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March 4, 2013

Mr. Berhan Keffelew
Colorado Division of Reclamation, Mining and Safety
1313 Sherman, Suite 215
Denver, CO 80203

Subject: Amendment 3, M-77-211 – Adequacy Review Response
Continental Materials Corporation, Transit Mix Aggregates, Castle Concrete
Pikeview Quarry

Dear Mr. Keffelew,

Transit Mix Aggregates is forwarding five copies of the revised Permit Amendment 3 permit application for Pikeview Quarry in response to October 15, 2012 Adequacy Review Comment letter.

This submittal expands upon the original Amendment 3 mining and reclamation plan by providing the clarification requested in the Adequacy Comment letter, and expanding the activities at the mine to include commercial mining operations, once the initial investigation of the fault has established its location, and safe operation protocols have been developed and implemented. This has resulted in the modification of the Amendment 3 mining plan to reflect the original four mining and reclamation phases. The reclaimed configuration would result in a benched highwall above 7470' with an overall slope of 1:1 (H:V) and slopes ranging from 3.7 to 3:9:1 (H:V) below that elevation. The material balance achieved with Phase 5 from the previous plan will no longer be necessary, as Transit Mix Aggregates will sell approximately 8 million tons (4 million cubic yards) of limestone produced at the site. Also, at the onset of mining activities, Transit Mix will mine approximately 60,000 tons (30,000 cubic yards) of limestone from the bench between the processing facility and Area H.

On November 7, 2012, we submitted electronic copies of the Exponent Report as requested in the September 24, 2012, TC Waite memo. The Exponent Report was requested, as it had been referenced in Exhibit G and Appendix 6.5 of Amendment 3.

Transit Mix Aggregates respectfully notes that the 2144-page Exponent Report includes historic permitting and photographic documentation of the site, as well as geotechnical evaluations. Transit Mix Aggregates engaged Norwest to develop a new mine plan for the site focused on safety, minimizing further disturbance at the site, and coupled with a geotechnical evaluation consistent with Rule 6.5 of the Construction Materials Rules and Regulations for 112 Mining operations. Amendment 3 incorporates the scientific investigations of physical properties at the site as summarized in the Exponent Report, but has developed a modified mining and

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reclamation plan. This plan called for a benched highwall above 7200' which would achieve a 1:1 (H:V) slope. A 3.7:1 (H:V) to 3.9:1 (H:V) slope would be created below 7200'.

The permit changes are summarized in the table below:

Section	Modifications
Application Form	Replace Page 1
Table of Contents	Replace Page iv
Exhibit B - Index Map	Replace Exhibit B
Exhibit C - Mining Plan Maps	Replace Exhibits C-1, C-3, C-4, and C-5. Remove Exhibit C-6.
Exhibit D - Mining Plan	Replace All Exhibit D
Exhibit E - Reclamation Plan	Replace All Exhibit E
Exhibit F - Reclamation Plan Maps	Replace All Exhibit F
Exhibit G - Water Information	Replace All Exhibit G
Exhibit L - Reclamation Costs	Replace All Exhibit L
Exhibit O - Owner of Record	Replace All Exhibit O
Exhibit Q - Proof of Mailing	Replace all Exhibit Q
Exhibit T – Health and Safety	Add Inert Materials Affidavit to last page
Exhibit 6.5 Geotechnical Stability Exhibit	Insert Page 6.5-2 and 6.5-3

Please do not hesitate to contact me, Mac Shafer, or our Norwest consultants, Cathy Begej or Paul Kos if you have any questions.

Sincerely,

Norton Cutler/csv

Norton Cutler
Attorney at Law
Perkins Coie
For
Transit Mix Aggregates

Attachments
5 CDs
5 Sets of Revised Pages

Cc
(1) CD; Mac Shafer, Transit Mix Aggregates, 444 E. Costilla, Colorado Springs, CO 80903-3761

Application Form

1) Please submit corrected pages that resolve the apparent discrepancy in new permit areas as they are shown on the application form (4.46 acres), the index map (4.5 acres), and Exhibit O (4.45 acres).

   The application form, Index Map (Exhibit B) and Exhibit O all reference 4.5 acres.

6.4.2 Exhibit E – Index Map

The Index map refers to Amendment #4; it should be labeled Amendment #3. In addition, the total added area equals 4.5 acres when it should be 4.46 acres. Please refer to comment 1, above. Please provide a new Index map that is properly labeled.

Exhibit B, the Index Map, includes the change referencing Amendment #3.

6.4.4 Exhibit D – Mining Plan

The operator states "It is challenging to design roads without disturbing additional areas for switch backs because the natural slopes above the current disturbed areas are so steep". The operator further states, "The exact location of access and haul roads are not shown on the figures at this time as the level of detail will be based on field observation during the execution of the plan".

1) Once these roads are in place, Transit Mix must submit a TR (Technical Revision) to incorporate new facilities showing the location and the size (width and length) of each road. This will allow the Division to re-calculate the cost to reclaim these added disturbances. Please acknowledge and commit to submitting this revised facilities map once the roads are in place.

   The fourth paragraph of page D-4 has been updated to include the following text. "Once these roads are in place, Transit Mix Concrete Company will submit a Technical Revision to incorporate new facilities showing the location and size (width and length) of each road into the Mining Plan. This Technical Revision will include a revised facilities map. "

Under Explosives use and Proof of Surrounding Stability, the operator states, "Explosives will be required to reclaim the Pikeview Quarry". The operator further states, "It is anticipated that the advance of blasting operations may aid in helping to stabilize the landslide areas currently creeping on the Pikeview property. However, the applicant does not anticipate any stability issues in lands surrounding the Pikeview Quarry, nor any impacts outside of the permit boundary."

2) In order to make sure no structures outside of the permit area are affected by the planned blasting, the operator must submit a revised blasting plan in accordance with Rule 6.5(4) of the Construction Materials Rules and Regulations

A new paragraph has been added on page D-8 stating "There are no modifications to the explosives storage and a blasting plan. Prior to reclamation activities, the explosives contractor may decide to modify the plan. The plan will be available to review in the quarry offices during active operations. The plan will ensure that off-site areas will not be adversely affected by blasting per Rule 6.5(4) of the Construction Materials Rules and Regulations.

6.4.5 Exhibit E – Reclamation Plan

Under the reclamation plan, the operator states, "Inert concrete fill from removal and building foundations may be accepted for disposal in the pit. Each load accepted for disposal will include documentation that it is asbestos free, and records of the volume of the materials and their certification will be retained at the quarry office for a period of three years".

1) Please submit the notice required by Rule 3.1.5(9). The notice must include:
    a. A narrative that describes the approximate location of the proposed activity;
    b. The approximate volume of inert material to be backfilled;
    c. A signed affidavit certifying that the material is clean and inert, as defined in Rule 1.1(20);
    d. The approximate dates the proposed activity will commence and end;
    e. An explanation of how the backfilled site will result in a post-mining configuration that is compatible with the approved post-mining land use; and
    f. A general engineering plan stating how the material will be placed and stabilized in a manner to avoid unacceptable settling and voids.
    g. Please provide the location or locations of the source of the inert fill material so the reclamation warranty can be adjusted accordingly.

    Exhibit Q has been modified to include a proposed landowner letter. The Division will receive copies of the certified mail cards, once they're returned.

2) Please respond to the concerns regarding the proposed reclamation plan for the quarry and importation of inert fill to accomplish the task, attached as part of Exhibit 65, memo to Berhan from T.C. Wait. Her comments include the grading plan as inflection points that would need to be addressed to establish a stable reclamation plan. It requires the operator to provide a detailed reclamation plan that will achieve a stable post mining slopes.

    The first paragraph in Exhibit E in the Final Grading, Slopes, and Drainage section on Page E-4 has been modified to add the following: "There will be no change in post-mining subsurface and no effect on the end of mine."

The operator states, "Some additional measures have been taken and designed into the mining and reclamation plan to prevent the final reclaimed slope from being saturated. Surface runoff from the hills above the disturbed areas will be diverted around the stabilized and reclaimed

slopes. In addition a series of French Drains will be installed across the current mine road connecting the mine office to the aggregate plan area".

3) Please provide a typical design for the proposed diversions and French Drain. No design details were provided with the application.

   A design for the proposed minimum French Drain has been added as Exhibit F-6; it was previously submitted as Exhibit C-6. Exhibit E (page E-4, last paragraph) has been modified to read as follows: "The three proposed French drains will be installed at the current ground surface once backfilling reaches that elevation. These will intercept surface water and direct the flow into the stormwater drainage system. The drains will have a minimum ten-foot width, 2:1 side slopes and be at least 20 feet deep."

Under topsoil application, the operator states, "The applicant will apply the salvaged topsoil from the site and donated topsoil from the public on disturbed areas affected by the layback project".

4) Please provide location and possible source and quantity of the donated topsoil in the facilities map.

   Donated topsoil and organic materials will be stockpiled in the zones identified on Exhibit C-1. The largest area will be located north from the office in piles that may be 30 feet high. Soil will come from development in the greater Colorado Springs area and from individuals disposing of fill. It is anticipated that 81,514 LCY are needed to provide an average 0.5 foot of plant growth medium. (No changes have been made to the permit.) It is anticipated that 27,917 LCY will be salvaged during the stabilization operations (page D-9).

5) What measures will be taken to ensure noxious weeds will not be imported with any donated topsoil?

   A paragraph has been added to the end of page E-5 (Exhibit E) to address this question: "Transit Mix Aggregates will discourage the donation of topsoil with weeds, and will perform weed management using noxious backpack weed sprayers as needed".

6.4.7 Exhibit F – Reclamation Plan Map

Please provide the reclamation plan map in accordance with Rule 6.4.6 (a) which shall include the following, "The expected physical appearance of the area of the affected land, correlated to the proposed mining and reclamation timetables. The map must show proposed topography of the area with contour lines of sufficient detail to portray the direction and rate of slope of all reclaimed lands".

Exhibits F-1 through F-4, the Reclamation Plan phase maps have been modified to darken and label the contour lines. The predominant direction of slope is from west to east.

6.4.7 Exhibit G – Water Information

Under Surface Water, the operator states, "Surface water will be affected in various ways but as much as possible surface water will be diverted around the operation, or treated in depressions on the site or passed through the sediment pond. Control of sediment and flow volumes will be accomplished through the storm water management control features. These facilities were described in Technical Revision 7, approved in early 1994. To control flow volumes, rates, and sediment discharge, a series of sediment basins and energy dissipation drop structures are used. These structures control the outflow volumes and are designed around a 10-year 24-hour storm event. It is likely that storms larger than this will be controlled to some extent, but sediment loads and volumes from larger storms will probably exceed the capability of the system to provide full control".

1) Given the site's potential for erosion to occur on steep slopes, the Division recommends upgrading the structure designs to at least a 25-year, 24-hour event. All diversion structures that are redesigned to handle velocities in excess of 5 feet per second must be armored with appropriately sized riprap. Please provide a detailed updated storm water design for the facility.

   A modification to the second paragraph on Page G-2 (Exhibit G) was made to upgrade the structure designs to 100-year, 24-hour storm event as indicated: "These structures control the outflow volumes and are designed around a 25-year, 24-hour storm event for the operational period and a 100-year, 24-hour storm event for reclamation." The operational drainage structures have been designed to the 25-year, 24-hour storm event as requested.

2) The Division recommends placing an upland diversion to limit flows and seeps into the fracture zone of the quarry during mining and reclamation activities.

   The drainage plan includes two upland diversions which would tie into the site road drainage as shown on Exhibit G-1. Transit Mix Aggregates does not want to divert drainage offsite, due to risks to neighboring properties.

Under ground water, the operator states, "The EXAP boring project was initiated on August 7, 2011, using air percussion drilling (Appendix 41, Exponent report). The goal of three wells within the H-area pit was to intersect the underlying Sawatch Sandstone; the northern EXAP-1 did not reach the Sawatch at 67' (7046.46') while EXAP-2 contacted it at 62'(7053.89') and EXAP-3 were unable to reach it at 70'(7075.3). All these wells had water in them the day after drilling, with two northern wells having water levels within 7-8' of the surface, and EXAP-3 having water within 40' of the surface suggesting intersection with confined aquifer. Exponent (2011) observed that 40 of 2144 GW levels were within a few feet of surface from coffined groundwater conditions". The operator further states, "Elevated water levels can potentially

impact slope stability **(Exhibit E and Exhibit 6.5)** and thus French Drain has been included in the reclamation design.

3) Even though the operator mentioned the Exponent report it is not included with the amendment. Please provide the report for our files.

   A CD containing a copy of the Exponent report was provided to CDRMS on November 7, 2012.

4) Did the operator implement all the recommendations in the Exponent report in designing the reclamation plan for the quarry? Please explain.

   Exponent's reclamation plan was highly conceptual, and Norwest used the plan as the basis for their permit-level design. The drawings associated with Exponent's reclamation plan indicate overall slopes of 1:1 in the granite and 4:1 in the fill. Norwest maintained this overall slope geometry, and only minor adjustments were required.

   A key change was the reclamation order. Exponent specified that the southern half of the quarry be reclaimed first to eliminate the landslide hazards. Norwest recommends that the landslide area be reclaimed last to allow additional rock to fall, potentially reducing the height of the cliffs, and to buttress the landslide from the north before accessing the area above the landslide.

5) Please provide details of the proposed French Drains that will be implemented to limit potential impacts to the slope stability.

   A design for the proposed minimum French Drain has been added as Exhibit F-6. Exhibit E (page E-4, last paragraph) has been modified to read as follows: "The three proposed French Drains will be installed at the current ground surface once backfilling reaches that elevation. These will intercept surface water and direct the flow into the stormwater drainage system. The drains will have a minimum ten-foot width, 2:1 side slopes and be at least 20 feet deep."

Exhibit 6.5 Geotechnical Stability Exhibit

The amendment proposes using the fault location (to be identified through field observations) as inflection point for grading.

- The report states that investigation was limited due to access difficulties and safety concerns on the slope face. Detailed mapping of the granite joints and fractures, as well as fault location and condition of the granite is needed. During grading

activities, this information should be carefully observed and recorded. This may impact the proposed design plans and require further analysis and design changes.

Exhibit D (Page D-3) has been modified to describe field testing and includes a commitment for periodic field geological engineering mapping and review of fault splays and joint sets.

- Most faults are actually shear zones, and may contain many splays across a wide area. It may be very difficult to identify the entire fault zone to determine a finite inflection point. How will this be accommodated? If the fault is across a zone, how will the inflection point for grading be determined?

  Page 6.5-2 has been added to Exhibit 6.5 with the following text. "Further knowledge of the exact location of the Rampart Range Fault is definitely needed prior to commencing major reclamation work in the Pikes Peak Granite west of the fault. Specifically, the surface trace location is needed as well as the location of any significant splays. This information will be collected on the north end of the quarry for approximately 1100 feet between the edge of the proposed reclamation (near the existing culvert) through the stable portion of the quarry, and for approximately 600 feet on the south end between the existing road, which is south of the proposed regrade limit, and the unstable portion of the quarry. This investigation area covers Phases 1 and 2 and part of Phase 4. Investigation of the fault for Phase 3 and the remaining part of Phase 4 will be performed prior to mining these areas, once the stability improves by constructing a buttress at the toe of the landslide. The location determination may best be done using a D9 dozer to create a road on top of the fault trace. The road needs to be wide enough so that the fault and any splays can be visually identified. In several locations along the excavated roads an east-west trench should be dug so that the fault and any splays can be examined in the vertical direction. These trenches should be about five feet deep and wide enough so that trench stability is not a safety issue for technical persons examining the fault/splays. Once the fault/splay location(s) are identified, the reclamation inflection line (granite @ 45° and landslide rubble/debris/fill @ 14°-15°) may be established along the west side of the quarry. With the establishment of the inflection line, the location of the approximate limit of reclamation in the granite may be determined."

- Given that the granite contains fractures and joint sets, as well as possible fault splays, how will "stable granite" be determined?

Pages 6.5-2 and 6.5-3 have been added to Exhibit 6.5 with the following text. "The upper limit reclamation line would then serve as the location for collection of additional granite fracture and joint data. As with the fault evaluation, a large dozer (and other drill/blast equipment, as needed) should be used to create an upper bench at the reclamation limit in a north-south direction. The bench would be at least 15 feet wide and allow detailed mapping of the fractures/joints to be made in the back slope on the west side. This additional data should include fracture/joint location, orientation (strike and dip), trace length, spacing (of parallel structures), joint roughness coefficient (JRC), waviness (asperity deviation in inches per 5 feet), infilling type/thickness and fractures/joint set intensity.

The collected fracture/joint data should be plotted on equal area Schmidt nets, which allow fracture/joint sets to be identified. These fracture/joint sets may then be stereographically plotted to determine the existence of potential planar and/or wedge mode failures in the overall 45° (1:1) granite slope and the 63.4° (1:2) bench face slope. Undercutting planes/wedges (if they exist) may then have their safety factors against failure calculated. If needed, the overall slope and bench face angles may be modified to get acceptable safety factors. Thus, the proposed granite slopes (overall and bench face) may be confirmed or modified to get acceptable long term stability. As reclamation in the granite slopes (from top to the inflection line) proceeds, each established bench should have the fractures/joints examined for potential stability problems and modified, as required, to get acceptable long term stability."

The amendment describes the fill on the lower slopes being placed in a top-down manner, using dozers to push material around. This will be a considerable amount of material, with some areas nearing or over 100 feet in fill. Poorly placed fill may not provide the buttressing effect that will help with overall slope stability.

- Fill placement procedures and detailed specifications are needed to ensure the structural integrity of the fill section.

Remote-controlled dozers will push approved waste into the pit to be used as backfill. Material will be placed using heavy equipment normally found in the mining industry, and a high degree of compaction is expected to occur. Page D-4 includes the note, "There are no plans to perform supplemental compaction as the slide zone will be removed."

The cross sections shown in Exhibit C show the growth medium on the benches in the granite face.

- How will this material be placed to avoid water infiltration into the granite face, joints, fractures, etc. that could lead to slope instability over time?

  The geotechnical analysis demonstrated that the granite slopes remain stable under saturated conditions during an earthquake with the factor of safety for a 200-ft 1:1 slope calculated at 1.55. Page D-3 (Exhibit D) has been modified to add the following: "Any infiltration from growth medium into granite face, joints, fractures, etc. will be very limited and will not lead to slope instability over time. Minimal impact to the long-term stability of the joint sets and branches from tree and plant root growth is anticipated."

- How do these joint/fracture sets orient in relation to the proposed cut face?
  Another paragraph was added on Page D-3 (Exhibit D) to include the following: "There are two steeply dipping joint sets: 1) flatter (0-30 degrees) which are irregular and not continuous and 2) close to vertical. During reclamation when new exposures in granite are exposed, there will be an assessment in the potential planar and/or wedge mode failures in the overall 45 degree (1:1 H:V) granite slope and the 63.4 degree (1:2 H:V) bench face slope. Modifications to the reclamation plan will ensure that no joints will undercut benches. The close to vertical sets will not pose a problem."

- What effect will the tree and plant root growth have on the long-term stability of the joint sets and benches?

  The third paragraph on Page D-3 (Exhibit D) has been modified to add the following: "Minimal impact to the long-term stability of the joint sets and branches from tree and plant root growth is anticipated."

The amendment proposes putting a French Drain system at the toe of the fill slope and surface water diversion channels around the final slope. There is not much information provided on the location and design criteria details of these features. Exhibit F (Reclamation Plan) doesn't show these features at all.

- Please provide details and specifications on both the French Drain and the diversion channels.

  Exhibit F-6 has been modified to show the proposed minimum design details that will be installed across the current mine road connecting the mine office to the aggregate plant area.

- Is there long-term maintenance associated with the performance of the drains and ditches into the future? If so, some sort of maintenance plan should be developed.

  The last paragraph on page E-4 (Exhibit E) has been updated to include the following text: "We do not anticipate any long-term maintenance or drainage issues with the French Drain, but the ditches will be maintained on a regular basis and as conditions require."

The stability report refers to data from Exponent (2011) relating directly to the site. This data is not contained in the report, nor on the CD provided with the report.

- Please provide the data and reports.

  A CD containing a copy of the Exponent report was provided to CDRMS on November 7, 2012.

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
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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.

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

CONSTRUCTION MATERIALS
REGULAR (112) OPERATION
RECLAMATION PERMIT APPLICATION FORM

COLORADO DIVISION OF RECLAMATION MINING & SAFETY

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

Permit # M - 77 - 211 - ___ (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 - 77 - 211 - 04 (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)**: Continental Materials Corp./Transit Mix Aggregates/Castle Concrete Co.
   - 1.1 Type of organization (corporation, partnership, etc.): Corporation

2. **Operation name (pit, mine or site name)**: Pikeview Quarry

3. **Permitted acreage (new or existing site)**: 236 permitted acres
   - 3.1 Change in acreage (+): 4.5 acres
   - 3.2 Total acreage in Permit area: 240.5 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**: Limestone Granite Dolomite ___ ___
   - 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 Aggregates
   - 5.3 Anticipated end use of incidental commoditie(s) to be mined: Construction Aggregates

6. **Name of owner of subsurface rights of affected land**: US Forest Service
   If 2 or more owners, "refer to Exhibit O".

7. **Name of owner of surface of affected land**: US Forest Service

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

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

   COUNTY: El Paso

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

   SECTION (write number): S 9 & 10

   TOWNSHIP (write number and check direction): T 13 ☐ North ☐ South

   RANGE (write number and check direction): R 67 ☐ 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):
   Adjacent to Colorado Springs at an approximate elevation of 7200' MSL

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 38 min 56 sec 2.35 (2 decimal places)

   Longitude (W): deg -104 min 52 sec 46.71 (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: Martin L. Shafer Title: Vice President, Aggregates
Company Name: Transit Mix Concrete Company
Street/P.O. Box: 444 E. Costilla P.O. Box:
City: Colorado Springs
State: CO Zip Code:
Telephone Number: (719) - 598-0215
Fax Number: (719) - 598-3053

PERMITTING CONTACT (if different from applicant/operator above)

Contact's Name: Andre LaRoche Title: Permit Specialist
Company Name: Transit Mix Concrete Company
Street/P.O. Box: 444 E. Costilla P.O. Box:
City: Colorado Springs
State: CO Zip Code:
Telephone Number: (719) - 475-0700
Fax Number: ( ) -

INSPECTION CONTACT

Contact's Name: Martin L. (Mac) Shafer Title: VP Aggregates
Company Name: Transit Mix Aggregates
Street/P.O. Box: 444 E. Costilla P.O. Box:
City: Colorado Springs
State: CO Zip Code:
Telephone Number: (719) - 598-0215
Fax Number: (719) - 598-3053

CC: STATE OR FEDERAL LANDOWNER (if any)

Agency: US Forest Service, Pike San Isabel National Forest, Pikes Peak Ranger District
Street: 601 South Weber
City: Colorado Springs
State: CO Zip Code: 80903
Telephone Number: (719) - 636-1602

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)
☐ Developed Water Resources(WR)		☐ Solid Waste Disposal(WD)

13. **Primary present 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)
☐ Developed Water Resources(WR)		

14. **Method of Mining**: Briefly explain mining method (e.g. truck/shovel): Rip & push weathered granite, drill and blast granite highwall bench sequence, dozer push & truck and shovel.

15. **On Site Processing**: ☑ Crushing/Screening

13.1 Briefly explain mining method (e.g. truck/shovel): Crushing, screening, washing and stockpiling of numerous aggregate specifications

List any designated chemicals or acid-producing materials to be used or stored within permit area: Vehicle fuel

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

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

This amendment is a mining and reclamation plan to stabilize and reclaim Pikeview Quarry and address the corrective action component of violation MV-2009-012.

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 (Snrface 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.

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;

MS 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;

MS 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;

MS 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;

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

MS 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.

MS 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.

MS 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.

MS 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.

MS 10. <u>For joint venture/partnership operators</u>: 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 20th day of July, 2012.

MARTIN L SHAFER
Applicant/Operator or Company Name

If Corporation Attest (Seal)

Signed: Martin L Shafer

Signed: _____

Corporate Secretary or Equivalent
Town/City/County Clerk

Title: V.P. AGGREGATES

State of Colorado)
) ss.
County of Denver)

The foregoing instrument was acknowledged before me this 20th day of July, 2012, by Martin L. Shafer as V.P. Aggregates of Transit Mix Concrete Co.

Helene Grace Whiting
Notary Public

My Commission expires: April 8, 2014

SIGNATURES MUST BE IN BLUE INK

You must post sufficient Notices at the location of the proposed mine site to clearly identify the site as the location of a

NOTICE

This site is the location of the existing mining operation, Pikeview Quarry, M-77-211, 7250 Allegheny Drive, Colorado Springs, CO 80919. Continental Materials Corporation/Transit Mix Concrete Company, 444 East Costilla, Colorado Springs, CO 80903-3761, (719-475-0700), has filed an application for Amendment 3 to their Regular (112) Reclamation Operation Permit with the Colorado Mined Land Reclamation Board. Anyone wishing to comment on the application amendment may view a copy at the El Paso County Clerk and Recorder's Office, Wayne W. Williams, County Clerk, 1675 West Garden of the Gods, Colorado Springs, CO 80907, (719) 520-6202, or the above named applicant, and should send comments prior to the end of the public comment period (September 23, 2012), to the Division of Reclamation, Mining and Safety, 1313 Sherman, Suite 215, Denver, CO 80203.

Section 34-32.5-102, 1.6.2(1)(b), Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials

TRANSIT MIX AGGREGATES

PIKEVIEW QUARRY

M-1977-211

Permit Amendment 3

Submitted to

Colorado Division of Reclamation Mining and Safety

In Compliance with the

Mineral Rules and Regulations

of the

Colorado Mined Land Reclamation Board

for the

Extraction of Construction Materials

And Section 34-32.5-102 of the Colorado Land Reclamation Act for the Extraction of Construction Materials

July 23, 2012

CDRMS COMPLIANCE LIST

Rule Number	Brief Description of Rule Requirement	Location in Application
1.2 and 1.2.1	Activities that Do Not Require a Reclamation Permit	Not applicable
1.2.4	Extraction or Exploration on Federal Lands	**Exhibit O** and **Exhibit E-1**
1.3	Public Inspection of Documents	**Exhibit R** contains an Affidavit of Filing with the El Paso County Clerk and Recorder
1.4.	Application Review and Consideration Process	
1.4.1	Application – General Provisions	Permit Application materials
1.4.5	Specific Requirements for Regular 112 Operations	Application fee, one original and four (4) copies of application and permit.
1.6	Public Notice Procedures	Notices identified in Appendix P, Q, and R. Permit Application form includes proposed Newspaper Public Notice and Sign
3.1	Reclamation Performance Standards	
3.1.1	Establishing Post-Mining Use	Permit Application
3.1.2	Reclaiming Substituted Land	Not Applicable
3.1.3	Time Limit and Phased Reclamation	Exhibit E
3.1.4	Public Use	No public recreational use within permit area
3.1.5	Reclamation Measures – Materials Handling	Exhibit E

Rule Number	Brief Description of Rule Requirement	Location in Application
3.1.6	Water – General Requirements	Exhibit G
3.1.7	Groundwater – Specific Requirements	Exhibit G
3.1.8	Wildlife	Exhibit H
3.1.9	Topsoiling	Exhibit D & Exhibit E
3.1.10	Revegetation	Exhibit E
3.1.11	Buildings and Structures	Exhibit E
3.1.13	Spill Reporting	Exhibit T
4	Performance Warranties and Financial Warranties	
5	Exploration Operations	Not applicable
6	Permit Application Exhibit Requirements	
6.1	Requirements for Specific Operations	112 Application with Geotechnical Stability Exhibit
6.2	General Requirements of Exhibits	Title blocks of each mapped Exhibit
6.4	Specific Permit Application Exhibit Requirements – 112 Reclamation Operations	
6.4.1	Exhibit A- Legal Description	Exhibit A
6.4.2	Exhibit B – Index Map	Exhibit B
6.4.3	Exhibit C – Pre-Mining Plan Map(s) of Affected Lands	Exhibit C-1 identifies the existing site topography
6.4.4	Exhibit D- Mining Plan	Exhibit D
6.4.5	Exhibit E – Reclamation Plan	Exhibit E

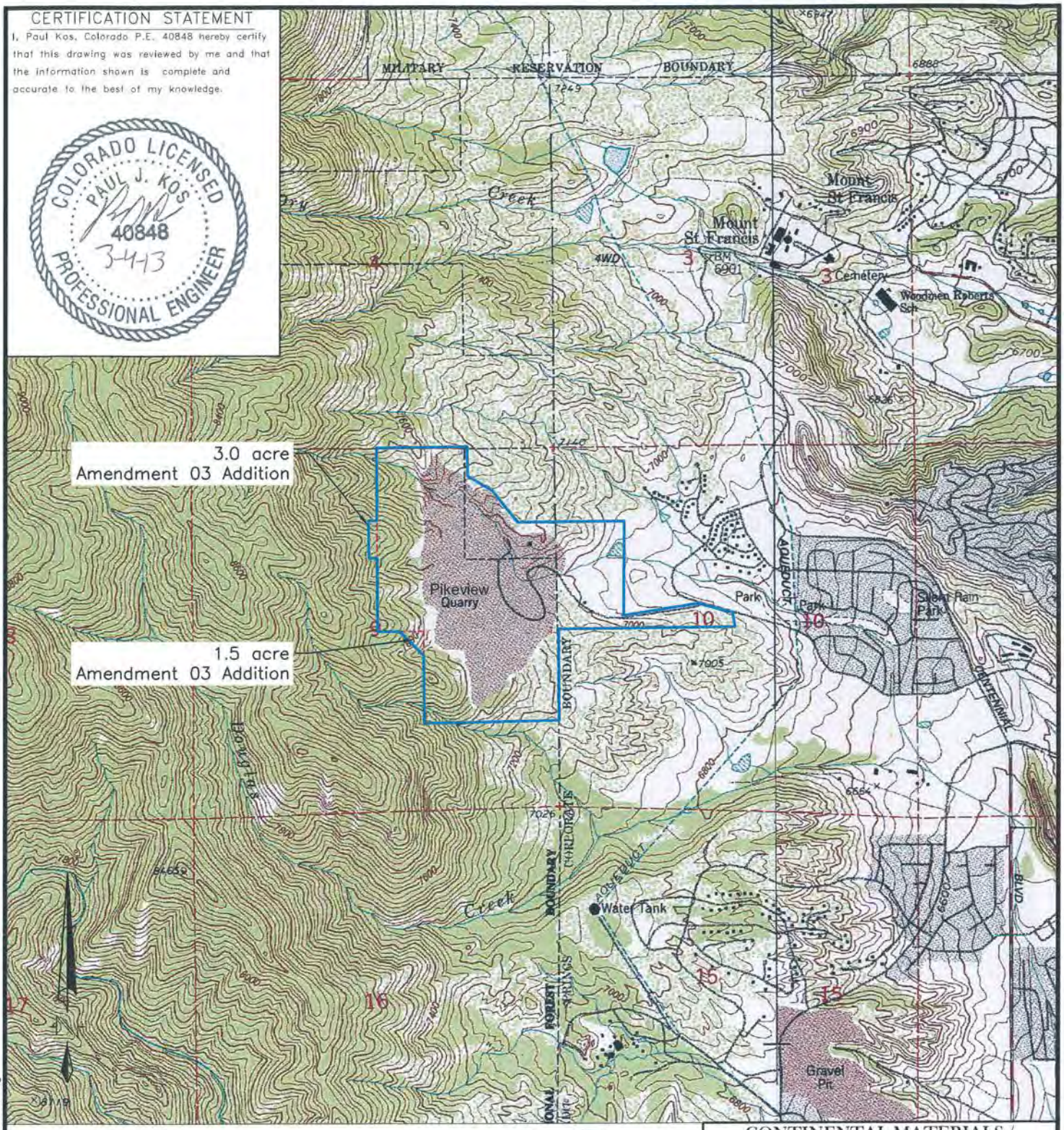
Rule Number	Brief Description of Rule Requirement	Location in Application
6.4.6	Exhibit F – Reclamation Plan Map	Exhibits F-1 through F-**4**
6.4.7	Exhibit G – Water Information	Exhibit G
6.4.8	Exhibit H – Wildlife Information	Exhibit H
6.4.9	Exhibit I – Soils Information	Exhibit I
6.4.10	Exhibit J – Vegetation Information	Exhibit J
6.4.11	Exhibit K - Climate	Exhibit K
6.4.12	Exhibit L – Reclamation Costs	**Exhibit L**
6.4.13	Exhibit M – Other Permits and Licenses	Exhibit M
6.4.14	Exhibit N – Source of Legal Right to Enter	Exhibit N
6.4.15	Exhibit O – Owner(s) of Record of Affected Land (Surface Area), and Owners of Substance to be Mined	Exhibit O
6.4.16	Exhibit P – Municipalities Within Two Miles	Exhibit P
6.4.17	Exhibit Q – Proof of Mailing of Notices to County Commissioners and Soil Conservation District	Exhibit Q
6.4.18	Exhibit R – Proof of Filing with County Clerk and Recorder	Exhibit R
6.4.19	Exhibit S – Permanent Man-Made Structures	Exhibit S
6.5	Geotechnical Stability Exhibit	Exhibit 6.5
8	Emergency Notification by Operators, and Emergency Response Authority of the Office	Exhibit T

EXHIBIT A
LEGAL INFORMATION

EXHIBIT A
LEGAL DESCRIPTION

The legal description of the 240.46 acre Pikeview Quarry permit boundary and this Amendment, according to quarter, quarter section is: Portions of SE1/4 of NE1/4, NW1/4 of NE1/4, SE1/4 of NE1/4 of NE1/4, SW1/4 of NE1/4, NE1/4 of SE1/4, E1/2 of NW1/4 of SE1/4, NE1/4 of SW1/4 of SE1/4, SE1/4 of NE1/4 of NW1/4, and NE1/4 of SE1/4 of NW1/4 of Section 9, plus portions of the W1/2 of SW1/4 of NW1/4, SE1/4 of SW1/4 of NW1/4 and S1/2 of SE1/4 of NW1/4 of Section 10, Township 13 South, Range 67 West of the 6th P.M., EI Paso County, Colorado, as shown on the various maps contained in this Amendment application.

EXHIBIT B
INDEX MAP



CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
PROFESSIONAL ENGINEER

3-4-13

LEGEND

Proposed Permit Boundary

Existing Permit Boundary

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

0 1000 2000 3000

FEET

From USGS Pikeview and Cascade Quadrangles

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT B
INDEX MAP

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: NW-Exhibit B CO83-CF.dwg			

Mar 01, 2013 - 11:38am\J:\Pikeview Quarry 374\NW-Exhibit B CO83-CF.dwg

EXHIBIT C
MINING PLAN MAPS
OF AFFECTED LANDS

C-1 Existing Facilities, Surface and Mineral Ownership
C-2 Section Profile Geology
C-3 Mining Plan Section Profile and Bench Detail X-X'
C-4 Mining Plan Section Profile and Bench Detail Y-Y'
C-5 Mining Plan Section Profile and Bench Detail Z-Z'
~~C-6 Typical French Drain Design~~

(D)
U.S. GOVERNMENT FOREST SERVICE, USDA

U.S. GOVERNMENT FOREST SERVICE, USDA

CASTLE CONCRETE APPLICANT

(A)
JANNIE RICHARDSON

CRUSHER

SHOP

CASTLE CONCRETE APPLICANT

CASTLE CONCRETE OFFICES

CASTLE CONCRETE APPLICANT

(B)
VERDOORN 1999 CHARITABLE UNITRUST

HOLLANDALE DR

COLD WATER DR

VAJUALA TERRACE

FRONT ROYAL DR

BRENTFORD DR

HANOVERTOWN DR

FRONT ROYAL DR

NORTHERN DR

PIKEVIEW QUARRY RD.

(D)
U.S. GOVERNMENT FOREST SERVICE, USDA

(D)
U.S. GOVERNMENT FOREST SERVICE, USDA

(C)
TERRY WOLF AND SUNNY BAKER

U.S. GOVERNMENT FOREST SERVICE, USDA

(D)
U.S. GOVERNMENT FOREST SERVICE, USDA

LEGEND

- Proposed Permit Boundary
- Existing Permit Boundary
- Land Ownership
- Mining Boundary
- Road
- Overhead Power Line
- Utility (Public Water)
- Utility (Waste Water)
- Utility (Power)
- Utility (Gas)
- Topsoil Stockpile

MINERAL OWNERSHIP

- U.S. Forest Service
- Castle Concrete

VEGETATION

- Douglas Fir/ Ponderosa Pine
- Pinyon Juniper/ Gambel Oak

NOTE:
5/3/2012 Query of COGCC Database (http://cogcc.state.co.us/) found no oil and gas facilities within permit boundary or immediate adjacent area." The power lines are from Exhibit C of the 1990 amendment.

