number;

PW 6. Upon permit issuance and prior to beginning on-site mining activity, you must post a sign at the entrance of the mine site, which shall be clearly visible from the access road, with the following information (Rule 3.1.12):

a. the name of the operator;

b. a statement that a reclamation permit for the operation has been issued by the Colorado Mined Land Reclamation Board; and,

c. the permit number.

PW 7. The boundaries of the permit boundary area must be marked by monuments or other markers that are clearly visible and adequate to delineate such boundaries prior to site disturbance.

PW 8. It is a provision of this permit that the operations will be conducted in accordance with the terms and conditions listed in your application, as well as with the provisions of the Act and the Construction Material Rules and Regulations in effect at the time the permit is issued.

PW 9. Annually, on the anniversary date of permit issuance, you must submit an annual fee as specified by Statute, and an annual report which includes a map describing the acreage affected and the acreage reclaimed to date (if there are changes from the previous year), any monitoring required by the Reclamation Plan to be submitted annually on the anniversary date of the permit approval. Annual fees are for the previous year a permit is held. For example, a permit with the anniversary date of July 1, 1995, the annual fee is for the period of July 1, 1994 through June 30, 1995. Failure to submit your annual fee and report by the permit anniversary date may result in a civil penalty, revocation of your permit, and forfeiture of your financial warranty. It is your responsibility, as the permittee, to continue to pay your annual fee to the Office until the Board releases you from your total reclamation responsibility.

PW 10. For joint venture/partnership operators: the signing representative is authorized to sign this document and a power of attorney (provided by the partner(s)) authorizing the signature of the representative is attached to this application.

NOTE TO COMMENTORS/OBJECTORS:

It is likely there will be additions, changes, and deletions to this document prior to final decision by the Office. Therefore, if you have any comments or concerns you must contact the applicant or the Office prior to the decision date so that you will know what changes may have been made to the application document.

The Office is not allowed to consider comments, unless they are written, and received prior to the end of the public comment period. You should contact the applicant for the final date of the public comment period.

If you have questions about the Mined Land Reclamation Board and Office's review and decision or appeals process, you may contact the Office at (303) 866-3567.

Certification:

As an authorized representative of the applicant, I hereby certify that the operation described has met the minimum requirements of the following terms and conditions:

1. To the best of my knowledge, all significant, valuable and permanent man-made structure(s) in existence at the time this application is filed, and located within 200 feet of the proposed affected area have been identified in this application (Section 34-32.5-115(4)(e), C.R.S.).

2. No mining operation will be located on lands where such operations are prohibited by law (Section 34-32.5-115(4)(f), C.R.S.;

3. As the applicant/operator, I do not have any extraction/exploration operations in the State of Colorado currently in violation of the provisions of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Section 34-32.5-120, C.R.S.) as determined through a Board finding.

4. I understand that statements in the application are being made under penalty of perjury and that false statements made herein are punishable as a Class 1 misdemeanor pursuant to Section 18-8-503, C.R.S.

This form has been approved by the Mined Land Reclamation Board pursuant to section 34-32.5-112,C.R.S., of the Colorado Land Reclamation Act for the Extraction of Construction Materials. Any alteration or modification of this form shall result in voiding any permit issued on the altered or modified form and subject the operator to cease and desist orders and civil penalties for operating without a permit pursuant to section 34-32.5-123, C.R.S.

Signed and dated this 27th day of June, 2014.

Martin Marietta Materials, Inc.
Applicant/Operator or Company Name

If Corporation Attest (Seal)

Signed: _____

Signed: _____
Corporate Secretary or Equivalent
Town/City/County Clerk

Title: Division President

State of Colorado)
) ss.
County of Jefferson)

The foregoing instrument was acknowledged before me this 27th day of June 2014, by Patrick H. Walker as Division President of Martin Marietta Materials, Inc.

_____
Notary Public

My Commission expires: 5/30/16

JULIE M. MIKULAS NOTARY PUBLIC STATE OF COLORADO

SIGNATURES MUST BE IN BLUE INK

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

June 24, 2014
GEI Project No. 1402970

RECEIVED
JUL 03 2014
Division of Reclamation, Mining & Safety

Peter Hays
Colorado Division of Mining, Reclamation, and Safety
1313 Sherman St., Room 215
Denver, CO 80203

Re: MMM Greeley 35th Avenue Mine (M-1977-036) Construction Material Regular (112) Operation Reclamation Permit Amendment Application

Dear Mr. Hays,

Please find the Construction Material Regular (112) Operation Reclamation Permit Amendment Application for the Martin Marietta Materials, Inc. (MMM) Greeley 35th Avenue Mine attached. The Greeley 35th Avenue Mine is located in Greeley, Colorado, at 925 N. 35th Avenue, Greeley, CO 80631.

This permit amendment application addresses the construction of a slurry wall around the West Pit, for conversion of the West Pit to Developed Water Storage. The West Pit was enlarged in a 2009 M-1977-036 permit amendment approved January 25, 2010. This 2009 permit amendment resulted in an increase in permitted area within the Greeley 35th Avenue Mine from 369 to 381.38 acres. The current permit amendment does not increase the permitted acreage. The area within the permit boundary outside of the West Pit area will be reclaimed according to the existing permit reclamation plan. This permit amendment only applies to the West Pit.

The slurry wall encompassing the West Pit is anticipated to be installed on or around July 2014 to October 2014. A leak test will be performed within the impounded reservoir, per Colorado State Engineer's Office (SEO) requirements, after completion of slurry wall construction. The leak test will likely occur between October 2014 and January 2015.

A slurry wall construction platform will be constructed around the West Pit at a uniform elevation to facilitate the construction of the slurry wall. The slope of the side walls from the construction platform have been designed to be 2:1 (H:V). These side walls will either be in cut or fill, depending on site conditions. Upon completion of the slurry wall construction, the construction pad will be regraded to a

GEI Consultants, Inc.
4601 DTC Boulevard, Suite 900, Denver, CO 80237
303.662.0100 fax: 303.662.8757

3:1 (H:V), and the areas disturbed during slurry wall construction will be toposoiled and revegetated according to the revegetation plan, as necessary.

The impounded reservoir will be used as a water augmentation reservoir. The reservoir is not intended for public use after completion.

The MMM representative for this application is Ms. Julie Mikulas, but please direct all correspondence to Mr. Jeremy Deuto, GEI Consultants. My contact information is:

Mr. Jeremy Deuto
c/o GEI Consultants, Inc.
2625 Redwing Dr., Suite 370
Fort Collins, CO 80526
(303) 775-2063 – mobile phone
(970) 224-7343 – office phone

Sincerely,

Jeremy Deuto, PG, EIT

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY
Department of Natural Resources

1313 Sherman St., Room 215
Denver, Colorado 80203
Phone: (303) 866-3567
FAX: (303) 832-8106

COLORADO DIVISION OF RECLAMATION MINING & SAFETY

CONSTRUCTION MATERIAL
REGULAR (112) OPERATION
RECLAMATION PERMIT APPLICATION PACKAGE

APPLICABILITY:

This application package is for a construction materials operation which affects 10 acres or more.
If you plan to conduct a construction materials extraction operation which meets these criteria, please follow the instructions provided in this package, in the Rules and Regulations, and in the Colorado Land Reclamation Act for the Extraction of Construction Materials, as required.

RECOMMENDATIONS PRIOR TO FILING:

The Construction Material Rules and Regulations (the Colorado Land Reclamation Act for the Extraction of Construction Materials, Section 34-32.5-101, et seq., C.R.S., and 2 CCR 407-1) and the Colorado Mined Land Reclamation Board (the "Board") regulate the permitting, operational and reclamation requirements for all construction material extraction operations in Colorado. It is your obligation to comply with the Act and Regulations. You are encouraged to obtain and review a copy of the Rules, available for $8.00 from the Division of Reclamation, Mining, and Safety (the "Office"). In order to submit your application properly, it is recommended that you review the Act and:

Rule 1.1	Definitions;
Rule 1.4.1	Application Review and Consideration Process;
Rule 1.4.5	Specific Requirements for Regular 112 Operations;
Rule 1.6	Public Notice Procedures;
Rule 3.1	Reclamation Performance Standards;
Rule 3.3.1	Operating without a Permit - Penalty;
Rule 4	Performance Warranties and Financial Warranties;
Rule 6	Permit Application Exhibit Requirements;
Rule 6.2	General Requirements of Exhibits;
Rule 6.4	Specific Permit Application Exhibit Requirements; and
Rule 6.5	Geotechnical Stability Exhibit.

It is recommended that you contact the agencies listed in the application section titled "Compliance With Other Laws" prior to submitting the application to the Office .

FILING REQUIREMENTS:

In order to apply for a Reclamation Permit for a Regular 112 Operation, please provide:

____ ° One (1) signed and notarized completed **ORIGINAL** and one (1) copy of the completed original Regular 112 Operation Application Form. **ORIGINAL SIGNATURES MUST BE DONE IN BLUE INK.**

____ ° Two (2) copies of Exhibits A-S (required sections described in Rule 6).

____ ° Two (2) copies of Addendum 1 - Notice requirements (described in Rule 1.6.2(1)(b)). A sample of this notice is attached for your use.

____ ° The Geotechnical Stability Exhibit when required by the Division.

____ ° The application fee.

The ninety (90) day period for review of the application and exhibits will **NOT** begin until all required information and fee are submitted. The Office will then review the submitted information for adequacy.

NOTICE REQUIREMENTS:

____ 1. You MUST send a notice, on a form approved by the Board, to the local board of county commissioners. A copy of this "Notice of Filing Application" form is attached for your use.

____ 2. If the mining operation is within the boundaries of a conservation district, send a notice to the board of supervisors of the conservation district, PRIOR to filing the application. A copy of this "Notice of Filing Application" form is attached for your use.

____ 3. You MUST include proof of notice #1 and #2 above with the application at the time the application is submitted to the Office for filing (Rule 1.6.2(1)(g)).

____ 4. PRIOR to filing the application, place for public review a copy of the application, less confidential items, with the clerk or recorder of the county or counties in which the affected land is located.

____ 5. You MUST include an affidavit or receipt demonstrating that the application was filed with the county clerk or recorder at the time the application is submitted to the Office for filing.

____ 6. Any changes or additions made to an application submittal MUST be filed with the county clerk or recorder. You MUST also provide the Office with an affidavit or receipt demonstrating that the change was filed with the county clerk or recorder no later than the close of business on the day the change was filed with the Office (Rule 1.8.1(2)).

____ 7. Within ten (10) days after your application is considered filed, you must publish four times in a newspaper of general circulation, in the locality of the proposed mining operation, the notice described in Rule 1.6.2(1)(d).

____ 8. In addition, after the first publication you must mail or personally serve a copy of the notice described in Rule 1.6.2(1)(d) to all owners of record of surface rights to the affected land and all owners of record of lands that are within 200 feet of the boundary of the affected land (Rule 1.6.2(1)(e)). A copy of a form which includes all required information for the notice is attached for your use.

_____ 9. Prior to the Office making a decision (consideration of the application), you MUST submit a copy of the proof of publication from the newspaper and proof of all required notices. Proof of the notices may be by submitting copies of return receipts of a certified mailing or by proof of personal service (Rules 1.4.1(4), 1.4.2(4)(c), 1.6.2(1)(a)(ii), and 1.6.2(1)(g)).

The copy of the application and any changes or additons placed at the office of the county clerk or recorder shall NOT be recorded, but shall be retained there for at least sixty (60) days after a decision on the application by the Office and be available for inspection during this period. At the end of this period, the application may be reclaimed by the applicant or destroyed (Rule 1.6.2(2)).

APPLICATION REVIEW PROCEDURES:

The Office shall approve or deny the application within ninety (90) days of filing unless the date for consideration by the Office is extended pursuant to Rule 1.8. The time for consideration shall not be extended beyond ninety (90) days after the last such change submitted. For complex applications, the review period may be extended an additional sixty (60) days. Please see Rule 1.1(10) for the definition of what constitutes a complex application.

APPLICATION APPROVAL/DENIAL:

If the requirements of the Act and Mineral Rules have been satisfied, the Office will approve the application. The Act also provides for automatic approval if no action is taken by the Office by the end of the review period.

If the Act and Regulation requirements have not been satisfied, the Office will deny the application. If the Office denies the application, you may appeal to the Board for a final determination by submitting a written request for administrative appeal to the Board within 60 days of the decision date (Rule 1.4.7).

PERFORMANCE AND FINANCIAL WARRANTIES:

A performance warranty, and a financial warranty dollar amount determined during the application review process, must be submitted and approved by the Office PRIOR to permit issuance. A financial warranty should NOT be submitted until a decision on the application has been made. If the applicant is a unit of state or county government, then ONLY a performance warranty is required.

Several different types of financial warranties are allowed by the law. Please review Rule 4.0 to determine which type of financial warranty you desire to use. You may obtain the appropriate warranty forms from the Office during the application review period.

Please note that an application approval DOES NOT convey a right to begin operations. You MUST submit, and have approval of your performance and financial warranties, and receive your copy of the signed permit document PRIOR to beginning on-site mining activity.

AUTOMATIC PERMIT APPROVAL:

An automatic approval will occur where the Office fails to notify the applicant/operator that the application has been denied. This decision must be made ninety (90) calendar days from the date the application was determined to have been filed. However, the performance and financial warranties must be submitted and approved by the Office before the permit will be issued even if you receive an automatic approval. NO MINING OPERATIONS SHALL BEGIN UNTIL A PERMIT IS ISSUED (Section 34-32.5-109(1), C.R.S.).

COMPLIANCE WITH OTHER LAWS:

Compliance with the Act and Rules and Regulations of the Mined Land Reclamation Board DOES NOT relieve you of your responsibility to comply with all other applicable state and federal laws. We recommend that you contact the following agencies to determine whether you need to comply with their legal requirements:

- The Colorado State Historical Preservation Office regarding properties of historical significance including the need for an archeological survey, procedures for requesting a file search, and inventory forms to identify structures.
- Colorado Division of Water Resources with regard to water rights;
- Colorado Department of Health, Water Quality Control Division, with regard to the discharge of pollutants into the State waters;
- Colorado Department of Health, Air Pollution Control Division, with regard to the need for a fugitive dust permit;
- U.S. Bureau of Land Management or the U.S. Forest Service if the proposed operation will occur on federal lands;
- U. S. Army Corps of Engineers regarding a dredge and fill (404) permit; and
- The County Planning Department for the county or counties in which your proposed operation is located. Section 34-32.5-109(3), C.R.S, requires a mining operator to be responsible for assuring that the mining operation and the post-mining land use comply with local land use regulations and any master plan for extraction adopted pursuant to Section 34-1-304, C.R.S.

COMPLETION OF MINING:

Upon completion of any phase of reclamation, you should consult Rule 3.1 for reclamation standards and 4.16 for details on how to request a reclamation responsibility release from the Board.

Greeley 35th Avenue Mine Site
Chemical Inventory

Calcium chloride
Diesel fuel
Various admixtures for concrete production
Propane
Asphalt cement
Lime
Emulsified AC
Burner fuel
Release agent
Acetylene
Brakleen parts cleaner
15W40 oil
Anti-freeze
Mobil grease XHP 222
Mobilgear 600 XP 150 oil
Mobilgrease XHP 320 MINE
Oxygen

NOTE: This list may change in the future, but chemicals that are replaced will be similar.