Surface Land Ownership	
Properties Adjacent to Castle Concrete Property	
1	Timothy & Stefanie Burgess
2	Paul Weissler
3	Darold & Bonnie Kern
4	John David & Veronica McKenna
5	Heather Jensen
6	Mary Dunham
7	Live Oak Station Filing #2
A	Jannie Richardson
B	Verdoorn 1999 Charitable Unitrust
C	Terry Wolfe & Sunny Baker
D	US Forest Land

Surface Land Ownership	
Properties Near but Not Touching Castle Concrete Property	
8	Elis & Christian Salamone
9	Timothy & Joy Townsend
10	Samuel & Ofelia Velarde
11	Live Oak Station Filing #2
12	Jeffrey Rogers
13	Guy & Kimberly Kendall
14	Live Oak Station Filing #2
15	Robert & Aimee Hellem
16	Eric & Lisa Supancic
17	Live Oak Station Filing #2

0 250 500 750
FEET

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

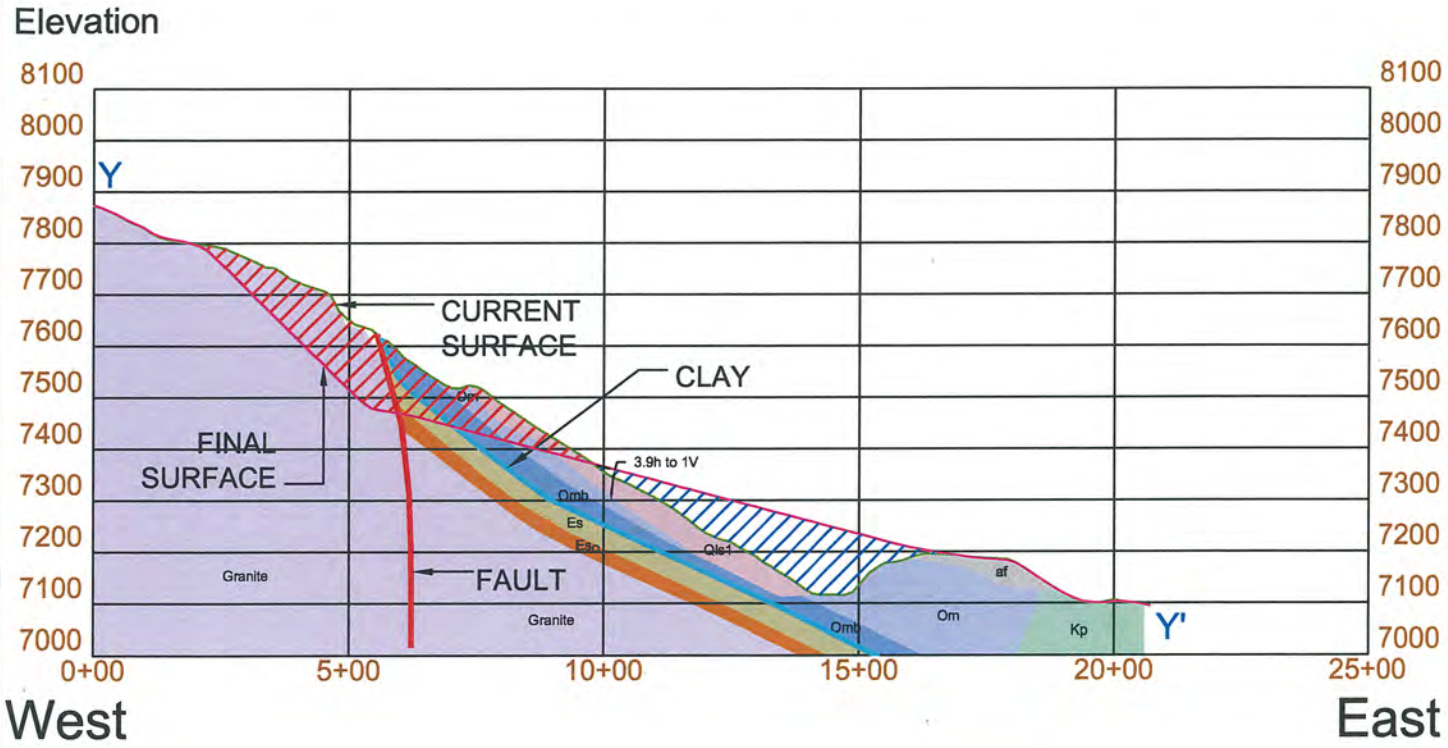
NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT C-1
EXISTING FACILITIES SURFACE & MINERAL OWNERSHIP

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO: 374-3	SCALE: As Shown
REVISION: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: NW-Existing Facilities.dwg			

Mar 01, 2013 - 12:58pm U:\Pikeview Quarry 374\NW-Existing Facilities.dwg



NOTE: Geological cross section derived from materials prepared by Exponent, 2011.

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
PROFESSIONAL ENGINEER
7-23-12

TRANSIT MIX AGGREGATES
NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT C-2
SECTION PROFILE GEOLOGY

DRAWN: NL	DATE: Jul 23, 2012	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: July 23, 2012		
DRAWING: Profiles.dwg			

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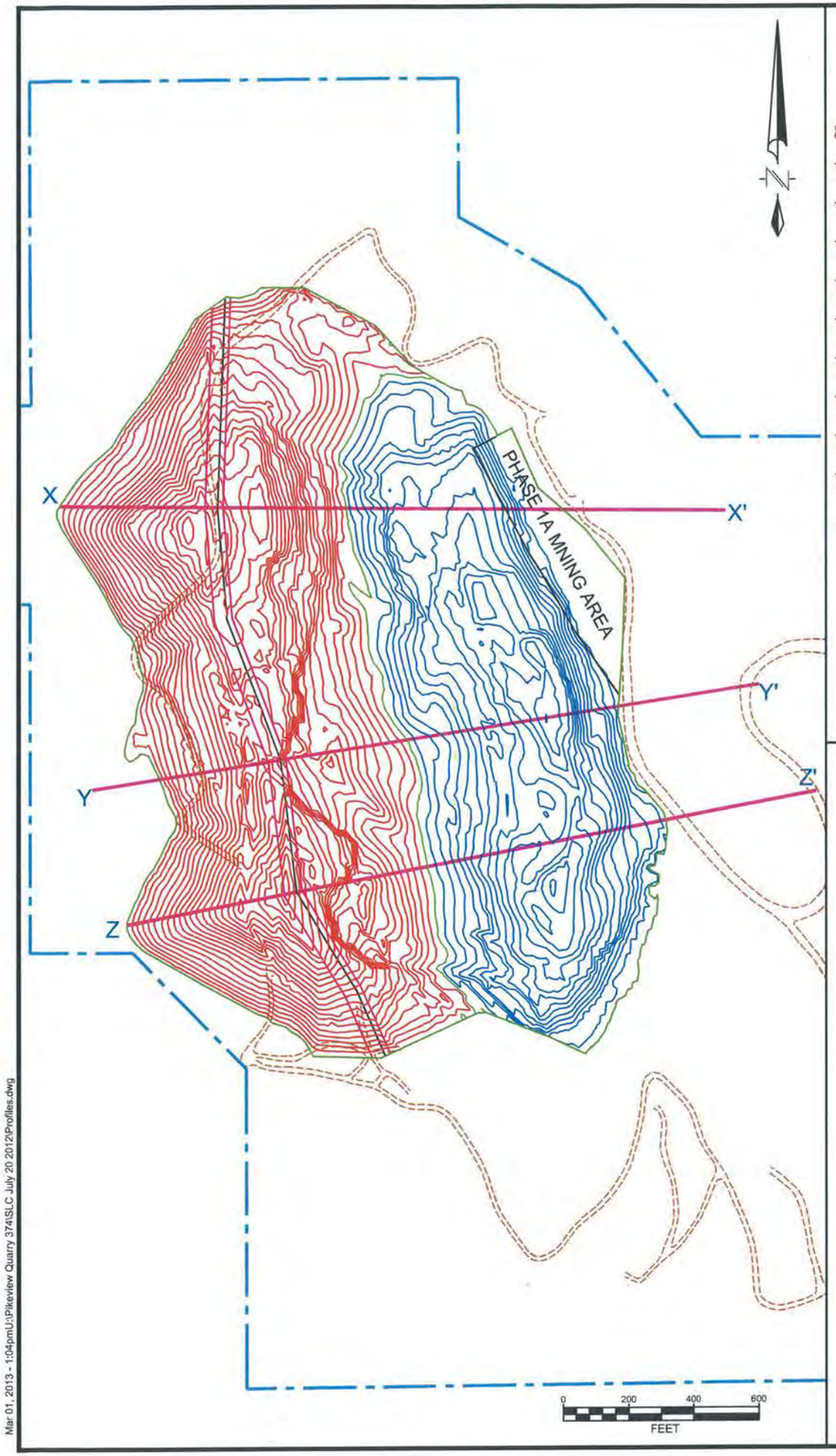

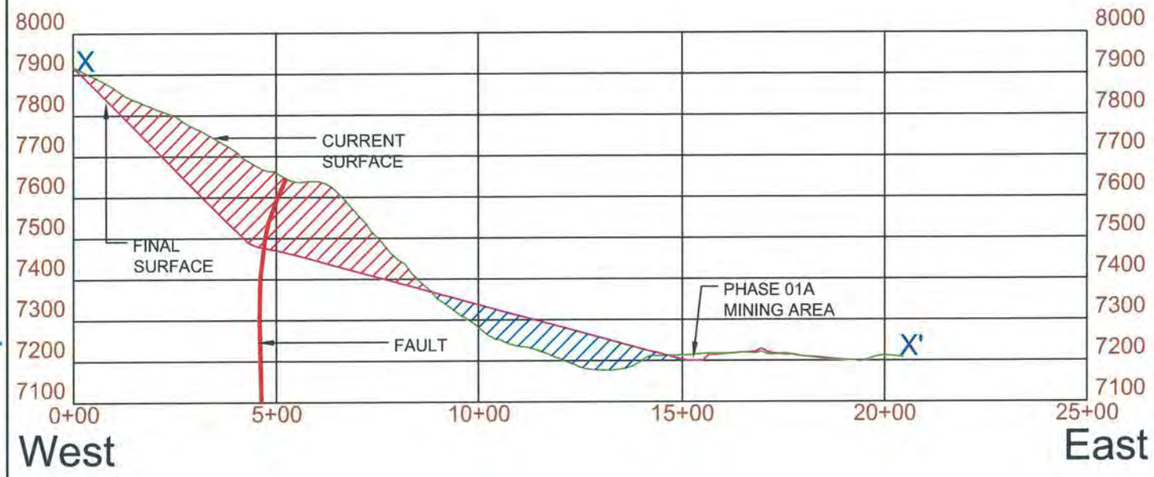

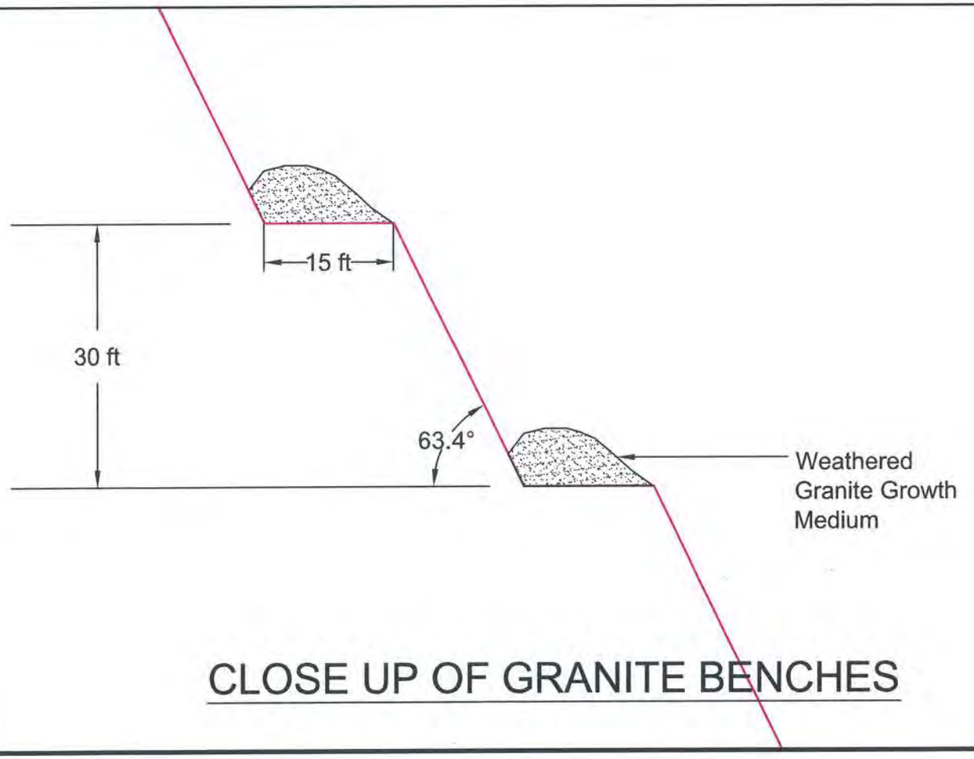

CLOSE UP OF GRANITE BENCHES

LEGEND

- CUT CONTOURS
- FILL CONTOURS
- X - SECTION LINES
- PROPOSED PERMIT BOUNDARY
- ROAD
- FAULT
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT C-3
SECTION PROFILE X-X' AND BENCH DETAILS

DRAWN: NL	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: Profiles.dwg			

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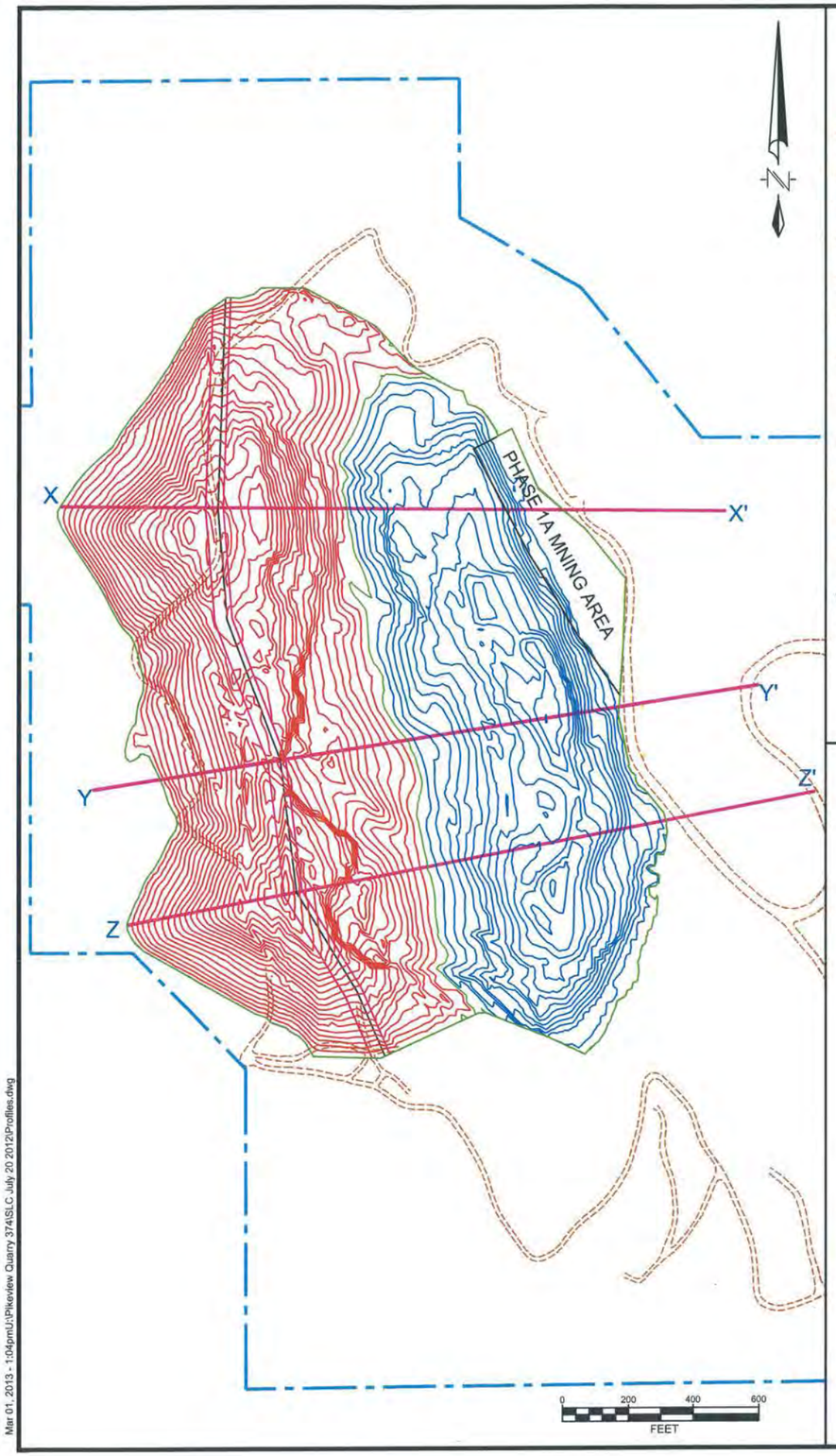

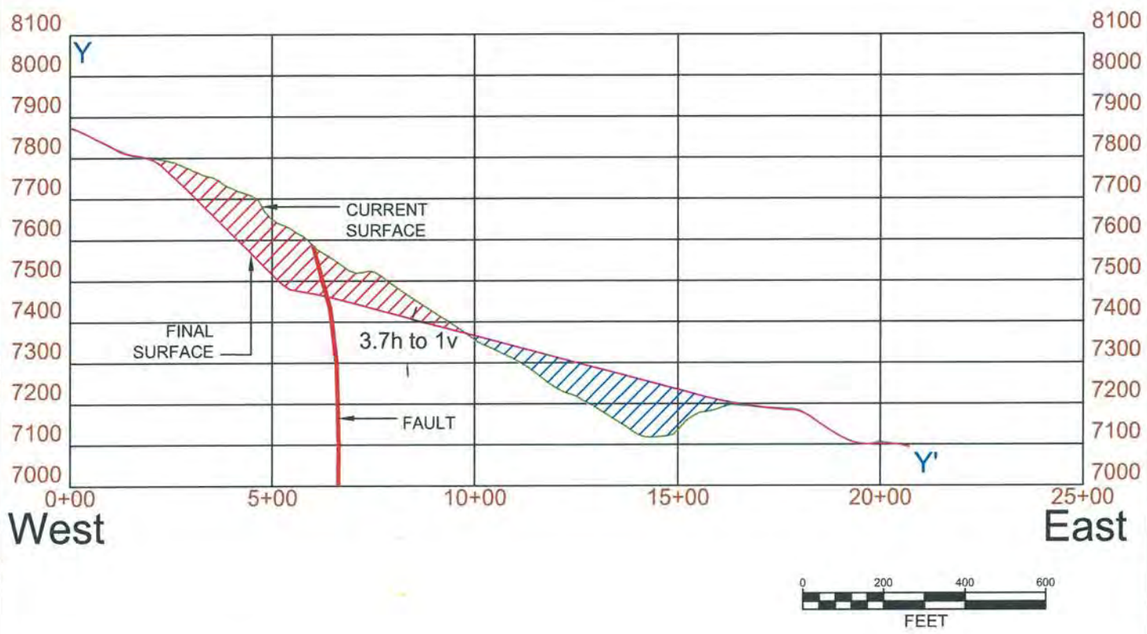

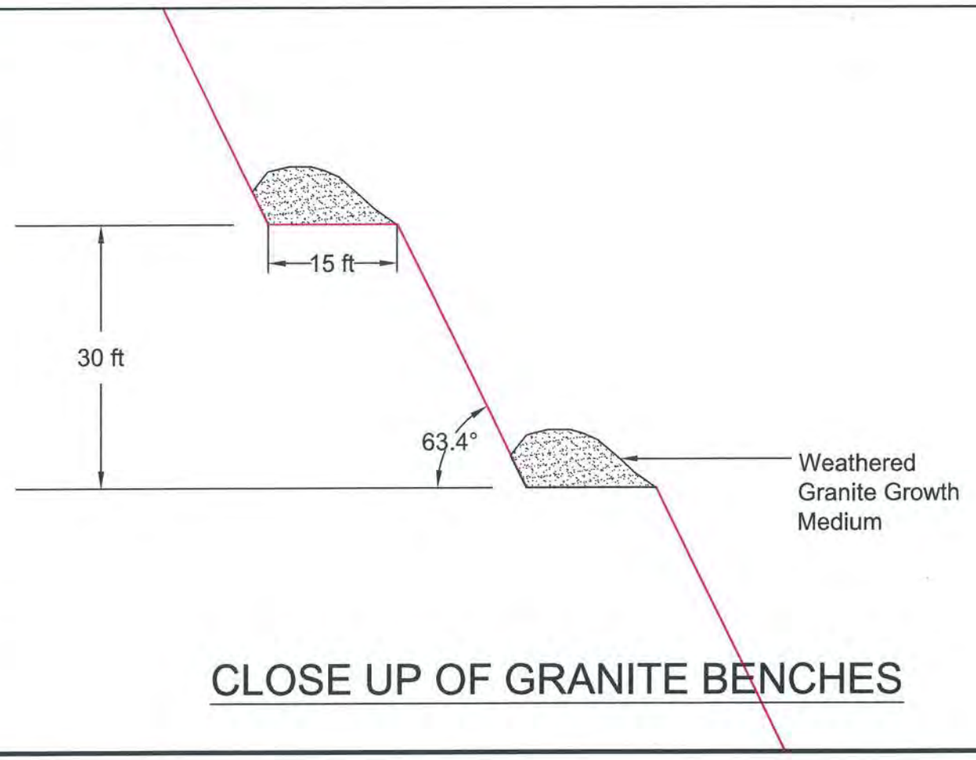

CLOSE UP OF GRANITE BENCHES

LEGEND

- CUT CONTOURS
- FILL CONTOURS
- X - SECTION LINES
- PROPOSED PERMIT BOUNDARY
- ROAD
- FAULT
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

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TRANSIT MIX AGGREGATES

NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT C-4
SECTION PROFILE Y-Y' AND BENCH DETAILS

DRAWN: NL	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWED: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: Profiles.dwg			

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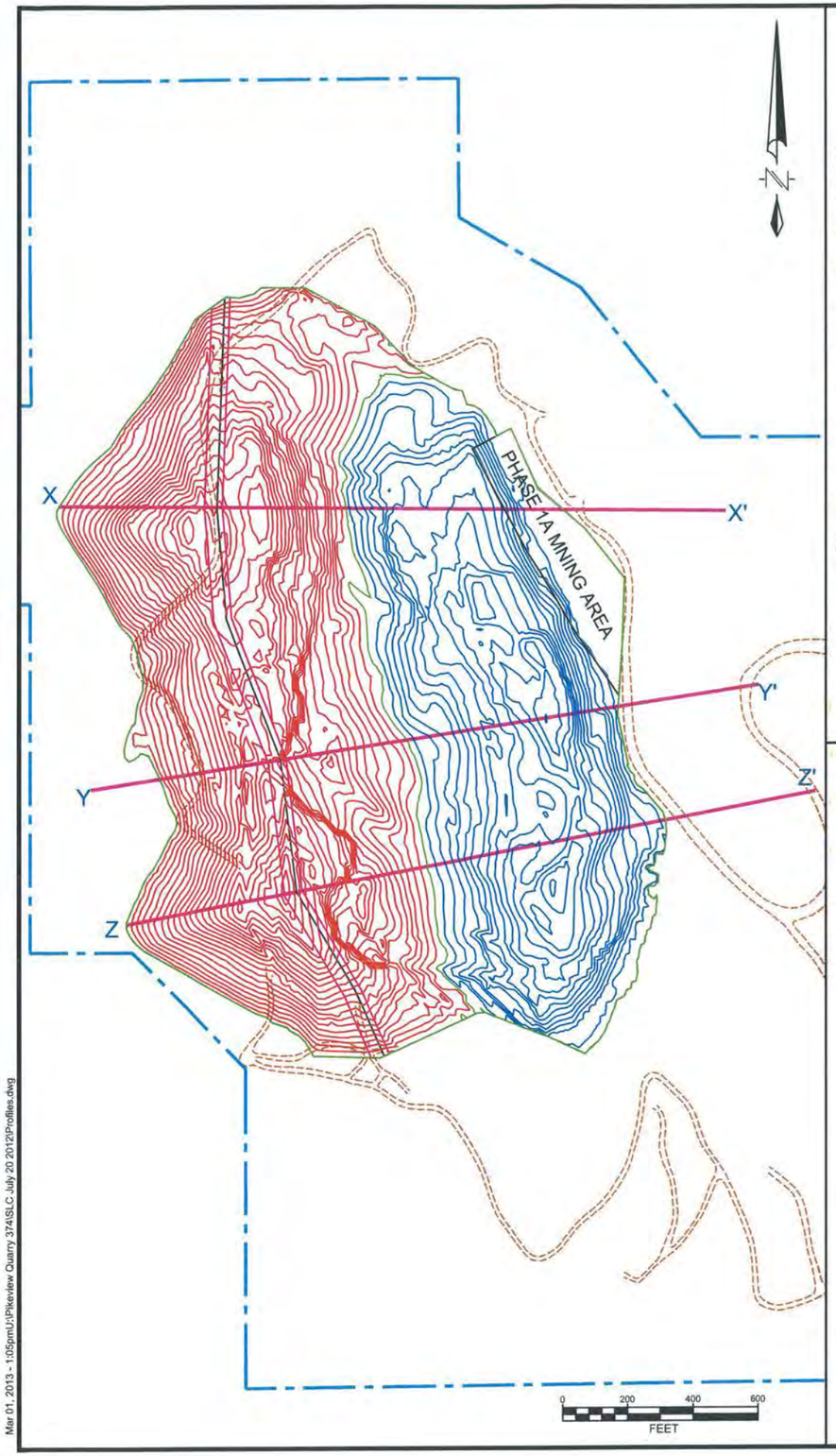

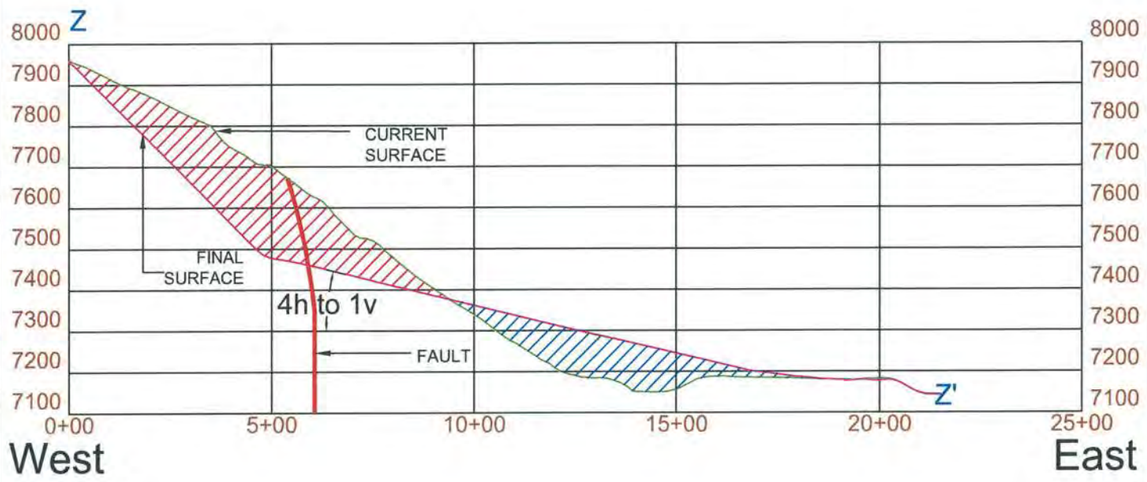

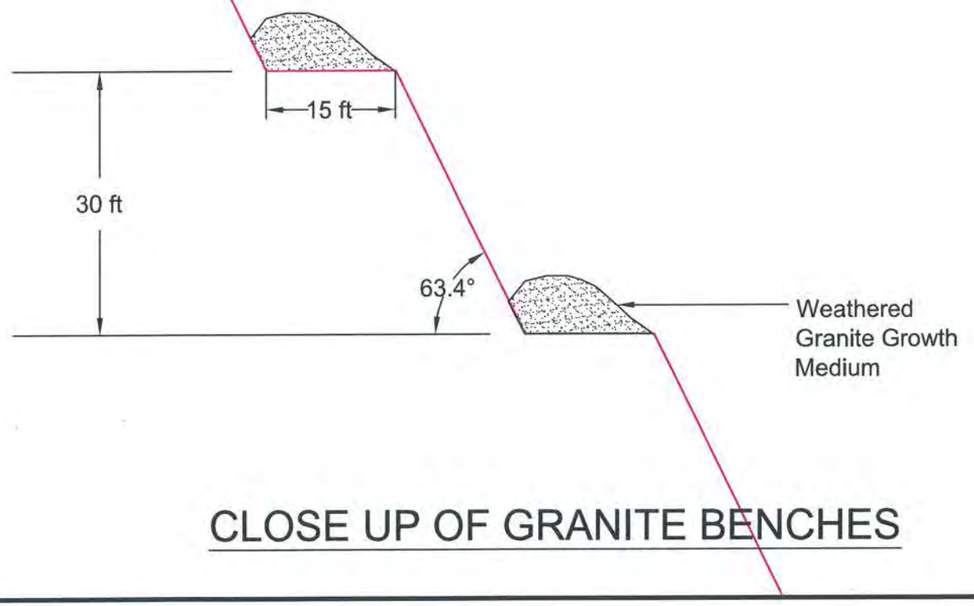

CLOSE UP OF GRANITE BENCHES

LEGEND

- CUT CONTOURS
- FILL CONTOURS
- X - SECTION LINES
- PROPOSED PERMIT BOUNDARY
- ROAD
- FAULT
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT C-5
SECTION PROFILE Z-Z' AND BENCH DETAILS

DRAWN:	DATE:	PROJECT NO.	SCALE:
NL	Mar 01, 2013	374-3	As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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EXHIBIT D
MINING PLAN

Overview

The Applicant, Castle Concrete, proposes this mining plan (Plan) to accomplish two objectives. First, the Applicant has developed this Plan to stabilize the entire previously mined area at Pikeview Quarry. The design will increase the safety factors of the final highwalls and reduce the risk of future slides from occurring. Second, the Applicant intends to fully reclaim the Pikeview mine site to fulfill its obligations under its current CDRMS permit.

The priority in achieving these two objectives is safety. This means safety in the short term for the workers performing the mining and reclamation and safety in the long term for the surrounding community during and after work is completed. The Applicant plans to reclaim the site in a way that reduces the visual impact of the mine to the greater Colorado Springs area. However, this will not take a priority over safety.

This Plan removes the materials high up on the western slope to achieve a stable final highwall configuration. There will be a considerable amount of excess materials generated in creating the stable slope, approximately 5.8 million loose cubic yards. Much of this material **is to be processed on site and sold, but additional excess material** could be consumed in reclaiming other parts of the mine site, away from the stable slope. **At the start of mining, limestone will also be removed from the bench between Area H and the processing facility.** The proposed final reclamation **is the** topography shown in **Exhibit F-4**.

Geologic Uncertainties and Mine Plan Review

The geotechnical information that was used to generate the Plan is based on past reports and recent field observations. Because of the past landslides and current instability of much of the western highwall, it was impossible to safely access all the areas during the site visit. The Operator will continuously monitor the entire area during the mine and reclamation operations and make adjustments to the plan should adverse geological conditions force a change in the Plan. The Plan is sequenced to begin working in the areas currently considered the most stable and slowly progress toward the more unstable areas by using the mined materials to help stabilize the slope ahead of the drilling and blasting operations.

The mine plan is designed to identify the North Rampart Fault that separates the Pikes Peak granite deposit to the west from the sedimentary deposits (Sawatch sandstone, Manitou limestone, et al.) to east of the fault. Once the fault is identified **prior to** Phase 1, shown in **Exhibit F-1**, it will be used as the inflection point or the change in angle of the reclaimed slope. East (below) this point the slope will range from 3.7H – 4.0:1V. West, (above the fault, a slope of 1:1 (H:V) will be cut into the stable granite. The exact location of the fault cannot be identified with certainty until actual field observations can be made. Development of the Plan has used

the best information available for the location of the fault to generate the cut and fill volumes in each phase. There is some uncertainty in the exact slope below the fault and the western slope crest, and slight adjustments to the Plan will be required as mining progresses.

As reclamation proceeds, mapping will begin to the west with the first bench cut. We do not have data on every single splay, but Transit Mix will put a dozer to work the fault from north to south so that the fault and major splays can be mapped prior to resuming mining and reclamation. Transit Mix Aggregates provides for the commitment for a geological engineer to periodically map and review the fault splays and joint sets and to study any possible new faults identified. The orientation of joint sets and any splays will be examined to determine if they will be undercut and the safety factor re-checked.

Ben Seegmiller, of Seegmiller International, a long-time established and respected geotechnical expert, performed a site visit on April 9 – 11, 2012. Using field observations and past geological and geotechnical reports on the Pikeview Quarry, he worked with Norwest Corporation's Mining Engineers to develop the basis for the mine plan and final slope configuration. Mr. Seegmiller then performed a detailed slope analysis on cross sections XX', YY', and ZZ' found in **Exhibits C-3, C-4 and C-5**. The dry safety factors ranged from 2.39 – 3.16 as summarized in Table V of **Exhibit 6.5**. The existing prism monitoring system will continue to monitor the site to ensure the safety of workers.

There are two steeply dipping joint sets: 1) flatter (0-30 degrees) which are irregular and not continuous and 2) close to vertical. During reclamation when new exposures in granite are exposed, there will be an assessment in the potential planar and/or wedge mode failures in the overall 45 degree (1:1 H:V) granite slope and the 63.4 degree (1:2 H:V) bench face slope. Modifications to the reclamation plan will ensure that no joints will undercut benches. The close to vertical sets will not pose a problem.

Any infiltration from growth medium into granite face, joints, fractures, etc. will be very limited and will not lead to slope instability over time. Minimal impact to the long-term stability of the joint sets and branches from tree and plant root growth is anticipated.

The results of the slope analysis of both the individual bench and full slope analysis provided very good safety factors (**Exhibit 6.5**). Even when analyzed under saturated conditions, along with local seismic considerations, the safety factors remained above 1.5. Some measures will be taken to ensure that slope does not become saturated. These can be found in later sections of this Application. Seegmiller's full analysis is found in **Exhibit 6.5**.

(a) Description of methods of mining to be employed in each stage of the operation as related to any surface disturbance on affected lands.

Mining Methods

The Applicant proposes traditional quarrying techniques to complete the Plan. Drilling and blasting, dozer push, and load and haul mining methods will be used to ensure the safety of operations. Generally, each phase will begin near the highest elevation of the disturbed area and work downslope. Blasted rock will be placed ahead of and below the existing failed slopes to stabilize them prior to work beginning above. Final topography projections for each phase are available in **Exhibits F-1** through **F-4**.

At the onset of mining, the Applicant proposes to mine limestone from the bench between Area H and the processing facility as described in a letter from the Applicant to CDRMS on February 9, 2009. The area, shown on Exhibit F-1A, will be mined to the processing facility bench level of 7200 feet. No mining will occur in Area H or below the 7200-foot level. Approximately 60,000 tons of limestone will be removed from this area. The fault location study will occur at the same time as this mining to allow mining to progress to the top of the pit wall.

(b) Earthmoving Operations

Initial access roads to the top of the "North Peak" quarry will be developed for track mounted equipment. Initial grubbing and clearing, along with the removal and stockpiling of topsoil will occur on the newly disturbed areas for the current phase of work. Remote controlled equipment will be employed when deemed necessary by the Safety Officer. Bulldozers will then be used to rip and **excavate the weathered granite.** Drilling and blasting will begin up high in the quarry and work down **to remove the competent granite and limestone** following the bench configuration proposed in the geotechnical analysis. Pre-splitting will be used if field conditions warrant, to leave more competent walls. Each bench highwall will be 30 feet high and blasted to approximately a 63 degree angle. The benches will be 15 feet wide so that the overall slope is 1:1(H:V). **At the start of each phase, bulldozers will push excavated material downhill to a safe loading area for haul trucks. The haul trucks will transport the material required to fill Area H and material to be processed and sold. The Area H material will either be end-dumped into Area H or pushed-in with bulldozers. Moisture conditioning and truck and bulldozer traffic are expected to provide sufficient compaction of the fill material, and there will be a compaction specification that all material be compacted by traversing the material at least twice with a haul truck or bulldozer. The fill material used to construct the slope below the fault will be pushed from the excavation area to the fill area using standard regrading techniques.** The slope designs can be seen in the cross sections in **Exhibits C-3** through **C-5**.

It is challenging to design roads without disturbing additional areas for switchbacks, because the natural slopes above the current disturbed land areas are so steep. In an attempt to minimize additional disturbed lands, bulldozers will push materials down slope to loading areas. Temporary haul roads will be designed from these lower loading areas so that fill and surplus materials can be safely moved down to the fill and temporary stockpile areas. The exact location of access and haul roads are not shown on the figures at this time as this level of detail will be based on field observations during the execution of the Plan. **Once these roads are in place, Transit Mix Concrete Company will submit a Technical Revision to incorporate new facilities showing the location and size (width and length) of each road into the Mining Plan. This Technical Revision will include a revised facilities map.**

The acreage, cut and fill volumes for each phase can be found in **Table D-1**.

Table D-1
Areas of Cut and Fills Associated with Four Reclamation Phases

	Area Cut	***Area Fill***	***Cut***	***Fill***	***Surplus***
	(acres)	**(acres)**	**(BCY[1])**	**(LCY[2,3])**	**(LCY[2,3])**
Phase 01A	**2.81**	**0**	**30,000**	**0**	**0**
Phase 01B	9.94	8.75	1,446,304	695,559	1,040,006
Phase 02	8.21	5.83	1,444,025	694,500	1,038,330
Phase 03	10.2	7.12	1,443,373	785,537	946,511
Phase 04	10.3	6.16	1,441,694	604,734	1,125,299
Total	**42.9**	**27.5**	**5,775,396**	**2,780,330**	**4,150,146**

NOTE:
1. BCY is bank cubic yards
2. LCY is loose cubic yards
3. 20% swell is assumed.
4. Subsoil is 163,027 LCY
5. Topsoil needs are 81,514 LCY

(c) Water Diversions and Impoundments

Storm water from all areas of disturbance will be directed into the existing sedimentation systems for the mine. After the water is clarified it will be discharged into existing drainages. A

CDPS discharge permit for the current operations already exists and will be revised to include new disturbance areas as a described in this Plan.

As mentioned earlier, some measures have been taken and designed into the Plan to prevent the final reclaimed slope from becoming saturated. Surface run off from the hills above the disturbed areas will be diverted around the stabilized and reclaimed slope. In addition, a series of French Drains will be installed across the current mine road connecting the mine office to the aggregate plant area. This road sits on solid rock. The Plan will use the road as an abutment at the toe of the final reclaimed slope. A series of trenches will be excavated approximately 20 feet deep across this road and filled as shown in **Exhibit F-5**. This will allow waters collecting behind this abutment to run under the road to avoid saturating the near surface areas of the reclaimed slope.

(d) Size of area(s) to be worked on at any one time

The acreage of disturbed area for each phase can be found in **Table D-2**. The surplus material for each phase will be **processed and sold or** used to aid in the reclamation of other portions of the Pikeview Quarry property.

Table D-2
Areas Associated with Reclamation Phases

	Area Cut (ac)	***Area Fill (ac)***
Phase 01A	**2.81**	**0**
Phase 01B	9.94	8.75
Phase 02	8.21	5.83
Phase 03	10.2	7.12
Phase 04	10.3	6.16
Previously Disturbed Areas Outside Phase 01 to 04	0	34.7
Total Area of Subsoil and Topsoil Application		104

(e) Timetables for Mining and Reclamation Operations

The estimated time required for each phase of this Plan can be found in **Table D-3**. The same general procedure will be used in Phases 1 - 4 as is described above in the Mining Method and Earthmoving section of this Application. **The end of Phase 4** will consist of the removal of all

facilities for the existing quarry, the final reclamation of these areas in accordance with the 1994 and 2000 permit amendments.

Table D-3 Reclamation Schedule

Reclamation Phase	Min. No. Years		Max. No. Years
Phase 01	1	-	2
Phase 02	1	-	2
Phase 03	1	-	2
Phase 04	1	-	2
Range	**4**	-	**8**

(f) Description and Thickness of Overburden, Deposit, and Underlying Stratum

From analysis of previous project documents and CDRMS permit amendments, the topsoil thicknesses on newly disturbed acreages is approximately six inches thick. The topsoil tends to be poor on southern slopes and more organic on the northern slopes. Approximately 27,917 LCY topsoil are expected to be salvaged from the 23.78 acres of newly disturbed areas in the Plan. This amount may increase or decrease based on the actual location of the fault once mining commences.

Highly weathered granite will be stockpiled, when conditions are suitable for safe operations, for use as subsoil between the re-grade and the topsoil.

Topsoil will be stockpiled for use in reclamation. The location of the topsoil stockpiles will be within the permit area, and out of the way of mine traffic, stream channels or drainage ways. Current native topsoil stockpile locations are shown on **Exhibit C-1**. Donated topsoil piles will be maintained near the plant area, and hauled to sloped benches which are ready for topsoil. Stockpiles will be stabilized with vegetative cover or other means to protect from erosion.

The upper slopes that will be newly disturbed in this Plan have 0 to 30 feet of highly weathered Pikes Peak granite that is considered overburden and will be removed by bulldozer prior to drilling and blasting operations. The benches will be blasted in the Pikes Peak granite west of the fault to achieve the desired long-term stable slope.

The primary deposit that has been mined in the past for sale at Pikeview Quarry is the Manitou Limestone. The basal member of the Manitou Limestone is the Peerless dolomite, which has also been mined, when present.

The underlying stratum is the 70-foot thick Sawatch sandstone. The sandstone is glauconitic near the top, and arkosic near the base. The failure of a weak, thin laterally extensive clay layer near the top of this formation has been attributed to the December 2, 2008 landslide.

Rock moved to achieve a stable configuration will be hauled/pushed for fill at the base of the mining area. **Exhibits F-1** through **F-4** show the **four** phases of the cut and fill operation.

(g) Primary and Secondary Commodities

Safe field operations will determine what type of rock will be surplus to the stabilization and reclamation activities. Should any of the sedimentary lithologies **or granite** be available as surplus, the permittee will sell these materials. All materials produced from the site will be processed at the site. Weathered granite and limestone fines may be mixed to provide a base over the reclaimed surface prior to placing topsoil.

(h) Incidental products

A demand for incidental products (surplus non-commodity) products will be determined as reclamation proceeds.

(i) Explosives use and proof of surrounding stability

Explosives will be required to reclaim Pikeview Quarry. The current Plan design reclaims and stabilizes the slope from north to south. The least stable areas are reclaimed late in this Plan, allowing unstable materials to achieve a more stable configuration prior to initiating work in an area. It is anticipated that the advance of blasting operations may aid in helping to stabilize the landslide areas currently creeping on the Pikeview property. However, the Applicant does not anticipate any stability issues in lands surrounding the Pikeview Quarry, nor any impacts outside the permit area.

A specific blasting plan is difficult to develop at this time. Much depends on the depth of weathered granite and exact location of the fault. The type and condition of the rocks encountered during mining will also have to be taken into consideration. The Applicant will work closely with a drilling and blasting contractor to ensure that safety is the top priority in the blasting program.

There are no modifications to the explosives storage and a blasting plan. Prior to reclamation activities, the explosives contractor may decide to modify the plan. The plan will be available to review in the quarry offices during active operations. The plan will ensure that off-site areas will not be adversely affected by blasting per Rule 6.5(4) of the Construction Materials Rules and Regulations.

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EXHIBIT E
RECLAMATION PLAN

Overview of Reclamation Plan

The post-mining land use for the layback reclamation area will be wildlife habitat; the post mining use for the existing quarry remains unchanged. The surrounding land uses remain National Forest and residential to the east. The reclamation and mining plan that is part of this application was developed for the sole purpose of stabilizing and reclaiming Pikeview Quarry. Additional land disturbance will be kept to a minimum, however it is estimated that an additional 9.3 acres disturbed land will be required high on the west highwall to complete stabilization of the current failing slope.

Topsoil will be stripped and initially stockpiled, prior to mining. Both on-site and donated topsoil will be utilized for future surface reclamation. It may be more aesthetically pleasing for portions of the slope to be left as bare blasted materials to represent natural talus slopes. This will be determined at a later date and could depend on the volume of donated topsoil available. The areas that will be topsoiled will be underlain by minus nine-inch sub-base material produced from the fine-grained granitic materials and any available surplus limestone fines.

The original estimate of land requirement in past permit amendments was based on an approximately 2:1 Horizontal:Vertical (H:V) reclaimed slope. The natural ridges west of the property range from 2.3:1 to 2.8:1 (H:V). Geotechnical analysis of the granite into which the final slopes will be cut reveals a steeply dipping joint set. Therefore the additional 9.3 acres of disturbed area are required to layback the final reclaimed, upper slope to 1:1 (H:V), which will achieve long-term stability. The lower slope will range from 3.7 – 4.0:1 (H:V). The exact location of the fault, which will serve as the point of inflection between the two slopes cannot be identified with certainty until actual field observations can be made **prior to** Phase 1 of the mining plan. The mining plan uses the best information available for the location of the fault to generate the cut and fill volumes in each phase. There is some uncertainty in the exact slope below the fault and the western slope crest and slight adjustments to the mining plan will be required as mining progresses.

Inert concrete fill from removal of building foundations may be accepted for disposal in the **Area H pit for five years**. Each load accepted for disposal will include documentation that it is asbestos free, and records of the volume of the materials and their certification will be retained at the quarry office for a period of three years. **A representative signed affidavit is included in Exhibit T which states that "No hazardous materials were used by this builder in the construction of the foundation, curbs or gutters on the property. The inert material contains no significant concentrations of ash, rubble or trash from the site, and has no evidence of hydrocarbon contamination. There may be a small quantity of earthen material associated with the inert material."**

Materials will be stockpiled at the elevation of the shop bench prior to placement in the pit, to allow screening of unacceptable materials. **No more than 1,000 cubic yards will be stockpiled adjacent to the pit at a time.** It is anticipated that there will be less than 30,000 CY of materials, and that backfill will compact the space between the concrete sufficiently to avoid significant differential settling. **A change in the post-mining configuration is not expected, as 30,000 CY is less than 1% of the total fill volume**.

It is challenging to design roads without disturbing additional areas for switchbacks, because the natural slopes above the current disturbed land areas are so steep. In an attempt to minimize additional disturbed lands, bulldozers will push materials down slope to loading areas. Temporary haul roads will be designed from these lower loading areas so that fill and surplus materials can be safely moved down to the fill and temporary stockpile areas. The exact location of access and haul roads are not shown on the figures at this time as this level of detail will be based on field observations during the execution of the Plan. The acreage, cut and fill volumes for each phase can be found in **Table D-1**.

Reclamation Quantities and Phasing

The Applicant will apply the salvaged topsoil available on site and the donated topsoil from the public on disturbed areas as the mining and reclamation proceed from north to south across Pikeview Quarry

An average of six inches of topsoil will be placed on the benches of the upper slope and across the lower slope. A sub-base material made of surplus granite and limestone materials will be placed over the shot rock prior to topsoil redistribution. This minus nine inch sub-base will create a good transition material from shot rock to topsoil, increasing the stability of the surface layers of the slopes. Ideally, tree planting and grass seeding will occur in conjunction and closely behind the final reclaimed slopes. The mining and reclamation will occur in conjunction with one another in 4 phases. Phase acres, estimated volumes of sub-base and topsoil required, and cut and fill volumes to achieve the recommend slope can be seen in **Tables D-1** and **D-2** from the Mine plan of this Application.

Topsoil Preservation

Topsoils will be salvaged from any new disturbance areas. Woody materials will be removed prior to salvage, and either removed from the area, chipped to incorporate into subsoils, or used as brush windrows for the stormwater plan Both on-site previously stockpiled topsoil and donated topsoil will be utilized for future surface reclamation as plant growth medium. The location of current topsoil stockpile locations and the proposed new topsoil stockpile(s) can be found on **Exhibit C-1**. Donated topsoil piles will be maintained near the plant area and hauled

to the reclaimed slopes when they are ready for final planting and seeding. Stockpiles will be stabilized with vegetative cover or other means to protect from erosion.

Subsoil Generation

Subsoils will provide a plant growth medium between the regraded materials and the topsoil. The weathered granite will be stockpiled and mixed with any available limestone fines or chipped woody materials to extend the rooting zone for plants.

Final Grading, Slopes, and Drainage

The reclamation plan has been described in considerable detail in **Exhibit D**. Reclamation of the current highwalls in the mining area will start above the current disturbance on the north end and continue south in phases, as shown in **Exhibits F-1** through **F-4**. Weathered granite will be pushed downhill for loading and transportation to the fill zone. Drilling and blasting will create a series of benches fifteen feet wide and thirty feet high down to the inflection point. The bench highwalls will have a 63 degree angle and the overall slope will be 1:1 (H:V). The lower slopes will be graded to 3.7:1 to 4:1 (H:V) with the road abutment at the toe of the slope. **There will be no change in post-mining subsurface and no effect on the end of mine.**

Storm water from all areas of disturbance will be directed into the existing sedimentation systems for the mine. After the water is clarified it will be discharged into existing drainages. A CDPS discharge permit for the current operations already exists and will be revised to include new disturbance areas as a described in this Plan.

Some additional measures have been taken and designed into the mining and reclamation plan to prevent the final reclaimed slope from becoming saturated. Surface run off from the hills above the disturbed areas will be diverted around the stabilized and reclaimed slope. In addition, a series of French Drains **(proposed minimum design shown on Exhibit F-5)** will be installed across the current mine road connecting the mine office to the aggregate plant area. This road sits on solid rock. The mining and reclamation plans will use this as an abutment at the toe of the final reclaimed slope. A series of trenches will be excavated approximately 20 feet deep across this road and filled as shown in **Exhibit F-5.** This will allow waters collecting behind this abutment to run under the road and into the existing storm water containment pond to prevent saturating the near surface areas of the reclaimed slope.

The three proposed French Drains will be installed at the current ground surface once backfilling reaches that elevation. These will intercept surface water runoff from the wests, as well as water collecting in the pit and direct the flow into the stormwater drainage system. The drains will have a minimum ten-foot width, 2:1 side slopes and be at least 20 feet deep. We do not anticipate any long-term maintenance or drainage issues

with the French Drains, but the ditches will be maintained on a regular basis and as conditions require.

Topsoil Application

The Applicant will apply the salvaged topsoil from the site and donated topsoil from the public on disturbed areas affected by the layback project. The topsoil thickness should average approximately 0.5 foot, above a 1.0-foot subgrade of weathered granite on the upper slope benches and on the lower slope in its entirety. Ideally, broadcast seeding should occur within five days of spreading the topsoil, otherwise mechanical roughening of the surface crust (formed by precipitation) may be needed prior to seeding operations. Topsoil will be applied to all areas of disturbance more gentle than 1:1 in the West area, approximately 101 acres. This corresponds to topsoil requirements of 81,514 LCY, which will consist of both on-site topsoil and donated topsoil. With time, some of the topsoil materials will migrate into this weathered granite subgrade, enhance its ability to store moisture from precipitation, and enhance tree root development. No slope stability problems are anticipated in this subsoil, since the granite is not susceptible to strength loss with moisture, and the slope backfill is supported by the stable underlying granite benches.

Transit Mix Aggregates will discourage the donation of topsoil with weeds, and will perform noxious weed management using backpack weed sprayers as needed.

Revegetation

Revegetation throughout the mine site will differ depending on surface ownership, elevation, and availability of water, **as shown on Exhibit F-6**. The western portion of the mine site and much of the area of 1:1 slopes is on Forest Service surface. The 2001 EA sought re-establishment of a Douglas Fir- Lodgepole pine forest on 2:1 slopes on this parcel. Prior reclamation plans included a pinyon juniper revegetation plan between 7450' and 7250' on private surface with deciduous tree plantings along waterways. As an expansion of their prior plans, the applicant has identified a mixed shrub community of Gambel's Oak and Mountain Mahogany from approximately 7250' to the base of the property.

Given the safety concerns and a desire to limit further disturbance at the site, the proposed reclamation plan is now a steeper 1:1 (H:V) overall slope. Trees will be planted on the benches to provide visual diversity at a rate of 43 trees per acre, with the anticipation that there will be a 70% survival rate of 30 trees per acre. The benches will be planted with the Forest Service prescribed rangeland shrub seed mix tabulated in **Table E-1**.

Downgradient, in the 3.6:1 to 3.9:1 (H:V) zone, a pinyon juniper community will be established to mimic the tree pattern on the south facing slopes above the disturbed areas. The number of planted trees would vary from 60 trees/acre to 30 trees/acre between 7450' and 7250', to achieve a 20 % cover assuming a 70% survival rate. The associated seed mix is compiled in **Table E-2**.

Plantings along waterways will be supplemented with deciduous species, including cottonless cottonwood, native willow, wild plum, snowberry and chokecherry to enhance wildlife diversity and provide shelter within the site.

The Gambel's Oak-Mountain Mahogany community near the base of the property will be planted with 336 oak or mahogany plugs/acre, supplemented by other woody species including soapweed yucca (*Yucca glauca*), Wood's rose (*Rosa woodsi*i), Cliff spirea (*Holodiscus dumosus*) at a rate of 200 stems per acre. The previously approved seed mix within Table **E-2** will also be utilized to provide a base revegetated cover.

Cultural practices will be key to the success of the reclamation effort. The planting of tree seedlings on the benches will not be supported by irrigation systems. Tree planting will occur in the spring when soil moisture is optimal. Site preparation prior to planting will include clearing an area roughly 3 feet by 3 feet, preparing a depression surrounded by an earthen berm. Polyacrylamides will be mixed in with the soil per manufacturer's recommendations to reduce competition from grasses and minimize moisture fluctuations. Prior to planting, bare root seedlings will be dipped in a mycorrhizal solution or inoculant. The tree seedling will be planted in the center of the basin, and an anchored weed control fabric installed. A mesh tree guard should be placed around the seedling to thwart immediate loss from foraging species. Planting should be followed by an initial watering to saturate the polyacrylamides, and enhance success. Native grasses will be seeded after the tree planting, at an appropriate time for successful germination.

Table E-1 Seed Mix Composition for USFS Lands

Species	Common Name-Variety	lbs./acre	Seeds/sq. ft.
Achnathaum hymenoides [a]	Indian Ricegrass- Rimrock	1.5	*5*
Bouteloua curtipendula	Sideoats Grama- Vaughn	0.7	*3*
Bromopsis ciliatus	Nodding Brome- Native	0.5	1
Chondrosum gracile [b]	Blue grama- Native	0.1	2
Danthonia parryii	Parry Oatgrass- Native	2.4	*5*
Elymus lanceolatus [c]	Thickspike Wheatgrass- Critana	2.3	8
Elymus trachycaulus [d]	Slender Wheatgrass - San Luis	2.7	10
Elymus elymoides [e]	Bottlebrush Squirreltail -Native	2.3	10
Festuca arizonica	Arizona Fescue - Redondo	0.8	9
Festuca saximontana	Rocky Mountain Fescue- Native	0.2	*5*
Hesperostipa comata [f]	Needle-and-thread- Native	1.9	*5*
Leymus ambiguus	Colorado Wildrye- Native	3.4	10
Muhlenbergia montana	Mountain Muhly- Native	0.2	10
Nasella viridula [g]	Green Needlegrass- LoDorm	0.7	3
Schizachyrium scoparium	Little Bluestem -Native	0.8	*5*
	TOTALS	20.5	91

Forbs */* Half-shrubs

Antennaria rosea	Rose Pussytoes	0.5	0.7
Artemisia frigida	Fringed Sagewort	0.4	*2*
Artemisia ludoviciana	Pasture Sagewort	0.5	3
Helianthus pumilus	Low Sunflower	7.9	3
Penstemon angustifolius	Narrowleaf Beardtongue	0.3	0.3
	TOTALS	9.6	9

[a] aka *Oryzopsis hymenoides*

[b] aka *Bouteloua gracilis*

[c] aka *Agropyron dasystachyum*

[d] aka *Agropyron trachycaulum*

[e] including *E. longifolius,* both aka *Sitanion hystrix, S. longifolius*

[f] aka *Stipa comata*

[g] aka *Stipa viridula*

TABLE E-2

SEED MIX – Permanent Mix for Erosion Control on Private Surface

Species[1]	PLS[2] lbs./ac	SEEDS/SF
Big Grama	0.5	9.47
Crested Wheatgrass – Ephraim	1	4.59
Green Needlegrass	1	4.16
Intermediate Wheatgrass	4	8.08
Little Bluestem	1	5.97
Pubescent Wheatgrass	4	9.18
Russian Wildrye	2	8.03
Sideoats Grama	2	8.77
Western Wheatgrass	4	10.10
Ranger Alfalfa	1	4.82
Mountain Mahogany	2	2.7
Rubber Rabbitbrush	1	9.18
TOTALS	24	85.05

[1] Availability may dictate the need for variety substitution or species omission.

[2] Percent of mix calculated on a seeds-per square-foot basis.

Use of native species grown from seed collected near the site or along Colorado's Front Range is highly recommended. Most seedlings may be purchased from the Colorado State Forest Service, local Soil Conservation Service, or State Extension Service offices.

Weed control shall be employed for all prohibited noxious week species. Weed control shall also be utilized to thwart weedy species threatening the success of reclamation species or when weeds threaten to spread outside the permit boundary.

Enhanced Reclamation

If the community wishes to enhance the reclamation effort by increasing the number of trees and shrubs, or additional wildflower planning, the Applicant will continue to work with the volunteer groups in stabilized areas. **An example** would be to include some Rocky Mountain Junipers in the Ponderosa pine and Douglas fir areas, and similarly including some random plantings of Ponderosa pines throughout the juniper areas. This would increase the random nature of the reclamation and allow nature to select which trees survive the best on certain slopes. Deciduous trees and shrubs planted along and near drainages would add some additional visual variety and erosion control.

The granite cliffs will be sprayed with a Permeon stain, in accordance with the manufacturer's application recommendations. The staining operations will occur as each 30' high cliff is constructed, prior to blasting the bench below. This will increase safety and also prevent any negative effects of the Permeon stain on vegetation below it.

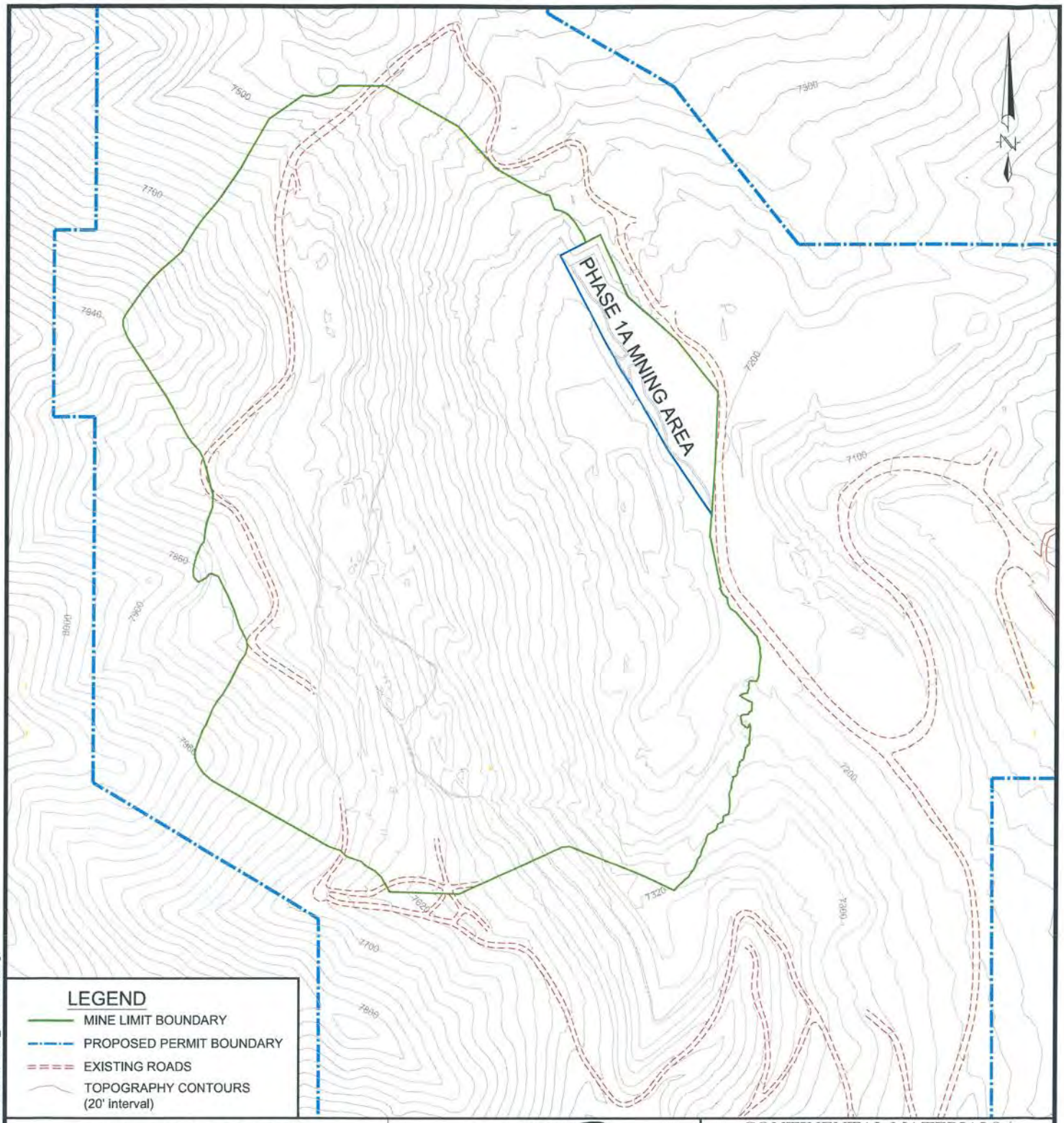
The bonding amounts for reclamation are only for the trees and grasses described above, but not described as "enhanced reclamation".

Buildings and Structures

All buildings and non-hydrologic structures will be removed and foundations broken up and buried on site from the permit boundary at Final Reclamation.

EXHIBIT F
RECLAMATION PLAN MAP

Exhibit F-1A	Reclamation Phase 01A
Exhibit F-1B	Reclamation Phase 01B
Exhibit F-2	Reclamation Phase 02
Exhibit F-3	Reclamation Phase 03
Exhibit F-4	Reclamation Phase 04
Exhibit F-5	Minimum French Drain Section
Exhibit F-6	Revegetation Plan



LEGEND

- MINE LIMIT BOUNDARY
- PROPOSED PERMIT BOUNDARY
- EXISTING ROADS
- TOPOGRAPHY CONTOURS (20' interval)

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST
CORPORATION

0 200 400 600
FEET
(10' interval)

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT F-1A
RECLAMATION PHASE 01A

DRAWN: NL	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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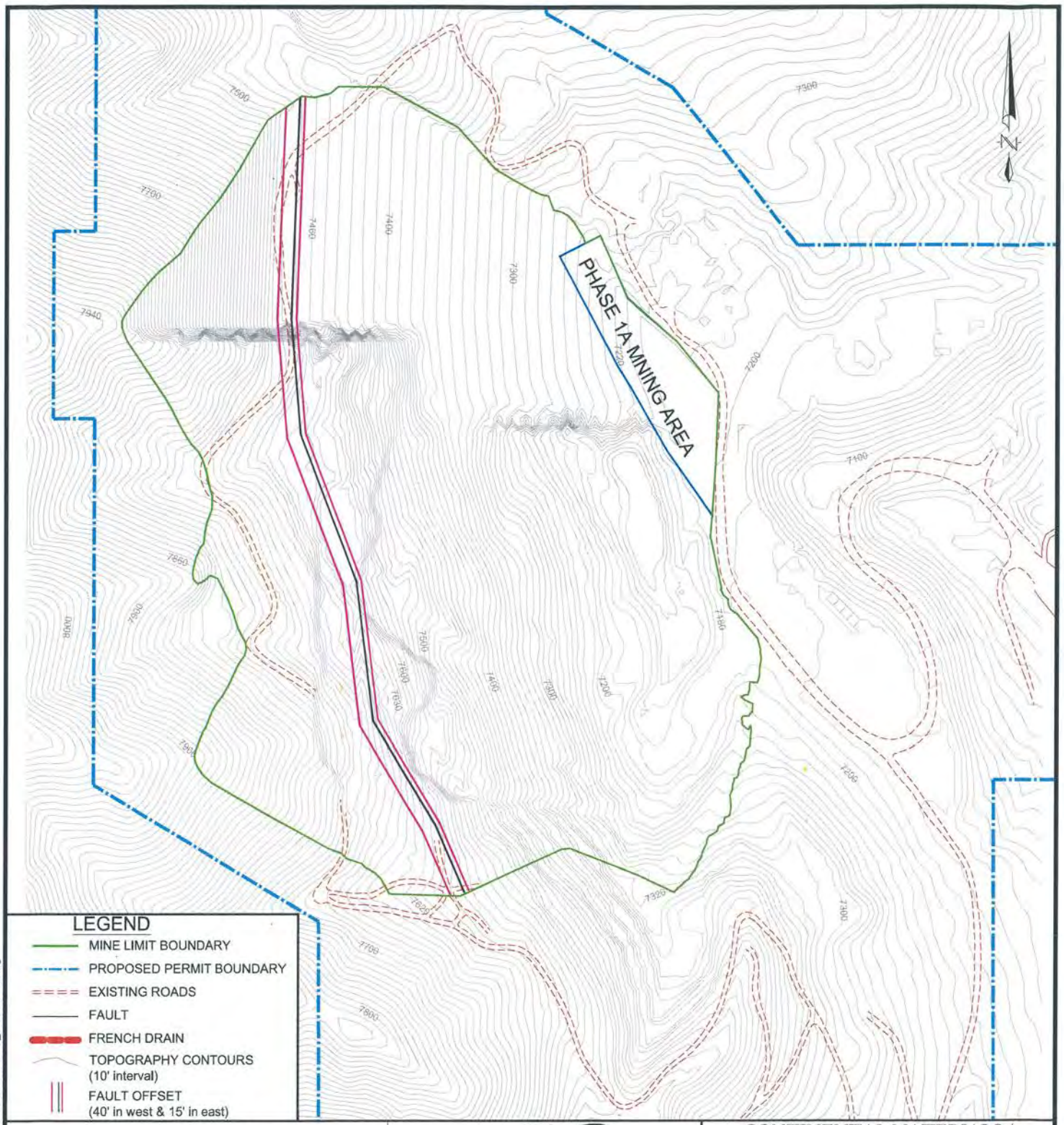

LEGEND

- MINE LIMIT BOUNDARY
- PROPOSED PERMIT BOUNDARY
- EXISTING ROADS
- FAULT
- FRENCH DRAIN
- TOPOGRAPHY CONTOURS (10' interval)
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST
CORPORATION

0 200 400 600
FEET
(10' interval)

CONTINENTAL MATERIALS /
TRANSIT MIX AGGREGATES /
CASTLE CONCRETE

EXHIBIT F-1B
RECLAMATION PHASE 01B

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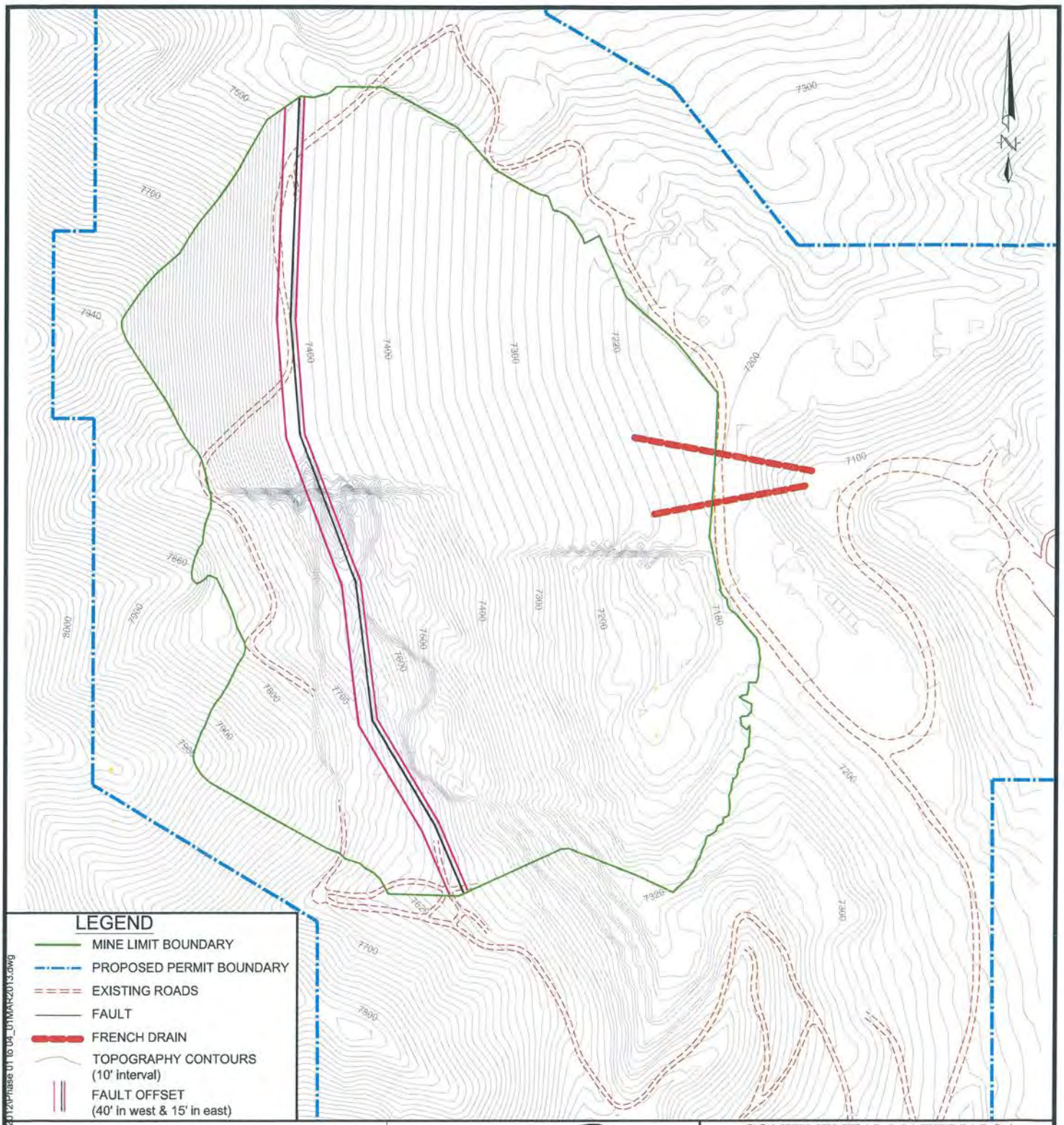

LEGEND

- MINE LIMIT BOUNDARY
- PROPOSED PERMIT BOUNDARY
- EXISTING ROADS
- FAULT
- FRENCH DRAIN
- TOPOGRAPHY CONTOURS (10' interval)
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

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COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES
NORWEST CORPORATION

0 200 400 600
FEET
(10' interval)

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT F-2
RECLAMATION PHASE 02

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REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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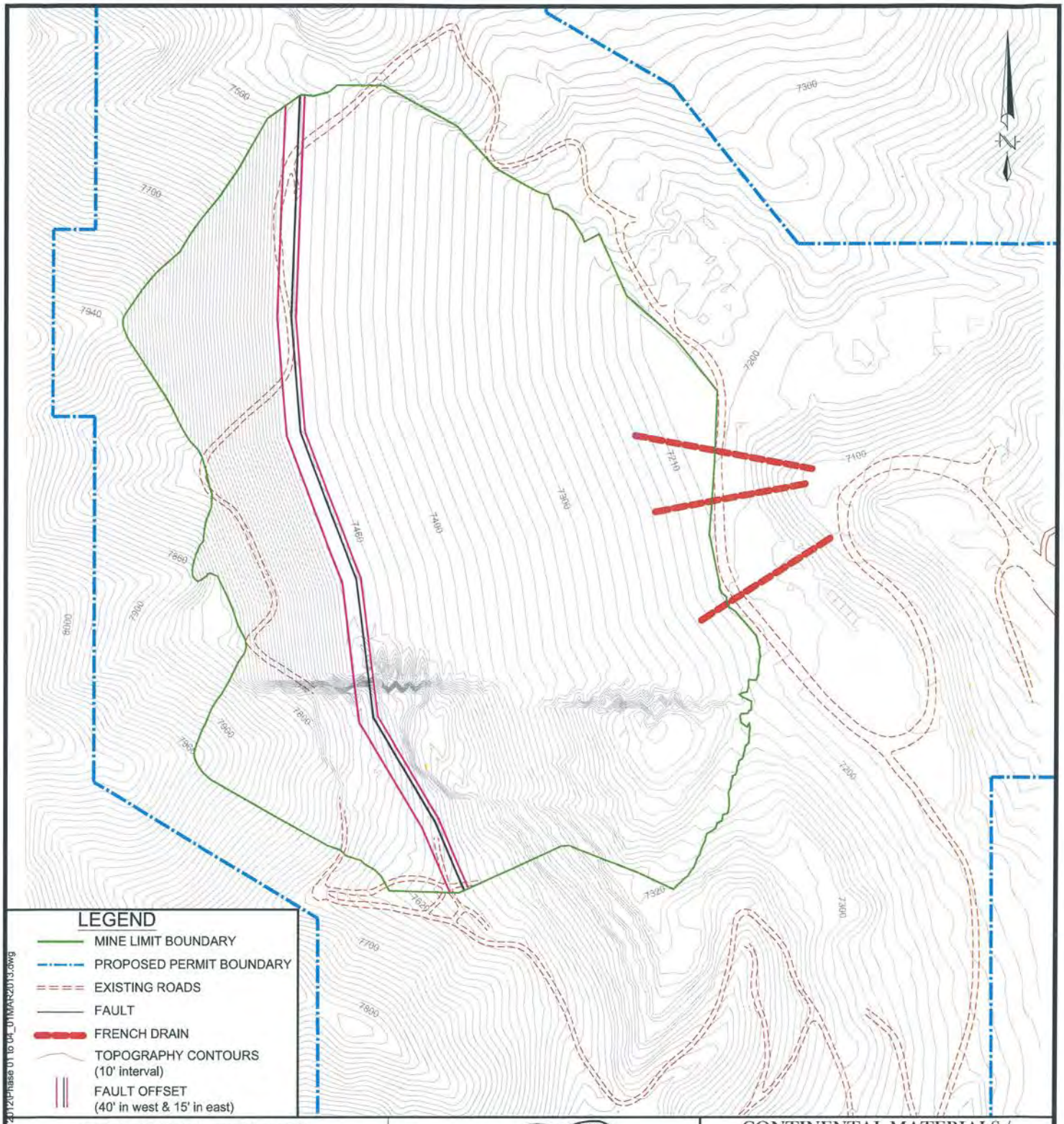