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Greeley 35th Avenue Mine Reclamation Permit Amendment Application

Permit M-1977-036

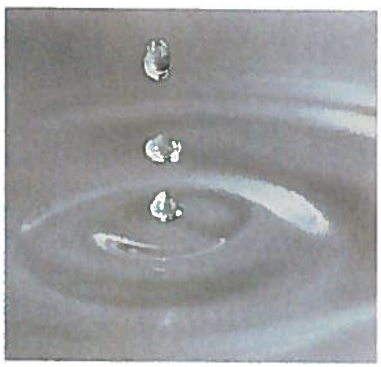
Construction Material Regular (112)
Operation Reclamation Permit

Colorado Division of Reclamation, Mining, and Safety

Submitted to:
Peter Hays
Colorado Division of Reclamation, Mining, and Safety
1313 Sherman St., Room 215
Denver, CO 80203

Submitted by:
GEI Consultants, Inc.
6401 DTC Blvd., Suite 900
Denver, CO 80237

June 25, 2014
Project 140297-0



Jeremy Deuto, PG, EIT
Project Manager, Engineering Geologist

Table of Contents

List of Figures

List of Tables

List of Attachments

1. Exhibit A – Legal Description

1.1 Metes and Bounds Legal Description

1.1.1 Original Mine Limits (1977)

Commencing at the NE Corner of said Section 35, said corner also being the True Point of Beginning, thence, along the north line of Section 35 S 89°22'37" W, 2686.63 feet to the N ¼ corner of said Section 35; thence, continuing along the said north line S 89°26'49" W, 1736.36 feet to a point on the south boundary of Tract "A" of a survey accomplished December 24, 1963 by James H. Stewart (Colorado Reg. No. 1650); thence, along the said boundary along the following courses: S 02°16'19" W, 232.07 feet; thence, S 74°34'49" W. 169.68 feet; thence, S 88°48'49" W, 39.57 feet; thence N 60°52'11" W, 194.78 feet; thence, N 70°49'11" W 76.10 feet; thence, N 86°15'11" W, 156.48 feet measured (157.58 feet recorded) to a point on the west section line of said Section 35; thence, along the said section line S 00°20'40" E, 1117.27 feet to the SE corner of the NE ¼ of the NE ¼ of the aforementioned Section 34; thence, along the south line of the NE ¼ of the NE ¼, S 89°43'18" W, 1323,26 feet to the SW corner of the said NE ¼ of the NE ¼; thence along the west line of the SE ¼ of the NE ¼ of said Section 34, S 00°23'25" E, 320.57 feet to a point in the northeasterly right-of-way of the Colorado and Southern Railroad; thence, along the said railroad right-of-way S 73°53'29" E, 7050.45 feet to a point in the aforementioned east line of Section 35; thence along the said east section line, N 00°00'00" E, 3695.81 feet to the true point of beginning.

Above being a tract of land located in a part of Section 34 and 35, T6N, R66W, of the 6th P.M., Weld County, Colorado, more particularly described above.

1.1.2 2009 Amendment Land Addition

Lots A and B, Recorded Exemption No. 0805-35-RE 2056, According to plat recorded September 30, 1197 at Reception No. 2571593, located in Sections 34 and 35, Township 6 North, Range 66 West of the Sixth Principal Meridian, County of Weld, State of Colorado.

Together with that parcel of land as described below:

A tract of land located in the northeast quarter of the northeast quarter of Section 34, Township 6 North, Range 66 West of the Sixth Principle meridian, County of Weld, State of Colorado being more particularly described as follows:

Commencing at the northeast corner of said Section 34 whence the north sixteenth corner of Sections 34 and 35 bears south 00°12'48" east 1352.35 feet, said line forming the basis of bearings for this legal description, thence along the east line of the northeast quarter of said Section 34 south 00°12'48" east 415.98 feet to the point of beginning.

Thence continuing along the east line of said northeast quarter of Section 34 south 00°12'48" east 936.38 feet to the north sixteenth corner of Sections 34 and 35; thence along the south line of the northeast quarter of the northeast quarter of said Section 34 south 89°48'39" west 913.84 feet to a point whence the northeast sixteenth corner of said Section 34 bears south 89°48'39" west 409.40 feet; thence north 37°40'01" east 57.99 feet; thence north 30°40'35" east 101.98 feet; thence north 36°40'29" east 347.03 feet; thence north 45°09'32" east 273.77 feet; thence north 89°03'37" east 181.23 feet to the point of beginning, containing 12.38 acres more or less.

Said described parcel of land contains 12.38 acres, more or less (±) and is subject to any rights-of-way or other easements as granted or reserved by instruments of record or as now existing on said described parcel of land.

Net acreage for both parcels is 381.38 acres more or less (±).

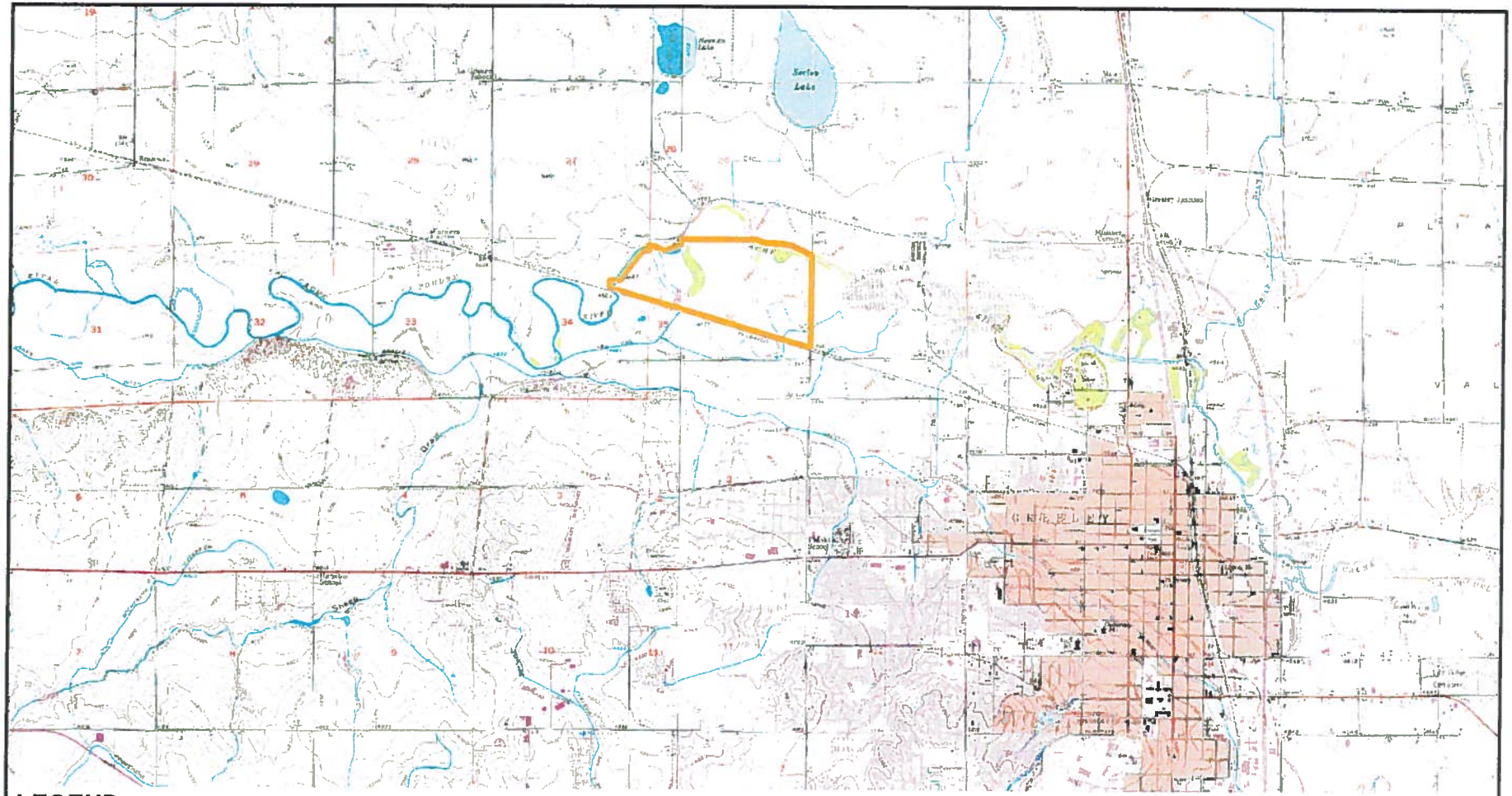
1.2 Main Entrance

The mine main entrance is located at:

40°26'45.74"N, 104°44'5.76"W

2. Exhibit B – Index Map

The Index Map is shown on **Figure B-1**. This figure shows the regional location of the Greeley 35th Avenue Mine. **Figures B-2** and **B-3** shows the elevation updates based on the NAVD 88.



LEGEND:

35th Avenue Mine Permit Boundary

Source:
Natural Resource Conservation Service

N

0 0.5 1 2

Miles

M-1977-036 Reclamation Permit Amendment
Application: Greeley 35th Avenue Mine
Weld County

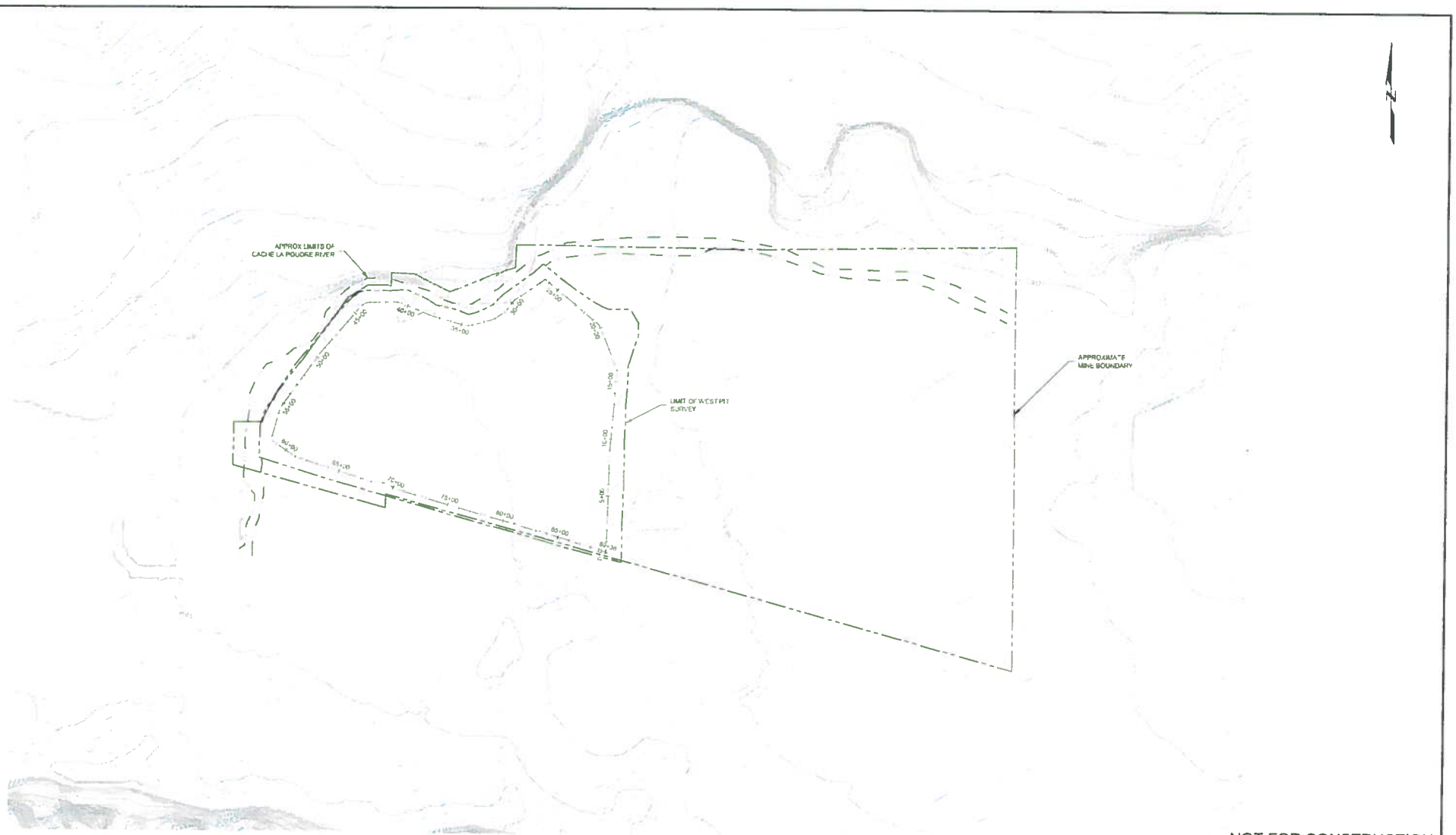
Martin Marietta Materials
Fort Collins, CO

GEI Consultants

35th Avenue Mine:
Index Map

Project 140297 | JUNE 2014 | Fig. B - 1

V:\PROJECTS\1402970 - 35th Ave Slurry Wall\GIS\Map folder\Figure B.mxd



NOT FOR CONSTRUCTION

SCALE: FEET

Attention: If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	
1	05/21/14	ISSUED FOR BID	CMM

DRAFT

Designed: J. DEUTO
Checked: C. MASCHING
Drawn: C. NIEMELA/B. MICKELL
Approved By: C. MASCHING
Approval Date: MAY 2014

GEI Consultants
4601 DTC Boulevard
Denver, Colorado 80237
303-482-0150

Martin Marietta Materials
1800 N Taft Hill Road
Fort Collins, CO

GEI Project 1402970

M-1977-036 RECLAMATION PERMIT AMENDMENT APPLICATION: GREELEY 35TH AVENUE MINE, WELD COUNTY

DWG. NO. B-2

PRE-MINING CONTOURS

The City of Greeley Control Network

GIS Reference No: 89
Cap ID: 66626B
Pin ID: Unknown
State/County: CO/Weld

Horizontal Datum - NAD83/92 - HARN (High Accuracy Reference Network) Based
(SPCS) State Plane Coordinate System Colorado North Zone 0501 US Survey Feet
Ellipsoid GRS 80 - (Geodetic Reference System of 1980)

Vertical Datum - NAVD 88 - (North American Vertical Datum of 1988)

Surveyed Location & Height - US Feet (Adjusted)

NAVD88 Elev: 4,708.25
NAVD29 Elev: 4,705.29
Northing 83 Feet: ----
Easting 83 Feet: ----

GIS Map Position -
(GIS position values for X, Y and Lat, Long are derived from desktop mapping product; they do not guarantee accuracy and should not be used for engineering purposes.)

GIS X Coordinate: 3,208,971.74
GIS Y Coordinate: 1,409,471.19
Latitude: 40d27'17.9"N
Longitude: 104d44'56.63"W

Dates -

Date of Install:
Date of Survey: 00/01/1997
Date of Recovery:

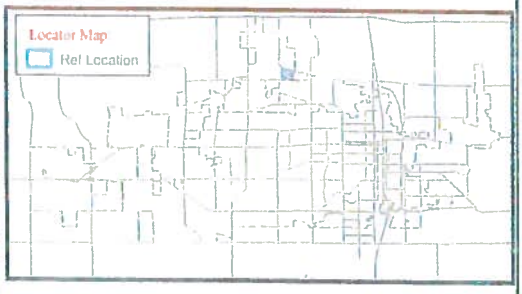
Types -

Monument Type: Aluminum 2 1/2" Disk
Benchmark Type: City Benchmark

NGVD 29 to NAVD 88 Conversion -

Scale Factor: 0.999963182
Combined Factor: 0.999738031
Convergence: 0 29' 06.74057"

Scale: 1 inch equals 300 feet



CITY BENCHMARK
COLORADO DEPT OF TRANSPORTATION
HARN POINT
NATIONAL GEODETIC SURVEY
US GEOLOGICAL SURVEY
QUARTER QUARTER
QUARTER SECTION CORNER
SECTION CORNER

Contact: The City of Greeley GIS Program, 1010 6th St. Greeley, CO 80631, (970) 350-9787

Description: Located in a traffic island at the intersection of O street and 35th Avenue. The monument is a 2.5" aluminum cap placed in a cast-iron street box and is| located 14.3' southwest of a 36" tree, and 60.5' north of a RR tie fence post. This| monument was set during the 1997 Cache La Poudre Flood Study project. Both| horizontal (gps) and vertical (digital level) coordinate values were provided by| King Surveyors Inc. 1/97.
[SW 1/4 OF T6NR66WS26]

Publication Date: 1/24/2007 12:00:00 AM

M-1977-036 Reclamation Permit Amendment Application:
Greeley 35th Avenue Mine
Weld County
Figure B-3

3. Exhibit C – Pre-mining and Mining Plan Map(s) of Affected Lands

Figures C-1, C-2, C-3, and **C-4** shows the features described below.