LEGEND

- MINE LIMIT BOUNDARY
- PROPOSED PERMIT BOUNDARY
- EXISTING ROADS
- FAULT
- FRENCH DRAIN
- TOPOGRAPHY CONTOURS (10' interval)
- FAULT OFFSET (40' in west & 15' in east)

CERTIFICATION STATEMENT

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COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST
CORPORATION

0 200 400 600
FEET
(10' interval)

CONTINENTAL MATERIALS /
TRANSIT MIX AGGREGATES /
CASTLE CONCRETE

EXHIBIT F-3
RECLAMATION PHASE 03

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REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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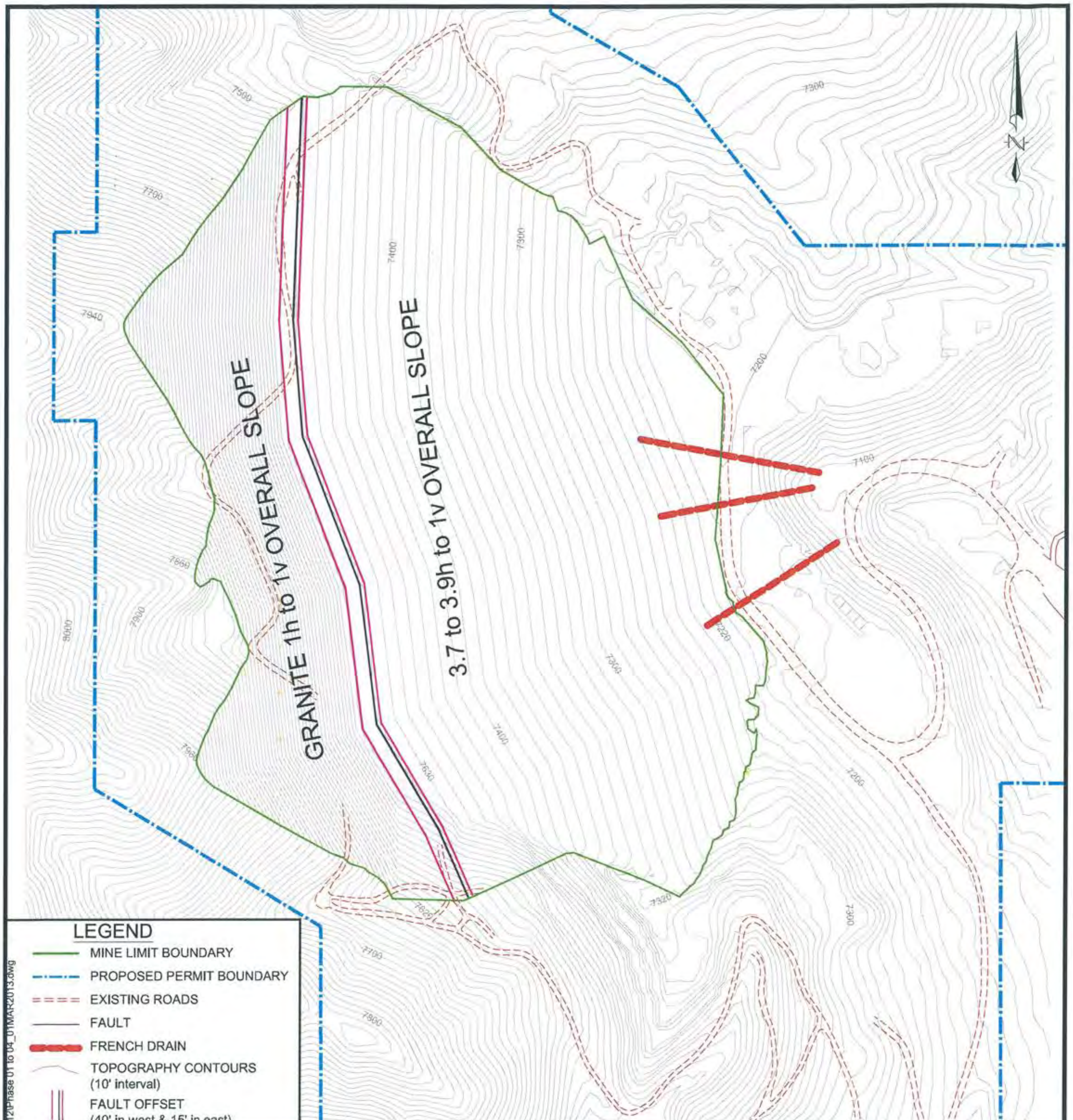

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CERTIFICATION STATEMENT

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COLORADO LICENSED PAUL J. KOS 40848 PROFESSIONAL ENGINEER
3-4-13

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

0 200 400 600
FEET
(10' interval)

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT F-4
RECLAMATION PHASE 04

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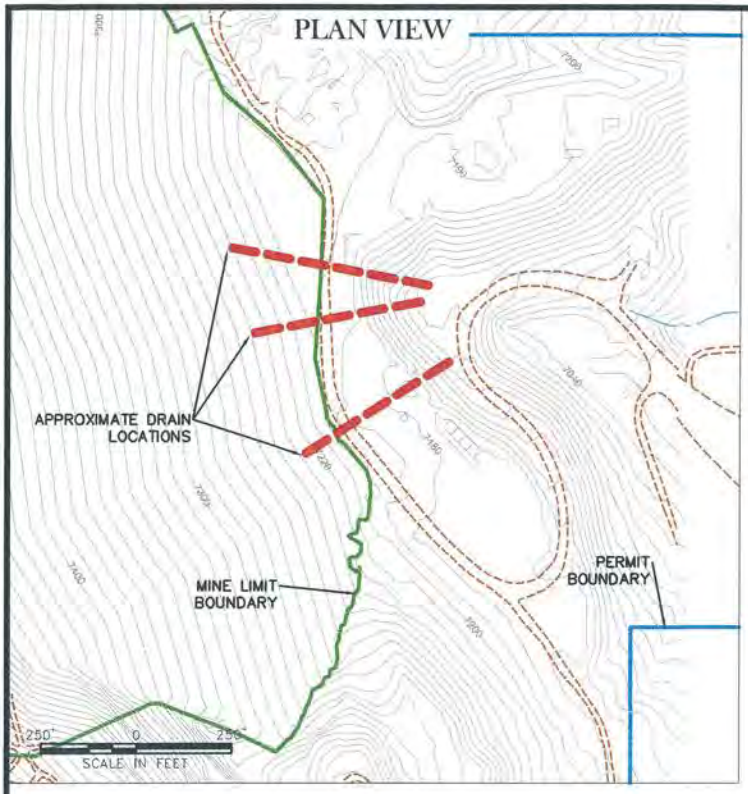
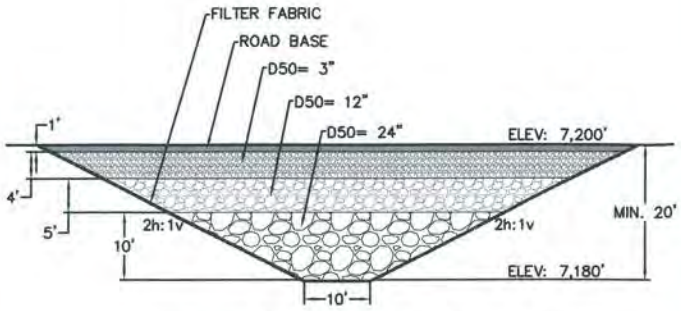
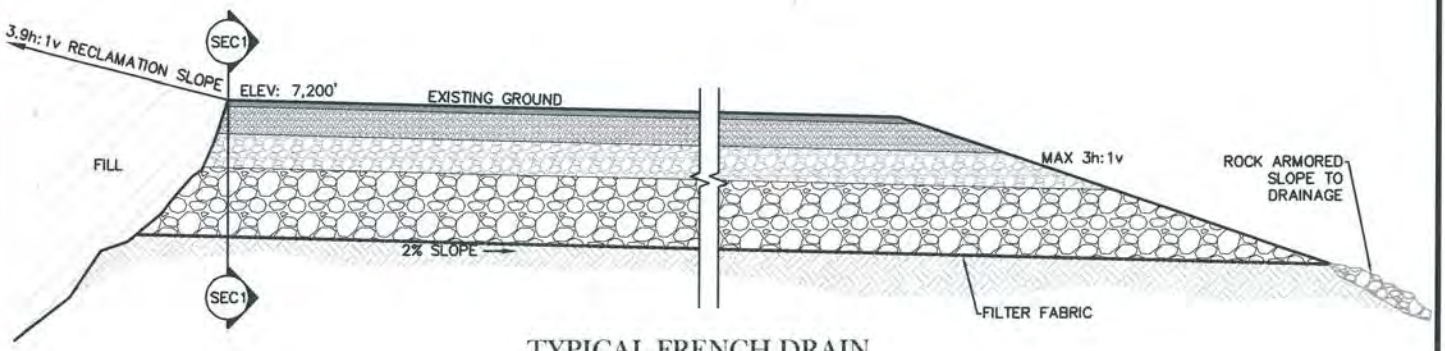
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: Phase 01 to 04_01MAR2013.dwg			

PLAN VIEW





TYPICAL FRENCH DRAIN SECTION



TYPICAL FRENCH DRAIN PROFILE

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED PAUL J. KOS 40848 3-4-13 PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT F-5 : MINIMUM FRENCH DRAIN SECTION

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REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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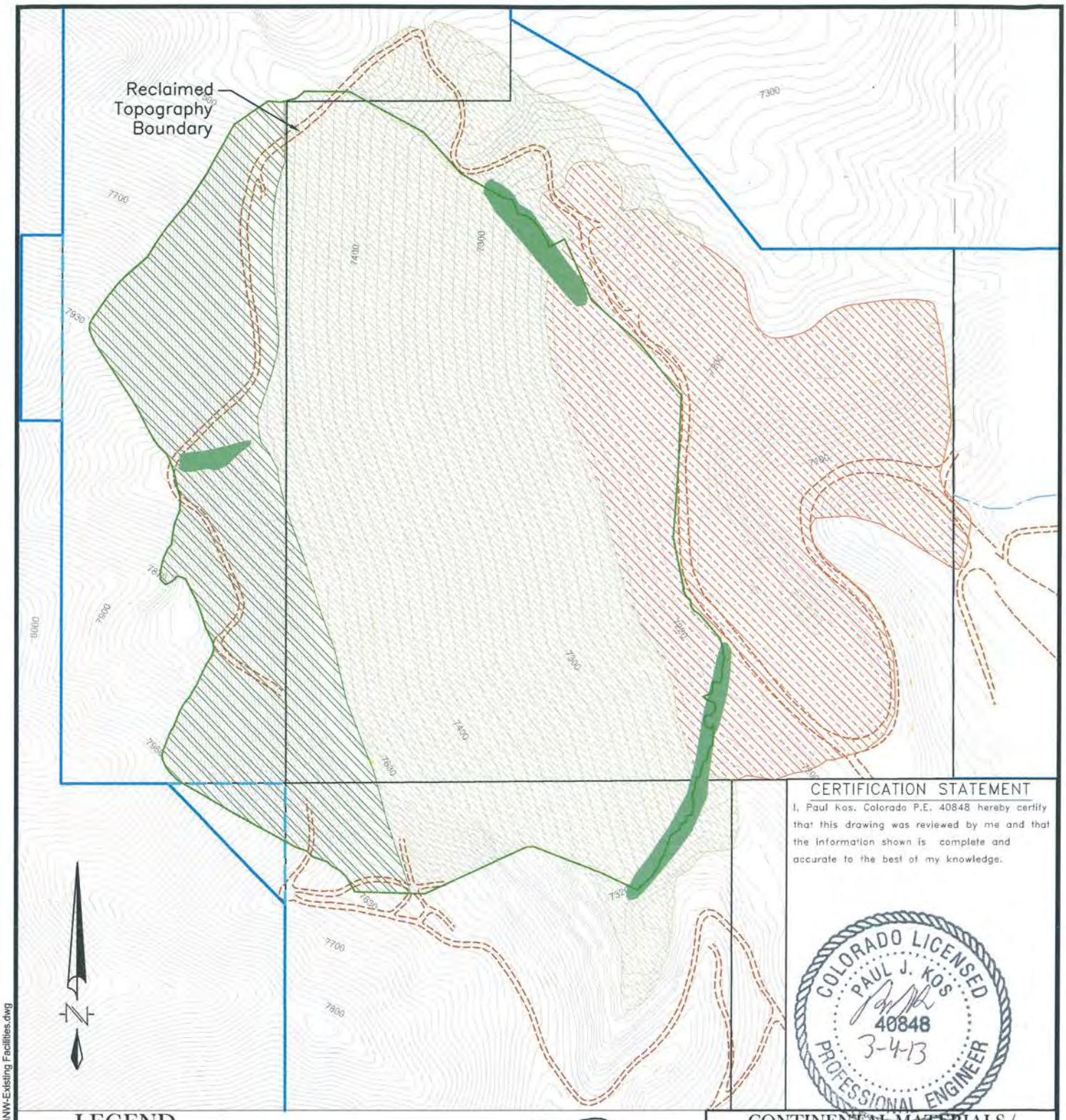

CERTIFICATION STATEMENT

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COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

LEGEND

- Ponderosa Pine & Douglas Fir (30 Stems/ac.Revegetated) (43 Stems/ac. Planted)
- Rocky Mountain Juniper & Grass (21-42 Trees Revegetated) (30-60 Trees Planted)
- Mtn Mahogany/Gambel Oak
- Decidous Tree Area
- Proposed Permit Boundary
- USFS Boundary

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

0 200 400 600

FEET

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

EXHIBIT F-6
REVEGETATION PLAN

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
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EXHIBIT G
WATER INFORMATION

EXHIBIT G
WATER INFORMATION

Surface Water

The Pikeview quarry is located in the headwaters of the Monument Creek watershed. There are four drainages flowing **east** towards the quarry from elevations ranging from 8120' msl to 8480' msl. The drainage basin north of North Peak has active surface flow during most of the year, but it disappears below the surface a few hundred feet west of the quarry. The other three drainages historically were dry. Flows are expected to increase for a few years as a consequence of the Waldo Canyon fire to the west. A small spring discharges in the vicinity of the sediment basin in the curve of the access road leading up to the quarry. Any channel flows that leave the site flow southeast in an unnamed tributary until its confluence with Douglas Creek, a mile downstream. Douglas Creek runs through a greenbelt to its confluence with Monument Creek. Monument Creek is a tributary of Fountain Creek, and all are located within the Arkansas River watershed.

Surface water will be affected in various ways, but, as much as possible, surface water will be diverted around the operation, or treated in depressions on the site or passed through the sediment pond**s**. Control of sediment and flow volumes will be accomplished through the stormwater management control features. These facilities were described in Technical Revision 7, approved in early 1994. Detail regarding these facilities can be found in the plans with that technical revision and more recent updates. To control flow volumes, rates, and sediment discharge, a series of **detention** basins and energy dissipation drop structures are used. These structures control the outflow volumes and are designed around a **25-year, 24-hour storm event for the operational period and a 100-year**, 24-hour storm event **for reclamation.** It is likely that storms larger than this will be controlled to some extent, but sediment loads and volumes from larger storms will probably exceed the capability of the system to provide full control.

Water needs for the operation include dust control on the roads and in the processing equipment. The source of this water is from fire hydrants in the vicinity of the quarry. This water is purchased from the City of Colorado Springs.

No water is needed for irrigation as no irrigation is expected to be used in the revegetation program. The revegetation program is designed to function and develop under natural precipitation levels. Some manual augmentation methods may be used for tree plantings.

The emphasis of the storm water management plan is in two parts. **First, is the diversion of run-on from the U.S. Forest Service land to the west away from the quarry pit walls. This is accomplished by grading the existing roads at the crest of the quarry so that water is collected and conveyed to the north or south. Diverting this water away from the quarry walls will limit flows and seeps into the fracture zone. Second,** is prevent**ing** heavy sediment and stormwater flows from **leaving** the site. This is accomplished by maintaining, as much as possible, "informal" detention **basins** within the mine. These are "informal" in that they are composed of mine pits and other depressions that simply capture stormwater and sediment and prevent it from entering the lower portions of the permit where the more "formal" controls identified in TR-7 (1994) are present.

The "formal" stormwater controls include the use of culverts to direct the water and sediment to a series of **detention** basins that capture the sediment and allow much cleaner water to pass through. Open drainage paths will be protected primarily with drop structures that act as energy dissipaters, minor sediment collection areas, and streambank protections.

A final **detention** basin near the east edge of the permit that was constructed before May 27, 1994, provides a final treatment area. This basin was included in the stormwater management facilities technical revision submitted in January 1994. This allows for capture of any sediment that manages to get past the upper sediment basins and drop structures.

A key element of the stormwater management plan is maintaining a high available sediment capacity in the **detention** basins. This is accomplished by periodically cleaning out the **detention** basins when the sediment reaches a certain level. By maintaining the upper **detention** basins the formal treatment basin should not receive much sediment. If much sediment accumulates in the final treatment basin then either the upper sediment basins need to be cleaned or the storm event that deposited the sediment in the formal treatment basin exceeded the capacity of the system. In either event, large amounts of sediment in the final treatment basin indicate a need to clean the upper **detention** basins.

Figure G-1 identifies the drainage system associated with the quarry area **during operations. Figure G-2 identifies the drainage system for reclamation.** **Figure G-3** identifies channel cross sections. **Figure G-3** also identifies plunge pools associated with **drops** in the benched areas. **The previously submitted drainage plan contains information on flow directions and detention basin locations, and is provided in Exhibit T.**

As the quarrying progresses, the stormwater management plan will be periodically reviewed and adjustments made as needed. Upland diversions and upstream basins will be used along the western perimeter of the disturbance area to minimize run-in to the pit area.

The north ditch has the largest watershed and runoff volumes. This ditch been designed to convey the peak flow from the 25-year, 24-hour event, but there is an overflow at one of the ditch bends where flows in excess of the 2-year, 24-hour storm event peak flow will be diverted into Area H. Flows up to the 2-year, 24-hour event will be conveyed to the bottom of the quarry and into the detention basins. Diverting this flow in larger storms will reserve detention basin capacity for runoff from the other areas of the quarry. Within the mining area, control measures will primarily consist of utilizing the trough zone as the sediment control facility. The volume of water that can be retained in these areas far exceeds anything that would be anticipated in a 100-year storm event.

Upon conclusion of the reclamation, the quarry depression will no longer be available for sediment control. Runoff will be routed to the northeast through the sediment pond, when practicable, and best management practices will limit offsite sedimentation in other locations. Discharge volumes may be somewhat greater simply because the final topography may allow a more rapid runoff. Sediment volumes should not be greater and will probably be much less. This is because nearly all the land at the end of the reclamation will be granitic cliffs or revegetated. At present, most of the sediment that needs to be controlled comes not from revegetated areas, but from nonvegetated roads, mining, and processing areas. It is expected that sediment control will essentially use the existing facilities after some minor modifications at the end of reclamation.

Long-term, small depressions along the eastern boundary of the mine will be utilized to increase sedimentation and slow runoff release from the areas. It is anticipated that these areas of dense vegetation on nearly level ground will be very effective at removing sediment. These facilities are presently operational and also function as sediment control facilities. It is expected that all stormwater control facilities will be maintenance-free in the future. None of the structures will be removed upon reclamation but will become part of the reclamation and will be largely obscured by vegetative growth.

Groundwater

Pikeview Quarry sits is located in northwestern Colorado Springs, where the Rockies rise out of the plains. Predominantly, the quarry has mined the Ordovician Manitou Limestone, a sedimentary formation with occasional thin layers of clayey shale. The limestone dips between 20 and 25 degrees on the floor of Area H to 30 to 45 degrees in the middle and upper slope areas, ranging up to 90 degrees in the immediate vicinity of the Rampart Range fault. The Manitou limestone has an exposed thickness of approximately 145 feet in portions of the Pikeview Quarry (Morgan, et al. 2003). The base of the limestone is the Cambrian Peerless

Dolomite which is approximately 40 feet thick. Underlying the dolomite is the Cambrian Sawatch sandstone, ranging from a glauconitic sandstone near the top to an arkosic sandstone near the base. The Sawatch is approximately 70 feet thick in the quarry. All formations are underlain by the Precambrian Pikes Peak granite which is highly weathered, fractured and jointed at the surface. The quarry is situated in a fault-bounded block related to the Rampart Range Fault. Both the Rampart Range Fault and the unnamed sub parallel fault that is located on the east side of the quarry exhibit west-side-up relative motion. The structural throw on the Rampart Range Fault is estimated to be approximately 4,300 feet (Morgan et al, 2003).

Historically, minimal groundwater has been encountered at the site, and there has been no need to pump water during mining operations. No seeps have been observed emanating from the high walls. One spring discharges in the vicinity of the sediment basin in the curve of the access road leading up to the quarry. The water coming from the spring likely originates in the large drainage northwest of the quarry and west of Area RN. The path it takes underground is unknown, but it likely flows through the sandstone and fractures in the limestone and granite north of areas that will be disturbed by future excavation. Water from the spring had been considered as a source of operational water for the mine, but problems with water rights and other issues has restricted the mine's source of water to City water. The spring discharges into a sediment basin and is allowed to flow on down the drainage. This prevents any interference with downstream water rights.

This aggregate operation is not expected to generate acid-forming or toxic producing materials, and thus no release of pollutants to groundwater is expected.

There has been an intensive amount of monitoring of water levels around the site following the slides. Near the top of the quarry, groundwater was observed in some drilling locations as summarized in **Figure G-4 and Attachment G-1**. Near the top (head scarp) of the December 2, 2008 landslide, groundwater was encountered and monitored in a piezometer (P-2) installed west of the nearby fault in Pikes Peak Granite and immediately east of the fault (P-1).

The EXAP boring project was initiated on April 7, 2011, using air percussion drilling (Appendix 41, Exponent Report). **A CD containing the Exponent Report was provided to CDRMS on November 7, 2012).** The goal of three wells within the H-area pit was to intersect the underlying Sawatch Sandstone; the northern EXAP-1 did not reach the Sawatch at 67' (7046.46'), while EXAP-2 contacted it at 62' (7053.89') and EXAP-3 were unable to reach it at 70' (7075.3'). All three wells had water in them the day after drilling, with the two northern wells having water levels within 7-8' of the surface, and EXAP-3 having water within 40' of the surface suggesting intersection with a confined aquifer. Exponent (2011) observed that 40 of 2144 GW levels were within a few feet of surface from confined groundwater conditions

Water levels were acquired from 26 boreholes in the H-Pit on 5/7/2011. Water elevations ranged from 7116' to 7137.75', with a median water level of 7123.75' (**Attachment G-1**).

Elevated water levels can potentially impact slope stability (**Exhibit E** and **Exhibit 6.5**), and thus French Drains have been included in the reclamation design.

Continuous water levels were acquired between 6/11/11 and 8/10/11 at 15 piezometers within the H-area pit. Instrumentation jammed in piezometer P-3 during installation, leaving 14 piezometers. Data were compared with the adjacent Mountain Shadows-Evergreen rain gage in the Colorado Springs area. There did not seem to be any response to rainfall in P-2(7586'), P-4 (Dry at 7142.7') and P-6 (dry at 7111.3'), but other borings exhibited a rapid response to rainfall with decay at variable rates of groundwater levels with time. Drilling at P-1, east of the Rampart Range fault encountered voids consistent with dissolution voids in the limestone; the intermittent measurement of water at this location is consistent with the rise of water in the piezometer from rain events and relatively fast, though not instantaneous, draining of water through the now interconnected voids and more permeable underlying sandstone (Appendix 41, Exponent, 2011).

In the immediate vicinity, there is one well permit from the Colorado Division of Water Resources for one 6-inch diameter, 29-foot well located in the SENW Section 9, drilled in 1964 for domestic use (**Table G-1**). It had a pumping rate of 4 gpm and a static water level of 12 feet. It was completed in "rock, clay and gravel" (**Attachment G-2**). The address associated with the well suggests that the well was filed incorrectly, and is located in the township directly south, over six miles away. Within a mile of the mine, there is another domestic well to the south in SESE Section 16, which is 150 feet deep that had a reported pumping rate of 15 gpm and a static water level of 36 feet (**Attachment G-2**). Reportedly, this is completed in the alluvium, so would not be influenced by activities in the mine. North of Section 10, in the SE quarter of Section 3 is a monitoring well of unknown depth installed in 1996 by Peregrine Joint Venture of Colorado Springs Utilities. To the northeast of the mine property in T13S R67W Section 2, there are 115 wells, ranging in depth from 50 to 700 feet, with static well depths of 18 to 270 feet. One is used for geothermal purposes, one is used for stock, fifteen have no use identified, and the rest are designated domestic use.

It is not anticipated that there would be impacts to local wells, but it would be worthwhile to acquire some baseline information on the well in Section 16, and to confirm the Section 9 well was permitted in the wrong location. There is a strong likelihood that the wells in Section 2 are completed in the High Plains Aquifer system to the east, which overlies the formations at the site, and thus no impacts to these wells are anticipated.

References

Morgan, M.L., Siddoway, C.S., Rowley, P.D., Temple, J., Keller, J.W., Archuleta, B.H., and Himmelreich, Jr., J.W., 2003, Geologic Map of the Cascade Quadrangle, El Paso County, Colorado, Colorado Geological Survey Open-File Report 03-18, Denver, CO, 1:24,000-scale.

Table G-1

Well Permits within 1 Mile of Pikeview Quarry

permitno	permitsuf	permit rpl	status_desc	div	wd	county	pm	ts	tdir	rng	rdir	sec	q160	q40	coordsns	coordsns_dir	coordsew	coordsew_dir	use1	use2	use3	aquifer1_name	permitted_area	permitted_area_units	annual_appropriation	date_permit_issued	date_permit_expires	date_well_constructed	date_1st_Beneficial_Use	date_pump_installed	comment	elev	well_depth	tperf	bperf	pump_rate	static_water_level
35107			Well Constructed	2	10	EL PASO	S	13	S	67	W	16	SE	SE					DOMESTIC			ALL UNNAMED AQUIFERS		acres					9/4/1968				150			15	36
21368			Well Constructed	2	10	EL PASO	S	13	S	67	W	9	NW	SE					DOMESTIC			ALL UNNAMED AQUIFERS		acres					4/23/1964				29			4	12
27825	MH		Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	3	SE						OTHER		MONITORI	ALL UNNAMED AQUIFERS		acres		4/12/1996	7/12/1996										
768	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				1/30/1957							155				
772	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				1/30/1957							210				
828	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							210				
829	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							194				
830	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							211				
831	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							148				
832	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							145				
836	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							118				
837	WCB		Well Constructed	2	10	EL PASO	S	13	S	67	W	2										ALL UNNAMED AQUIFERS				5/2/1957							148				
984			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE					DOMESTIC			ALL UNNAMED AQUIFERS			1	4/7/1958		4/22/1958	4/21/1958				150	40	140	12	50
6820			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2600	N	1200	E	DOMESTIC			ALL UNNAMED AQUIFERS			1	8/29/1960		8/27/1960	6/20/1976				210	90	210	14	150
10974			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1	3/26/1962		4/7/1962	4/7/1962				200	115	194	12	97
37293			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NE					DOMESTIC			ALL UNNAMED AQUIFERS			1	4/1/1969		5/30/1969	5/27/1969				245	140	245	6	119
10974		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SE					DOMESTIC			ALL UNNAMED AQUIFERS		acres		9/2/1969		8/25/1969	8/25/1969				200	150	200	15	98
51275			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1	2/17/1972		2/29/1972	2/29/1972				95	50	95	9	36
52478			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1	3/9/1972		7/27/1972	7/27/1972				205	65	195	7	86
56904			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NW					DOMESTIC			ALL UNNAMED AQUIFERS			1	4/13/1972		5/21/1974	3/21/1974				310	260	300	10	270
66176			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW	1935	N	2065	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	11/10/1972		4/19/1973	4/19/1973				240	160	240	6	136
66391			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW	2150	N	1650	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	11/16/1972		7/17/1973	8/20/1973	8/20/1973			210			10	135
66463			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2600	N	1180	E	DOMESTIC			ALL UNNAMED AQUIFERS			1	11/24/1972		2/9/1973	2/9/1973	2/24/1973			240	120	230	9	126
68719			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW	1962	N	1652	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	5/3/1973			10/1/1974		No Log						
72345			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NE	310	N	1060	E	DOMESTIC			ALL UNNAMED AQUIFERS				11/8/1973		11/14/1973		7/31/1974			310	260	300	10	260
74256			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	2600	S	1250	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	5/10/1974		4/25/1974	5/14/1974	5/14/1974			240	180	240	8	133
83624			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	2620	S	600	E	DOMESTIC			ALL UNNAMED AQUIFERS			1	5/3/1976		5/5/1976	5/5/1976				270	160	270	10	120
6820		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2600	N	1200	E	DOMESTIC			ALL UNNAMED AQUIFERS		acres		8/27/1976		6/20/1976	6/20/1976	SEE REC #336071			250	150	240	12	150
4854		A		2	10	EL PASO	S	13	S	67	W	2	SE	NE					DOMESTIC			ALL UNNAMED AQUIFERS		acres		9/22/1977											
99646			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	2050	S	600	E	DOMESTIC			ALL UNNAMED AQUIFERS				6/23/1978			11/30/1960								140
99646		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SE	2050	S	600	E	DOMESTIC			ALL UNNAMED AQUIFERS	1	ACRES		6/23/1978	6/23/1980	6/23/1978					235	130	235		140
105341			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW	1420	N	1900	E	DOMESTIC			ALL UNNAMED AQUIFERS			1	4/4/1979		3/28/1981		6/30/1987			250	200	240	12	60
124727			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1	4/5/1982		8/26/1983					290	210	290	15	125
130329			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1	5/11/1983		2/27/1985		10/15/1985			290	190	270	1.5	162
138363			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW	1650	N	2310	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	1/4/1985		3/2/1985					280	180	250	10	110
139283		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE					DOMESTIC			ARAPAHOE		acres		4/22/1985		1/25/1985					220	100	220	10	95
5510		A	Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	SE	NW					DOMESTIC			ALL UNNAMED AQUIFERS		acres		7/7/1986											
130329		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2345	N	430	E	DOMESTIC			ARAPAHOE		acres		5/11/1989		5/19/1989					310	190	310	5	70
154703			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NE	150	N	1000	E	HOUSEHOLD USE ONL	ISSUED UN		ALL UNNAMED AQUIFERS			0.33	7/18/1989		11/20/1990		3/7/1991			700	300	690	15	270
90531	VE		Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	NE	NE	200	N	415	E	DOMESTIC			ALL UNNAMED AQUIFERS		acres		11/28/1990											
128050		A	Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	NE	NE	200	N	415	E	DOMESTIC			LARAMIE FOX HILLS		acres		1/23/1991											
91192	VE		Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	NE	SE	1500	N	425	E	DOMESTIC			ARAPAHOE		acres		6/6/1991											
150		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	1500	N	425	E	DOMESTIC			ARAPAHOE		acres		7/29/1991		6/19/1991		6/20/1991	91192VE		255	160	245	15	100
92036	VE		Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2600	N	1200	E	DOMESTIC			ALL UNNAMED AQUIFERS		acres		2/18/1992											
6820		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2600	N	1200	E	DOMESTIC			ARAPAHOE		acres		4/8/1992		2/18/1992		2/20/1992	SEE REC #273379		195	100	195	12	95
165812			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NE	860	N	1170	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	8/24/1992		10/20/1992		10/26/1992			290	210	290	10	155

Table G-1

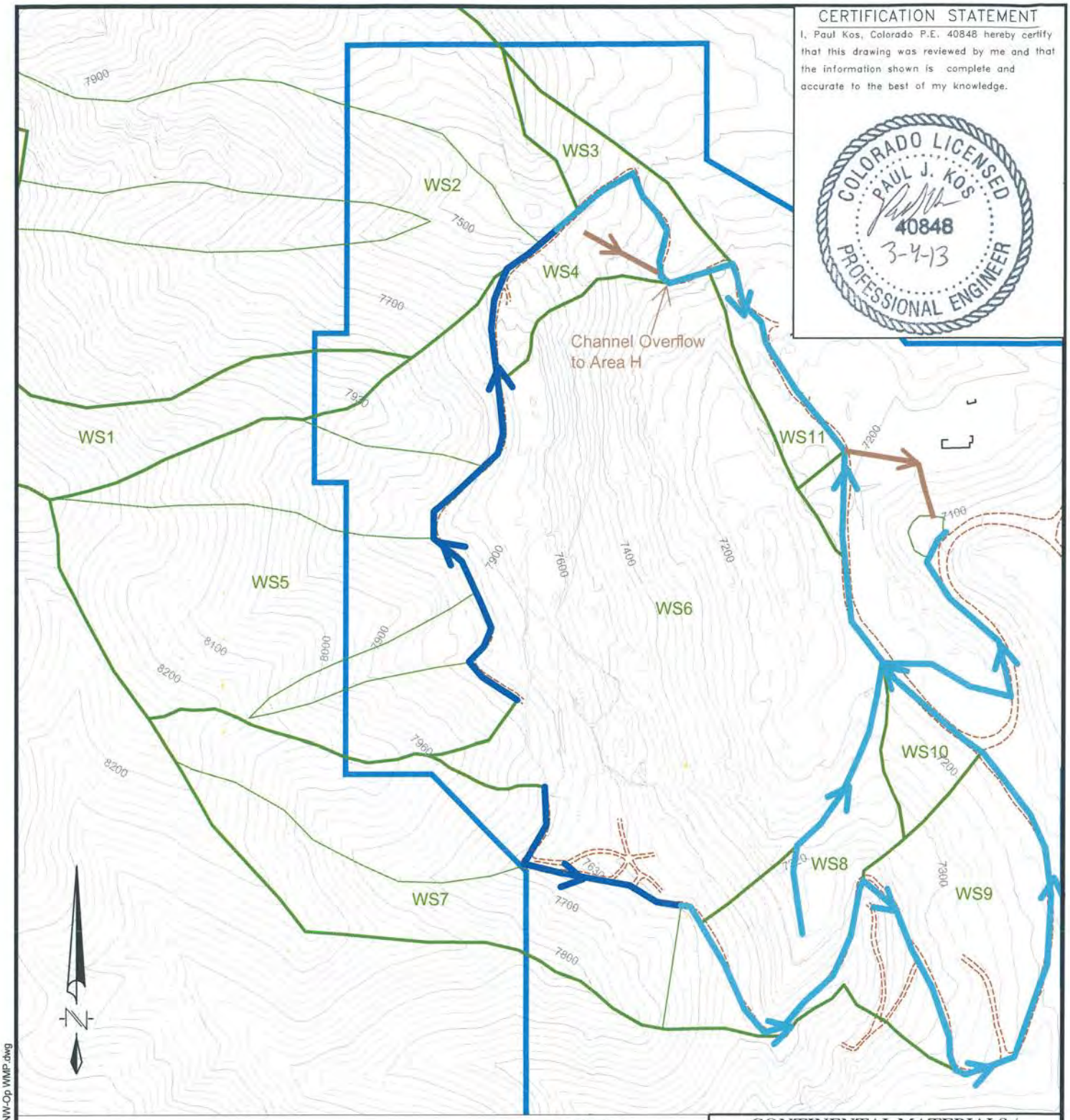
Well Permits within 1 Mile of Pikeview Quarry

permitno	permitsuf	permit rpl	status_desc	div	wd	county	pm	ts	tdir	rng	rdir	sec	q160	q40	coord sns	coords_dir	coord sew	coordsew_dir	use1	use2	use3	aquifer1_name	permitted_area	permitted_area_units	annual_appropriation	date_permit_issued	date_permit_expires	date_well_constructed	date_1st_Beneficial_Use	date_pump_installed	comment	elev	well_depth	tperf	bperf	pump_rate	static_water_level
92433	VE		Permit Issued; Completion Status Unknown	2	10	EL PASO	S	13	S	67	W	2	SE	NE	1700	S	250	E	DOMESTIC			ALL UNNAMED AQUIFERS		acres		11/16/1992												
167876			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW	2000	S	2260	E	DOMESTIC			ALL UNNAMED AQUIFERS		acres	1	12/28/1992				1ST USE 1940	OLD WELL PLUGGED		167				15	
167876		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW	2000	S	2260	E	DOMESTIC			LARAMIE FOX HILLS		acres		12/28/1992		1/12/1993		1/14/1993			241	141	241	14	125
984		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	1700	S	250	E	DOMESTIC			ARAPAHOE		acres		12/31/1992		11/30/1993	12/1/1992	12/1/1993	E X-REF RE(	6500	150	60	145	10	70
172808			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NW	460	N	1580	E	HOUSEHOLD USE ONLY			ALL UNNAMED AQUIFERS			0.33	6/30/1993	6/30/1995	10/11/1993				6720	310	250	310	10	180
173145				2	10	EL PASO	S	13	S	67	W	2	SE	SW	330	S	1345	E	HOUSEHOLD USE ONLY			ARAPAHOE		acres		6/30/1993	6/30/1995		Well address: 1425 Cedar Valley Lane, CO Springs 80919							
173575				2	10	EL PASO	S	13	S	67	W	2	NE	NW	1059	N	1680	E	DOMESTIC			LARAMIE		acres		6/30/1993	6/30/1995										
174490				2	10	EL PASO	S	13	S	67	W	2	NE	SW	2600	N	2000	E	HOUSEHOLD USE ONLY			LARAMIE FOX HILLS		acres		6/30/1993	6/30/1995		LARAMIE FORMATION AQUIFER RESTRICTION							
174791				2	10	EL PASO	S	13	S	67	W	2	NE	NW	1245	N	2130	E	HOUSEHOLD USE ONLY			ARAPAHOE		acres		6/30/1993	6/30/1995										
174499				2	10	EL PASO	S	13	S	67	W	2	NE	SW	2600	N	2000	E	DOMESTIC	STOCK		LARAMIE FOX HILLS		acres		11/15/1993	11/15/1995		LARAMIE-FOX HILLS AQUIFER RESTRICTION							
221714			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW	1050	S	2100	E	DOMESTIC			ALL UNNAMED AQUIFERS			1	11/2/1999			12/31/1961								
282166		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW	1369	S	1471	E	DOMESTIC			ALL UNNAMED AQUIFERS	1	ACRES		11/20/2009	11/20/2010	12/11/2009	12/31/1956	5/5/2010	ed - Vacant - AOT 12-29		100	20	40	15	27
283244			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW	650	S	3840	W	DOMESTIC			ALL UNNAMED AQUIFERS	1	ACRES	1	5/26/2010			12/31/1952				100			15	
282166		A	Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW	1206	S	1757	E	DOMESTIC			ALL UNNAMED AQUIFERS	1	ACRES		8/16/2010	8/16/2012			11/29/2011			62			15	30
6	GX		Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW	2482	S	1446	E	GEOTHERMAL		CLOSED LO	ALL UNNAMED AQUIFERS						1/6/2012								
674			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1			1/10/1958	1/10/1958				140	43	140	8	44
1076			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/4/1958			212			14	89
1099			Well Constructed	2	10	EL PASO	S	13	S	67	W	2							DOMESTIC			ALL UNNAMED AQUIFERS			1				5/22/1958			225			22	121
2531			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				12/31/1958			82			5	26
3810			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				7/8/1959			170			5	74
4854			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	1650	S	225	E	DOMESTIC			ALL UNNAMED AQUIFERS			1				8/25/1977			200			7	70
5510			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/7/1960			184			30	82
6509			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/7/1960			202			9	135
6734			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/23/1960			193			16	106
6735			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/24/1960			160			6	81
10793			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				3/12/1962			115			4	21
11083			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				4/4/1962			150			18	58
11681			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/11/1962			240			10	160
12210			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/4/1962			215			15	116
12875			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NW					DOMESTIC			ALL UNNAMED AQUIFERS			1				9/19/1962			220			12	206
13606			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW					DOMESTIC			ALL UNNAMED AQUIFERS			1				11/30/1962			160			15	50
15193			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/6/1963	ess: 1485 Cedar Valley Lane, CO Sprin		140			5	67
15919			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/25/1963			140			15	34
19605			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE	2535	N	223	E	DOMESTIC			ALL UNNAMED AQUIFERS			1				5/14/1964			230			12	190
20253			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SE					STOCK			ALL UNNAMED AQUIFERS			1				6/9/1964			50			16	18
20254			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				6/7/1964			93			12	18
20771			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				7/25/1964			220			10	93
20812			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				7/22/1964			240			8	104
24155			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				5/28/1965			140			9	68
25366			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				10/1/1965			83			25	21
26296			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE					DOMESTIC			ALL UNNAMED AQUIFERS			1				2/10/1966			164			9	64
26312			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				2/17/1966			185			15	60
31015			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				6/9/1967			242			10	60
31743			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				9/5/1967			95			28	39
34223			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				7/8/1968			140			4	54
34880			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	NE					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/15/1968			260			9	139
39195			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				8/22/1969			125			10	42
40548			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	NE	SE					DOMESTIC			ALL UNNAMED AQUIFERS			1				4/23/1970			260			6	106
40768			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SW	SW					DOMESTIC			ALL UNNAMED AQUIFERS			1				4/20/1970			180			4	69
78921			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NE	1650	S	25	E	DOMESTIC			ALL UNNAMED AQUIFERS			1				5/15/1975			150			15	80
119659			Well Constructed	2	10	EL PASO	S	13	S	67	W	2	SE	NW	1920	S	1350	E	DOMESTIC			ALL UNNAMED AQUIFERS			1				6/24/1981			174			8	130
			Application Received	2	10	EL PASO	S	13	S	67	W	2	SE	NW					DOMESTIC			ALL UNNAMED AQUIFERS		acres													

Source: http://www.dwr.state.co.us/WellPermitSearch/default.aspx

T13S R67W 6th PM Sections 2,3,4,5,8,9,10,11,14,15,16,17

ATTACHMENT G-1



CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

LEGEND

- Sub Watershed Boundary
- Watershed Boundary
- Diversion Ditch
- Earthen Ditch
- Rip-Rap Ditch
- Permit Boundary
- Road

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

0 250 500 750

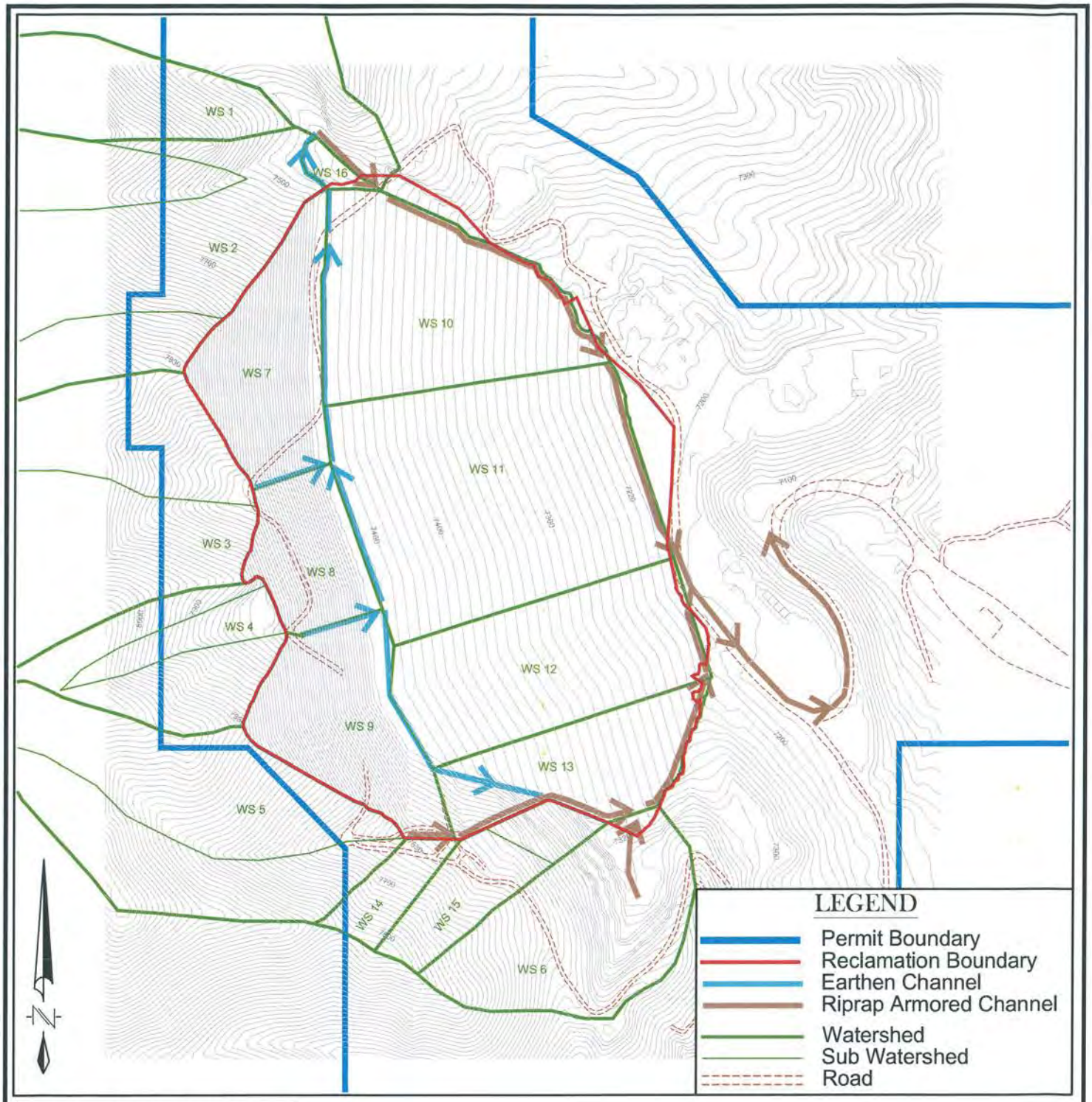
FEET

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

FIGURE G-1 OPERATIONAL WATER MANAGEMENT PLAN

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: NW-Op WMP.dwg			

Mar 01, 2013 - 2:10pm\\dendata2\autocad\Pikeview Quarry 374\NW-Op WMP.dwg



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COLORADO LICENSED
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40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST
CORPORATION

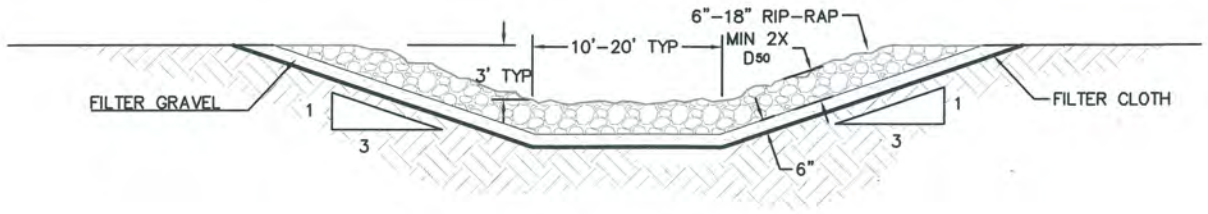
0 250 500 750
FEET

CONTINENTAL MATERIALS /
TRANSIT MIX AGGREGATES /
CASTLE CONCRETE

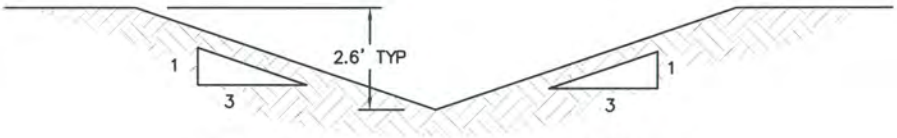
FIGURE G-2
RECLAMATION WATER MANAGEMENT PLAN

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: NW-Rec WMP.dwg			

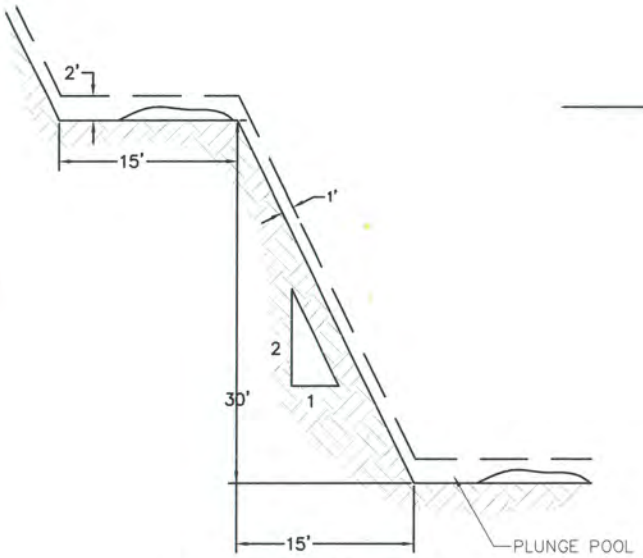
Mar 01, 2013 - 11:52am U:\Pikeview Quarry 374\NW-Rec WMP.dwg



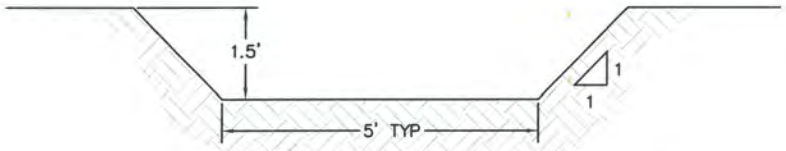
TYPICAL RIPRAP CHANNEL



TYPICAL EARTHEN CHANNEL



IN–SITU GRANITE



TYPICAL GRANITE DOWNDRAIN

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
3-4-13
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

FIGURE G-3 CROSS SECTIONAL DETAILS

DRAWN: JLS	DATE: Mar 01, 2013	PROJECT NO. 374-3	SCALE: As Shown
REVIEWER: NORWEST	DATE REVIEWED: Feb 28, 2013		
DRAWING: NW-Rec WMP.dwg			

Mar 01, 2013 - 11:52am U:\Pikeview Quarry 374\NW-Rec WMP.dwg

Pikeview Quarry Water Management Plan

Operational Period

25-yr, 24-hr storm event=3.7"

Paul Kos

Norwest Corporation
950 South Cherry Street
Suite 800
Denver, CO 80246

Phone: 303-782-0164

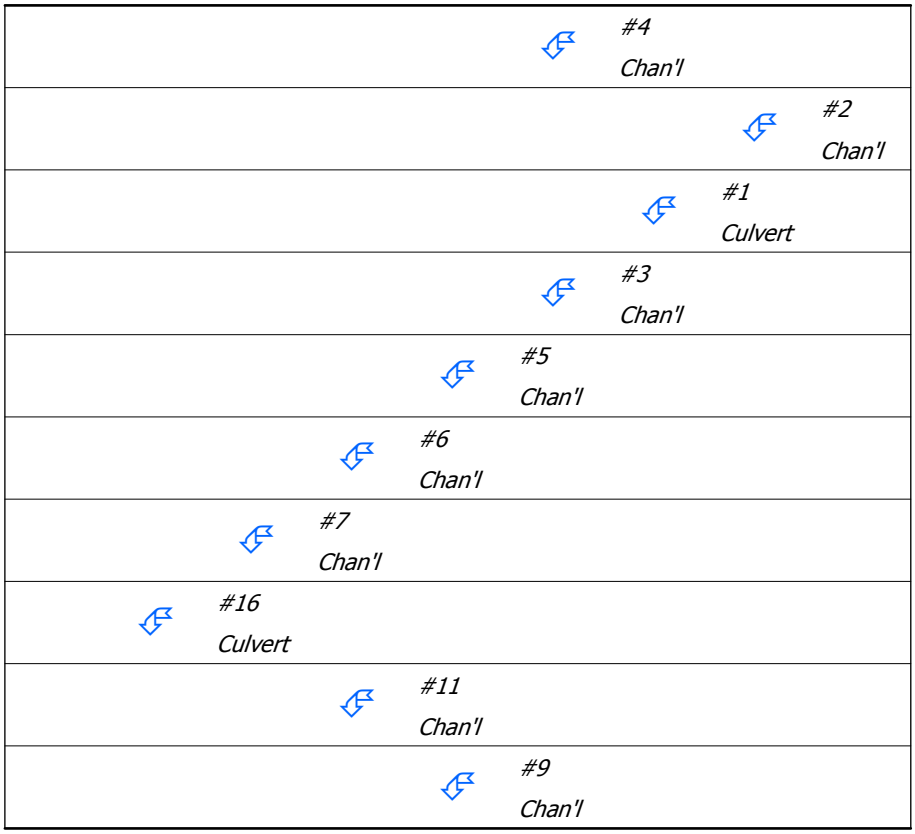
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	3.700 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Culvert	#1	==>	#3	0.015	0.385	Existing culvert
Channel	#2	==>	#1	0.013	0.357	North crest road ditch
Channel	#3	==>	#5	0.053	0.422	Ditch below culvert
Channel	#4	==>	#5	0.053	0.422	Upper north road ditch
Channel	#5	==>	#6	0.083	0.319	Lower north road ditch
Channel	#6	==>	#7	0.004	0.460	Ditch across processing area
Channel	#7	==>	#16	0.000	0.000	Rip rap channel to Detention Basin #2
Null	#8	==>	#14	0.000	0.000	Area H/Detention Basin #1
Channel	#9	==>	#10	0.126	0.429	South crest road
Channel	#10	==>	#12	0.046	0.319	South road ditch
Channel	#11	==>	#12	0.046	0.319	Horseshoe road ditch
Channel	#12	==>	#13	0.022	0.419	South toe road ditch
Channel	#13	==>	#15	0.000	0.000	Road ditch to detention basin #2
Null	#14	==>	End	0.000	0.000	End
Null	#15	==>	#14	0.000	0.000	Detention basin #2
Culvert	#16	==>	#15	0.000	0.000	Alternative to riprap from processing area



	#10 *Chan'l*
	#12 *Chan'l*
	#13 *Chan'l*
	#15 *Null*
	#8 *Null*
#14 *Null*	

Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	32.26	100.00	310.00	5.67	0.015
#1	**Muskingum K:**					**0.015**
#2	8. Large gullies, diversions, and low flowing streams	2.00	4.00	200.00	4.24	0.013
#2	**Muskingum K:**					**0.013**
#3	8. Large gullies, diversions, and low flowing streams	16.00	132.00	825.00	12.00	0.019
	8. Large gullies, diversions, and low flowing streams	1.00	3.69	370.00	3.00	0.034
#3	**Muskingum K:**					**0.053**
#5	8. Large gullies, diversions, and low flowing streams	1.00	9.00	900.00	3.00	0.083
#5	**Muskingum K:**					**0.083**
#6	8. Large gullies, diversions, and low flowing streams	41.38	120.00	290.00	19.29	0.004
#6	**Muskingum K:**					**0.004**
#9	8. Large gullies, diversions, and low flowing streams	16.00	448.00	2,800.00	12.00	0.064
	8. Large gullies, diversions, and low flowing streams	1.00	6.80	680.00	3.00	0.062
#9	**Muskingum K:**					**0.126**
#10	8. Large gullies, diversions, and low flowing streams	1.00	5.00	500.00	3.00	0.046
#10	**Muskingum K:**					**0.046**
#11	8. Large gullies, diversions, and low flowing streams	1.00	5.00	500.00	3.00	0.046
#11	**Muskingum K:**					**0.046**

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#12	8. Large gullies, diversions, and low flowing streams	8.57	60.00	700.00	8.78	0.022
#12	**Muskingum K:**					**0.022**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	3.585	3.585	4.85	0.36
#2	38.749	38.749	30.08	3.15
#1	158.165	196.914	62.68	9.86
#3	4.529	201.443	65.10	11.17
#5	2.589	207.617	67.05	12.27
#6	0.000	207.617	66.24	12.27
#7	0.000	207.617	66.24	12.27
#16	0.000	207.617	66.24	12.27
#11	7.792	7.792	3.06	0.62
#9	27.940	27.940	35.80	3.39
#10	10.562	38.502	42.56	4.24
#12	2.554	48.848	44.76	5.11
#13	0.000	48.848	44.76	5.11
#15	0.000	256.465	106.12	17.38
#8	57.790	57.790	162.73	16.68
#14	0.000	314.255	249.27	34.06

Structure Detail:

Structure #4 (Erodible Channel)

Upper north road ditch

Trapezoidal Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	24.0	0.0300				5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	4.85 cfs	
Depth:	0.06 ft	
Top Width:	20.38 ft	
Velocity:	3.82 fps	
X-Section Area:	1.27 sq ft	
Hydraulic Radius:	0.062 ft	
Froude Number:	2.70	

Structure #2 (Erodible Channel)

North crest road ditch

Trapezoidal Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	1.0	0.0300				5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	30.08 cfs	
Depth:	0.48 ft	
Top Width:	22.89 ft	
Velocity:	2.91 fps	
X-Section Area:	10.34 sq ft	

	w/o Freeboard	w/ Freeboard
Hydraulic Radius:	0.448 ft	
Froude Number:	0.76	

Structure #1 (Culvert)

Existing culvert

Culvert Inputs:

Length (ft)	Slope (%)	Manning's n	Max. Headwater (ft)	Tailwater (ft)	Entrance Loss Coef. (Ke)
200.00	2.00	0.0240	8.00	0.00	0.90

Culvert Results:

Design Discharge = 62.68 cfs

Minimum pipe diameter: 1 - 36 inch pipe(s) required

Structure #3 (Riprap Channel)

Ditch below culvert

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
17.00	3.0:1	3.0:1	32.0			

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	65.10 cfs	
Depth:	0.03 ft	
Top Width:	17.15 ft	
Velocity*:		
X-Section Area:	0.43 sq ft	
Hydraulic Radius:	0.025 ft	
Froude Number*:		
Manning's n*:		
Dmin:	5.00 in	
D50:	15.00 in	
Dmax:	18.75 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #5 (Riprap Channel)

Lower north road ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	14.0			

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	67.05 cfs	
Depth:	0.34 ft	
Top Width:	22.01 ft	
Velocity*:		
X-Section Area:	7.04 sq ft	
Hydraulic Radius:	0.318 ft	
Froude Number*:		
Manning's n*:		
Dmin:	2.00 in	
D50:	6.00 in	
Dmax:	7.50 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #6 (Erodible Channel)

Ditch across processing area

Trapezoidal Erodible Channel Inputs:

Material: Coarse gravel noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	2.0	0.0250				6.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	66.24 cfs	
Depth:	0.56 ft	
Top Width:	23.37 ft	
Velocity:	5.43 fps	
X-Section Area:	12.19 sq ft	
Hydraulic Radius:	0.518 ft	
Froude Number:	1.33	

Structure #7 (Riprap Channel)

Rip rap channel to Detention Basin #2

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
14.00	3.0:1	3.0:1	40.0			

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	66.24 cfs	
Depth:	0.03 ft	
Top Width:	14.15 ft	
Velocity*:		
X-Section Area:	0.35 sq ft	
Hydraulic Radius:	0.025 ft	
Froude Number*:		
Manning's n*:		
Dmin:	7.00 in	
D50:	21.00 in	
Dmax:	26.25 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #16 (Culvert)

Alternative to riprap from processing area

Culvert Inputs:

Length (ft)	Slope (%)	Manning's n	Max. Headwater (ft)	Tailwater (ft)	Entrance Loss Coef. (Ke)
200.00	2.00	0.0240	4.50	0.00	0.90

Culvert Results:

Design Discharge = 66.24 cfs

Minimum pipe diameter: 1 - 42 inch pipe(s) required

Structure #11 (Erodible Channel)

Horseshoe road ditch

Trapezoidal Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	17.0	0.0300				5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	3.06 cfs	
Depth:	0.05 ft	
Top Width:	20.32 ft	
Velocity:	2.87 fps	
X-Section Area:	1.06 sq ft	
Hydraulic Radius:	0.052 ft	
Froude Number:	2.21	

Structure #9 (Erodible Channel)

South crest road

Trapezoidal Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	1.0	0.0300				5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	35.80 cfs	
Depth:	0.53 ft	
Top Width:	23.21 ft	
Velocity:	3.10 fps	
X-Section Area:	11.54 sq ft	
Hydraulic Radius:	0.494 ft	
Froude Number:	0.78	

Structure #10 (Riprap Channel)

South road ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	16.0			

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	42.56 cfs	
Depth:	0.19 ft	
Top Width:	21.14 ft	
Velocity*:		
X-Section Area:	3.89 sq ft	
Hydraulic Radius:	0.184 ft	
Froude Number*:		
Manning's n*:		
Dmin:	2.00 in	
D50:	6.00 in	
Dmax:	7.50 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #12 (Erodible Channel)

South toe road ditch

Trapezoidal Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
20.00	3.0:1	3.0:1	1.0	0.0300				5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	44.76 cfs	
Depth:	0.61 ft	
Top Width:	23.66 ft	
Velocity:	3.36 fps	
X-Section Area:	13.30 sq ft	
Hydraulic Radius:	0.558 ft	
Froude Number:	0.79	

Structure #13 (Riprap Channel)

Road ditch to detention basin #2

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	8.5			

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	44.76 cfs	
Depth:	0.32 ft	
Top Width:	21.90 ft	
Velocity*:		
X-Section Area:	6.65 sq ft	
Hydraulic Radius:	0.302 ft	
Froude Number*:		
Manning's n*:		
Dmin:	1.00 in	
D50:	3.00 in	
Dmax:	3.75 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #15 (Null)

Detention basin #2

Structure #8 (Null)

Area H/Detention Basin #1

Structure #14 (Null)

End

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	3.585	0.055	0.000	0.000	71.000	M	4.85	0.356
	Σ	**3.585**						**4.85**	**0.356**
#2	1	38.749	0.240	0.000	0.000	71.300	M	30.08	3.145
	Σ	**38.749**						**30.08**	**3.145**
#1	1	158.165	0.370	0.000	0.000	63.050	S	35.88	6.714
	Σ	**196.914**						**62.68**	**9.859**
#3	1	4.529	0.039	0.000	0.000	98.000	M	12.75	1.307
	Σ	**201.443**						**65.10**	**11.166**
#5	1	2.589	0.058	0.000	0.000	98.000	M	7.29	0.747
	Σ	**207.617**						**67.05**	**12.270**
#6	Σ	**207.617**						**66.24**	**12.270**
#7	Σ	**207.617**						**66.24**	**12.270**
#16	Σ	**207.617**						**66.24**	**12.270**
#11	1	7.792	0.967	0.000	0.000	71.000	M	3.06	0.617
	Σ	**7.792**						**3.06**	**0.617**
#9	1	27.940	0.171	0.000	0.000	80.000	M	35.80	3.395
	Σ	**27.940**						**35.80**	**3.395**
#10	1	10.562	0.191	0.000	0.000	71.000	M	8.62	0.844
	Σ	**38.502**						**42.56**	**4.239**
#12	1	2.554	0.068	0.000	0.000	71.000	M	3.46	0.254
	Σ	**48.848**						**44.76**	**5.109**
#13	Σ	**48.848**						**44.76**	**5.109**
#15	Σ	**256.465**						**106.12**	**17.379**
#8	1	57.790	0.041	0.000	0.000	98.000	M	162.73	16.680
	Σ	**57.790**						**162.73**	**16.680**
#14	Σ	**314.255**						**249.27**	**34.059**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#2	1	1. Forest with heavy ground litter	55.56	200.00	360.00	1.880	0.053
		3. Short grass pasture	39.37	500.00	1,270.00	5.010	0.070
		8. Large gullies, diversions, and low flowing streams	1.00	12.70	1,270.00	3.000	0.117
#2	**1**	**Time of Concentration:**					**0.240**
#3	1	5. Nearly bare and untilled, and alluvial valley fans	36.07	220.00	610.00	6.000	0.028
		5. Nearly bare and untilled, and alluvial valley fans	33.33	80.00	240.00	5.770	0.011
#3	**1**	**Time of Concentration:**					**0.039**
#4	1	5. Nearly bare and untilled, and alluvial valley fans	30.91	340.00	1,100.00	5.550	0.055
#4	**1**	**Time of Concentration:**					**0.055**
#5	1	5. Nearly bare and untilled, and alluvial valley fans	13.16	100.00	760.00	3.620	0.058
#5	**1**	**Time of Concentration:**					**0.058**
#8	1	5. Nearly bare and untilled, and alluvial valley fans	54.55	600.00	1,100.00	7.380	0.041
#8	**1**	**Time of Concentration:**					**0.041**
#9	1	1. Forest with heavy ground litter	41.67	100.00	240.00	1.630	0.040
		3. Short grass pasture	37.59	500.00	1,330.00	4.900	0.075
		8. Large gullies, diversions, and low flowing streams	1.00	6.10	610.00	3.000	0.056
#9	**1**	**Time of Concentration:**					**0.171**
#10	1	6. Grassed waterway	16.00	448.00	2,800.00	6.000	0.129
		8. Large gullies, diversions, and low flowing streams	1.00	6.80	680.00	3.000	0.062
#10	**1**	**Time of Concentration:**					**0.191**
#11	1	1. Forest with heavy ground litter	1.00	8.30	830.00	0.250	0.922
		6. Grassed waterway	18.69	200.00	1,070.00	6.480	0.045
#11	**1**	**Time of Concentration:**					**0.967**
#12	1	2. Minimum tillage cultivation	41.38	120.00	290.00	3.210	0.025
		8. Large gullies, diversions, and low flowing streams	1.00	4.65	465.00	3.000	0.043
#12	**1**	**Time of Concentration:**					**0.068**

Pikeview Quarry Water Management Plan
Reclamation Period

100-year, 24-hour storm = 4.48"

O. Cannon

Norwest Corporation
950 South Cherry Street
Suite 800
Denver, CO 80246

Phone: 303-782-0164

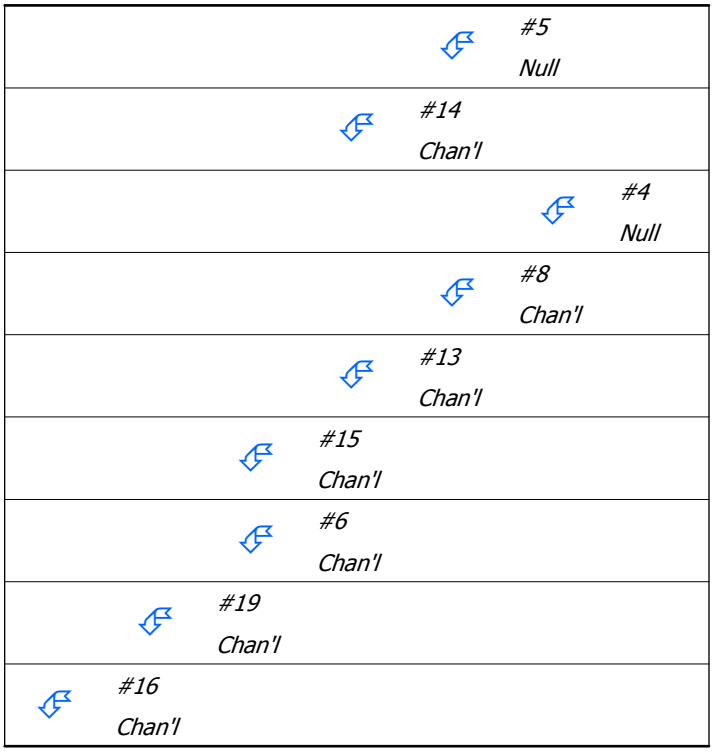
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	4.480 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Channel	#1	==>	#18	0.011	0.440	WS1 w/ ditch
Null	#2	==>	#18	0.011	0.440	WS2
Null	#3	==>	#7	0.004	0.458	WS3
Null	#4	==>	#8	0.004	0.460	WS4
Null	#5	==>	#14	0.002	0.460	WS5
Channel	#6	==>	#19	0.003	0.446	WS6 w/ ditch
Channel	#7	==>	#10	0.105	0.277	WS7, Granite channel (northern)
Channel	#8	==>	#13	0.109	0.277	Granite channel (southern)
Channel	#9	==>	#10	0.105	0.277	WS8, Granite 1:1 face (center)
Channel	#10	==>	#11	0.002	0.436	Granite 1:1 face (northern)
Channel	#11	==>	#18	0.011	0.440	WS16, Ditch, north end
Channel	#12	==>	#17	0.066	0.412	WS11, Shallow grade ditch
Channel	#13	==>	#15	0.019	0.428	WS9, Granite 1:1 face (southern)
Channel	#14	==>	#15	0.019	0.428	WS14, Ditch (south end of 1:1 granite face)
Channel	#15	==>	#19	0.003	0.446	WS15, Ditch (south end)
Channel	#16	==>	#17	0.066	0.412	WS12, Shallow grade ditch
Channel	#17	==>	End	0.000	0.000	Outlet
Channel	#18	==>	#12	0.035	0.389	WS10, Steep ditch
Channel	#19	==>	#16	0.023	0.381	WS13, Steep ditch



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	16.97	85.00	501.00	12.35	0.011
#1	**Muskingum K:**					**0.011**
#2	8. Large gullies, diversions, and low flowing streams	16.97	85.00	501.00	12.35	0.011
#2	**Muskingum K:**					**0.011**
#3	7. Paved area and small upland gullies	85.37	245.00	287.00	18.59	0.004
#3	**Muskingum K:**					**0.004**
#4	7. Paved area and small upland gullies	95.71	290.00	303.00	19.69	0.004
#4	**Muskingum K:**					**0.004**
#5	7. Paved area and small upland gullies	92.49	160.00	173.00	19.35	0.002
#5	**Muskingum K:**					**0.002**
#6	8. Large gullies, diversions, and low flowing streams	21.88	35.00	160.00	14.03	0.003
#6	**Muskingum K:**					**0.003**

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#7	8. Large gullies, diversions, and low flowing streams	0.50	4.01	803.00	2.12	0.105
#7	**Muskingum K:**					**0.105**
#8	8. Large gullies, diversions, and low flowing streams	0.50	4.17	834.00	2.12	0.109
#8	**Muskingum K:**					**0.109**
#9	8. Large gullies, diversions, and low flowing streams	0.50	4.01	803.00	2.12	0.105
#9	**Muskingum K:**					**0.105**
#10	7. Paved area and small upland gullies	33.33	40.00	120.00	11.62	0.002
#10	**Muskingum K:**					**0.002**
#11	8. Large gullies, diversions, and low flowing streams	16.97	85.00	501.00	12.35	0.011
#11	**Muskingum K:**					**0.011**
#12	8. Large gullies, diversions, and low flowing streams	0.37	1.50	409.00	1.81	0.062
	8. Large gullies, diversions, and low flowing streams	31.91	90.00	282.00	16.94	0.004
#12	**Muskingum K:**					**0.066**
#13	7. Paved area and small upland gullies	25.57	180.00	704.00	10.17	0.019
#13	**Muskingum K:**					**0.019**
#14	7. Paved area and small upland gullies	25.57	180.00	704.00	10.17	0.019
#14	**Muskingum K:**					**0.019**
#15	8. Large gullies, diversions, and low flowing streams	21.88	35.00	160.00	14.03	0.003
#15	**Muskingum K:**					**0.003**
#16	8. Large gullies, diversions, and low flowing streams	0.37	1.50	409.05	1.81	0.062
	8. Large gullies, diversions, and low flowing streams	31.91	90.00	282.00	16.94	0.004
#16	**Muskingum K:**					**0.066**
#18	8. Large gullies, diversions, and low flowing streams	3.98	30.00	754.00	5.98	0.035
#18	**Muskingum K:**					**0.035**
#19	8. Large gullies, diversions, and low flowing streams	3.30	15.00	454.00	5.45	0.023
#19	**Muskingum K:**					**0.023**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#5	18.645	18.645	41.30	3.19
#14	1.875	20.520	44.38	3.42
#4	8.615	8.615	16.24	1.22
#8	0.000	8.615	16.24	1.22
#13	5.639	14.254	25.28	2.03
#15	4.234	39.008	79.90	6.26
#6	9.908	9.908	25.75	2.09
#19	6.315	55.231	117.77	9.26
#16	10.637	65.868	138.18	10.79
#9	3.665	3.665	7.03	0.53
#3	24.770	24.770	48.73	3.68
#7	0.000	24.770	48.73	3.68
#10	6.526	34.961	62.77	5.15
#11	0.542	35.503	63.81	5.22
#2	44.005	44.005	13.46	2.43
#1	112.500	112.500	49.03	8.06
#18	11.779	203.787	125.16	17.41
#12	19.216	223.003	162.04	20.18
#17	0.000	288.871	299.69	30.97

Structure Detail:

Structure #5 (Null)

WS5

Structure #14 (Nonerodible Channel)

WS14, Ditch (south end of 1:1 granite face)

Triangular Nonerodible Channel Inputs:

Material: Exposed Granite

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
2.0:1	2.0:1	100.0	0.0170	0.50		

Nonerodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	44.38 cfs	
Depth:	0.73 ft	1.23 ft
Top Width:	2.92 ft	4.92 ft
Velocity:	41.57 fps	
X-Section Area:	1.07 sq ft	
Hydraulic Radius:	0.327 ft	
Froude Number:	12.12	

Structure #4 (Null)

WS4

Structure #8 (Nonerodible Channel)

Granite channel (southern)

Trapezoidal Nonerodible Channel Inputs:

Material: Exposed Granite

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
5.00	2.0:1	2.0:1	100.0	0.0170	0.50		

Nonerodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	16.24 cfs	
Depth:	0.14 ft	0.64 ft
Top Width:	5.55 ft	7.55 ft
Velocity:	22.37 fps	
X-Section Area:	0.72 sq ft	
Hydraulic Radius:	0.129 ft	
Froude Number:	10.91	

Structure #13 (Erodible Channel)

WS9, Granite 1:1 face (southern)

Triangular Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.0:1	3.0:1	1.0	0.0300	0.50			5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	25.28 cfs	
Depth:	1.47 ft	1.97 ft
Top Width:	8.81 ft	11.81 ft
Velocity:	3.90 fps	
X-Section Area:	6.47 sq ft	
Hydraulic Radius:	0.697 ft	
Froude Number:	0.80	

Structure #15 (Riprap Channel)

WS15, Ditch (south end)

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	26.7	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	79.90 cfs	
Depth:	0.16 ft	1.16 ft
Top Width:	20.97 ft	26.97 ft
Velocity*:		
X-Section Area:	3.30 sq ft	
Hydraulic Radius:	0.157 ft	
Froude Number*:		
Manning's n*:		
Dmin:	5.00 in	
D50:	15.00 in	
Dmax:	18.75 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #6 (Riprap Channel)

WS6 w/ ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	3.0:1	3.0:1	2.0	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	25.75 cfs	
Depth:	0.27 ft	1.27 ft
Top Width:	11.59 ft	17.59 ft
Velocity*:		
X-Section Area:	2.86 sq ft	
Hydraulic Radius:	0.245 ft	
Froude Number*:		
Manning's n*:		
Dmin:	2.00 in	
D50:	6.00 in	
Dmax:	7.50 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #19 (Riprap Channel)

WS13, Steep ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	17.0	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	117.77 cfs	
Depth:	0.48 ft	1.48 ft
Top Width:	22.90 ft	28.90 ft
Velocity*:		
X-Section Area:	10.35 sq ft	
Hydraulic Radius:	0.449 ft	
Froude Number*:		
Manning's n*:		
Dmin:	4.00 in	
D50:	12.00 in	
Dmax:	15.00 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #16 (Riprap Channel)

WS12, Shallow grade ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	1.0	1.00		

Riprap Channel Results:

Simons/OSM Method - Mild Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	138.18 cfs	
Depth:	1.34 ft	2.34 ft
Top Width:	28.04 ft	34.04 ft
Velocity:	4.29 fps	
X-Section Area:	32.18 sq ft	
Hydraulic Radius:	1.130 ft	
Froude Number:	0.71	
Manning's n:	0.0377	
Dmin:	2.00 in	
D50:	9.00 in	
Dmax:	12.00 in	

Structure #9 (Erodible Channel)

WS8, Granite 1:1 face (center)

Triangular Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.0:1	3.0:1	1.0	0.0300	0.50			5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	7.03 cfs	
Depth:	0.91 ft	1.41 ft
Top Width:	5.46 ft	8.46 ft
Velocity:	2.84 fps	
X-Section Area:	2.48 sq ft	
Hydraulic Radius:	0.431 ft	
Froude Number:	0.74	

Structure #3 (Null)

WS3

Structure #7 (Nonerodible Channel)

WS7, Granite channel (northern)

Trapezoidal Nonerodible Channel Inputs:

Material: Exposed Granite

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
5.00	2.0:1	2.0:1	100.0	0.0170	0.50		

Nonerodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	48.73 cfs	
Depth:	0.26 ft	0.76 ft
Top Width:	6.05 ft	8.05 ft
Velocity:	33.45 fps	
X-Section Area:	1.46 sq ft	
Hydraulic Radius:	0.236 ft	
Froude Number:	12.02	

Structure #10 (Erodible Channel)

Granite 1:1 face (northern)

Triangular Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.0:1	3.0:1	1.0	0.0300	0.50			5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	62.77 cfs	
Depth:	2.07 ft	2.57 ft
Top Width:	12.40 ft	15.40 ft
Velocity:	4.90 fps	
X-Section Area:	12.81 sq ft	
Hydraulic Radius:	0.980 ft	
Froude Number:	0.85	

Structure #11 (Erodible Channel)

WS16, Ditch, north end

Triangular Erodible Channel Inputs:

Material: Graded loam to cobbles when noncolloidal

Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
3.0:1	3.0:1	1.0	0.0300	0.50			5.0

Erodible Channel Results:

	w/o Freeboard	w/ Freeboard
Design Discharge:	63.81 cfs	
Depth:	2.08 ft	2.58 ft
Top Width:	12.47 ft	15.47 ft
Velocity:	4.92 fps	
X-Section Area:	12.97 sq ft	
Hydraulic Radius:	0.986 ft	
Froude Number:	0.85	

Structure #2 (Null)

WS2

Structure #1 (Riprap Channel)

WS1 w/ ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	3.0:1	3.0:1	3.7	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	49.03 cfs	
Depth:	0.45 ft	1.45 ft
Top Width:	12.69 ft	18.69 ft
Velocity*:		
X-Section Area:	5.09 sq ft	
Hydraulic Radius:	0.396 ft	
Froude Number*:		
Manning's n*:		

	w/o Freeboard	w/ Freeboard
Dmin:	2.00 in	
D50:	6.00 in	
Dmax:	7.50 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #18 (Riprap Channel)

WS10, Steep ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	24.3	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	125.16 cfs	
Depth:	0.38 ft	1.38 ft
Top Width:	22.26 ft	28.26 ft
Velocity*:		
X-Section Area:	7.96 sq ft	
Hydraulic Radius:	0.356 ft	
Froude Number*:		
Manning's n*:		
Dmin:	5.00 in	
D50:	15.00 in	
Dmax:	18.75 in	

Velocity and Manning's n calculations may not apply for this method.