3.1 Adjoining Surface Owners of Record

The owners of record of adjacent land to the Greeley 35th Avenue Mine are:

- City of Greeley
- Great Western Railway of Colorado
- Weld County
- River View Homeowners Association
- LG Everist, Inc.
- Melvin D. Everhart
- Michael P. Kelly
- Earl E. Wellnitz
- Jeff Everhart
- Jill Renee Harmon Brown

This information is available on the Larimer County parcel viewer website at http://propertyinfo.co.weld.co.us/.

3.2 Geographical, Energy, and Communication Features

3.2.1 Bodies of Water

The Cache la Poudre River flows along the north side of the Greeley 35th Avenue Mine from west to east. The City of Greeley owns a lined water storage facility east of the mine. More information about this facility can be found at http://greeleygov.com/Water/intownstorage.aspx.

3.2.2 Roads

Roads in close proximity to the Greeley 35th Avenue Mine are:

- Weld County Rd. 64 (also known as W. O St.) approximately 350 feet on the north;
- Weld County Rd. 35 (also known as N. 35th Ave.) bordering the mine on the east;
- W. F St. approximately 350-2,350 feet south of the south permit boundary
- Weld County Rd. 31 (also known as W. 59th Ave.) approximately 4,150 feet on the west

- Weld County Rd. 31 (also known as W. 59th Ave.) approximately 4,150 feet on the west

3.2.3 Buildings

Buildings on the Greeley 35th Avenue Mine property include:

- Mine scale house
- Mineral processing facility
- Asphalt lab
- Asphalt plant
- Asphalt tank
- Concrete plant
- Pump house
- Miscellaneous buildings associated with mine QA/QC
- Miscellaneous maintenance facilities
- Miscellaneous outbuildings
- Mine office

3.2.4 Oil and Gas Wells and Pipelines

Oil and gas wells on the Greeley 35th Avenue Mine:

- Noble Energy, Inc.:
  - 05-123-11900, Mobile Premix 4-35
  - 05-123-23229, Mobile Premix I 35-8
  - 05-123-23233, Mobile Premix I 35-17
  - 05-123-23231, Mobile Premix I 35-4
  - 05-123-23234, Mobile Premix I 35-23
  - 05-123-23235, Mobile Premix I 35-23
  - 05-123-23860, Mobile Premix I 35-1
  - 05-123-11901, Mobile Premix 1A-35
  - 05-123-10981, Mobile Premix 3-25
  - 05-123-22216, Flathead I 35-12
  - 05-123-23194, Mobile Premix I 35-19
  - 05-123-23218, Mobile Premix I 35-6
  - 05-123-10980, Mobile Premix 2-35

Gas pipelines on the Greeley 35th Avenue Mine:

- DCP Midstream 4 inch transmission pipelines servicing the Noble Energy wellheads

3.2.5 Power and Communication Lines

Xcel Energy owns and operates four sets of power lines in the vicinity of the Greeley 35th Avenue Mine. The locations are described below.

A set of power lines runs along the east side of N. 35th Ave. at the eastern edge of the Greeley 35th Avenue site. On the south side of the main entrance, a service line runs on the west side of the N. 35th Avenue for approximately 600 feet.

A set of power lines runs along the north side of the railroad tracks on the southern edge of the Greeley 35th Avenue property.

A service line runs from the main power line on the south side of W. F St. to service various residential structures on the north side of W. F St.

Power lines that fall within the 200 foot boundary of the Greeley 35th Avenue mine are shown on **Figure C-1**.

3.3 Pre-Mining Topography

Pre-mining topography of the Greeley 35th Avenue Mine is shown on **Figure B-2**. It should be noted the USGS datum (NAVD 29) used for this figure is lower by 2.96 feet in this area than the correct datum (NAVD 88). NAVD 88 is used in design in the area as it is considered more reflective of actual ground elevations. NAVD 88 has been utilized for design within the Greeley 35th Avenue Mine. The conversion documentation for the area of the Greeley 35th Avenue Mine is presented in **Figure B-3**.

3.4 Permit Boundary

The area involved in the mining operation (permit boundary) and Affected Land is shown on **Figure C-1**. The permit boundary for the Greeley 35th Avenue Mine is unchanged in this permit amendment. Typical sections within the West Pit reclamation area are shown in **Figures F-1** and **F-2**. **Figure F-3** shows the plan of the West Pit. The West Pit within the current permit boundary (amended 2009) will become a lined below grade reservoir for use as Developed Water Resources. The reservoir will be lined with a slurry wall. Areas involved in the Greeley 35th Avenue Mine West Pit reclamation are shown in **Figure F-3**.

3.5 Present Vegetation

Present vegetation on the Greeley 35th Avenue property consists of native shrubs and grasses. Large portions of the site are unvegetated due to mining activities.

3.6 Water Information

Groundwater monitoring is not required at the Greeley 35th Avenue mine by the DRMS. A Groundwater Monitoring and Mitigation Plan is presented in Exhibit G, **Attachment A**.

3.7 Permanent Structures

Permanent man-made structures within 200 feet of the permit boundary are:

Owner: 83 Joint Ventures, LLC

- Below grade pond and associated embankments

Owner: Candelario Nevarez, 3501 West F Street, 80631

- Residential housing structures

Owner: City of Greeley

- 2 below grade ponds and associated embankments
- Water monitoring station
- 2 Weirs
- Poudre River trail and associated appurtenances

Owner: DCP Midstream

- Natural gas pipelines

Owner: Earl E. Wellnitz, 4700 O Street, 80631

- Residential housing structures

Owner: Great Western Railway of Colorado

- Railroad bridges
- Railroad tracks
- Miscellaneous appurtenances

Owner: Jeff Everhart, 4704 O Street, 80631

- Residential housing structures

Owner: LG Everist, Inc.

- 2 below grade pond and associated embankments

Owner: Martin Marietta Materials, Inc.

- Scale house
- Mineral processing facility
- Asphalt lab
- Asphalt plant
- Asphalt tank
- Concrete plant
- Pump house
- Miscellaneous buildings associated with mine QA/QC
- Miscellaneous maintenance facilities
- Miscellaneous outbuildings
- Mine office

Owner: Melvin D. Everhart, 4514 O Street, 80631

- Residential housing structures

Owner: Michael P. Kelly, 4620 O Street, 80631

- Residential housing structures

Owner: River View Homeowner's Association

- Tennis Court
- Below grade pond and associated embankments

Owner: Weld County

- N. 35th Avenue
- W. O St.
- Poudre River Trail
- Fence

Owner: William A. Rodman, 3613 West F Street, 80631

- Residential housing structures

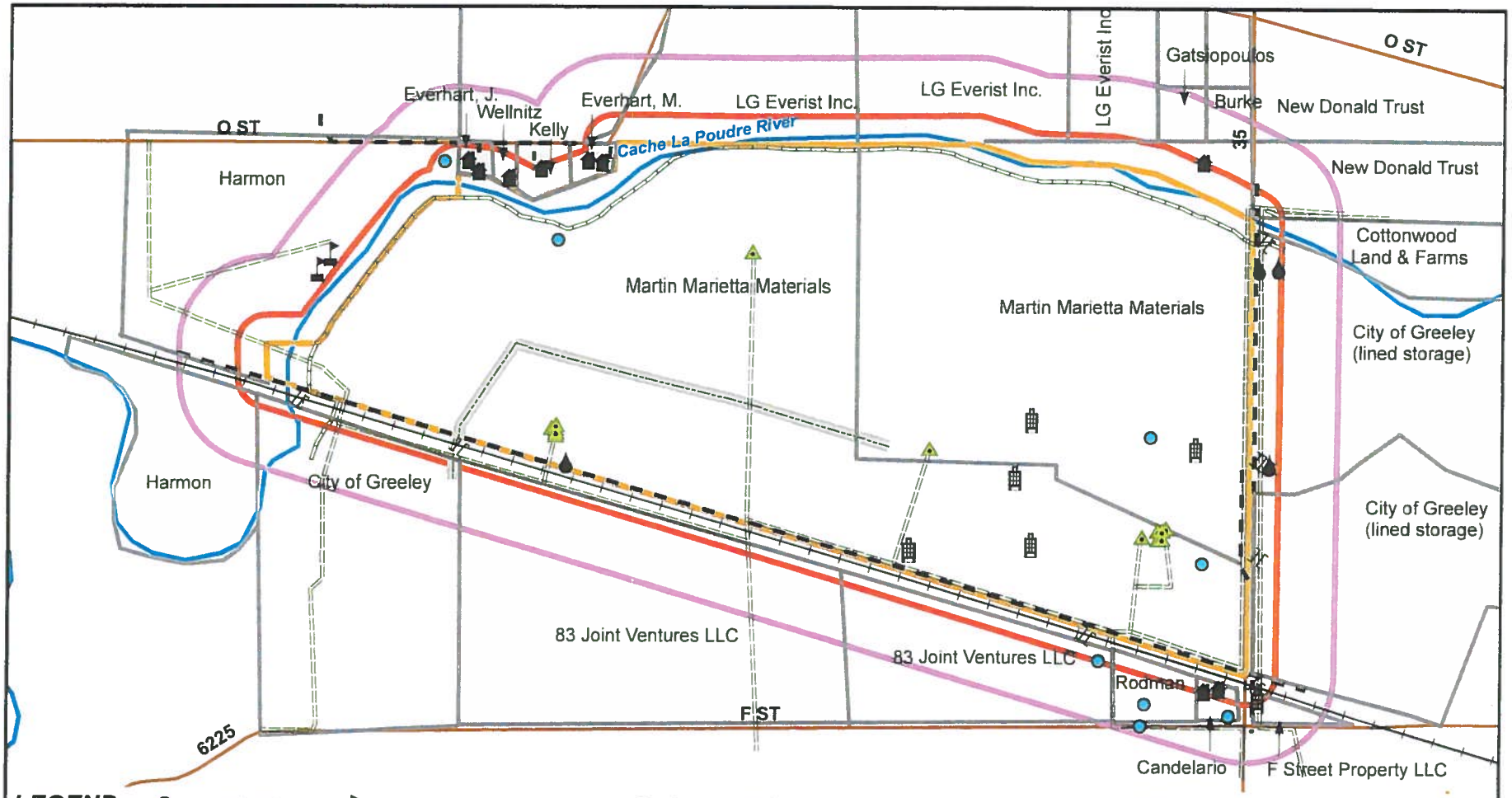
Owner: Xcel Energy

- Electrical transmission lines

3.8 Soils Information

The soil information has not changed since the permit amendment for Greeley 35th Avenue Mine, M-1977-036 in 2009.

Information regarding the soil types found at the Greeley 35th Avenue Mine from the Web Soil Survey, Natural Resources Conservation Service (NRCS), United States Department of Agriculture can be found in **Attachment B**.



M-1977-036 Reclamation Permit Amendment
Application: Greeley 35th Avenue Mine
Weld County

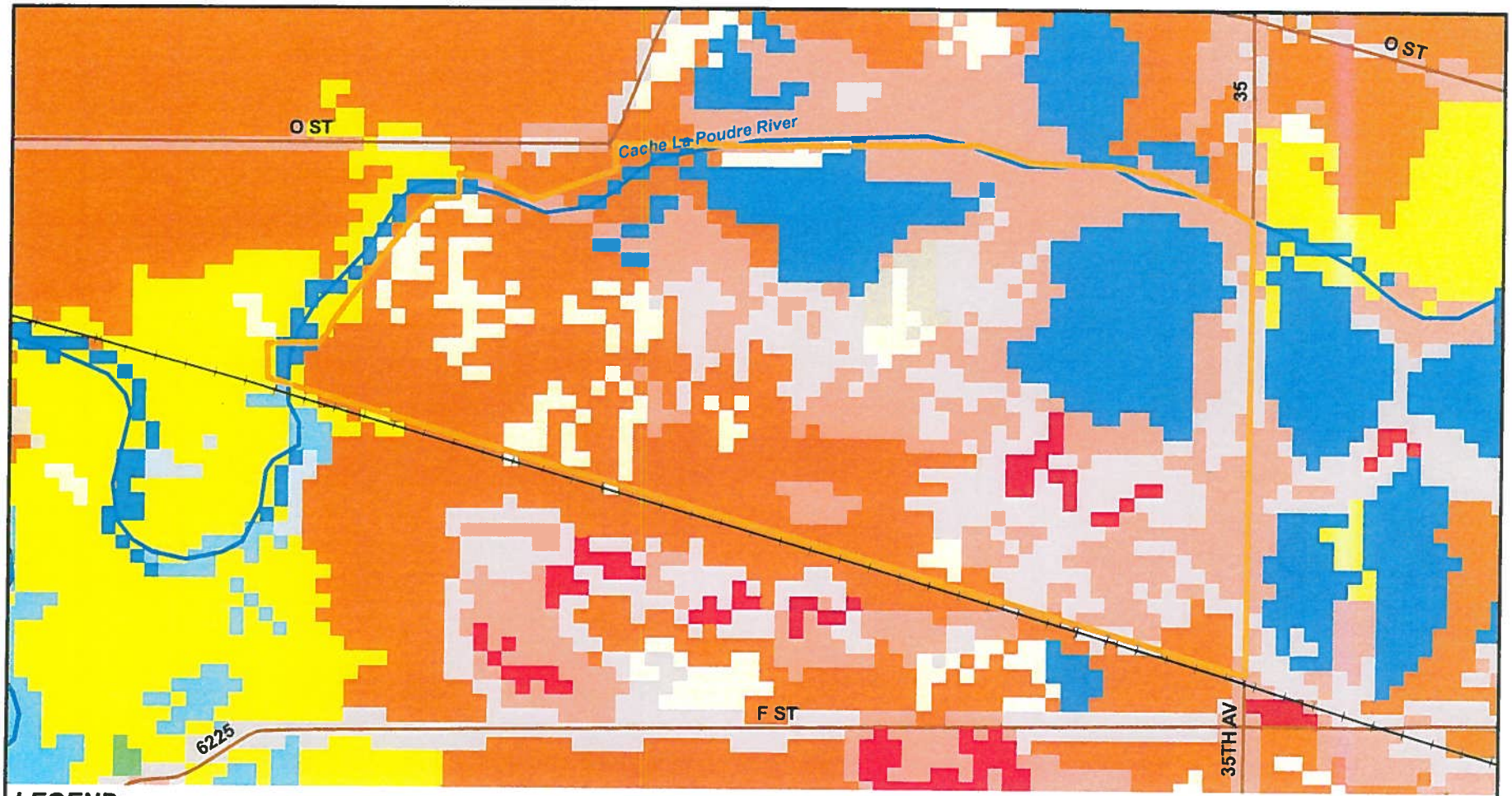
Martin Marietta Materials
Fort Collins, CO

GEI Consultants

35th Avenue Mine:
Premining Map - Manmade Structures, Landowners, Wells

Project 140297 | JUNE 2014 | Fig. C-1

V:\PROJECTS\1402970 - 35th Ave Slurry Wall\GIS\Map folder\Figure C-1.mxd



LEGEND:

- 35th Avenue Mine Permit Boundary
- Open Water
- Developed Area
- Developed - Low
- Developed - Medium
- Developed - High
- Rock/Sand/Clay
- Deciduous Forest
- Grassland
- Pasture/Hay
- Cropland
- Woody Wetland
- Herbaceous Wetland

Source:
United States Geological Survey, National Land Cover Dataset

N

0 500 1,000 2,000

Feet

M-1977-036 Reclamation Permit Amendment
Application: Greeley 35th Avenue Mine
Weld County

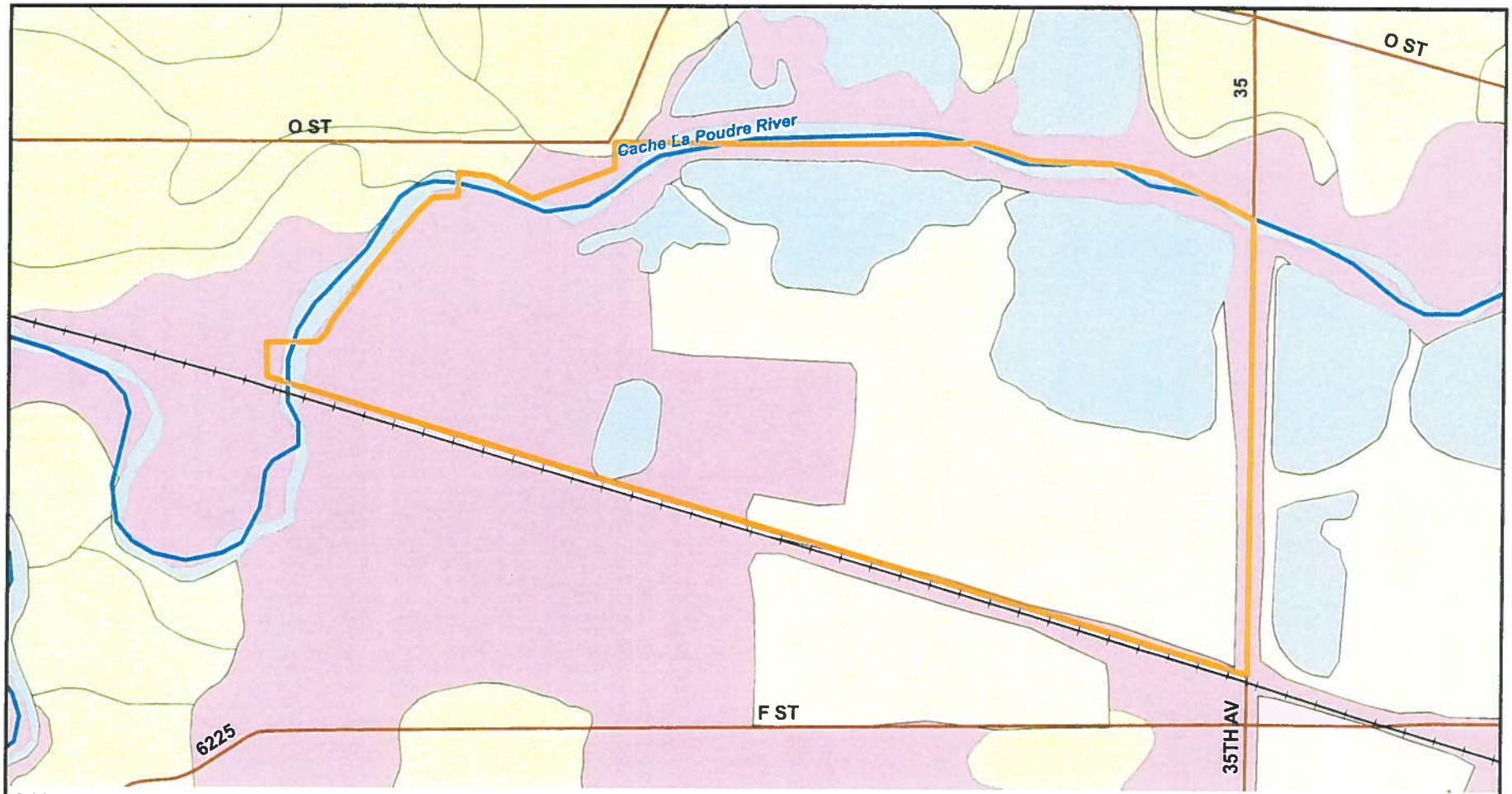
Martin Marietta Materials
Fort Collins, CO

GEI Consultants

35th Avenue Mine:
Premining Map - Vegetative Cover

Project 140297 | JUNE 2014 | Fig. C-2

V:\PROJECTS\1402970 - 35th Ave Slurry Wall\GIS\Map folder\Figure C-2 Vegetation.mxd



LEGEND:

- 35th Avenue Mine Permit Boundary
- Other
- Aquolls and Aquents
- Water
- Borrow Pits

N

Source:
Natural Resources Conservation Service, Soil Survey

0 500 1,000 2,000

Feet

M-1977-036 Reclamation Permit Amendment
Application: Greeley 35th Avenue Mine
Weld County

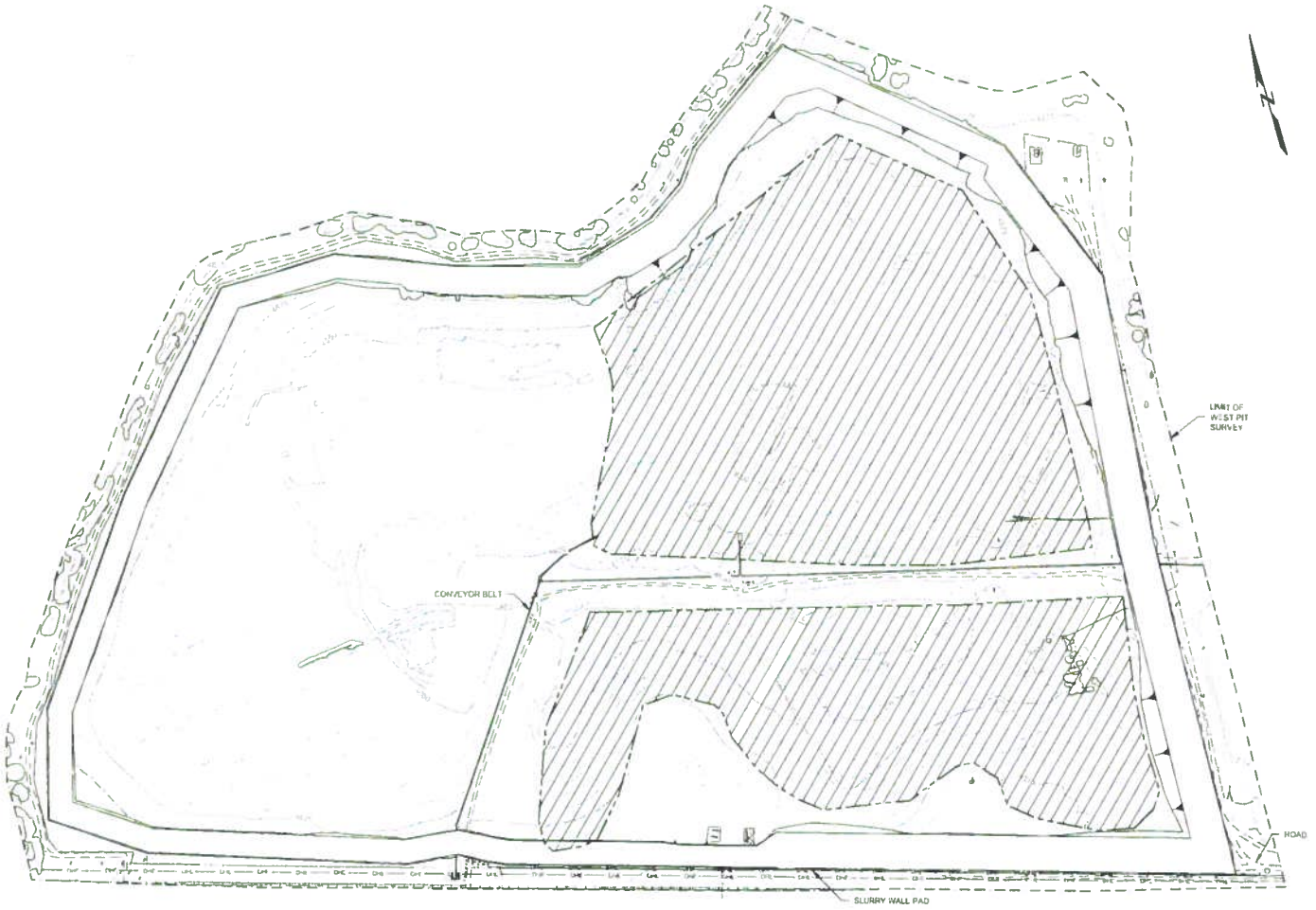
Martin Marietta Materials
Fort Collins, CO

GEI Consultants

35th Avenue Mine:
Premining Map - Soil Type

Project 140297 | JUNE 2014 | Fig. C-3

V:\PROJECTS\1402970 - 35th Ave Slurry Wall\GIS\Map folder\Figure C-3 Soils.mxd



PLAN

SITE MODIFICATIONS

NOT FOR CONSTRUCTION

LEGEND

REMAINING AREAS IN WEST PIT TO BE MINED

0 153 320

SCALE FEET

Attention

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
1	05/21/14	ISSUED FOR BID	CMM

DRAFT

Designed: J. DEUTO
Checked: C. MASCHING
Drawn: C. NIEMELA/S. MICKELL
Approved By: C. MASCHING
Approval Date: MAY 2014

GEI Consultants
4601 DTC Boulevard
Denver, Colorado 80237
303-667-0100

Martin Marietta Materials

1800 N Taft Hill Road
Fort Collins, CO

GEI Project 1402970

M-1977-036 RECLAMATION PERMIT AMENDMENT APPLICATION GREELEY 35TH AVENUE MINE, WELD COUNTY

DWG. NO. C-4

WEST PIT RECLAMATION PLAN

4. Exhibit D – Mining Plan

4.1 Mining Methods and Earthmoving

Mining methods and earthmoving procedures have not changed from the original or amended Greeley 35th Avenue Mine reclamation permit M-1977-036.

4.2 Water Diversions and Impoundments

Water diversions and impoundments have not changed from the original Greeley 35th Avenue Mine reclamation permit M-1977-036.

4.3 Size of Work Areas

Approximately 130 acres of the western portion of the Greeley 35th Avenue known as the "West Pit" will be the area to be mined and reclaimed simultaneously. The West Pit area is unchanged from previous permit amendments. The slurry wall construction will encompass the West Pit. Other work areas of the mine will not be changed from the current approved mine permit.

4.4 Approximate Mining Timetable

Mining at the Greeley 35th Avenue Mine is ongoing and is anticipated to be completed by December 31, 2019, depending on market conditions.

Material is imported to the mineral processing facility at Greeley 35th Avenue from the Iverson Mine (M-2011-001) in addition to remaining reserves within the West Pit. As per M-2011-001, the Iverson property is expected to continue mining through 2016, depending on market conditions. Portable processing equipment used at the Greeley 35th Avenue Mine site will be required to remain onsite until the completion of mining activities at the Iverson Mine Site.

4.5 Mining Map

Figure C-1 shows the Greeley 35th Avenue Mine permit boundary. **Figure F-3** shows the anticipated location of the slurry wall placement.

4.6 Commodities

The primary commodities mined at the Greeley 35th Avenue Mine are construction aggregate, in the form of sand, cobbles, and gravel.

4.7 Incidental Products

There are not expected to be incidental products produced at the Greeley 35th Avenue Mine.

4.8 Explosives

No explosives will be used at the Greeley 35th Avenue Mine.

5. Exhibit E – Reclamation Plan

5.1 Final Grading, Revegetation, and Topsoiling

5.1.1 Final Grading

Reclamation slopes within the Greeley 35th Avenue Mine West Pit will be constructed after the completion of the slurry wall and after completion of mining activities in the pit. The reclamation slopes will be constructed at a minimum 3:1 (H:V).

5.1.2 Slurry Wall

Conventional slurry wall trenching techniques will be implemented for slurry wall construction along the Greeley 35th Avenue Mine West Pit slurry wall alignment. The slurry wall trench will be excavated to a width of 3.0 feet. Bentonite slurry will be used to stabilize the trench walls from collapsing. Select slurry wall backfill will be comprised of a mix of materials encountered during excavation of the trench mixed with bentonite trench slurry, powdered dry bentonite, and on-site or imported supplemental fines. The trench will extend from ground surface to a depth necessary to key the wall a minimum of five feet into unweathered bedrock underling the site. Exploratory boring results suggest the slurry wall trench depth (including key) should range approximately from 15 to 55 feet.

The slurry wall alignment will encompass the West Pit in its entirety. A slurry wall construction platform varying in width from 40 to 95 feet in width (depending on slurry wall depth and proximity to existing structures) will be constructed to facilitate the construction of the slurry wall. The platform will be constructed on the pit side of the slurry wall alignment. Construction of the platform will require areas of cuts and fills along the alignment to bring the platform to the universal elevation of 4680.0. The typical side slopes in both the cut and fill areas will be 2:1 (H:V). These slopes are considered temporary, necessary only for construction of the slurry wall. Upon completion of the slurry wall, the fill slopes will be graded back to a 3:1 (H:V) in areas and utilized as reclamation slopes within the reservoir.

The slurry wall alignment crosses the DCP 4-inch gas transmission lines at four locations. The exact location and depth of these crossings is unknown, and will be developed during slurry wall construction. The buried pipelines will be encased in concrete extending 5 feet either side of the slurry wall. Several structural crossings will be constructed along the alignment allowing for vehicles and equipment to safely cross the slurry wall trench. Typical slurry wall sections are provided in **Figure F-2**.

5.1.3 Final Revegetation

Revegetation will occur concurrently with or upon completion of the mining process. Care will be taken to regrade and provide reclaimed slopes such that revegetation regrowth may

occur to help comply with state and erosion standards. Revegetation activities will take place immediately upon completion of reclaimed slopes (season permitting) whenever practically sized areas become available and free from mining activity. Areas not planned for revegetation include Phases 1, 3, and 4 as they will become below-grade ponds. Based on SCS guidance for other local projects having similar surficial soils, the following revegetation procedures are anticipated:

- Grass seed will typically be planted in unfrozen soil between October 1 and April 30
- Grass seed will typically be planted with a grass drill, or where necessary, with a broadcast seeder
- The proposed seed mix and application rates in pounds of pure live seed per acre are described on the following pages
- Weed control practices will be implanted as required.

The above procedures may be modified as conditions dictate. Weeds will be mowed before they go to seed during the first growing season. Plant species anticipated to establish themselves naturally along the shorelines include cattails, willows, cottonwoods, and bulrushes. Proposed seed mixtures to be used on site where appropriate are listed below. Availability may dictate the need for substitution. The anticipated seed mix to be used for Greeley 35th Avenue Mine revegetation is shown in **Table 1**.