Structure #12 (Riprap Channel)

WS11, Shallow grade ditch

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	3.0:1	3.0:1	1.1	1.00		

Riprap Channel Results:

Simons/OSM Method - Mild Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	162.04 cfs	
Depth:	1.97 ft	2.97 ft
Top Width:	21.80 ft	27.80 ft
Velocity:	5.18 fps	
X-Section Area:	31.28 sq ft	
Hydraulic Radius:	1.394 ft	
Froude Number:	0.76	
Manning's n:	0.0377	
Dmin:	2.00 in	
D50:	9.00 in	
Dmax:	12.00 in	

Structure #17 (Riprap Channel)

Outlet

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
20.00	3.0:1	3.0:1	9.5	1.00		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	299.69 cfs	
Depth:	1.07 ft	2.07 ft
Top Width:	26.43 ft	32.43 ft
Velocity*:		
X-Section Area:	24.87 sq ft	
Hydraulic Radius:	0.929 ft	
Froude Number*:		

	w/o Freeboard	w/ Freeboard
Manning's n*:		
Dmin:	6.00 in	
D50:	18.00 in	
Dmax:	22.50 in	

Velocity and Manning's n calculations may not apply for this method.

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#5	1	18.645	0.080	0.000	0.000	75.300	M	41.30	3.195
	Σ	**18.645**						**41.30**	**3.195**
#14	1	1.875	0.070	0.000	0.000	67.000	M	3.08	0.226
	Σ	**20.520**						**44.38**	**3.421**
#4	1	8.615	0.047	0.000	0.000	70.500	M	16.24	1.216
	Σ	**8.615**						**16.24**	**1.216**
#8	Σ	**8.615**						**16.24**	**1.216**
#13	1	5.639	0.070	0.000	0.000	71.000	M	10.82	0.813
	Σ	**14.254**						**25.28**	**2.029**
#15	1	4.234	0.000	0.000	0.000	78.300	M	10.24	0.811
	Σ	**39.008**						**79.90**	**6.261**
#6	1	9.908	0.045	0.000	0.000	81.000	M	25.75	2.088
	Σ	**9.908**						**25.75**	**2.088**
#19	1	6.315	0.062	0.000	0.000	71.000	M	12.12	0.910
	Σ	**55.231**						**117.77**	**9.259**
#16	1	10.637	0.089	0.000	0.000	71.000	M	20.41	1.533
	Σ	**65.868**						**138.18**	**10.792**
#9	1	3.665	0.070	0.000	0.000	71.000	M	7.03	0.528
	Σ	**3.665**						**7.03**	**0.528**
#3	1	24.770	0.062	0.000	0.000	71.700	M	48.73	3.677
	Σ	**24.770**						**48.73**	**3.677**
#7	Σ	**24.770**						**48.73**	**3.677**
#10	1	6.526	0.070	0.000	0.000	71.000	M	12.52	0.941
	Σ	**34.961**						**62.77**	**5.146**
#11	1	0.542	0.000	0.000	0.000	71.000	M	1.04	0.078
	Σ	**35.503**						**63.81**	**5.224**
#2	1	44.005	0.367	0.000	0.000	59.670	S	13.46	2.427
	Σ	**44.005**						**13.46**	**2.427**
#1	1	112.500	0.370	0.000	0.000	64.500	S	49.03	8.059

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
	Σ	**112.500**						**49.03**	**8.059**
#18	1	11.779	0.049	0.000	0.000	71.000	M	22.60	1.698
	Σ	**203.787**						**125.16**	**17.408**
#12	1	19.216	0.100	0.000	0.000	71.000	M	36.88	2.770
	Σ	**223.003**						**162.04**	**20.178**
#17	Σ	**288.871**						**299.69**	**30.971**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	23.38	900.00	3,850.00	3.860	0.277
		8. Large gullies, diversions, and low flowing streams	3.72	15.00	403.00	5.780	0.019
		1. Forest with heavy ground litter	35.00	140.00	400.00	1.490	0.074
#1	**1**	**Time of Concentration:**					**0.370**
#2	1	5. Nearly bare and untilled, and alluvial valley fans	41.10	184.12	447.98	6.410	0.019
#2	**1**	**Time of Concentration:**					**0.367**
#3	1	5. Nearly bare and untilled, and alluvial valley fans	47.10	723.00	1,535.00	6.860	0.062
#3	**1**	**Time of Concentration:**					**0.062**
#4	1	5. Nearly bare and untilled, and alluvial valley fans	42.62	479.00	1,124.00	6.520	0.047
#4	**1**	**Time of Concentration:**					**0.047**
#5	1	5. Nearly bare and untilled, and alluvial valley fans	37.56	667.00	1,776.00	6.120	0.080
#5	**1**	**Time of Concentration:**					**0.080**
#6	1	5. Nearly bare and untilled, and alluvial valley fans	49.53	317.00	640.00	7.030	0.025
		7. Paved area and small upland gullies	25.14	185.00	736.00	10.090	0.020
#6	**1**	**Time of Concentration:**					**0.045**
#9	1	9. Small streams flowing bankfull	96.03	290.00	302.00	88.190	0.000
		8. Large gullies, diversions, and low flowing streams	0.50	2.69	538.00	2.120	0.070
#9	**1**	**Time of Concentration:**					**0.070**
#12	1	8. Large gullies, diversions, and low flowing streams	3.98	30.00	754.01	5.980	0.035
		3. Short grass pasture	26.26	255.00	971.00	4.090	0.065
#12	**1**	**Time of Concentration:**					**0.100**

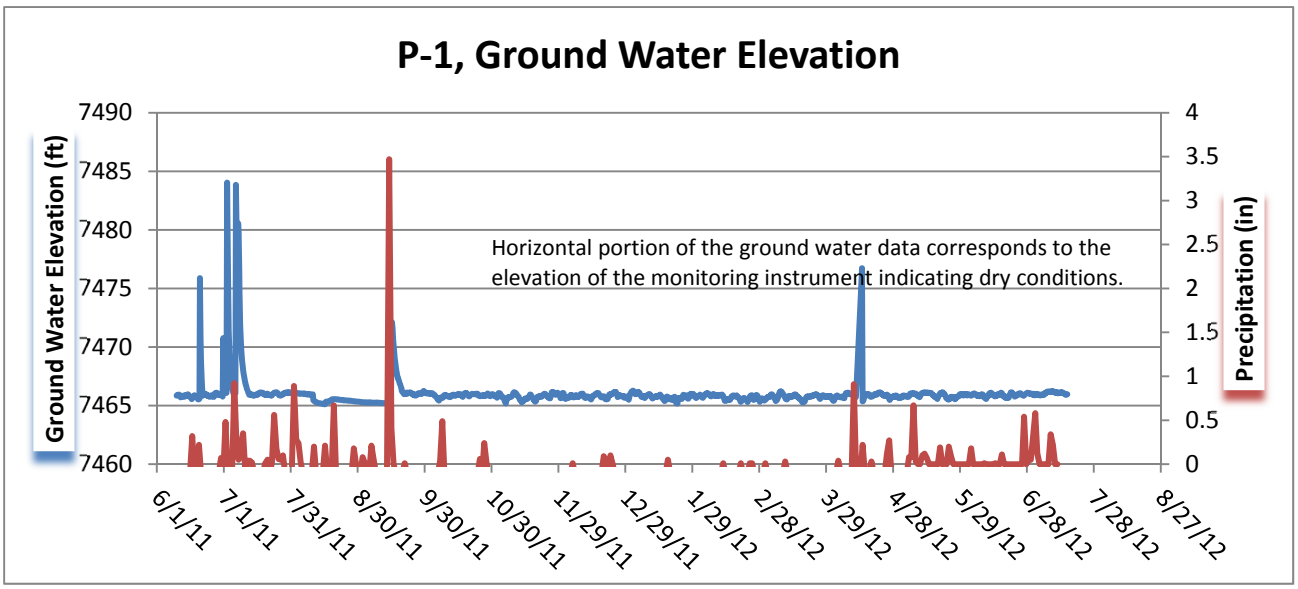
Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#16	1	8. Large gullies, diversions, and low flowing streams	3.30	15.00	454.00	5.450	0.023
		3. Short grass pasture	26.69	265.00	993.00	4.130	0.066
#16	**1**	**Time of Concentration:**					**0.089**
#18	1	3. Short grass pasture	24.46	146.75	599.96	3.950	0.042
		8. Large gullies, diversions, and low flowing streams	24.46	103.22	422.00	14.830	0.007
#18	**1**	**Time of Concentration:**					**0.049**
#19	1	3. Short grass pasture	26.38	230.00	872.00	4.100	0.059
		8. Large gullies, diversions, and low flowing streams	21.88	35.00	160.00	14.030	0.003
#19	**1**	**Time of Concentration:**					**0.062**

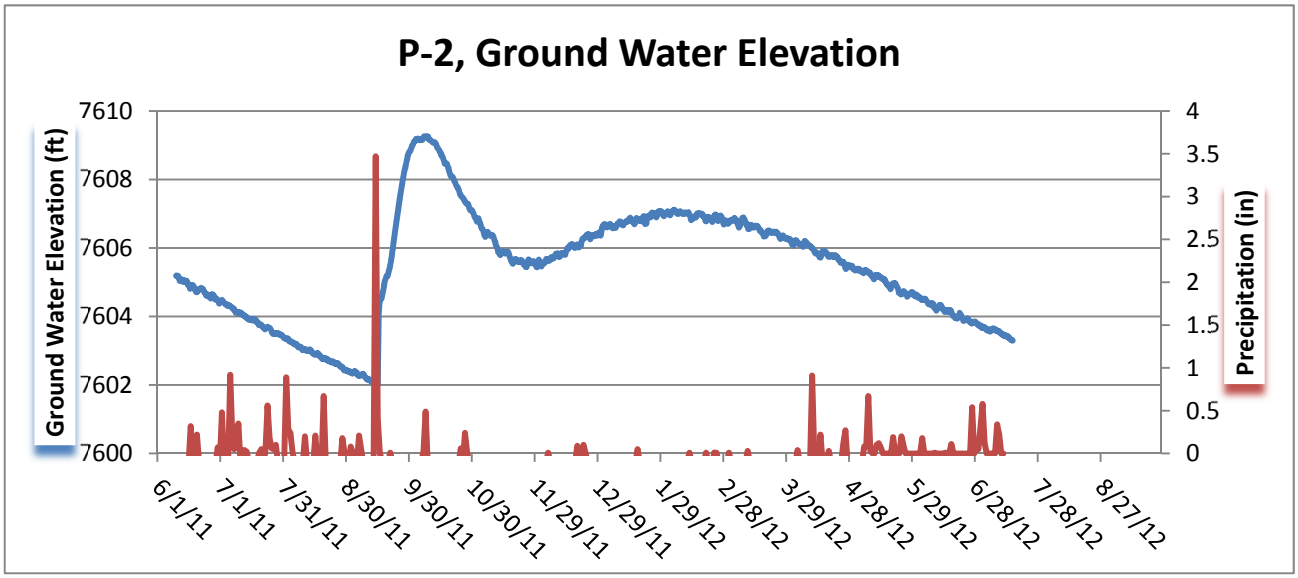
Subwatershed Muskingum Routing Details:

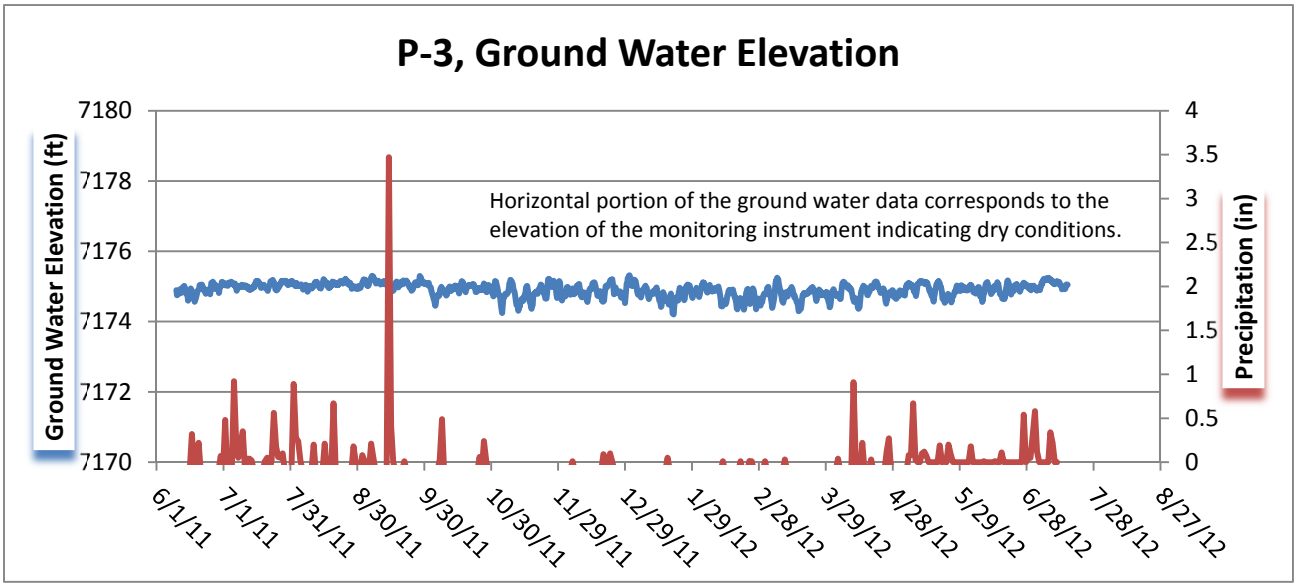
Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#2	1	1. Forest with heavy ground litter	41.10	882.00	2,146.00	1.620	0.367
#2	**1**	**Muskingum K:**					**0.000**

Table of most recent readings

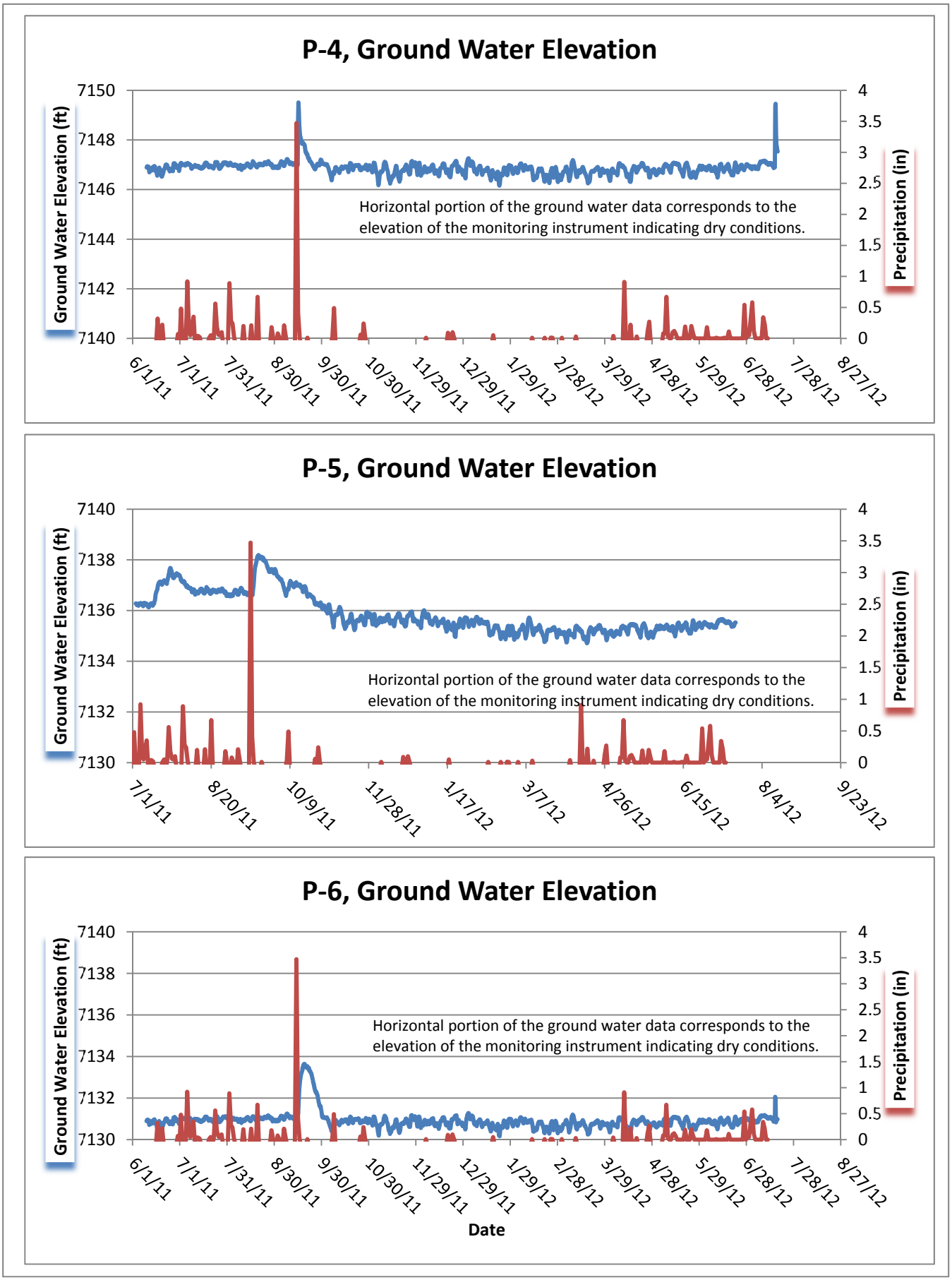
Date	Well ID	Water Elevation (ft)	Calculated Depth (ft)
7/16/2012	P-1	7465.97	7443.57
7/16/2012	P-2	7603.30	7577.23
4/11/2012	P-3	NA	NA
7/18/2012	P-4	7147.53	7132.05
7/18/2012	P-5	7135.53	7113.14
7/18/2012	P-6	7130.98	7100.78
7/18/2012	P-7	7113.82	7097.7
7/18/2012	P-8	7105.24	7098.11
7/18/2012	P-9	7117.92	7096.44
7/18/2012	P-10	7107.09	7097.7
7/18/2012	P-11	7126.06	7110.2
4/11/2012	P-12	7141.25	7124.36
4/11/2012	P-13	7141.90	7130.36
4/11/2012	P-14	7145.36	7130.14
7/18/2012	P-15	7146.68	7136.64
7/18/2012	"Upper"	7175.05	



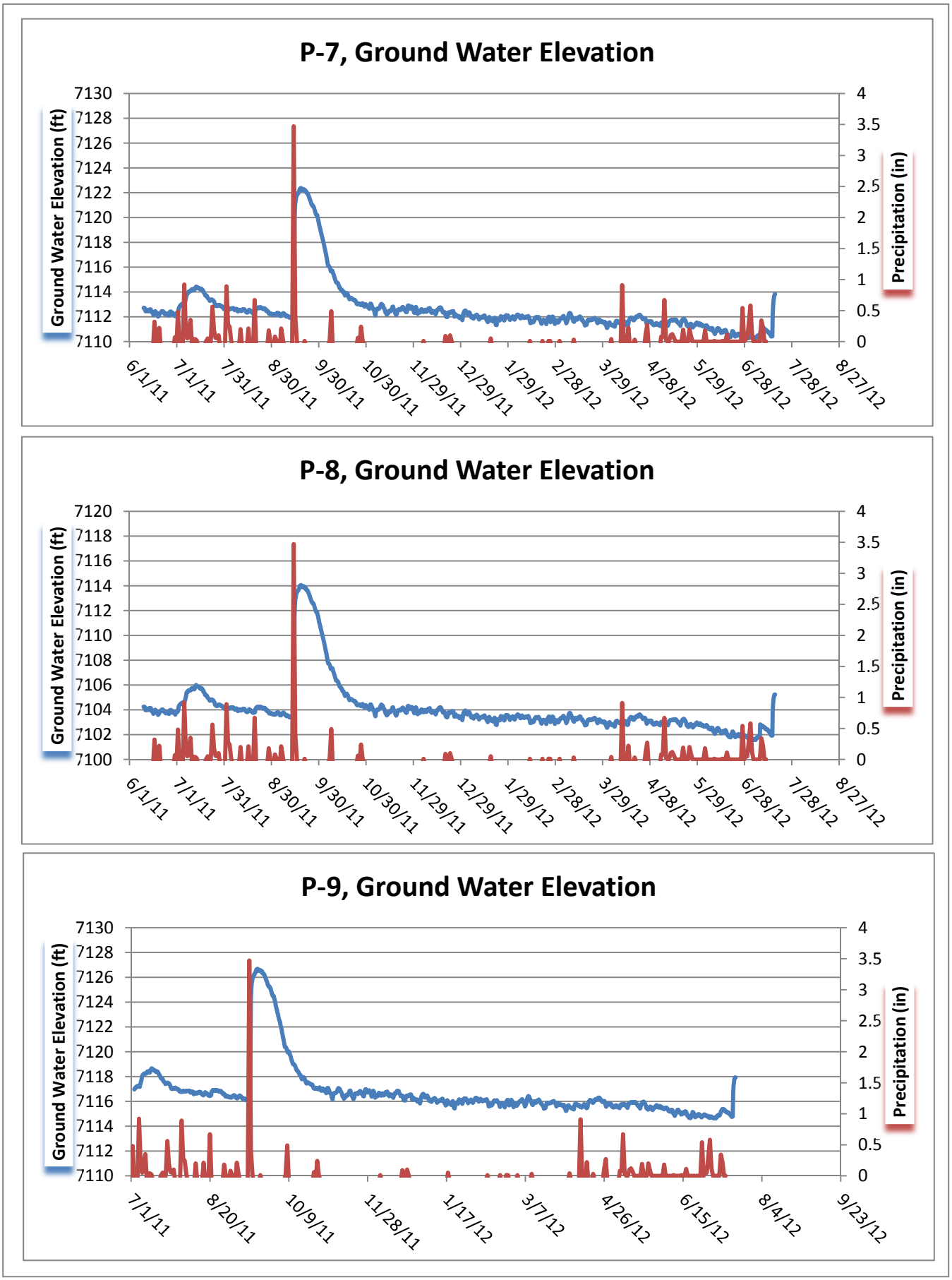




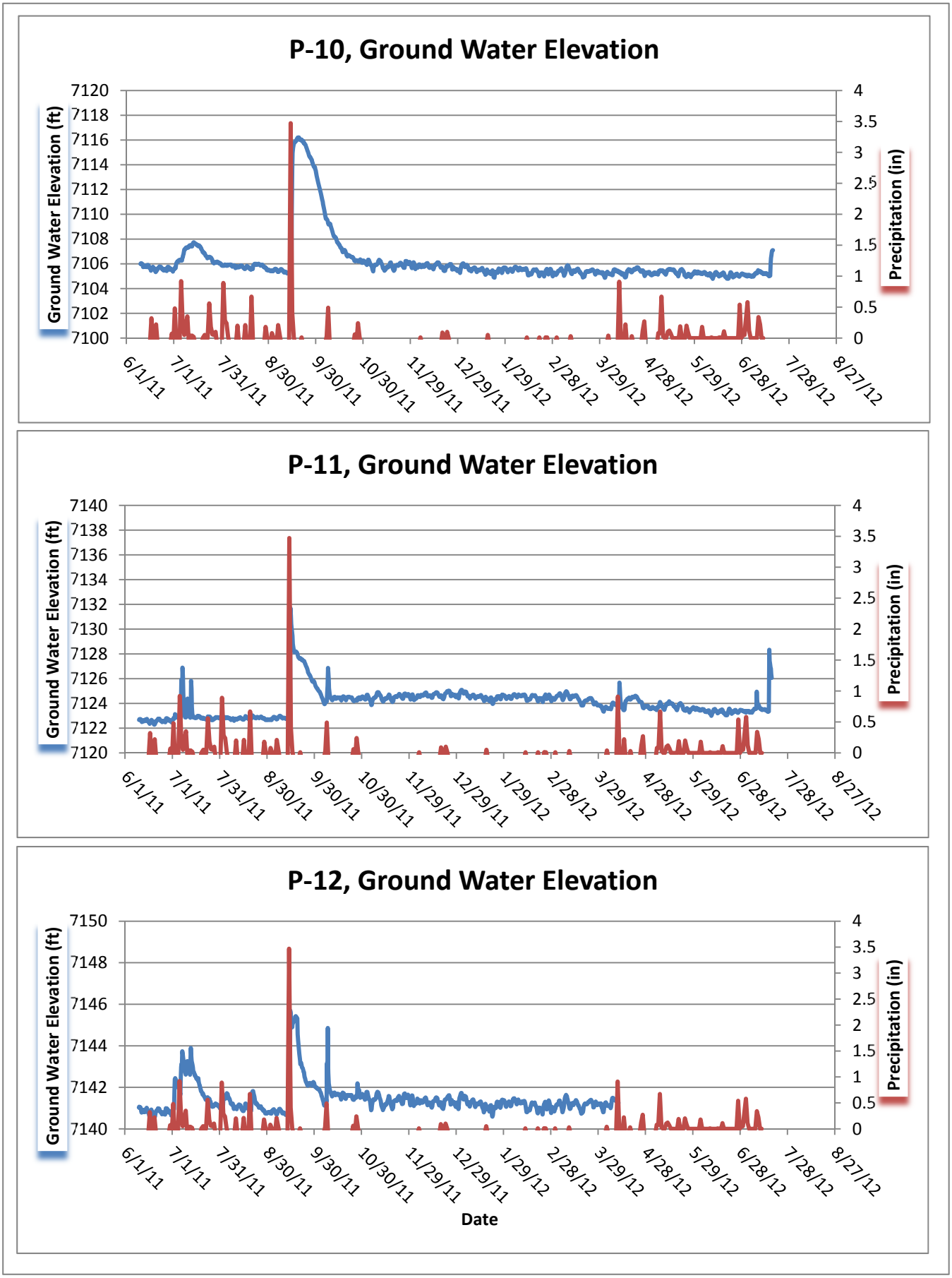
Precipitation information from the Mountain Shadows-Evergreen Rain Gage Station, (www.wunderground.com)



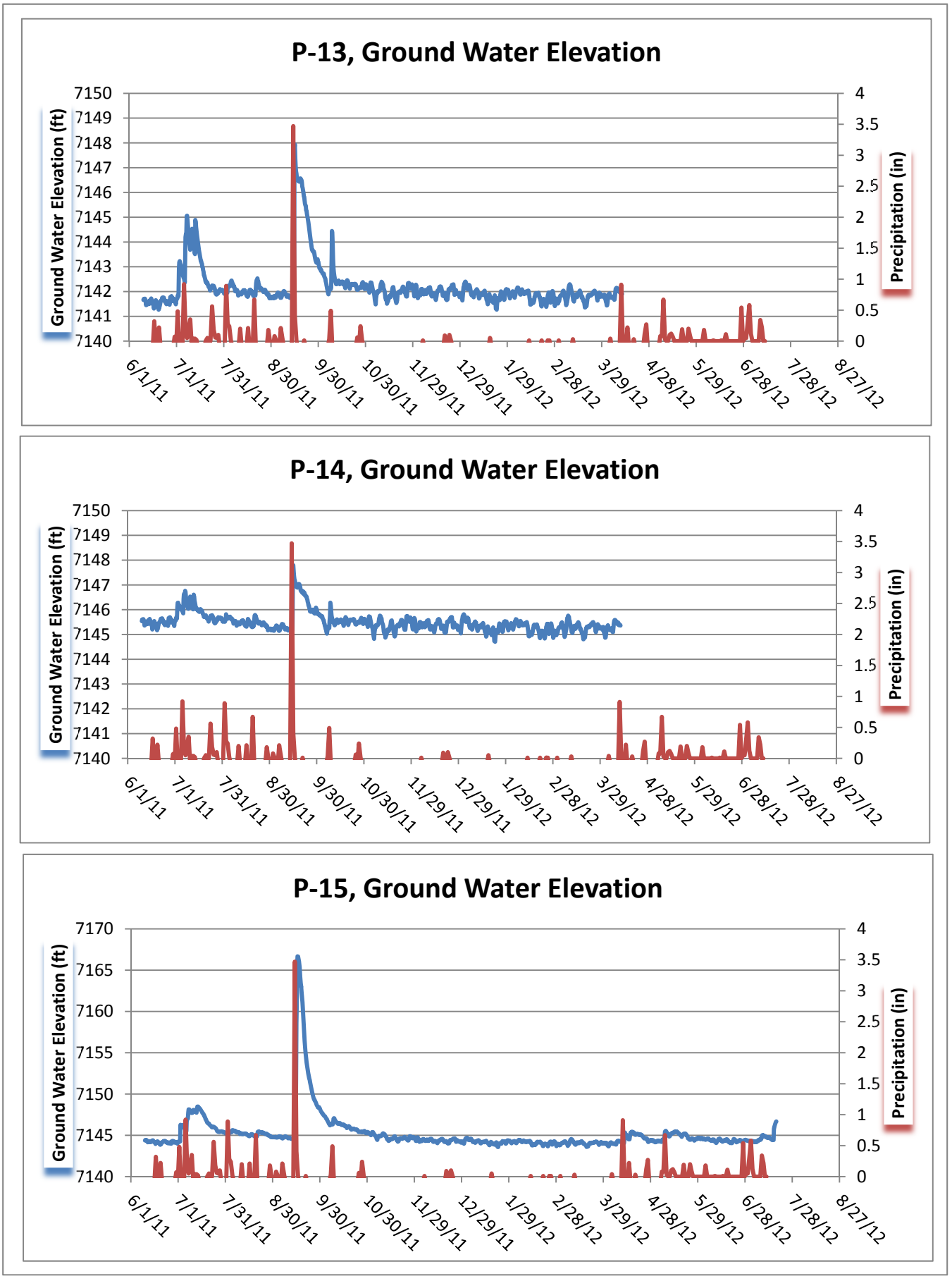
Precipitation information from the Mountain Shadows-Evergreen Rain Gage Station, (www.wunderground.com)



Precipitation information from the Mountain Shadows-Evergreen Rain Gage Station, (www.wunderground.com)



Precipitation information from the Mountain Shadows-Evergreen Rain Gage Station, (www.wunderground.com)



Precipitation information from the Mountain Shadows-Evergreen Rain Gage Station, (www.wunderground.com)

ATTACHMENT G-2

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help | Last Refresh: 5/2/2012 12:00:51 AM

Receipt: 9080650 **Division:** 2
Permit #: 21368- - **Water District:** 10
Well Name / #: **County:** EL PASO
Designated Basin: **Management District:**
Case Number:
WDID:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	MILLER J F	183 CRYSTAL PK RD	MANITOU SPG, CO

[-] Location Information

Approved Well Location:

Q40	Q160	Section	Township	Range	PM	Footage from Section Lines
SE	NW	9	13.0S	67.0W	Sixth	

Northing (UTM y): 4309541.8 **Easting (UTM x):** 508804.0
Location Accuracy: Spotted from quarters

Physical Address **Subdivision Name**

City/State/Zip **Filing** **Block** **Lot**

Parcel ID: **Acres in Tract:**

[-] Permit Details

Date Issued: **Date Expires:**

Use(s): DOMESTIC **Aquifer(s):** ALL UNNAMED AQUIFERS
Special Use:

Area which may be irrigated:
Maximum annual volume of appropriation:

Statute:

Permit Requirements:	Totalizing Flow Meter	Geophysical Log	Abandonment Report
	No	No	No

Cross Reference Permit(s):	Permit Number	Receipt	Description

Comments:

[-] Construction/Usage Details

Well Construction Date: **Pump Installation Date:**
Well Plugged: **1st Beneficial Use:** 04/23/1964

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
	29			12	4

[-] Application/Permit History

First Beneficial Use 04/23/1964

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Original File	12/07/2007	No

Form C Rev. 9-62/10M

STATE OF COLORADO RO 8141

APPLICATION FOR: ☐ A PERMIT TO USE GROUND WATER ☒ A PERMIT TO CONSTRUCT A WELL

RECEIVED
AUG 27 1964
GROUND WATER SECT.
COLORADO
STATE ENGINEER

Applicant J.F. Miller
183 Crystal Park Rd.
P.O. Address Manitou Springs, Colo.
Quantity applied for 10 gpm or
AF Storage
Used for Domestic Lawn Purposes
on/at 183 Crystal Park Rd.
(legal description of land site)

Total acreage irrigated and other rts.