Table 1: Seed Mix for Greeley 35th Avenue Mine

Species	Preferred Varieties	Rate Lbs./Acre Planted (Drilled 1)	PLS Seeded/Acre
Green needlegrass Stipa viridula	Lodorm	2.00	362,000
Indian ricegrass Achnatherum hymenoides	Paloma	2.00	376,000
Slender wheatgrass Elymus trachycaulus	Primar, Revenue	2.00	320,000
Thickspike wheatgrass Elymus lanceolatus	Critana	2.00	372,000
Western wheatgrass Pascopyrum smithii	Arriba, Barton	5.00	630,000
Lewis flax Linum lewisii	Appar	1.00	285,000
Upright prairie coneflower Ratibida columnifera	None	0.25	225,000
Totals		14.25	2,570,000 (59 seeds/sq.ft.)

5.1.4 Final Topsoiling

Final topsoiling procedures will be the same as the original permit, M-1977-036.

5.2 Final Land Use

Final land use at the Greeley 35th Avenue Mine West Pit will be Developed Water Resources utilizing a below grade reservoir.

Final land use of other portions of the mine will remain consistent with the original reclamation permit, M-1977-036.

5.3 Reclamation Performance Standards

5.3.1 Reclaiming Substituted Land

There will be no Substituted Land to be reclaimed, as defined in Section 3.1.2.

5.3.2 Time Limit and Phased Reclamation

Reclamation of the West Pit is expected to be completed as described in Section 5.1.2. The reclamation plan timeline is within the five year timeframe required in Rule 3.1.3. The schedule indicates slurry wall and reservoir completion within 8 months. Slurry wall construction is anticipated to occur from July 2014 to October 2014, and a leak test will be performed on the facility from October 2014 to January 2015.

5.3.3 Public Use

It is not anticipated the public will use the Greeley 35th Avenue Mine property after reclamation. The facility will be used as a water augmentation reservoir.

5.3.4 Reclamation Measures – Material Handling

Reclamation grading and backfilling will occur as necessary to comply with all local and state erosion prevention measures. The slopes within the West Pit will be graded to a 3:1 (H:V) slope above and below the post-mine normal high water line (NHWL).

There has been no refuse, acid-forming, or toxic producing material mined at the Greeley 35th Avenue Mine, and none of this material is expected to be produced.

The Greeley 35th Avenue Mine is a surface mine with no adits or shafts that require closing.

Reclamation design does not include plans for agricultural or horticultural use.

Supplemental fines will be imported for use in the construction of the slurry wall as wall backfill.

All mined material to be disposed of onsite will be disposed in a manner to prevent contamination of the surface drainage system, as per Rule 3.1.5(10).

Pollutants are not expected to be released to groundwater during reclamation.

5.3.5 Water – General Requirements

Disturbances to surface water and groundwater will meet all applicable Colorado water laws and regulations. Necessary permits will be obtained for wells and disturbances. All Colorado and federal water quality standards will be met both on the statewide level, and on a site-specific standard basis. Any variation will be reclaimed to mitigate water contamination.

No siltation structures lay in drainways at the Greeley 35th Avenue Mine.

No earth dams will be constructed on the Greeley 35th Avenue Mine as a part of reclamation.

The land surface of the Greeley 35th Avenue Mine will be stabilized as necessary to control erosion.

5.3.6 Groundwater – Specific Requirements

Groundwater quality standards will be maintained during reclamation operations. Deviations from regulated water quality standards as a result of mining operations at Greeley 35th Avenue will be reclaimed in an expedient and appropriate manner.

Greeley 35th Avenue Mine has no areas classified by the Water Quality Control Commission (WQCC) to be monitored for groundwater quality. Mining and reclamation activities in areas not classified by the WQCC will be carried out in such a manner to protect groundwater resources outlined by the WQCC.

Groundwater disturbance and interaction is anticipated to be minimal. Measures will be taken to preserve existing groundwater resources as reclamation commences. Points of compliance and groundwater sampling may see monitoring plans on the Greeley 35th Avenue Mine property and hydrologically downstream as appropriate and required by the Board.

MODFlow models and analyses have been utilized to demonstrate the estimated effect of reclamation on existing groundwater resources. Models were created to estimate the effect of a slurry wall keyed approximately 5 feet into bedrock in the West Pit on the Greeley 35th Avenue property. MODFlow results are available in **Attachment C**.

5.3.7 Wildlife

Wildlife reclamation measures have not changed from the Greeley 35th Avenue Mine permit, M-1977-036.

5.3.8 Topsoiling

Overburden has been stripped from the mined areas to allow access to aggregate deposits and stockpiled onsite. Stockpile locations are located away from daily operations for minimal disturbance, as per the Rules. Placement of overburden will be done in such a manner to create an approximately level construction pad for the installation of a slurry wall.

5.3.9 Revegetation

Methods of revegetation have not changed from the original Greeley 35th Avenue reclamation permit, M-1977-036. Revegetation will not occur in areas to become a below grade reservoir.

5.3.10 Buildings and Structures

No historic structures are located on the Greeley 35th Avenue Mine property.

5.3.11 Signs and Markers

A statement regarding the permit amendment to the Greeley 35th Avenue permit, M-1977-036, has been posted at the entrance to the facility. A fence surrounds the facility to mark the mine and the Affected Area, according to Paragraph 3.1.12(2)(b).

5.3.12 Spill Reporting

MMM will notify DRMS of any toxic or hazardous spills which occur on Greeley 35th Avenue property. MMM will contain and remediate any spills which do occur, as appropriate, on an individual case basis.

5.4 Topsoil Segregation

Overburden which has been stripped from active mining areas has been stockpiled outside of active mining areas. Topsoil will be replaced as necessary after the construction of the slurry wall is complete. Topsoil will be used for revegetation purposes.

5.5 Reclamation Implementation Schedule

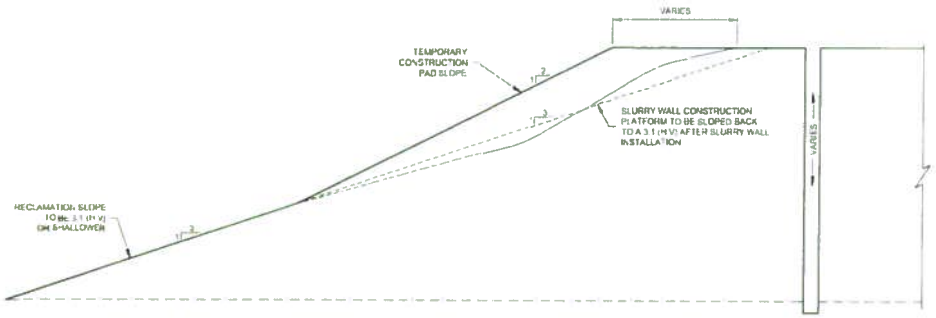
Reclamation is anticipated to start in June 2014, when construction on the slurry wall construction platform is expected to begin. Construction of the slurry wall is expected to commence immediately after completion of the slurry wall construction platform and is expected to be complete by October 2014.

The sequence of reclamation of the Greeley 35th Avenue Mine West Pit property will be as follows:

- Completion of mining (ongoing/depending on market and environmental conditions)
- Construction of the slurry wall construction platform
- Construction of the slurry wall
- Reclamation slope construction and grading, as necessary.
- Reclamation measures for areas other than the West Pit will remain unchanged.

6. Exhibit F – Reclamation Plan Map

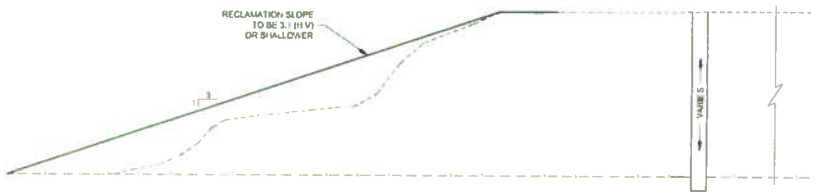
See **Figures F-1**, **F-2**, and **F-3** for the Reclamation Plan Figures.



TYPICAL RECLAMATION SECTION

IN AREAS WITH SLURRY WALL CONSTRUCTION PAD INFLUENCE

NOT TO SCALE



TYPICAL RECLAMATION SECTION

IN AREAS WITH MINIMAL TO NO SLURRY WALL CONSTRUCTION PAD INFLUENCE

NOT TO SCALE

NOT FOR CONSTRUCTION

Attention: If this scale bar does not measure 1" then drawing is not original scale.					DRAFT	Designed: J. DEUTO Checked: C. MASCHING Drawn: C. NIEMELA/S. MICKELL Approved By: C. MASCHING Approval Date: MAY 2014	GEI Consultants 4601 DTC Boulevard Denver, Colorado 80237 303-662-0100
	1	05/21/14	ISSUED FOR BID	CMM			
	NO.	DATE	ISSUE/REVISION	APP			

Martin Marietta Materials

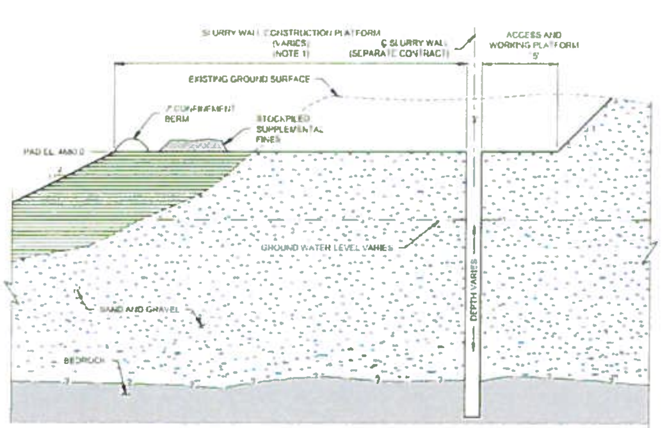
1800 N Taft Hill Road
Fort Collins, CO

GEI Project 1402970

M-1977-036 RECLAMATION PERMIT AMENDMENT APPLICATION: GREELEY 35TH AVENUE MINE, WELD COUNTY

TYPICAL RECLAMATION SECTIONS

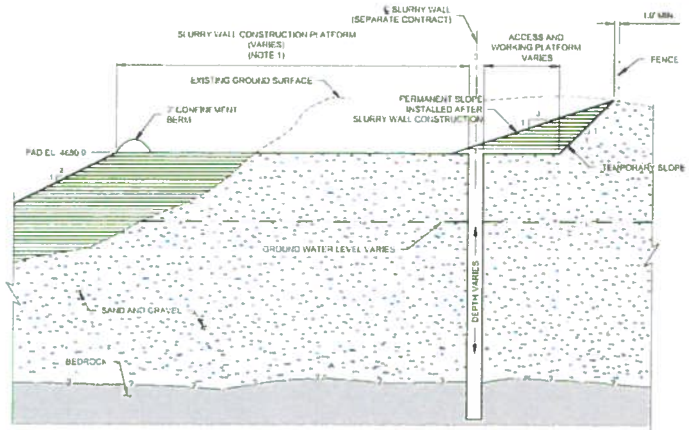
DWG. NO. F-1



TYPICAL SECTION

SLURRY WALL IN CUT AREAS

NOT TO SCALE

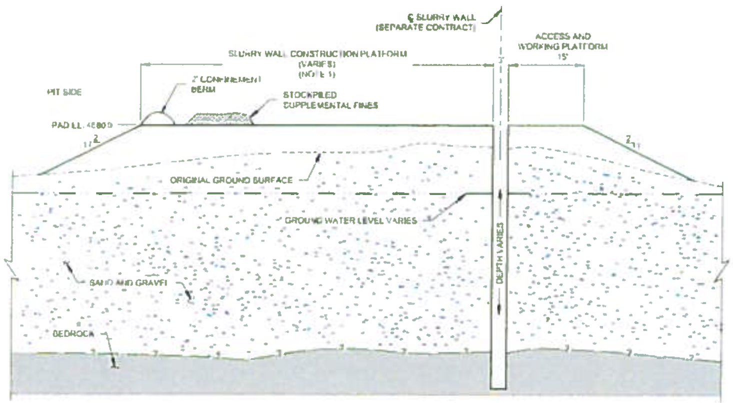


TYPICAL SECTION

SLURRY WALL NEAR FENCE
APPROX STA 27+00 TO STA 35+00

NOT TO SCALE

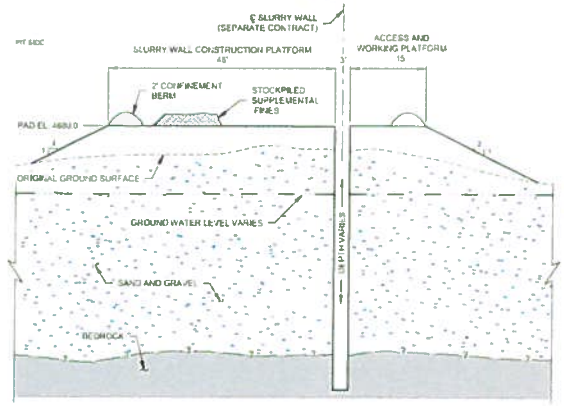
CONSTRUCTION PLATFORM WIDTHS	
STATION	WIDTH (FT)
0+00 TO 19+60	63
19+60 TO 20+10	TRANSITION
20+10 TO 25+30	63
25+30 TO 26+00	TRANSITION
26+00 TO 33+40	63
33+40 TO 33+60	TRANSITION
33+60 TO 38+00	78
38+00 TO 39+10	TRANSITION
39+10 TO 74+50	63
74+50 TO 75+00	TRANSITION
75+00 TO 77+00	56.5
77+00 TO 77+50	TRANSITION
77+50 TO 89+43	63



TYPICAL SECTION

SLURRY WALL IN FILL AREAS

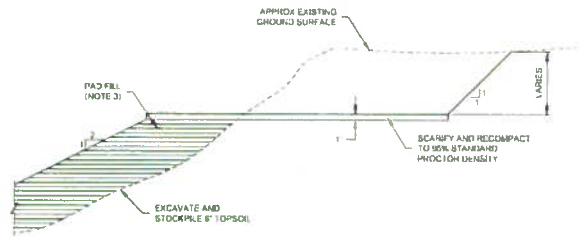
NOT TO SCALE



TYPICAL SECTION

SLURRY WALL IN LIMITED ACCESS AREAS
STA 20+10 TO STA 25+30
STA 75+00 TO STA 77+00

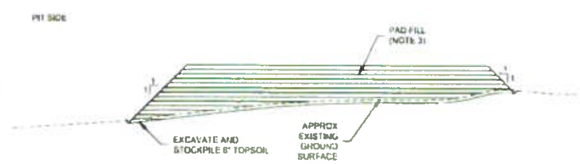
NOT TO SCALE



TYPICAL DETAIL

CUT AREAS

NOT TO SCALE



TYPICAL DETAIL

FILL AREAS

NOT TO SCALE

NOTES

1. PLATFORM WILL BE APPROXIMATELY 1.5 TIMES WALL DEPTH (RANGING BETWEEN 45' AND 75')
2. 9" LIFTS KEYED INTO EXISTING SLOPE COMPACTION TO 95% STANDARD PROCTOR
3. CONFINEMENT BERM REQUIRED WHEN TRANSITIONS FROM CUT TO FILL AND IN AREAS WHERE CUTS ARE LESS THAN 2'

NOT FOR CONSTRUCTION

Attention: If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
1	05/21/14	ISSUED FOR BID	CMM

DRAFT

Designed: J. DEUTO
Checked: C. MASCHING
Drawn: C. NIEMELA/S. MICKELL
Approved By: C. MASCHING
Approval Date: MAY 2014

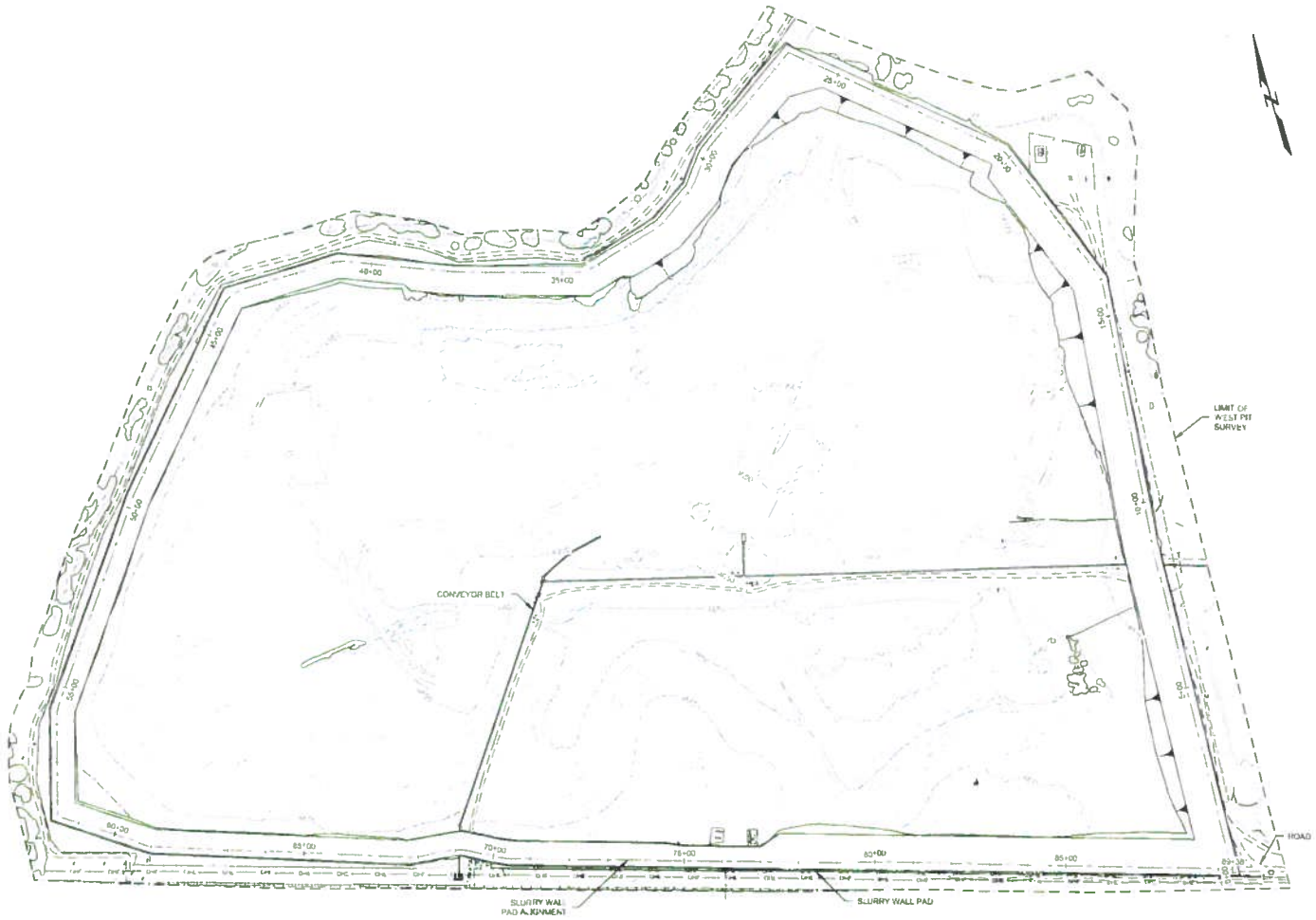
GEI Consultants
4601 DTC Boulevard
Denver, Colorado 80237
303-662-0100

Martin Marietta Materials
1800 N Taft Hill Road
Fort Collins, CO
GEI Project 1402970

M-1977-036 RECLAMATION PERMIT AMENDMENT APPLICATION: GREELEY 35TH AVENUE MINE, WELD COUNTY

TYPICAL SECTIONS AND DETAILS

DWG. NO. F-2



PLAN

SITE MODIFICATIONS

NOT FOR CONSTRUCTION

NOTE

SLOPES WITHIN THE WEST PIT TO BE GRADED TO A 3 : 1 (H:V) OR SHALLOWER

SCALE, FEET

NO.	DATE	ISSUE/REVISION	
1	05/21/14	ISSUED FOR BID	CMM

DRAFT

Designed: J. DEUTO
Checked: C. MASCHING
Drawn: C. NIEMELA/S. MICKELL
Approved By: C. MASCHING
Approval Date: MAY 2014

GEI Consultants
4601 DTC Boulevard
Denver, Colorado 80237
303-662-0100

Martin Marietta Materials
1800 N Taft Hill Road
Fort Collins, CO

GEI Project 1402970

M-1977-036 RECLAMATION PERMIT AMENDMENT APPLICATION: GREELEY 35TH AVENUE MINE, WELD COUNTY

WEST PIT RECLAMATION PLAN

DWG. NO. F-3

7. Exhibit G – Water Information

The Greeley 35th Avenue Mine operation is not expected to negatively affect surface water or groundwater. The mining is relatively shallow; typically 15-50 feet below the ground surface.

Impact to groundwater will be minimal within the existing mine. Any water depletions to the Cache la Poudre River associated with mining are currently mitigated to prevent injury to vested senior water rights by having an approved Temporary Substitute Water Supply Plan in place.

Estimated water requirements for the project vary depending on several factors including season, precipitation, and construction. Projected water usage estimates range from 25,000 – 3.4 million gallons per month. Larger values of makeup water usage occur during months of anticipated slurry wall construction. Monthly makeup water estimates are shown in **Table 2**.

Table 2: Greeley 35th Avenue Makeup Water

Month	Exposed Water Surface Area (acres)	Estimated Water for Dust Control and Construction (gal)	Actual Water for Dust Control and Construction (gal)
May 2013	26.3	1,000,000	678,300
June 2013	26.3	1,000,000	1,705,000
July 2013	26.3	700,000	1,393,400
August 2013	26.3	500,000	1,172,500
September 2013	26.3	500,000	566,900
October 2013	26.3	500,000	425,100
November 2013	26.3	300,000	458,900
December 2013	26.3	125,000	150,900
January 2014	26.3	25,000	-
February 2014	26.3	25,000	-
March 2014	26.3	150,000	-
April 2014	26.3	400,000	-
May 2014	26.3	700,000	-
June 2014	26.3	3,400,000	-
July 2014	26.3	3,300,000	-
August 2014	26.3	1,800,000	-
September 2014	26.3	2,100,000	-
October 2014	26.3	500,000	-
November 2014	26.3	500,000	-
December 2014	26.3	175,000	-
January 2015	26.3	30,000	-
February 2015	26.3	25,000	-
March 2015	26.3	150,000	-

Month	Exposed Water Surface Area (acres)	Estimated Water for Dust Control and Construction (gal)	Actual Water for Dust Control and Construction (gal)
April 2015	26.3	400,000	-
May 2015	26.3	700,000	-

Groundwater infiltrating into mine areas is the source for makeup water. Water used for dust control is taken from water stored in onsite ponds.

MMM has applied for and acquired a permit through the National Pollutant Discharge Elimination System (NPDES) Water Quality Control Division (permit number COG5000066).

8. Exhibit H – Wildlife Information

There will be no change to Exhibit H – Wildlife Information from the original Greeley 35th Avenue Mine reclamation permit M-1977-036.

9. Exhibit I – Soils Information

There will be no change to Exhibit I – Soils Information from the original Greeley 35th Avenue Mine reclamation permit M-1977-036.

10. Exhibit J – Vegetation Information

There will be no change to Exhibit J – Vegetation Information from the original Greeley 35th Avenue Mine reclamation permit M-1977-036.

11. Exhibit K – Climate

There will be no change to Exhibit K – Climate from the original Greeley 35th Avenue Mine reclamation permit M-1977-036.

12. Exhibit L – Reclamation Costs

For the Greeley 35th Avenue Mine, the estimated reclamation costs are summarized in **Table 3**.

Table 3: Estimated Greeley 35th Avenue Mine Reclamation Costs

Greeley 35th Avenue Mine Reclamation Costs Outside of West Cell					
Item		Unit	Quantity	Unit Price	Extension
Area Outside of West Cell Reclamation Costs - NOT DEVELOPED BY GEI					
1	Grass Seed Mix	AC	153	$ 40	$ 6,120
2	Drilling Grass Seed	AC	153	$ 18	$ 2,754
3	Fertilizer-40#A N&P	AC	153	$ 29.25	$ 4,475
4	Fertilizer Application	AC	153	$ 12.50	$ 1,913
5	Top Soiling with Dozer/Loader (assumes 9" of soil over 153 acres)	CY	185,130	$ 0.50	$ 92,565
6	Disking or Scarifying	AC	153	$ 28.50	$ 4,361
7	Weed Control	AC	153	$ 30	$ 4,590
8	Reclamation Slopes for open water ponds (assumes 20' avg pond depth)	CY	550,000	$ 0.50	$ 275,000
9	Conveyor Removal	LF	4,300	$ 2	$ 8,600
10	Mobilization/Demobilization	LS	1	$ 40,000.00	$ 40,000
Total Reclamation Cost for Greeley 35th Avenue, excluding West Cell					**$ 440,377**
Total Reclamation Cost per acre (301 acres)					**$ 1,463.05**
West Cell Reclamation Costs					
Slurry Wall Construction Pad					
1	Mobilization/Demobilization	LS	1	$ 13,600	$ 13,600
2	Strip and Stockpile Topsoil	CY	5,500	$ 1.47	$ 8,085
3	Slurry Wall Construcion Pad	CY	70,000	$ 5	$ 380,100
4	Stockpile Supplemental Fines	CY	31,000	$ 3	$ 106,950
Slurry Wall					
5	Mobilization/Demobilization	LS	1	$ 151,000	$ 151,000
6	Slurry Wall	SF	372,000	$ 5	$ 1,860,000
7	Utility Crossings	EA	4	$ 7,200	$ 28,800
8	Structural Crossings	EA	4	$ 10,000	$ 40,000
Miscellaneous					
9	Revegetation permitted area (above NHWL)	AC	16	$ 200	$ 3,200
Total Reclamation Cost for Greeley 35th Avenue, West Cell					**$ 2,591,735**
Total Reclamation Cost per acre (81 acres)					**$ 31,996.73**
Total Reclamation Cost for Greeley 35th Avenue Mine					**$ 3,032,112**
Total Reclamation Cost per acre (382 acres)					**$ 7,937.47**

The reclamation costs have been broken down by area. The permitted area is presented as the Area Outside of West Cell. The West Pit, expanded in the 2009 M-1977-036 permit amendment, is listed separately under West Cell Construction as a result of the current amendment.

13. Exhibit M – Other Permits and Licenses

Permits and licenses required to reclaim the Greeley 35th Avenue Mine are:

- Well permit issued by SEO – The SWSP has expired; information has been submitted to CO SEO to renew the plan
- Discharge permit – NPDES Permit Number COG5000066
- Stormwater management plan

14. Exhibit N – Source of Legal Right to Enter

MMM owns the Greeley 35th Avenue Mine. The source of legal right to enter is presented in the property deed.

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

MMM is the surface and subsurface owner. Please see **Figure C-1** for property boundaries and Owners of Record for surrounding land.

16. Exhibit P – Municipalities Within Two Miles

City of Greeley, Colorado
1000 10th St.
Greeley, CO 80631
(970) 350-9740

17. Exhibit Q – Proof of Mailing Notices to Board of County Commissioners and Soil Conservation District

18. Exhibit R – Proof of Filing with County Clerk and Recorder

EXHIBIT R WAS MAILED ON 7/3/14. WE WILL SEND YOU A COPY OF THE CERTIFIED MAIL RECEIPT AS SOON AS IT ARRIVES

THANK YOU,
DAN GUTH

19. Exhibit S – Permanent Man-made Structures

Permanent man-made structures within 200 feet of the permit boundary are:

Owner: 83 Joint Ventures, LLC

- Below grade pond and associated embankments

Owner: Candelario Nevarez, 3501 West F Street, 80631

- Residential housing structures

Owner: City of Greeley

- 2 below grade ponds and associated embankments
- Water monitoring station
- 2 Weirs
- Poudre River trail and associated appurtenances

Owner: DCP Midstream

- Natural gas pipelines

Owner: Earl E. Wellnitz, 4700 O Street, 80631

- Residential housing structures

Owner: Great Western Railway of Colorado

- Railroad bridges
- Railroad tracks
- Miscellaneous appurtenances

Owner: Jeff Everhart, 4704 O Street, 80631

- Residential housing structures

Owner: LG Everist, Inc.

- 2 below grade pond and associated embankments

Owner: Martin Marietta Materials, Inc.

- Scale house

- Mineral processing facility
- Asphalt lab
- Asphalt plant
- Asphalt tank
- Concrete plant
- Pump house
- Miscellaneous buildings associated with mine QA/QC
- Miscellaneous maintenance facilities
- Miscellaneous outbuildings
- Mine office

Owner: Melvin D. Everhart, 4514 O Street, 80631

- Residential housing structures

Owner: Michael P. Kelly, 4620 O Street, 80631

- Residential housing structures

Owner: River View Homeowner's Association

- Tennis Court
- Below grade pond and associated embankments

Owner: Weld County

- N. 35th Avenue
- W. O St.
- Poudre River Trail
- Fence

Owner: William A. Rodman, 3613 West F Street, 80631

- Residential housing structures

Owner: Xcel Energy

- Electrical transmission lines

Attachments

Attachment A: Groundwater Monitoring and Mitigation Plan

1. Groundwater Monitoring and Mitigation Plan

1.1 Purpose

This Groundwater Monitoring and Mitigation plan has been developed in support of Martin Marietta Materials (MMM) Permit Amendment Application to the Colorado Division of Reclamation Mining and Safety (DRMS) M-1977-036 112 Permit. The 112 Permit Amendments is being submitted to revise the reclamation plan to Developed Water Storage for the Greeley 35th Avenue Mine.

This Plan addressed the actions developed by MMM that would be implemented should adverse groundwater conditions develop during site reclamation as a below grade reservoir lined with a slurry wall.

1.2 Background

The Greeley 35th Avenue Mine is owned and operated by MMM. The mine property is located just outside of Greeley, Colorado, in Weld County. The Affected Land is located in Township 6 North, Range 66 West of the 6th Principle Meridian, in Sections 34 and 35.

The Greeley 35th Avenue Mine is currently active and operational under permit M-1977-036. The permit amendment addresses developing the West Cell as Developed Water Storage. Proposed date of completion for the Developed Water Storage is on or about December 31, 2014.

During mining of the Greeley 35th Avenue Mine, MMM is mining in the dry by keeping the pit dewatered utilizing a system of ditches and pumps. The dewatering system discharged groundwater captured within the mine limits to the Cache la Poudre (Poudre) River at discharge points established in the CDPS Discharge Permit.

1.3 Impacts to groundwater

Adverse impacts to the local groundwater aquifer have not been observed or reported on the Greeley 35th Avenue Mine. Adverse impacts are not anticipated to develop as a result of current or future MMM reclamation in the West Cell of the Greeley 35th Avenue Mine. GEI has modeled current and post reclamation groundwater conditions at the 35th Avenue site utilizing Visual MODFLOW (Version 2011.1, U.S. Geological Survey (USGS) 2014), and the results indicate a maximum drawdown of 2.6 feet of groundwater impact adjacent to the south side of the West Cell and a maximum water rise of 1 foot of groundwater impact adjacent to the east side of the West Cell, with impacts lessening as the distance away from the cell increases. The MODFLOW predicted drawdown for the north and west side of the West Cell is limited to less than one foot,

due to the proximity of the Cache la Poudre River. The results are provided in MODFLOW Figures 1 through 5.