ESTIMATED DATA OF WELL

Hole size: 10 in. to 60 ft.
in. to ft.

Casing Plain 6 in. from 0 to 40 ft.
in. from to ft.
Open or Perf. 6 in. from 40 to 60 ft.
in. from to ft.
PUMP DATA: Type . HP Outlet Size ?

Use initiation date August 24 19 64.
(Use Supplemental pages for additional data)

Driller to furnish Log and History (Form E) within 30 days after completion of well.

THIS APPLICATION APPROVED
PERMIT NO. 21368
ISSUED: DATE AUG 27 1964 19

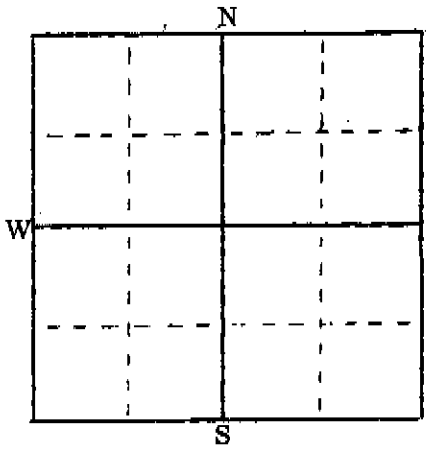
LOCATION OF WELL

County El Paso

¼ of ¼ of Sect. , Twp. ,

Rge. , P.M. OR

183 Crystal Park Road
Street Address or Lot & Block No.
Manitou Springs, Colo.
Town or Subdivision



Locate well in 40 acre (small) square as near as possible. Large square is one section.

$25.00 fee required for uses other than Domestic or Livestock.

Applicant J.F. Miller
Agent or
Driller Joe Coniff Co. No. 56
2522 E. Hwy 24
Address Colorado Springs, Colo.

NOTE — SATISFACTORY COMPLETION REQUIRED FOR APPROVAL OF APPLICATION

10-63

RO 8141

STATE OF COLORADO
DIVISION OF WATER RESOURCES
OFFICE OF THE STATE ENGINEER
GROUND WATER SECTION

RECEIVED
SEP 1 1964
GROUND WATER SECT.
COLORADO
STATE ENGINEER

Index No. 1406
IDWD 2-10
Use Domestic
Registered 7/1/64
(For State Engineer's Use)

LOG AND HISTORY OF WELL

PERMIT NO. 21368

Driller Joe Coniff Co. Lic. No. 56

Owner J.F. Miller

Street 183 Crystal Park Rd. City Manitou Spgs. Colo.

Tenant

Use of Water Lawn

On or By 183 Crystal Park Rd. No. Acres
(description of site or land)

Date Started 4-21, 1964

Date Completed 4-23, 1964

Yield 4 GPM or CFS

WELL DESCRIPTION:

Depth to Water 12 ft. Total Depth 29 ft.
(measured from ground surface)

Hole Diameter:
from 0 ft. to 29 ft., 10 in.
from ft. to ft., in.
from ft. to ft., in.

TEST DATA:

How Tested Pump or X Bailed

Date Tested 4-23, 1964 Length 1 hrs.

Rate 4 GPM Drawn Down 14 ft.

PUMP DATA:

Pump Type Outlet Size in.

Driven by HP

CASING RECORD:

Plain Casing

Size 6", Kind galv from 0 ft. to 17 ft.

Size , Kind from ft. to ft.

Size , Kind from ft. to ft.

Perforated Casing

Size 6", Kind galv from 17 ft. to 29 ft.

Size , Kind from ft. to ft.

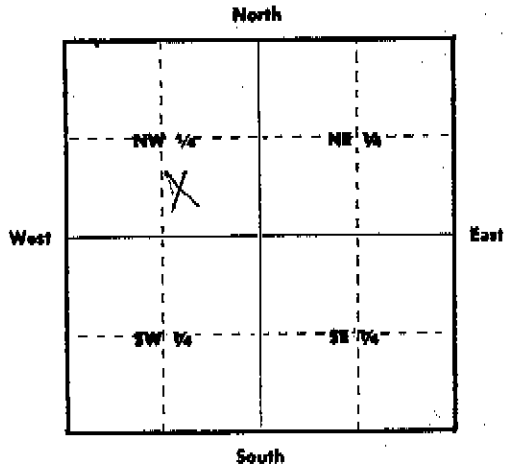
Size , Kind from ft. to ft.

WELL LOCATION

El Paso County

SE ¼ of NW ¼ of Sect. 7

Twp. 13S., Rge. 67W., 6 PM



ABOVE DIAGRAM REPRESENTS ONE FULL SECTION. LOCATE WELL ACCURATELY IN SMALL SQUARE REPRESENTING 40 ACRES.

or

If the above is not applicable fill in:

183 Crystal Park Road
No. Street

Manitou Spgs., Colo.
City or Town

or

Lot , Block

Subdivision
(include filing or number)

TO BE MADE OUT IN QUADRUPLICATE:

Original Blue and Duplicate Green Copy must be filed with the State Engineer within 30 days after well is completed. White copy is for the Owner and Yellow copy for the Driller. **SIGN BLUE COPY**

FOR WELL LOG USE REVERSE SIDE

WELL LOG

Ground Elevation _____ (if known) How Drilled Rotary

FROM FEET	TO FEET	TYPE OF MATERIAL	REMARKS (such as Cementing, Packing, Shut off, etc.)	Indicate Water Bearing Formation	Indicate Perforated Casing Location
0	17	Rock			
17	18	"			X
18	20	Clay & gravel			X
20	29	Rock & clay			X
		TD 29 ft.			
		Gravel packed from 0 to 29 ft.			

(if more space is required use additional sheet)

WELL DRILLER'S STATEMENT

This well was drilled under my supervision and the above information is true and correct to the best of my knowledge and belief.

Signed Joe Coniff Company

By T. W. Brown

Dated August 31, 1964

Colorado Division of Water Resources

Colorado's Well Permit Search

Well Constructed

Help | Last Refresh: 5/2/2012 12:00:51 AM

Receipt: 9081794
Permit #: 35107- -
Well Name / #:
Designated Basin:
Case Number:
WDID:
Division: 2
Water District: 10
County: EL PASO
Management District:

[-] Applicant/Owners History

Date Range	Applicant/Owner Name	Address	City/State/Zip
Unknown - Present	DEMARK FRANK	RT 6	COLO SPRGS, CO 80901

[-] Location Information

Approved Well Location:

Q40	Q160	Section	Township	Range	PM	Footage from Section Lines
SE	SE	16	13.0S	67.0W	Sixth	

Northing (UTM y): 4307136.2 **Easting (UTM x):** 509607.9
Location Accuracy: Spotted from quarters

Physical Address
Subdivision Name
City/State/Zip
Filing **Block** **Lot**
Parcel ID:
Acres in Tract:

[-] Permit Details

Date Issued: **Date Expires:**
Use(s): DOMESTIC
Aquifer(s): ALL UNNAMED AQUIFERS
Special Use:
Area which may be irrigated:
Maximum annual volume of appropriation:
Statute:

Permit Requirements:	Totalizing Flow Meter	Geophysical Log	Abandonment Report
	No	No	No

Cross Reference Permit(s):	Permit Number	Receipt	Description

Comments:

[-] Construction/Usage Details

Well Construction Date:
Well Plugged:
Pump Installation Date:
1st Beneficial Use: 09/04/1968

Elevation	Depth	Perforated Casing (Top)	Perforated Casing (Bottom)	Static Water Level	Pump Rate
	150			36	15

[-] Application/Permit History

First Beneficial Use 09/04/1968

[-] Imaged Documents

Document Name	Date Imaged	Annotated
Original File	12/03/2007	No

NOV 1 4 1968

WRJ-25-68

Index No. 2088
IDWD 2-10
Use 1
Registered

STATE OF COLORADO
DIVISION OF WATER RESOURCES
OFFICE OF THE STATE ENGINEER

RECEIVED
OCT 14 1968
GROUND WATER SECT
COLORADO
STATE ENGINEER

MAP AND STATEMENT FOR WATER WELL FILING

PERMIT NUMBER 35107 erk. ms.

STATE OF COLORADO)
SS
COUNTY OF _____)

Know all men by these presents: That the undersigned

Frank Demarke,

claimant(s), whose address is Rt 6,

City Colo Spgs., Colorado, states:

Claimant(s) is (are) the owner(s) of the well described hereon; the total number of acres of land to be irrigated from this well is _____; work was commenced on this well by actual construction Wed day of Sept 4, 1968; the yield to be used from said well is 15 (gpm), for which claim is hereby made for Domestic purposes; that the average annual amount of water to be diverted is _____ acre-feet; and that the aforementioned statements are made and this map and statement are filed in compliance with the law.

X _____
Claimant(s)

Subscribed before me on this _____ day of _____, 19____.

My commission expires _____

_____
Notary Public

WELL DATA

Date Completed Sept 4- 68

Static Water Level 36

Total Depth 150

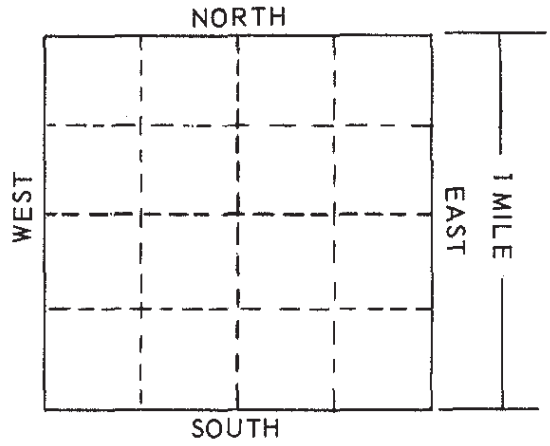
WELL LOCATION

El Paso 21 County

SE ¼ of SE ¼, sec. 16

T. 13 S R. 67 W, 6 P.M.

INDICATE WELL LOCATION ON DIAGRAM



WELL SHALL BE LOCATED WITH REFERENCE TO GOVERNMENT SURVEY CORNERS OR MONUMENTS, OR SECTION LINES BY DISTANCE AND BEARING.

_____ ft. from _____ section line.
(North or South)

_____ ft. from _____ section line.
(East or West)

Ground Water Basin _____

Water Management District _____

Domestic wells may be located by the following:

LOT _____, BLOCK _____

SUBDIVISION _____

FILING # _____

ACCEPTED FOR FILING IN THE OFFICE OF THE STATE ENGINEER OF COLORADO ON THIS _____ DAY OF _____, 19____.

_____
State Engineer

FORM TO BE MADE OUT IN QUADRUPLICATE: WHITE FORM MUST BE AN ORIGINAL COPY ON BOTH SIDES AND SIGNED.

WHITE copy & GREEN copy must be filed with the State Engineer within 30 days after well is completed. PINK copy is for the Owner & YELLOW copy is for the Driller.

WELL LOG

From	To	Type of Material	Water Loc.
0	4	Soil	
4	18	Dry Gravel	
18	36	Clay	
36	39	Water Sand	
39	110	Blue Clay	
110	176	Water Sand	
176	150	Clay	

Use additional paper if necessary to complete log.

WELL DATA

Type Drilling Rotary.

HOLE DIAMETER:

9 in. from 0 ft. to 150 ft.

____ in. from ____ ft. to ____ ft.

____ in. from ____ ft. to ____ ft.

CASING RECORD

Cemented from 0-15'

Plain Casing

Size 5, kind Stov from 0 ft. to 75 ft.

Size __, kind ____ from ____ ft. to ____ ft.

Size __, kind ____ from ____ ft. to ____ ft.

Perforated Casing

Size 5, kind Stov from 75 ft. to 150 ft. Stripped

Size __, kind ____ from ____ ft. to ____ ft.

Size __, kind ____ from ____ ft. to ____ ft.

TEST DATA

Date Tested Sept 4-68

Type of Pump ?

Length of Test 1½

Constant Yield 15

Drawdown 4ft

WELL DRILLERS STATEMENT

John Matayka.

being duly sworn, deposes and says: he is the driller of the well hereon described; he has read the statement made hereon; knows the content thereof, and the same is true of his own knowledge.

x M-B Drlg Co

License No. 69.

State of Colorado, County of _____) ss

Subscribed and sworn to before me this _____ day of _____, 19__

My Commission expires _____, 19__.

Notary Public

WRJ-5-67

STATE OF COLORADO DIVISION OF WATER RESOURCES

APPLICATION FOR:
- ☐ A PERMIT TO USE GROUND WATER
- ☒ A PERMIT TO CONSTRUCT A WELL
- ☐ REPLACEMENT FOR NO._____ (Reason)
- ☐ OTHER

RECEIVED
AUG 28 1968
GROUND WATER SECT.
COLORADO
STATE ENGINEER

PRINT OR TYPE

APPLICANT Frank Demark

Street Address RT 6

City & State Colo Spgs, Colo

Use of ground water Domestic

Owner of land on which well is located Frank Demark

Number of acres to be irrigated None

Legal description of irrigated land

Other water rights on this land None

Owner of irrigated land

Aquifer(s) ground water is to be obtained from Alluvium

ESTIMATED WELL DATA

Est. quantity of ground water to be claimed:
Est. Max. Yield I5 GPM or CFS
Est. average annual amount to be used in acre-feet
Storage capacity _____ AF

Anticipated start of drilling Sept 19 68

Hole Diameter:
9 in. from 0 ft. to I50 ft.
____ in. from ____ ft. to ____ ft.

Casing:
Plain 6 in. from 0 ft. to I25 ft.
____ in. from ____ ft. to ____ ft.
Perf. 6 in. from I25 ft. to I50 ft.
____ in. from ____ ft. to ____ ft.

PUMP DATA:
Type Sub HP ½ Outlet Size I"

FOR STATE ENGINEER OR COMMISSION USE

LOCATION OF WELL

COUNTY EL PASO

SE ¼, SE ¼, sec. I6

T. I3 S, R. 67 W, 6 P.M.

Street or Lot & Block

City or Subdivision

Ground Water Basin

Water Management District

LOCATE WELL ON THE BACK OF THIS SHEET

Driller M.B. Drlg. CO No. 69

Driller's Address RT 2 Colo Spgs, Colo.

Frank Demark
Signature of Applicant

CONDITIONS OF APPROVAL

APPLICATION APPROVED:
VALID FOR ONE (1) YEAR AFTER DATE ISSUED UNLESS EXTENDED FOR GOOD CAUSE SHOWN TO THE ISSUING AGENCY

PERMIT NO. 35107 CONDITIONAL ☐

DATE ISSUED AUG 28 1968

Ralph L. Owens
STATE ENGINEER or CHAIRMAN GROUND WATER COMMISSION

By Jordan W. Esker

APPLICATION MUST BE COMPLETED SATISFACTORILY BEFORE ACCEPTANCE

(OVER)

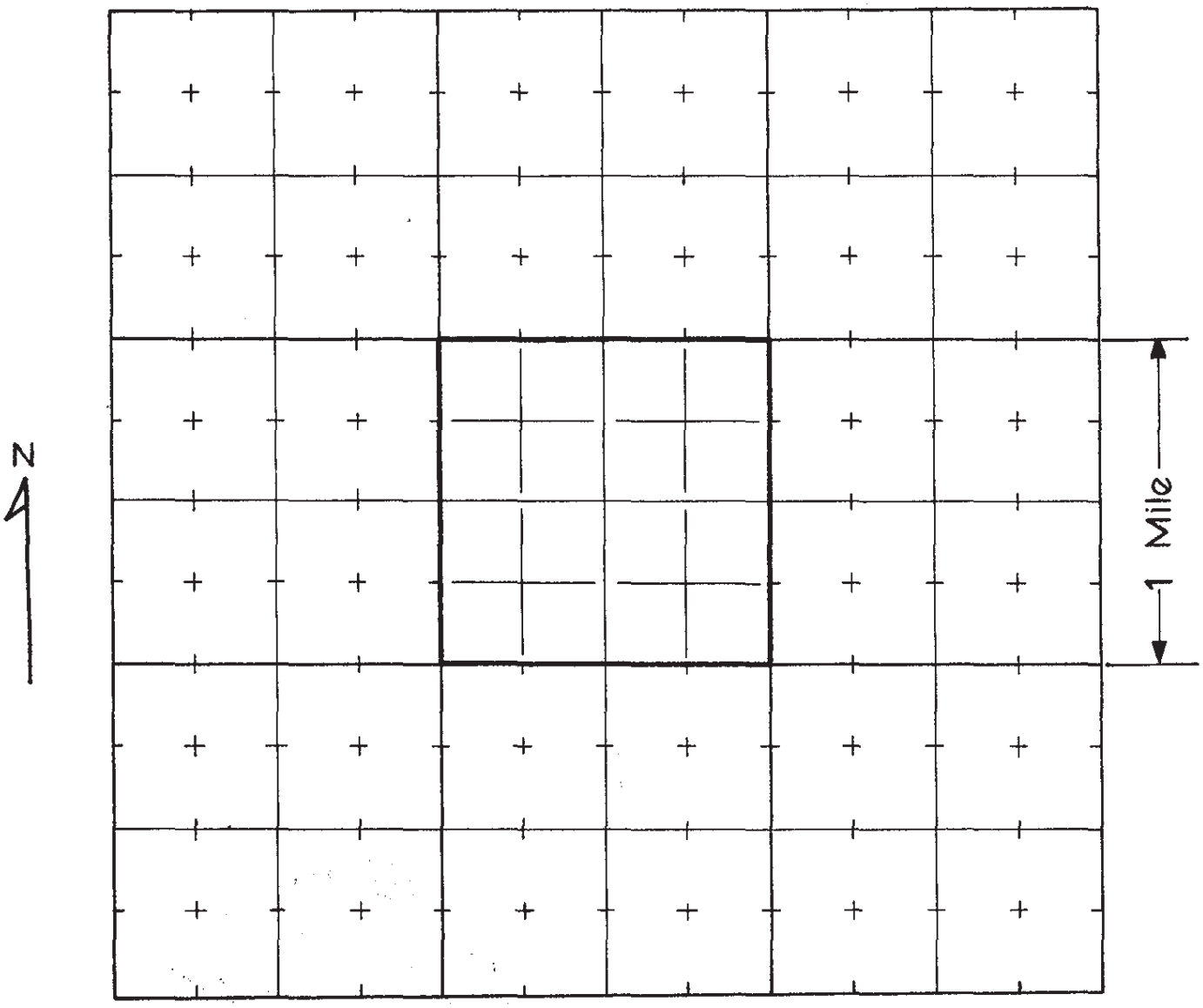
THE LOCATION OF THE PROPOSED WELL SHALL BE SHOWN ON THE DIAGRAM BELOW WITH REFERENCE TO SECTION LINES OR GOVERNMENT SURVEY CORNERS OR MONUMENTS.

_____ feet from _____ (North or South) section line

_____ feet from _____ (East or West) section line

IF WELL IS FOR IRRIGATION, THE AREA TO BE IRRIGATED MUST BE SHADED OR CROSS-HATCHED.

This diagram represents nine (9) sections. Use the CENTER SQUARE (one section) to indicate the location of the well.



THE SCALE OF THE DIAGRAM IS TWO INCHES EQUALS ONE-MILE

EXHIBIT H
WILDLIFE INFORMATION

EXHIBIT H
WILDLIFE INFORMATION

Wildlife information was provided in the original application through a Division of Wildlife Statement for Mine Permit Application. Although the original document is in the original permit file, for convenience, the contents of that statement are summarized here. Following that summary some additional comments are provided.

The Division of Wildlife (DOW) listed the species that occur on the site. They included: Bighorn sheep, Mule deer, Coyote, Golden eagle, Raccoon, Striped skunk, Golden Mantled ground squirrel, Rock squirrel, Thirteen-lined ground squirrel, Cottontail rabbit, Deer mice, Wood rat, Prairie falcon, Red-tailed hawk, Kestrel, Magpie, Sparrows, Raven, Crow, Steller's jay, Hummingbirds, Western tanager, Western meadowlark.

The DOW found no known endangered or threatened species present on the site. They felt that "Overall, there are minimal negative impacts on wildlife."

Additional Comments

Much of the impact on wildlife occurred when the quarry was expanded in the mid 1950's. Since that time, most of the site has remained in a severely disturbed state and wildlife habitat has been limited, at best. Residential development on nearby lands appears to have increased impacts on some wildlife species in recent years.

One species that was not mentioned by the DOW in their species list is the Mountain Lion. Workers have occasionally seen Mountain Lions sunning themselves on rocks high up on the quarry wall. Mountain Lion tracks are often seen on and near the site. They have even been found in the snow or in mud in the vicinity of the entrances to the Castle Concrete offices, located a short distance east of the quarry.

Another species known to occur is Black Bear. Bear scats are not uncommon in the forests just west of the quarry and some workers have seen bear around the edges of the quarry. None have been seen within the quarry area itself.

Although the DOW lists Bighorn Sheep as being in the area, they are rarely seen. Once in a while a few may wander north from the Queens Canyon Quarry area, but it is an unusual occurrence. Reaching this site would require them to travel through considerable amounts of thick forest. These animals tend to avoid such forests and prefer more open land where predators can be spotted more easily.

On the whole this site appears to exhibit a fairly stable wildlife population. The pattern of increased predators, which is not uncommon along the Front Range Urban Corridor, may be partly related to the relative ease these animals have in catching cats and dogs that stray too far from home. Unlike some areas along the Front Range, though, Mountain Lions have rarely been seen in the vicinity of the houses.

The wildlife habitat requirements to be developed in the reclamation plan will primarily provide habitat for smaller species, mainly ground dwelling rodents and lagomorphs (rabbits), and birds. However, the re-vegetation of lower portions of the operation in recent years has produced an increase in the frequency of Mule Deer seen on the site. This is especially true in winter and spring when forage is easily available in the re-vegetation areas. In the spring, sizable herds of deer are often seen in the early morning or in the late evening grazing on the new growth.

The conclusion that can be drawn from the original assessment performed by the DOW and by what has been observed to occur since then is that impacts on wildlife will be minimal in a negative sense and significant in a positive sense. Some of the positive effects derived from reclamation have already been observed with increased frequency of deer utilizing re-vegetated land. Active re-vegetation efforts will accelerate the enhancement of wildlife habitat more quickly than the probable reforestation efforts on the 2012 Waldo Canyon fire, west of the mine. As re-vegetation continues on land that is accessible to deer these favorable impacts will increase.

It is unlikely that re-vegetation of the benches will provide much if any utilization by deer. Benches on the side of a mountain do not normally constitute quality or even marginal deer habitat. However that re-vegetation will favor small animals. The re-vegetation work on the more or less level ground will provide habitat for deer and other large animals. Bench re-vegetation is mainly for human purposes, namely to satisfy the human need for attractive surroundings. The wildlife probably does not care in the least bit whether the benches are attractive looking.

EXHIBIT I
SOILS INFORMATION

EXHIBIT I
SOILS INFORMATION

The original soils on the site have largely been lost as a result of mining over the last 40 or more years. Only a few remnants of the original soils can be found in isolated pockets mainly occurring outside of the area to be affected under this amendment. When the permit was issued approximately 25 acres of land that is presently undisturbed was intended to be mined. Under this amendment, nearly all of this land is being removed as affected land and will be left in an undisturbed condition. Therefore, only those remaining original soils that are currently undisturbed but will be disturbed by further mining need to be described.

The original soil covering this site was of the Paunsaugunt Series. This soil which is characteristic of soil overlying the Manitou and the Williams Canyon limestones is thin, stony, very poorly developed, and a poor source of topsoil. Typically it is about 18 inches thick to bedrock with only the top 4 to 6 inches containing limited amounts of organic matter. No B horizon is present; only the A and C horizons. Only very small pieces of this soil still exist on the site within the land to be mined under this plan. It is estimated the total area occupied by this soil and within this amended plan amounts to perhaps an acre, at most.

The other soil within the mining area that will be affected is the Kutler-Broadmoor Complex. This soil is found on very steep slopes where the Pikes Peak Granite forms the bedrock. On top of the Pikes Peak Granite and below the Manitou Limestone is the Saguache formation. Although that formation is over 50 feet thick about 1.5 to 2 miles south of this site, the Saguache Sandstone here is a very thin formation and in some places is missing. Either erosion at the end of the Cambrian or early in the Ordovician removed it from this area or this area was a ridge where little or no sandstone forming material was deposited. Because the Saguache Sandstone is a beach deposit, it is more likely the latter is true than the former. This area may have been a granitic highland slightly elevated above a beach that was present further to the south.

Typically, where the Saguache Sandstone is present, the soil is a blend of both the Paunsaugunt Series and the Kutler-Broadmoor Complex. Fragments of granite can be found mixed with limestone and sandstone. This soil tends to be slightly more productive than the Paunsaugunt, probably because of less alkalinity and a little more favorable drainage.

On this site, such blended soils are evident in a few locations, but constitute a very small proportion of the total remaining soils.

The Kutler-Broadmoor Complex is nearly pure Pikes Peak Granite and usually exhibits a very gravelly texture with low quantities of fines. Upper Horizons are nearly indistinguishable from lower horizons. Productivity is low and because of its gravelly texture it favors deeply rooted plants like Ponderosa Pine, Douglas Fir, and various shrubs. Surface vegetation is usually very sparse and is non-existent in some places. Erosion potential is high. If the surface is subjected to intense runoff gullies quickly form.

Because of the very limited amount of existing, native soil that will be disturbed and because that soil is generally on very steep slopes, little of this soil can be salvaged. Furthermore, because of its low quality, especially on south facing slopes, there is little point in salvaging it. Donated soil, even the poor quality donated soil, is far better than any of the native soil remaining on the site.

Soils on the Existing Disturbed Land

As mentioned previously, existing disturbed lands contain little native soil that is of any value and what is present is of such a small quantity it is insignificant. Soils on the disturbed and yet to be mined lands are composed almost entirely of various kinds of mining by-products. These fall into two classes. First, is limestone rubble left after mining but not picked up and processed for aggregate. This has a coarse texture and contains few fines. It is rarely very suitable for use as a growth medium, but can support sparse growth.

Second is waste which is composed of various kinds of products. It varies from gravelly to a sandy texture. This spectrum of by-products is collectively called waste. It is a poor growth medium and is highly erodible. But, as has been learned at the Snyder Quarry, when blended with quality soil or covered with several inches of soil it can form an excellent substrate that encourages strong growth and high productivity.

In this plan, none of the waste will be used directly as a growth medium. However, it will be used as backfill, subsoil, and topographic modification material. Soils for the re-vegetation will come from either the soils that have been stockpiled from this site in the past or from soils that have been collected and are continuing to be collected through donations. This soil mostly comes from Gambel Oak dominated vegetation/soil units, grasslands, and forest areas in northwest Colorado Springs. Most of the soil is moderately to extremely rich in organic matter, and contains good quantities of woody materials to help stabilize slopes and control erosion. Because this soil is so varied in source it would be impossible to describe its properties in detail.

EXHIBIT J
VEGETATION INFORMATION

EXHIBIT J
VEGETATION INFORMATION

The information provided in this exhibit is largely derived from the original permit application. That was a very complete description and is also relevant to the visual impact mitigation plan contained in the Enhanced Reclamation Plan. Some additional information is provided that was not provided in the original permit. Also, some information provided in the original exhibit has been deleted from this description as it is no longer relevant.

Virtually all the vegetation on the quarry site was destroyed by previous mining activities when the quarry was operated as a material source for constructing the United States Air Force Academy. Because reclamation was not a serious concern at that time, no preliminary studies were done. However, the visual patterns that occurred on the quarry can be reconstructed from examining historic photos of surrounding vegetation. In 2012, the Waldo Canyon fire decimated the forested communities west of the mine. A small zone west of North Peak did not burn.

Topography greatly dictates the vegetation composition and community type on this site in an interesting fashion. The area can be divided into two topographic types. The quarry itself occupies a steep, east facing slope that is somewhat dissected by the drainage patterns. The processing area at the base of the actual quarry area occupies more level ground.

The quarry area is represented by two community types. South-facing slopes primarily have a shrub type community of Gambel Oak (*Quercus gambelli*) and Mountain Mahogany (*Cercocarpus montanus*). North-facing slopes are inhabited by a more typical Montane forest composed of various mixtures of Ponderosa Pine (*Pinus ponderosa*), Douglas Fir (*Pseudotsuga menzesii*), and Rocky Mountain Juniper (*Juniperus scopulorum*). In most forest areas the Douglas Fir is dominant numerically. Unlike the area around the Queens Canyon Quarry located a couple of miles to the south, One-seeded Juniper (*Juniperus monosperma*) is very rare in the vicinity of the Pikeview Quarry. This reflects the additional wetness of this site compared to the Queens Canyon area.

Drainage from the mountain side above the quarry area produces a strongly vertical linearity to the vegetation patterns. Demarcation lines between the communities appear to be fairly sharp and closely follow ridge tops and drainage courses. Some overlap of shrub communities to north slopes and forest communities to south slopes does occur and probably follows slight variations in soil depth and texture. On some rockier south facing slopes Piñon Pine (*Pinus edulis*) trees occur in abundance but generally do not achieve a full crown cover. They represent a somewhat open forest that is not dense enough to be called a true forest or open

enough to be called a Savannah. The shrub component is still dominant numerically and probably functionally as well, but the Piñon Pines do play a minor role in the communities.

On the whole, these two communities are ecologically fairly distinct but not quite as distinct as one would assume by visual inspection from a distance. The visual dominance by trees and by shrubs is not so clearly marked when total species composition is considered. The presence of a reasonably high quantity of shrubs in the forest is obscured by the trees themselves and is closely matched, in an inverse manner, by the presence of scattered trees in the shrub community. Nevertheless, the mixing of the components of the communities is not deemed sufficient to warrant combining of the communities into a single type with two sub-types. Understory composition is the best indicator, in this case, of the distinctiveness of the environment and the communities.

The shrub-land is heavily grassed with species similar to those typically found on Paunsaugunt Series and Kutler-Broadmoor Complex soils. The forest, by contrast, has a much different understory composed of species more typical of Montane forests. The difference indicates the distinctive character of the communities.

The shrub-lands contain grasses which include Needle-and-Thread (*Stipa comata*), Arizona Fescue (*Festuca arizonica*), Mountain Muhly (*Muhlenbergia montana*), Indian Ricegrass (*Oryzopsis hymenoides*), Sideoats Grama (*Bouteloua curtipendula*), and Little Bluestem (*Andropogon scoparius*). Some Mountain Mahogany (*Cercocarpus montanus*), and Skunkbush Sumac (*Rhus trilobata*) also can be found in minor quantities on some of the drier slopes.

Understory in the forest is much sparser due to the depth of shading that occurs on the forest floor. Grasses are few and mainly represented by small quantities of Bluegrass (*Poa sp*.), Sideouts Grama (*Bouteloua curtipendula*), and fescues (*Festuca sp*.). The prominent understory species are broad leaved evergreens like Oregon Grape (Mahonia repens) and various heaths. A small amount of Mountain Mahogany and Gambel Oak as well as numerous small junipers can be found in the somewhat more open areas of the forest and is commonly associated with an understory similar to that found on the south slope shrub-lands.

The lower area where the processing facilities are found is an area with a comparatively gentle, east-facing slope. Trees in this area are much less common. This area was probably inhabited by a shrub and grass community not very different from that found on the south facing slopes of the quarry face. More Mountain Mahogany occurs here. Understory species composition is basically the same as the south facing slopes except that here Blue Grama (*Bouteloua gracilis*) is much more common. The vegetation pattern is more discontinuous with much more clumping of the shrubs.

The original vegetation of the Pikeview Quarry was essentially composed of two fairly distinct types which are delineated visually by topography. Relatively level areas and south facing slopes in the quarry area were inhabited by shrub-lands of primarily Oakbrush with an understory of generally drought resistant grasses. North-facing slopes were inhabited by a forest of Douglas Fir and Ponderosa Pine with an understory of Junipers and shrubs, along with scattered grasses and evergreen sub-shrubs.

Areas of future operation are scattered about the immediate boundaries of the current operation. All areas where future operations will occur are found in the various communities already described.

Plant community patterns at the Pikeview Quarry are determined by an interaction of a large number of factors. Initial drainage and erosion patterns to a large extent determined which of two complex successional models would dominate. Each model has acted in its own fashion to produce two very complex communities that overlap considerably in composition but are distinctive in their ecological functioning. The initial erosion patterns were probably determined by a number of different events that were largely acting together in a probabilistic fashion much as the vegetation today behaves. Care must be exercised in reclaiming the site to induce appropriate successional models on the various plots of land. Once set in action, each model should be able to basically sustain its own development, although the actual direction may be more determined by probability than the series of lineal stages encountered in simple environments where causal arguments and models are much more explanatory and operative.

EXHIBIT K
CLIMATE

K.1 GENERAL CONDITIONS

Colorado Springs is in a continental climatic condition with warm summers and cool to cold winters. Precipitation is considered semi-arid. The wind factor is above national averages meaning it is windier than the average for the United States. Humidity is usually low to moderate throughout the year and therefore evapotranspiration rates are moderate to high. Snowfall in winter is moderate when compared to other locations in Colorado.

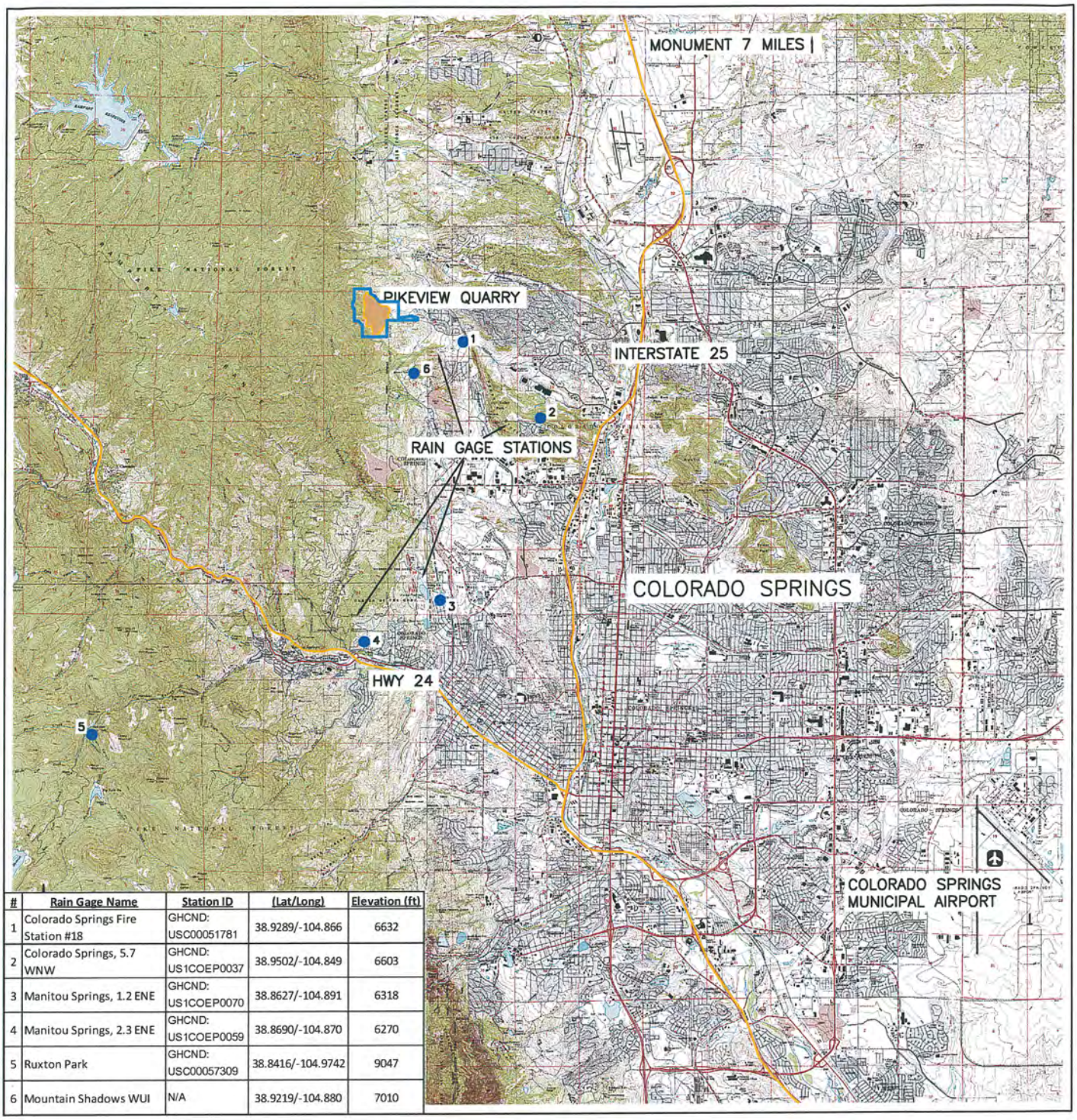
Perhaps the most distinguishing characteristic of the Colorado Springs climate is the frequency and intensity of thunderstorms during summer. Colorado Springs, according to weather records, is the most thunderstorm prone city west of the Mississippi River followed closely by Flagstaff, Arizona and Garden City, Kansas. Although the city itself has never experienced a super-thunderstorm, the Palmer Divide a few miles north of Colorado Springs has experienced some of the most severe thunderstorms on record anywhere in the world.