1.4 Well Inventory

A well inventory for areas surrounding the Greeley 35th Avenue Property was conducted to identify registered wells within 600 feet as required by the Colorado Office of the State Engineer (SEO). GEI identified six domestic wells and five irrigation wells within 600 feet of the Greeley 35th Avenue Property. The wells are identified below:

Domestic Wells

Permit No. 75772
Owner – Robert Drewer
Rt 2 Box 180A
Greeley, CO 80631
Location NE ¼ Sec., NE ¼ Sec., Section 34 T6N R66W

Permit No. 30523
Owner – Cheryl and Gino Tori
4704 West O Street
Greeley, CO 80631
Location – NW ¼ Sec., NW ¼ Sec., Section 35 T6N R66W

Permit No. 118815
Owner – H. Dieterle
-
Greeley, CO 80631
Location – NW ¼ Sec., NW ¼ Sec., Section 35 T6N R66W

Permit No. 78370
Owner – Martin Marietta Materials
10170 Church Ranch Way #200
Westminster, CO 80021
Location – NE ¼ Sec., SE ¼ Sec., Section 35 T6N R66W

Permit No. 78858
Owner – Larson
-
Greeley, CO 80634
Location – NE ¼ Sec., SE ¼ Sec., Section 35 T66N R66W

Permit No. 78858
Owner – Candelario Nevarez
-
Greeley, CO 80634
Location – NE ¼ Sec., SE ¼ Sec., Section 35 T66N R66W

Irrigation Wells

Permit No. 5846
Owner – Martin Marietta Materials
10170 Church Ranch Way #200
Westminster, CO 80021
Location – SW ¼ Sec., NW ¼ Sec., Section 35 T6N R66W

Permit No. 472
Owner – Harry Duvall
-
Greeley, CO 80634
Location – NW ¼ Sec., NW ¼ Sec., Section 35 T6N R66W

Permit No. 3597, 55880, and 93463
Owner – William Rodman
3613 F Street
Greeley, CO 80634
Location – NE ¼ Sec., SE ¼ Sec., Section 35 T6N R66W

The SEO requires a 600-foot well spacing agreement with well owners who have wells within the 600-foot buffer zone. GEI will submit the well agreement on behalf of MMM to the owners of the above mentioned well upon notification from the DRMS that the M-1977-036 112 permit amendment application is complete.

1.5 Monitoring and Mitigation

Martin Marietta Materials has two monitoring wells on the West and South side of the West Cell of the Greeley 35th Avenue Property, in addition to seven wells in the vicinity of the West Pit that were installed in support of the Iverson Mine. Continued monitoring of these wells for the purpose of this Groundwater Monitoring and Mitigation Plan is not required by the DRMS. In the event adverse groundwater conditions develop, the wells listed below would be monitored on a weekly basis and/or a schedule dictated by the DRMS to observe groundwater conditions around the site. Additional monitoring wells may be added if necessary to develop a complete understanding of the groundwater conditions. GEI has identified additional wells not owned by MMM in the vicinity of the West Pit that could be utilized as additional points as necessary. Owner approval would be required to monitor with these wells.

Permit No. – 279721
Owner - Martin Marietta Materials Inc.
1800 North Taft Hill Road
Fort Collins, CO 80521
Location – NE ¼ Sec., NE ¼ Sec., Section 34 T6N R66W

Permit No. – 279720
Owner - Martin Marietta Materials Inc.
Location – NE ¼ Sec., SE ¼ Sec., Section 34 T6N R66W

Permit No. – 279722
Owner - Martin Marietta Materials Inc.
Location – NW ¼ Sec., NE ¼ Sec., Section 34 T6N R66W

Permit No. – 279719
Owner - Martin Marietta Materials Inc.
Location – SE ¼ Sec., NE ¼ Sec., Section 34 T6N R66W

Permit No. – 279718
Owner - Martin Marietta Materials Inc.
Location – SE ¼ Sec., SE ¼ Sec., Section 34 T6N R66W

Permit No. – 279717
Owner - Martin Marietta Materials Inc.
Location – SE ¼ Sec., SE ¼ Sec., Section 34 T6N R66W

Permit No. – 279716
Owner - Martin Marietta Materials Inc.
Location – SE ¼ Sec., NW ¼ Sec., Section 34 T6N R66W

Permit No. – 279715
Owner - Martin Marietta Materials Inc.
Location – SE ¼ Sec., NW ¼ Sec., Section 34 T6N R66W

Permit No. – 279714
Owner - Martin Marietta Materials Inc.
Location – SW ¼ Sec., NE ¼ Sec., Section 34 T6N R66W

Should MMM receive notification of adverse groundwater conditions or a complaint from the well owner, MMM will notify the DRMS and propose mitigation measures. Mitigation measures may include the following:

- Monitor the wells discussed above on a weekly basis and report the results to the DRMS.

- Investigation of the notification/complaint to establish parameters and to determine if MMM mining operations are the sole cause or contributing to the adverse groundwater conditions. This measure may include the installation of additional monitoring wells at strategic locations to assist in data gathering.
- If MMM mining operations are determined to not be the sole cause, MMM will consult with the DRMS on further actions, but will not provide any further mitigation measures.
- If MMM mining operations are determined to be the sole cause of the adverse groundwater conditions, MMM will consult with the DRMS on appropriate mitigation measures including (but not limited to) providing temporary or permanent alternative water sources to impacted well owners, repairing or deepening affected wells, installing physical measures such as perimeter drains, well points, low permeability barriers, etc. to assist in mitigation of the adverse groundwater conditions.
- Other mitigation measures may be developed in consultation with or at the request of the DRMS.

Attachment B: NRCS Web Soil Survey Results

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Weld County, Colorado, Southern Part

June 3, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 12, Jan 3, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 22, 2011—Oct 19, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Weld County, Colorado, Southern Part (CO618)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Aquolls and Aquents, gravelly substratum	139.5	37.4%
85	Water	96.0	25.7%
86	Borrow Pits	137.4	36.8%
Totals for Area of Interest		372.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Weld County, Colorado, Southern Part

3—Aquolls and Aquents, gravelly substratum

Map Unit Setting

Elevation: 4,000 to 7,200 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 80 to 155 days

Map Unit Composition

Aquolls and similar soils: 55 percent
Aquents, gravelly substratum, and similar soils: 30 percent
Minor components: 15 percent

Description of Aquolls

Setting

Landform: Swales, streams, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent alluvium

Typical profile

H1 - 0 to 48 inches: moderately alkaline, loam
H2 - 48 to 60 inches: moderately alkaline, gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 6 to 48 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: Salt Meadow (R067BY035CO)

Description of Aquents, Gravelly Substratum

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent alluvium

Typical profile

H1 - 0 to 48 inches: moderately alkaline, variable
H2 - 48 to 60 inches: moderately alkaline, very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 19.98 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: Salt Meadow (R067BY035CO)

Minor Components

Bankard

Percent of map unit: 10 percent

Ustic torrifluvents

Percent of map unit: 5 percent

85—Water

Map Unit Composition

Water: 95 percent
Minor components: 5 percent

Minor Components

Aquolls

Percent of map unit: 5 percent
Landform: Marshes

86—Borrow Pits

Map Unit Composition
Borrow pits: 100 percent

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

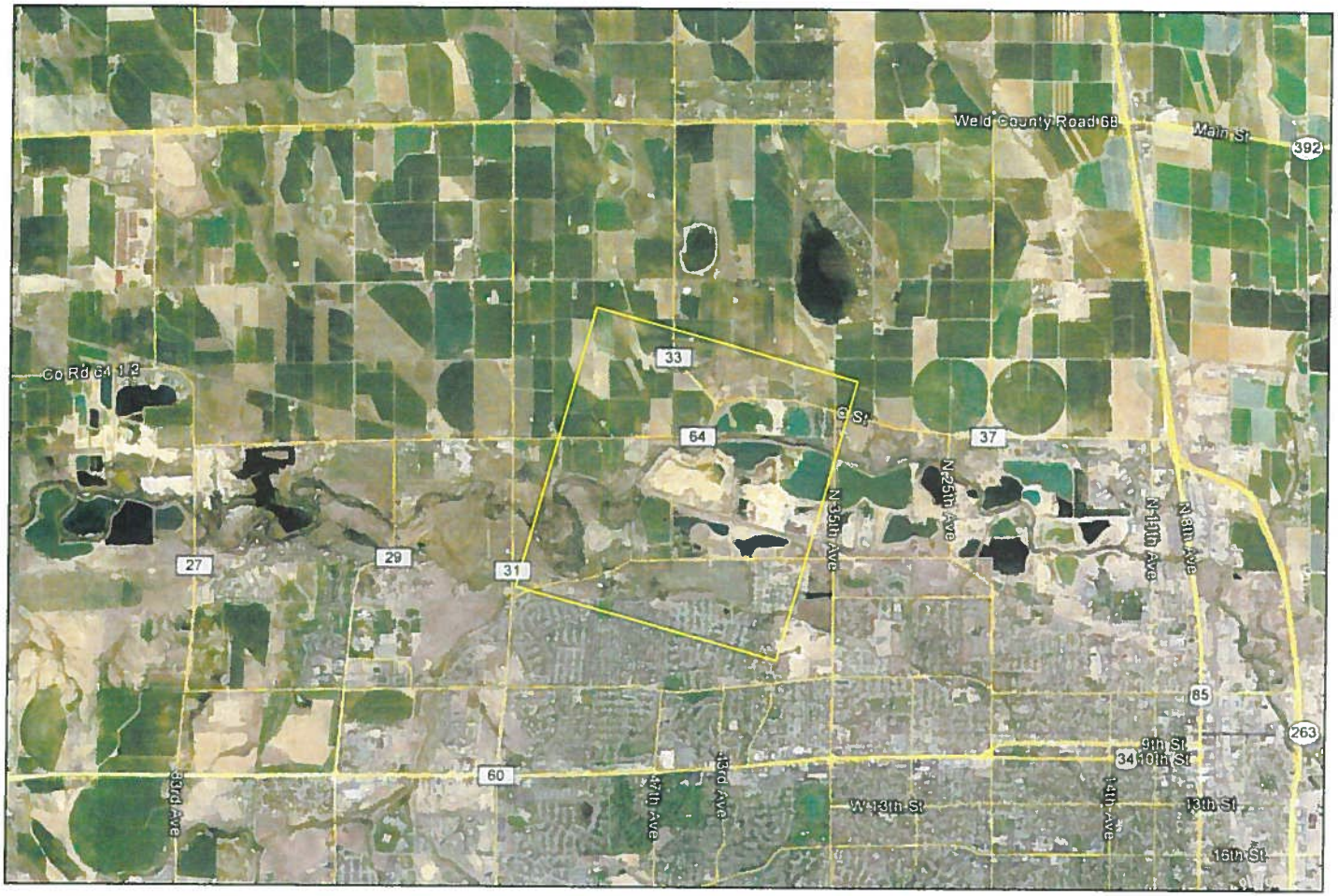
United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment C: MODFlow Results



N

LEGEND

LIMIT OF GROUNDWATER MODEL

IMAGE SOURCE: Google Earth

GROUNDWATER MODEL
35TH AVENUE SLURRY WALL
GREELEY, COLORADO

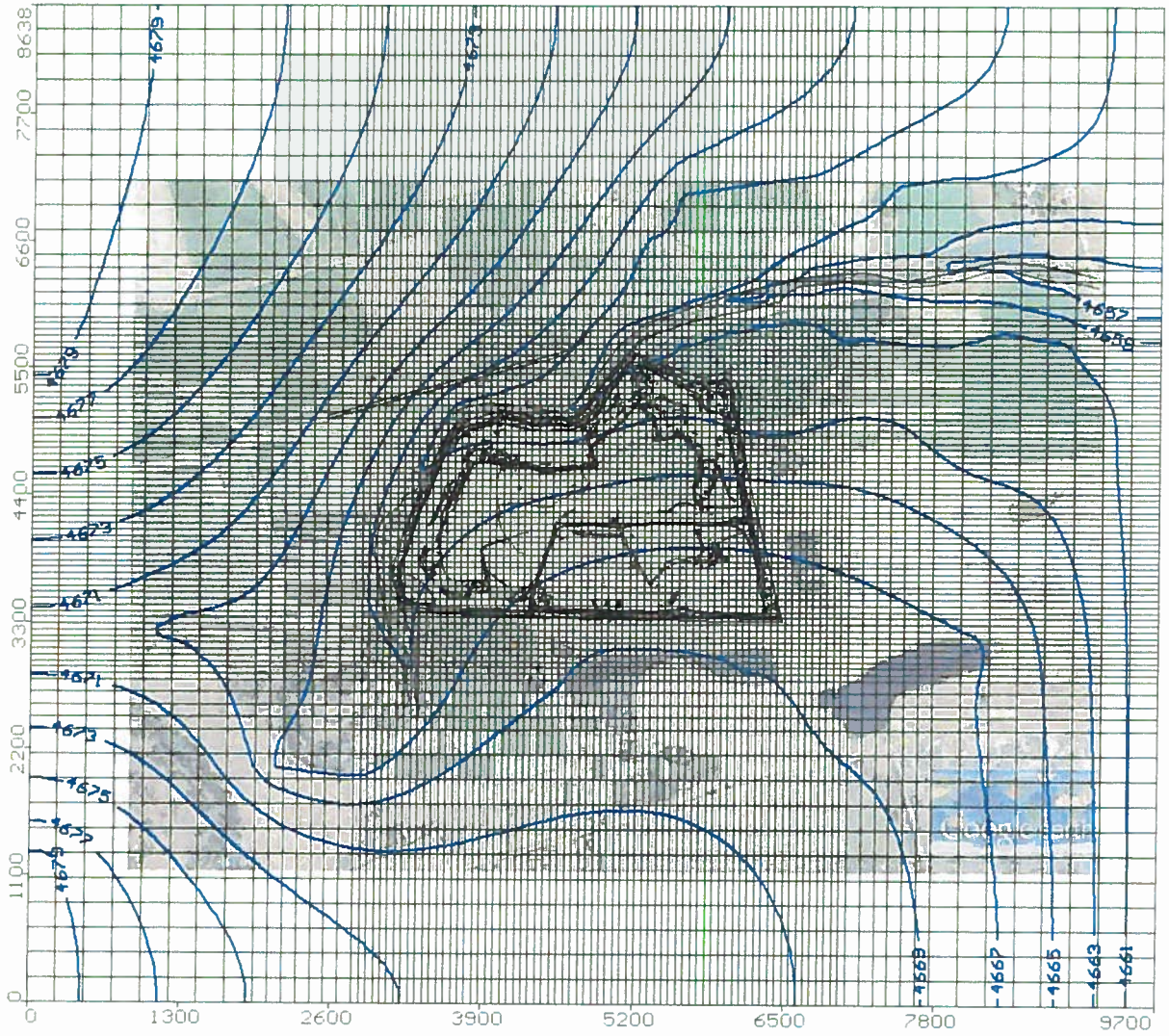
Martin Marietta Materials

GEI Consultants

MODEL LOCATION

Project 1405060-1001 | May 2014 | Figure 1

H:\TECH\project\Regional Modflow model\Report\Figures.pptx



N

LEGEND

MODEL GRID LINES

—4800— MODEL – COMPUTED GROUNDWATER CONTOUR

ELEVATIONS BELOW IN FT. NAVD:

TOP MODEL ELEV. = 4690

BOTTOM MODEL ELEV. = 4650

UPGRADIENT (WEST) HEAD BOUNDARY = 4680

DOWNGRADIENT (EAST) HEAD BOUNDARY = 4660

RIVER BOUNDARY =
4670 WEST (UPSTREAM) TO
4655 EAST (DOWNSTREAM)

SOIL HYD. COND. = 10^{-2} cm/s

RAINFALL RECHARGE = 3.5 in./yr.

RESERVOIRS MODELED AS HIGH – CONDUCTIVITY CELLS WITH 71 in./yr EVAPORATION

GROUNDWATER MODEL
35TH AVENUE SLURRY WALL
GREELEY, COLORADO

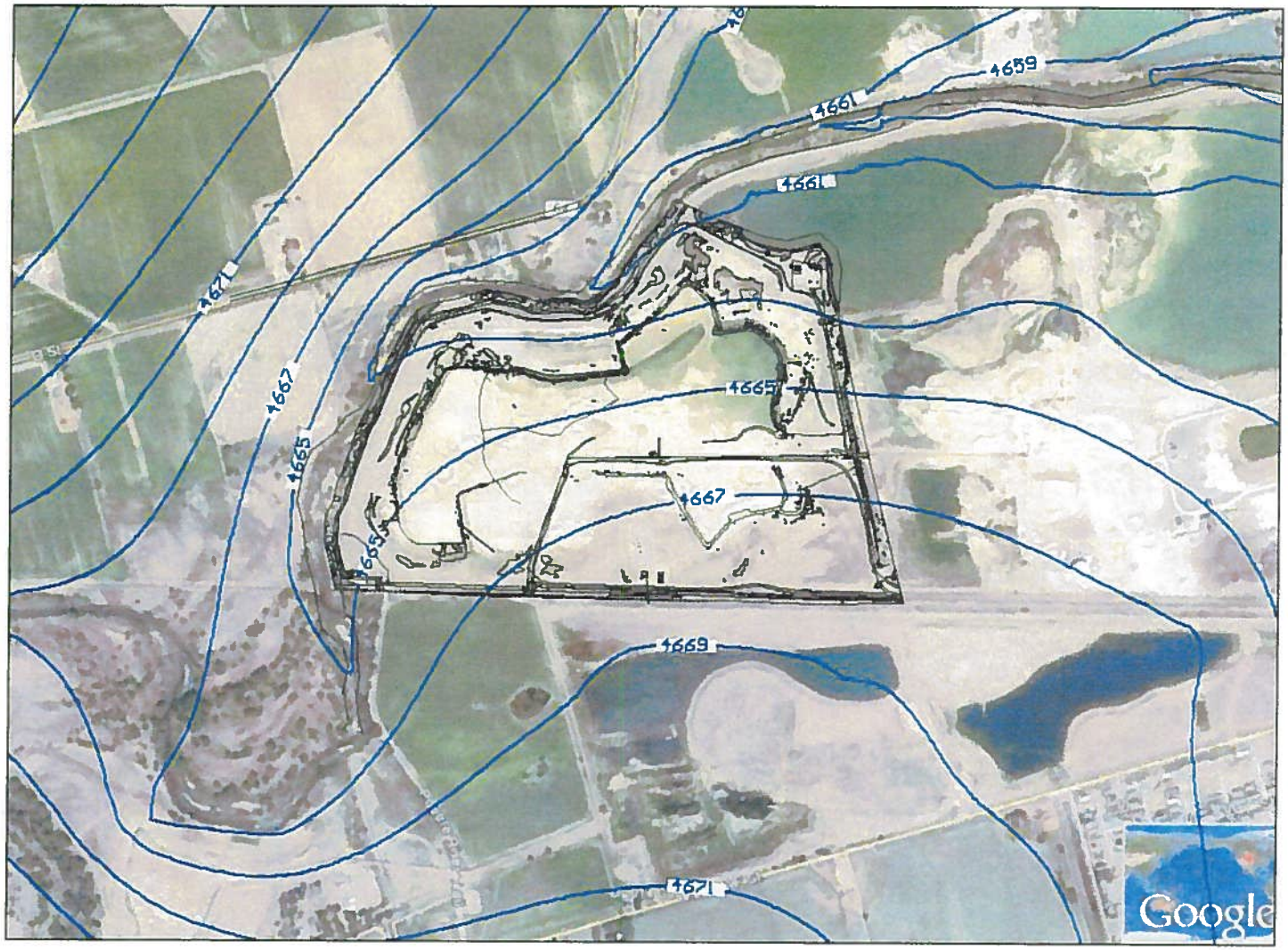
Martin Marietta Materials

GEI Consultants

MODEL DESCRIPTION

Project 1405060-1001 | May 2014 | Figure 2

H:\TECH\project\Regional Modflow model\Report\Figures pptx



N

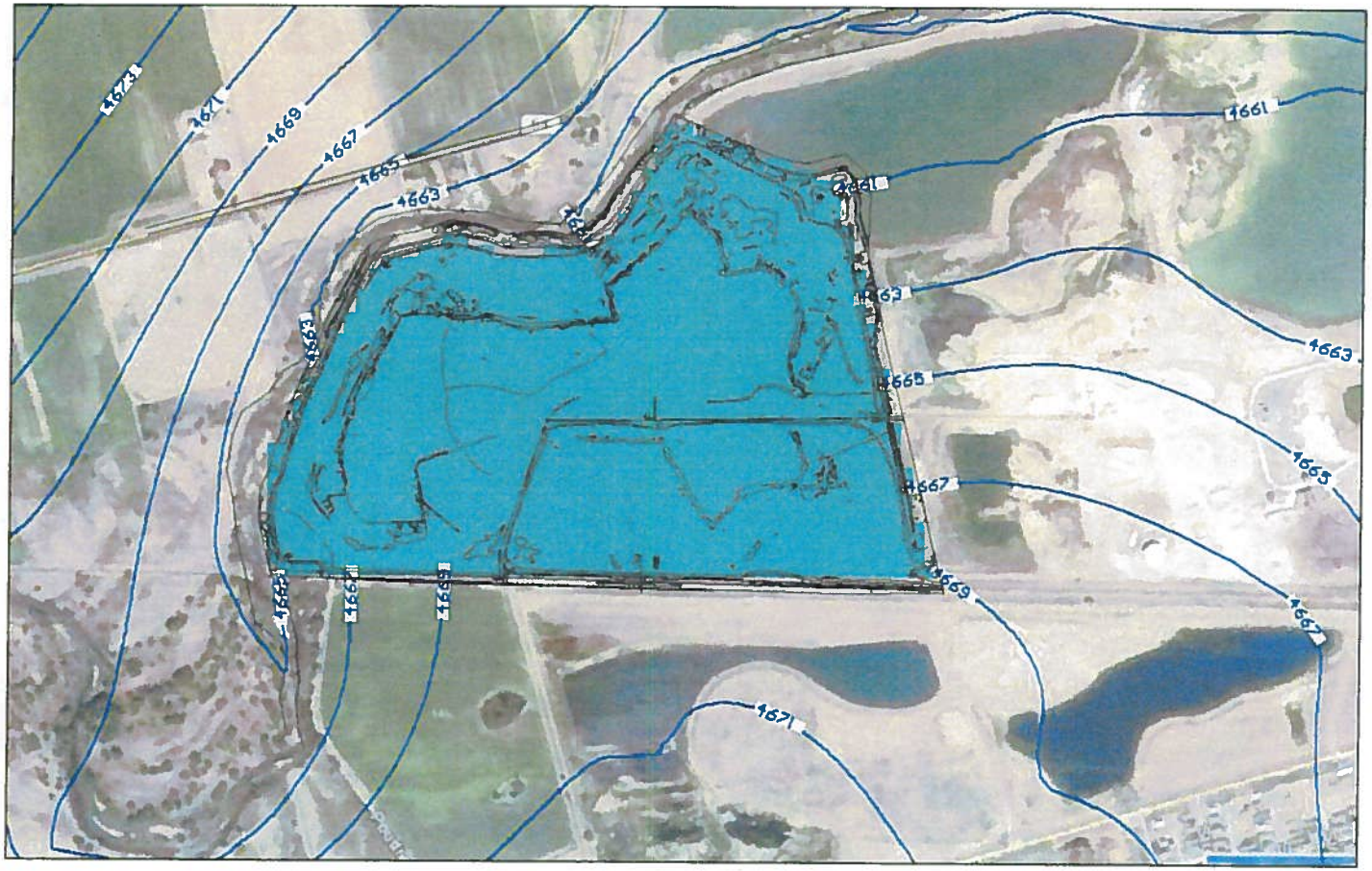
LEGEND

GROUNDWATER ELEVATION CONTOUR (FT. NAVD)

4800

GROUNDWATER MODEL 35TH AVENUE SLURRY WALL GREELEY, COLORADO	GEI Consultants	**POTENTIOMETRIC SURFACE PRESENT CONDITIONS**
Martin Marietta Materials	Project 1405060-1001	May 2014 Figure 3

H:\TECH\project\Regional Modflow model\Report\Figures.pptx



N

LEGEND

GROUNDWATER ELEVATION CONTOUR (FT. NAVD)

4800

AREA CONTAINED BY SLURRY WALL (NO-FLOW BOUNDARY)

GROUNDWATER MODEL
35TH AVENUE SLURRY WALL
GREELEY, COLORADO

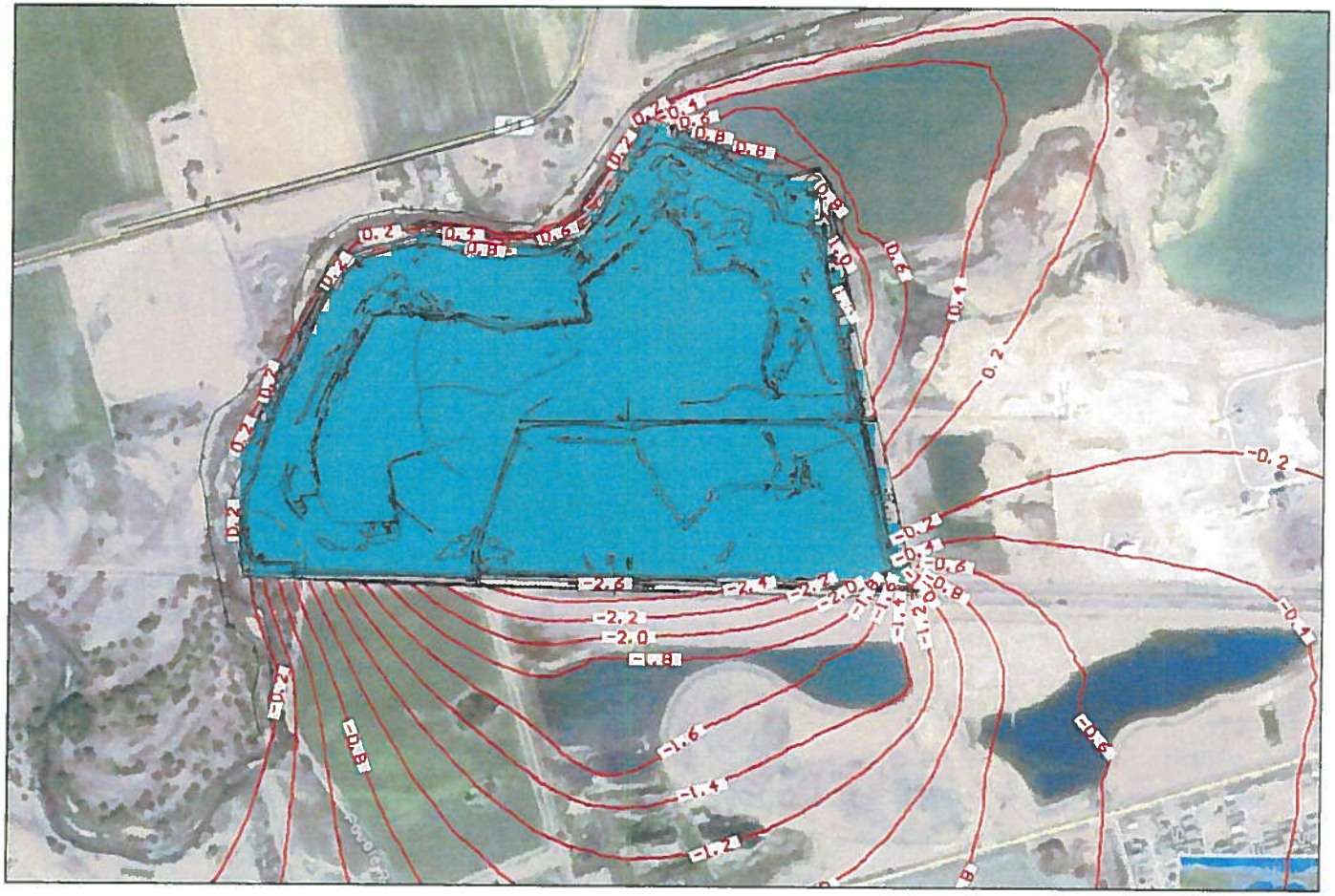
Martin Marietta Materials

GEI Consultants

POTENTIOMETRIC SURFACE PREDICTED WITH SLURRY WALL

Project 1405060-1001 | May 2014 | Figure 4

H:\TECH\project\Regional Modflow model\Report\Figures.pptx



N

LEGEND

COMPUTED DRAWDOWN CONTOUR (FT.)(a)

0.4

(POS. = WATER LEVELS DECREASE, NEG. = WATER LEVELS INCREASE)

SLURRY WALL EXTENT (NO-FLOW BOUNDARY)

(a) DRAWDOWN VALUE = PREDICTED (POST-LINER) ELEVATION (FT.) MINUS PRESENT-CONDITIONS WATER TABLE ELEVATION (FT.). POSITIVE VALUES INDICATE PREDICTED RISE IN WATER TABLE (MOUNDING).

GROUNDWATER MODEL
35TH AVENUE SLURRY WALL
GREELEY, COLORADO

Martin Marietta Materials

GEI Consultants

WATER TABLE DRAWDOWN PREDICTED WITH SLURRY WALL

Project 1405060-1001 | May 2014 | Figure 5

H:\TECH\project\Regional Modflow model\Report\Figures.pptx

NOTICE

This site is the location of a proposed mining operation. Martin Marietta Materials, Inc., whose address and phone number is 1800 N. Taft Hill Rd., Fort Collins, CO 80521, (970) 227-4041, has applied for a Reclamation Permit Amendment with the Colorado Mined Land Reclamation Board. Anyone wishing to comment on the application may view the application at the Weld County Clerk and Recorder's Office, 1402 N. 17th Avenue, Greeley, CO 80631, and should send comments prior to the end of the public comment period to the Division of Reclamation, Mining, and Safety, 1313 Sherman St., Room 215, Denver, CO 80203.

Certification:

I, Jeremy Deuto, hereby certify that I posted a sign containing the above notice for the proposed permit area known as the Three Bells Mine on

(Date Posted) 7-3-14,

SIGNATURE

7-3-14
DATE

Division of Reclamation, Mining, and Safety

Fee Receipt for M1977036

Martin Marietta Materials, Inc.

000000000

Receipt #: 17741
Date: 07/03/2014
Permit: M1977036

Payment Method	Revenue Code	Fee Description/Notes	Amount
709658 msr	4300-MAMD	Minerals Amendment Fees M1977-036 paid by GEI Consultants	$2,229.00
		Receipt Total:	**$2,229.00**