On May 30, 1935, Elbert, located 35 miles northeast of Colorado Springs, received 24 inches of rain in 24 hours and most of it fell in only 3 hours. Colorado Springs itself received 7 inches of rain in 24 hours on the same date from a related storm to the one that affected Elbert. Monument to the north of Colorado Springs received 14 inches of rain in 24 hours on June 16, 1965.

During the summer, thunderstorms that drop an inch or two of rain in periods of under an hour are not uncommon. But the super-thunderstorms usually occur north of the city in the Black Forest area.

Another important feature of the Colorado Springs climate is the monthly distribution pattern of moisture, especially during the growing season. Unlike most areas along the Front Range Urban Corridor, Colorado Springs usually experiences only minor drought periods during the growing season. In contrast, Pueblo and Denver both experience moderate to severe drought conditions from June through August. The pattern in Colorado Springs is similar to what occurs much farther east near the Kansas border or further up in the mountains. In this sense, Colorado Springs has a favorable precipitation pattern for the growth and development of vegetation on disturbed lands.

On the downside, much of that moisture comes in quick and occasionally intense storms that exhibit heavy runoff and only moderate soil absorption. The Colorado Springs climate produces generally reliable moisture, but much of that moisture is not as effective as suggested by the numbers. Furthermore, monthly evaporation exceeds precipitation every month of the year (Table K-1). Nevertheless, the climate can induce a higher proportion of cool season



#	Rain Gage Name	Station ID	(Lat/Long)	Elevation (ft)
1	Colorado Springs Fire Station #18	GHCND: USC00051781	38.9289/-104.866	6632
2	Colorado Springs, 5.7 WNW	GHCND: US1COEP0037	38.9502/-104.849	6603
3	Manitou Springs, 1.2 ENE	GHCND: US1COEP0070	38.8627/-104.891	6318
4	Manitou Springs, 2.3 ENE	GHCND: US1COEP0059	38.8690/-104.870	6270
5	Ruxton Park	GHCND: USC00057309	38.8416/-104.9742	9047
6	Mountain Shadows WUI	N/A	38.9219/-104.880	7010

CERTIFICATION STATEMENT

I, Paul Kos, Colorado P.E. 40848 hereby certify that this drawing was reviewed by me and that the information shown is complete and accurate to the best of my knowledge.

COLORADO LICENSED
PAUL J. KOS
40848
7-23-12
PROFESSIONAL ENGINEER

TRANSIT MIX AGGREGATES

NORWEST CORPORATION

12,000 0 12,000

SCALE IN FEET

CONTINENTAL MATERIALS / TRANSIT MIX AGGREGATES / CASTLE CONCRETE

FIGURE K-1
WEATHER STATIONS NEAR PIKEVIEW QUARRY

DRAWN: JLS	DATE: Jul 23, 2012	PROJECT NO. 374-3	SCALE: As Shown
REVIEWED: NORWEST	DATE REVIEWED: May 02, 2012		
DRAWING: Rain Gage Locations.dwg			

Jul 23, 2012 - 12: PerkinsCole_D_374\374-Common\Site Data\Climatology\Pikeview Quarry_OTC_April2012\Rain Gage Locations.dwg

dependent species in the natural vegetation than would be expected elsewhere along the Front Range Urban Corridor.

Another feature of the Colorado Springs local climate is high geographic variability depending upon the location of the recording equipment. The weather station is east of the city, but limited data from the west side of the city suggests a reasonably different climate, both with respect to precipitation and temperature. Therefore, attempting to apply the official weather station data to conditions on this limestone quarry located in the hills west of the city must be done with considerable caution and interpretation.

K.2 STATISTICAL DATA AND COMMENTS

K.2.1 Overview

Data applicable to planning re-vegetation and reclamation of disturbed lands **(Figure K-1**) is available from the official airport weather station located east of Colorado Springs. Direct application of that data to the site is not wise without interpreting the data after considering the climate modifying effects of mountainous topography. The following sections present data on precipitation, temperature, pan evaporation, humidity, and wind. These factors are important to understanding site operation conditions, the hydrogeologic setting and the success of re-vegetation programs. Because the data is from the weather station, other limited data sources are used to modify the official record. This is necessary because the climates east and west of Colorado Springs are rather different. The data is presented in graphic and numeric formats.

Table K-1 30-Year Monthly Average Precipitation at Colorado Springs Municipal Airport, Colorado and Monthly Average Pan Evaporation

Location	***Period of Record***	***Jan***	***Feb***	***March***	***April***	***May***	***June***	***July***	***Aug.***	***Sept.***	***Oct.***	***Nov.***	***Dec.***	***Total***
Average Monthly Rainfall (in)	1982 - 2011	0.32	0.34	0.99	1.43	1.94	2.44	2.88	3.22	1.37	0.84	0.41	0.32	16.5
Pan Evaporation (in)	--	2.38	2.52	3.76	5.86	7.91	9.36	9.52	8.59	6.69	5.14	3.02	2.43	67.18

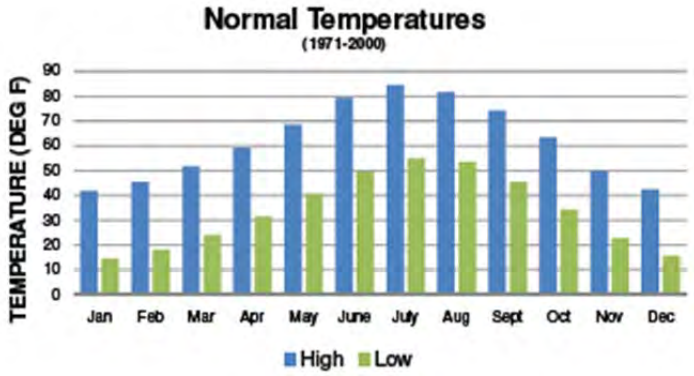
Data Source: NOAA 2012 and 1982

At the end of this exhibit, a section examines about 60 years of records from the weather station, (1948 – 2010). The long term variations are important to understanding the annual variations. These annual variations affect the predictability of possible success in any one year. The long term record provides some "feel" for how the climate, particularly precipitation, varies from year to year. This helps identify the extremes that must be considered when planning a rehabilitation program.

K.2.2 Temperature

Figure K-2 shows the annual variations in maximum and minimum temperatures for Colorado Springs on a monthly basis. Of particular importance are the temperatures during the growing season, essentially May through September.

Figure K-2: Monthly Temperature



Source: Colorado Springs Monthly Average Daily Temperatures (1971-2000, NOAA)

The patterns indicate a wide range in daily temperatures as shown by the large difference in the length of the maximum and minimum temperature bars. This is not only indicative of the usually low humidity but also the high elevation of Colorado Springs (6100'). This wide difference is important to plant growth characteristics. Adapted species must be capable of withstanding the stress produced by the often 30 degree range in temperatures encountered in the average day. Such stress can cause serious declines in growth rates of non-adapted species. Thus, the temperature environment is more stressful to plant life in general than, for example, Austin, Texas or Memphis, Tennessee where the daily temperature range during the growing season averages about 20 degrees or less and rarely drops below 70 degrees F.

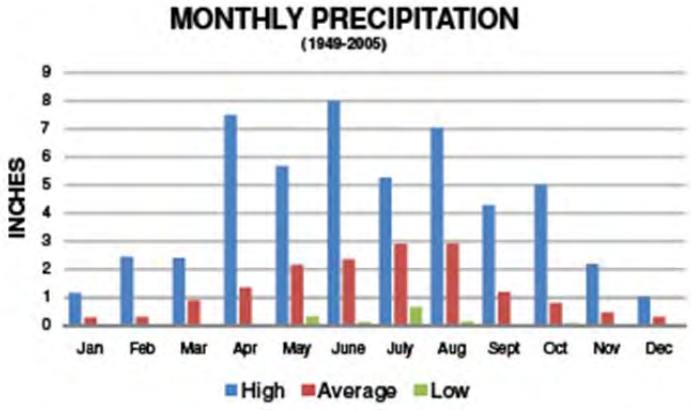
Site Modifications

The quarry site itself is about 1500 feet higher than the weather service station and therefore the actual temperatures would average about 2 to 5 degrees less. Yet, the pattern of variation throughout the year and the average daily range of temperatures are probably similar. In winter, the daily range may be somewhat less because of cold air drainage into the lower elevations of the city and somewhat higher night temperatures at the quarry. Shallow temperature inversions that are common in winter usually cause this pattern. During the growing season the quarry would be expected to be cooler but would exhibit essentially the same pattern of variation on a monthly and daily basis.

K.2.3 Precipitation

The average precipitation at the Colorado Springs Municipal Airport is 16.5 inches per year (NOAA 1982). **Figure K-3** shows the variation in mean precipitation for Colorado Springs on a monthly basis. This bar graph shows the rather even distribution of precipitation over the growing season. The July/August increase over June reflects the usually reliable arrival of monsoonal moisture from the Gulf of California. Further north in Denver, precipitation decreases in those months. This is a reflection of the effectiveness of the Pikes Peak and Palmer Divide barriers in creating a mild rain shadow effect in northeastern Colorado during the monsoon.

Figure K-3 Monthly Precipitation Colorado Springs Airport, 1948 - 2005



Source: NOAA

Anywhere else along the Front Range Corridor this Colorado Springs pattern is very unusual. The pattern is a major factor in the usually successful re-vegetation programs conducted in the Colorado Springs area. However, this pattern of increase precipitation in July and August is primarily attributable to the heavy and often severe thunderstorms that Colorado Springs is

noted for. Thus, although precipitation levels appear excellent during this time, much of that precipitation is not very effective moisture. That is, much of it runs off before it can soak into the ground. But, this pronounced moisture peak during a time when most other areas are "crying for rain" enhances the re-vegetation potentials in the Colorado Springs area.

Site Modifications

Mean annual precipitation for Manitou Springs is about 2 inches greater than it is for Colorado Springs, according to USGS Professional Paper 1019 "Climatography of the Front Range Urban Corridor and Vicinity, Colorado". The limited data from Manitou Springs may not totally represent the true differences. However, because Manitou Springs is nearer the mountains and therefore more subject to the increase precipitation resulting from orographic lifting, an increase of 2 inches in annual precipitation is not unusual or unexpected.

Average annual precipitation for Monument, several miles to the north of this site, is about 18.5 inches. That provides further support to a conclusion that this site is significantly wetter than Colorado Springs. This difference of nearly 5 inches is somewhat misleading because Monument is near the crest of the Palmer Divide. If long term records had been kept every few miles along a line between Monument and Colorado Springs, it is likely that the annual precipitation curve would exhibit a steep decline immediately south of Monument followed by a more gradual decline as far a Colorado Springs.

Four rain gage stations near Pikeview Quarry were located on a database provided by the National Climatic Data Center (www.ncdc.noaa.gov/cdo-web). These 4 rain gages were (1) Colorado Springs Fire Station #18, located approximately 1.4 miles east-south-east of the quarry, (2) Colorado Springs 5.7WNW, located approximately 2.9 miles south-east of the quarry, (3) Manitou Springs Rain Gage 1.2ENE, located approximately 5.1 miles south of the quarry (1/1/07 through 5/18/09), and (4) Manitou Springs 2.3ENE, located approximately 5.0 miles south of the quarry (5/1/09 – 12/10/11). The location of Pikeview Quarry, the above mentioned rain gage stations as well as Colorado Springs Municipal Airport are shown on Figure K-1, Pikeview Quarry Vicinity Map. Daily and monthly precipitation plots for periods between 2008 and 2011 are shown on Figures K-4 and K-5. The data on Figure K-5 came from the first three stations. Table K-2 summarizes precipitation data for days and periods of interest.

Figure K-4 Daily Rainfall Near Pikeview Quarry

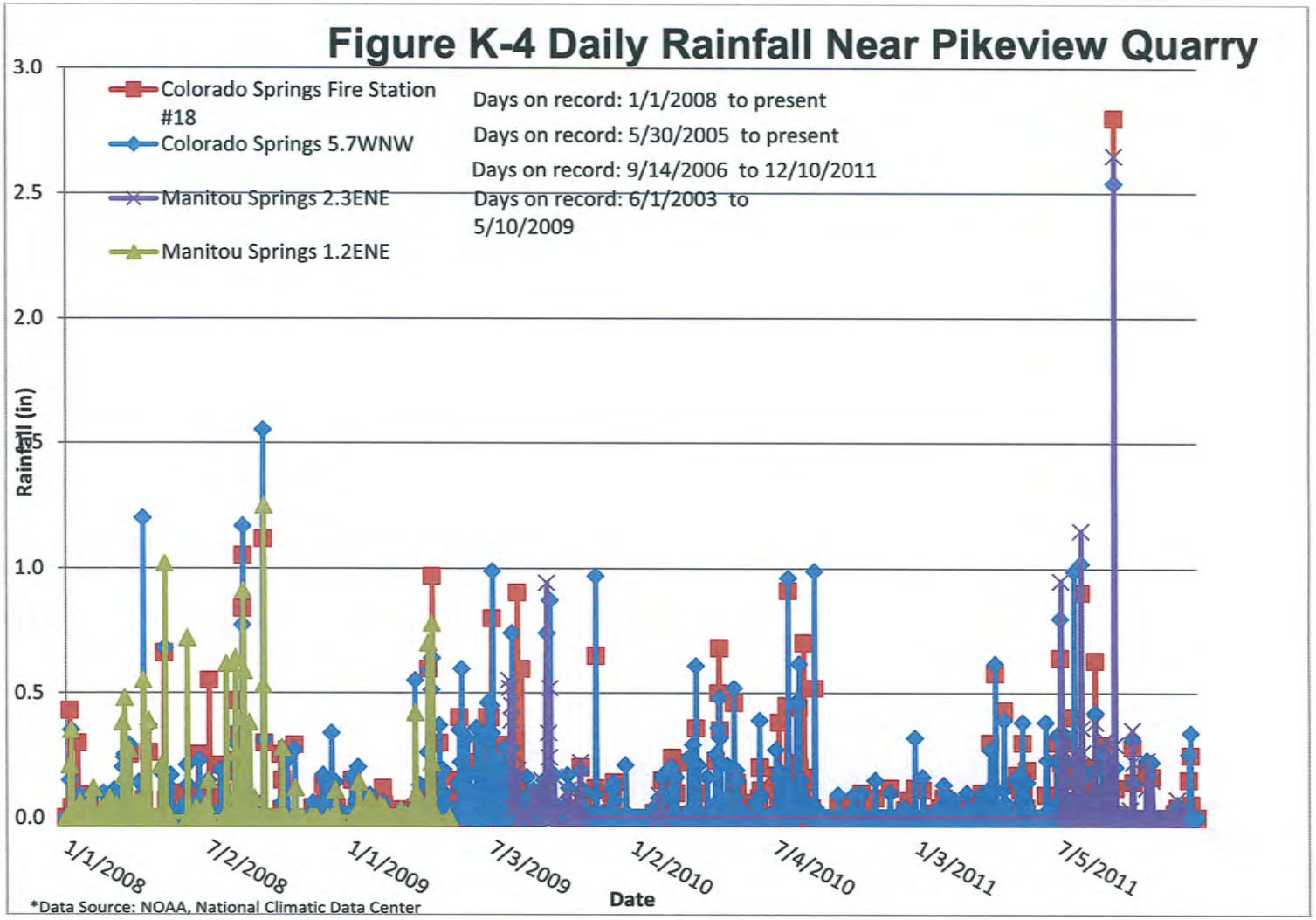
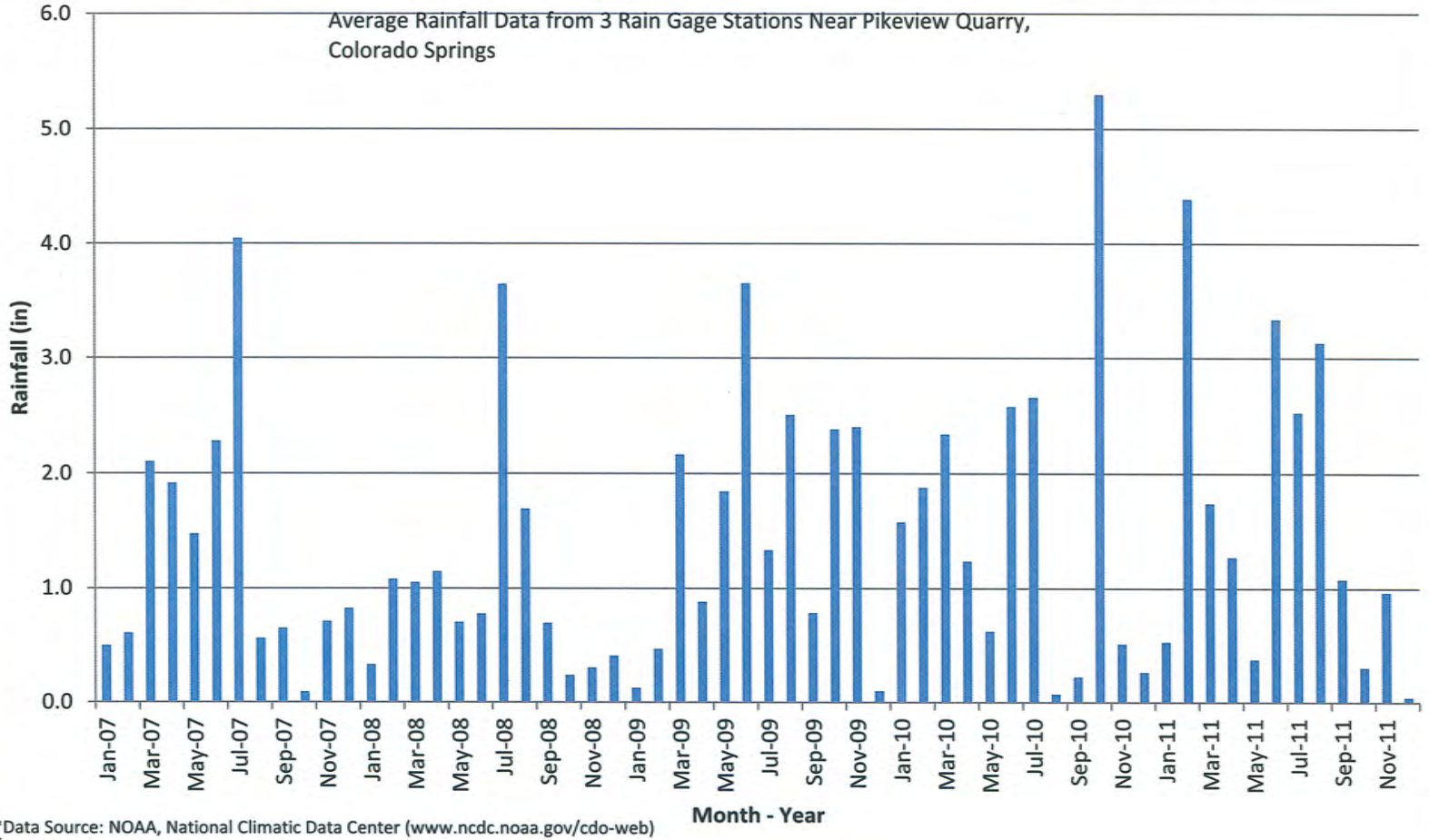


Figure K-5 Monthly Rainfall near Pikeview Quarry



*Data Source: NOAA, National Climatic Data Center (www.ncdc.noaa.gov/cdo-web)
*

Table K-2
Rainfall (Inches) Recorded at Rain Gage Stations near Pikeview Quarry
During Selected Periods

	Fire Station #18	***Colorado Springs 5.7WNW***	***Manitou Springs 1.2ENE***
December 8, 2008	0	0	0
February 23, 2009	0	0	0
September 1-30, 2009	N/A	2.51	2.52*
September 1-30, 2011	3.14	3.13	3.61*

*Data collection for Manitou Springs 1.2ENE rain gage ends May 10, 2009. The two data points shown above with asterisk are from a different, nearby rain gage station (Manitou Springs 2.3ENE).

The pattern of precipitation on a monthly basis throughout the year should be similar to the Colorado Springs records. Therefore, it is concluded that the quarry itself receives about 2 to 3 inches (about 12% to 15%) more precipitation than Colorado Springs, but follows the same pattern. Heavy thunderstorms may be more common at the quarry, but drizzle caused by upslope flow from the east is also more common as is fog.

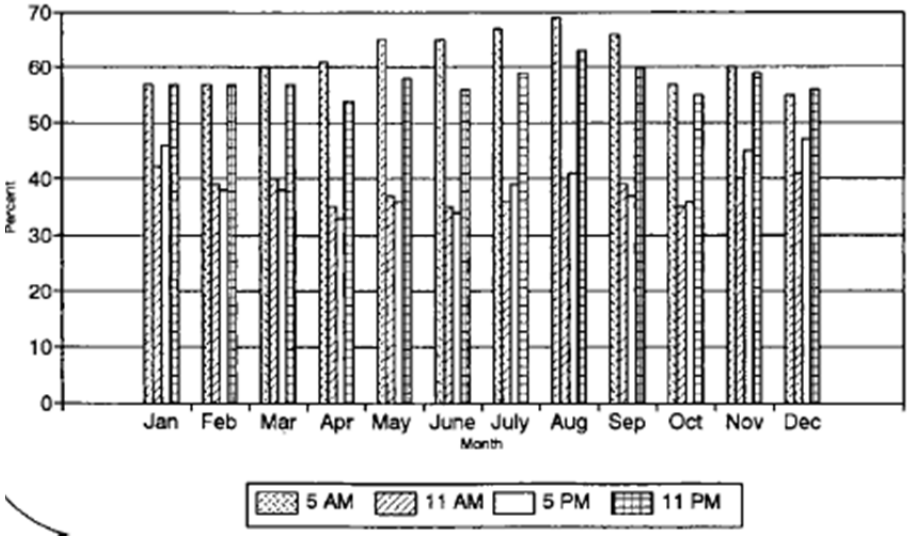
K.2.4 Pan Evaporation

Calculated pan evaporation data for Colorado Springs is presented on Table K.1. On the same table is also monthly 30-year average monthly rainfall data at Colorado Springs Municipal Airport presented.

K.2.5 Relative Humidity

Figure K-6 shows the annual variations in relative humidity at different times of the day on a monthly basis. The combination of precipitation, temperature, and humidity are important to plant growth. Relative humidity alone is a poor measure of evapotranspiration, but weather records rarely present data on vapor pressure deficit, which is what actually influences plant growth characteristics. But, vapor pressure deficit and relative humidity are related parameters. Relative humidity is temperature dependent while vapor pressure deficit is temperature independent, but both provide some measure of the degree of moisture stress plants experience.

Figure K-6 Relative Humidity (Monthly) Colorado Springs, CO



The wide range in relative humidity throughout the day follows a fairly even pattern, and is not marked different from, for example Austin, Texas or Memphis, Tennessee. However, at Colorado Springs the relative humidity is often 15% to 25% less than in the more humid climates found in Austin or Memphis. Maximum relative humidity at Colorado Springs would reach what is considered a "normal" relative humidity in those cities only after summer thunderstorms. Even then such high humidity would only last a few hours. Although such low humidity makes living in Colorado Springs considerably more comfortable for people than living in Austin or Memphis, it also creates more stress on plant life. This is reflected in the adaptations of the plants living in the area.

Whereas plants with drought resistant adaptations are rare in Austin or Memphis, plants without drought resistance in Colorado Springs rarely survive very long with lots of supplemental water. The combination of low humidity and comparatively high temperature that is further accentuated by the Q_{10} metabolic pattern characteristic of living systems creates considerable stress on plants. Counteracting this adversity requires moisture consideration and internal temperature reduction adaptations as well as very efficient water uptake by root structures.

Site Modifications

The quarry itself probably exhibits similar patterns of relative humidity variations throughout the day. Because temperatures are lower the actual relative humidity would be somewhat higher. The vapor pressure deficit is probably similar to what would be measured in Colorado Springs.

Thus plants at the quarry probably would experience only slightly less moisture stress than those found near the city. The increased precipitation and somewhat increase available moisture in the soils at the quarry would help reduce the moisture stress factor caused by a high vapor pressure deficit. Again this probably is a major factor in maintaining forests and the considerable abundance of cool season grasses at the quarry.

Humidity increases in the afternoon as a result of cooling from afternoon shading. Because the quarry is at the base of a high ridge, shade engulfs the quarry between 1 PM and 3 PM in the afternoon. How much effect this shading has on vegetation growth cannot be determined, but it undoubtedly improves the growth environment by reducing the moisture stress.

K.2.6 Wind

Figures K-7 and K-8 shows the wind velocity and prevailing wind direction data for Colorado Springs on a monthly basis. Note that the velocity scale covers the range of 9 to 12 miles per hour. This makes the wind velocity variations throughout the year appear more severe than they actually are.

In the Colorado Springs area, and especially in the mountains west of the city, wind is a significant factor for plant growth. The wind factor is an important modifier of the other three parameters in that it increases the vapor pressure gradient and is a major cause of desiccation. This is especially true in winter when soil temperatures are low and root metabolism is weak resulting in limited water intake to replace that which is transpired through leaves. This is not such a serious problem for deciduous trees which are leafless during most hazardous time of the year, but for conifers and other evergreens, winter desiccation is a major limiting factor in their growth success.

Figure K-7 Wind (Monthly) Colorado Springs, CO

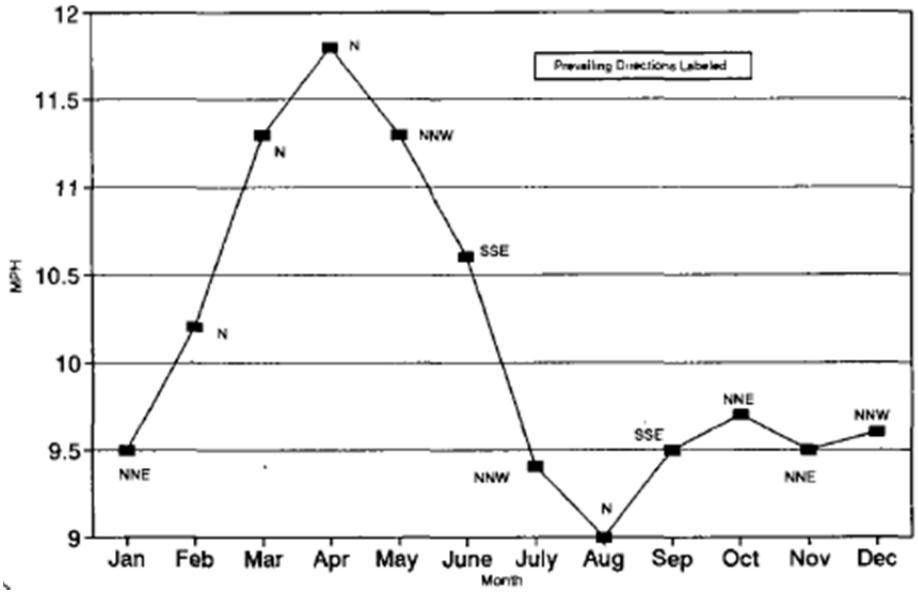
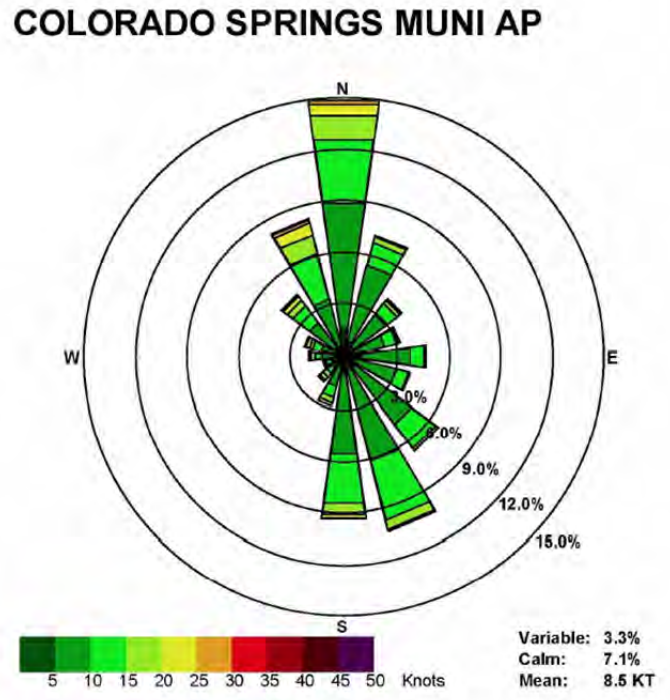


Figure K-8 Wind Rose Colorado Springs, CO



Source: CDPHE, 2009

Site Modifications

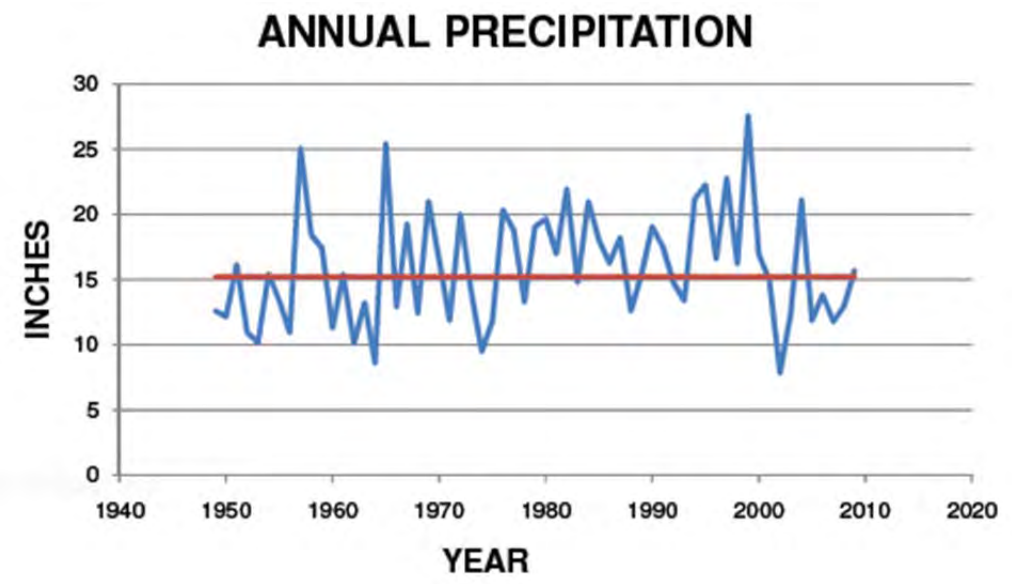
Wind factors along the Front Range Urban Corridor show very significant variations depending upon the relationship of the site to the mountain front. Generally, near the mountains the winds are considerably greater than they are even a short distance further east. This is especially true during the non-growing season. Strong downslope, warming winds are common in winter and is a very significant factor affecting winter survival of especially non-deciduous plants. This site is prone to severe winds that blow downslope as well as laterally from north to south along the mountain face. This turbulence sometimes creates a local swirling motion that maintains very steep vapor pressure gradients in the vicinity of leaves.

The Colorado Springs weather station is generally outside the area of strong wind influence. Therefore, the data presented in Figure 4 has limited utility to this site. Colorado Springs is windier, on the average, than most other areas along the Front Range Urban Corridor, but the desiccating winds of winter are probably not much different at this site that they are elsewhere. Thus, consideration should be given to using moisture conserving techniques where conifers are to be planted. Afternoon shading and rapid cooling in winter offsets the negative effects of wind to some extent.

K.3 PATTERNS OF ANNUAL VARIATION

Figure K-9 shows the annual precipitation for Colorado Springs between 1956 and 1985. The 1957 and 1965 peaks were clearly anomalous and should not be relied upon to estimate drought periods and periods of better than average moisture. During this period (1956-1985), 14 years were below normal and 16 years were above normal. As a rule the annual variation range about 2 inches on either side of the average annual precipitation indicated by the horizontal line. Between 1976 and 1985 there were far more wet years than dry years. Although data since 1985 is available, it is not in a condensed form and probably would show similar patterns of variation.

Figure K-9 Total Annual Precipitation, Colorado Springs, (1949 – 2009)



This variation in precipitation shows that deviations from the average are rarely extreme and should not significantly influence the long term success of a re-vegetation program. Of course, these patterns can change abruptly. From 1959 to 1964 there was a general decline in annual precipitation, but in 1965 precipitation increase by nearly three times over 1964. Since 1965 the variations have been moderate, except for 1974. This is quite consistent with what has been observed previously in re-vegetation programs.

It can be concluded that in this area the pattern of annual variations does not usually present serious problems for re-vegetation programs. The lack of consistent pattern in annual precipitation quantities and moderate annual variance does not suggest any preference for any identifiable long-term period that is best for planting. That is, planting in any one year is probably as good as planting in any other year. Any variations that would occur probably would only influence the rate of vegetation development and not its success or failure.

References

Colorado Department of Public Health and Environment, 2009. Technical Support Document for Lead Attainment in Colorado: Eight Factor Analysis. For the State of Colorado 2009 Lead Designations. Acquired from the Internet 4/17/12, http://www.cdphe.state.co.us/ap/down/Pb2009_DesignationsTSD9-17-2009.pdf

NOAA, National Climatic Data Center 2012 (Acquired from the internet, 4/17/2012, www.ncdc.noaa.gov/cdo-web

NOAA 1982 Technical Report NWS 34, Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States, acquired from the Internet 4/17/2012, http://www.nws.noaa.gov/oh/hdsc/PMP_related_studies/TR34.pdf

EXHIBIT L
RECLAMATION COSTS

Overview

Phase 01 of the Mining and Reclamation Plan requires approximately 1,400,000 cubic yards to be moved from the top of the quarry to the bottom of the quarry. The plan requires approximately 700,000 cubic yards of fill material, with a surplus volume of approximately 1,000,000 cubic yards that will likely be processed and sold. The following assumptions were used to calculate this reclamation estimate for Phase 01:

- Phase 01A is only for mining purposes and does not apply to the reclamation volumes. The backfill volume of approximately 10,000 yd^3 is included in the 1,345,000 yd^3 bulldozer fill volume
- Material swell is 20%.
- Excess material is not sold and is used for fill on the reclamation slope.
- Material will be extracted by ripping where possible or by drilling and blasting.
    - A seismic survey conducted in 1998 suggests that the top 30 feet of granite is highly weathered. This survey was included in the Exponent report as Appendix 40. The Applicant estimates that 206,000 yd^3 can be extracted by ripping with a D9-size bulldozer.
    - The remaining 1,240,000 yd^3 will be extracted by drilling and blasting.
- Material will be moved from the top to the bottom of the quarry by loading and hauling or by pushing with bulldozers. All the material will be pushed with bulldozers.
    - 102,000 yd^3 is required to fill Area H for Phase 01. This will be loaded using a 998H excavator and hauled in 35-ton rigid-frame haul trucks downhill approximately one mile (one way) to Area H. Material will be end-dumped into Area H or pushed using bulldozers. The material will be compacted using moisture conditioning and compacting with at least two trips across the material with a haul truck or D9-sized bulldozer.
    - The remaining 1,345,000 yd^3 will be pushed with D9-size bulldozers, with an average push distance of 600 feet downhill on a 40% slope. This downhill gradient is expected to significantly increase the dozing efficiency, and the effective push distance will likely be significantly less than 600 feet.
- The earthmoving and vegetation unit costs are the same for this estimate as previous estimates, except for the drilling and blasting estimate.
- The drilling and blasting cost has been reduced from $1.00 per ton to $0.61 per ton based on discussions between Pikeview Quarry and their blasting contractor. The lower cost reflects a blasting pattern that will rubblize material to a larger size for reclamation objectives than is typically needed for limestone sales purposes. This will not require changes to the current blasting plan (peak particle velocity or allowable decibel limits).

The reclamation cost estimate for Phase 1 of the Mining and Reclamation Plan is included below in Table L-1.

Table L-1: Reclamation Cost Estimate for Phase 01 Mining and Reclamation

	Description	Unit Cost	Units	Quantity	Units	Subtotal	Total
1	Total Facility and Structure Removal Costs					$ -	
2	Total Earthmoving Costs for Subsoil, Topsoil, Filter Material and Riprap						
	Load/Haul/Dump	$ 0.75	$/ton	101,571 213,000	BCY Ton	$ 159,750	
	Phase 01 volume to fill Area H						
	998H Excavator						
	35-ton rigid-frame haul truck						
	One-mile, downhill, one-way haul distance						
	Bulldozing	$ 0.32	$/ton	1,446,304 3,026,000	BCY Ton	$ 968,320	
	All material will be bulldozed						
	Trucked material will be pushed into Area H						
	Remaining volume will be pushed to fill area						
	D9-size bulldozers						
	600-foot push with 40% downhill slope						
	Ripping	$ 0.50	$/ton	206,360 432,000	BCY Ton	$ 216,000	
	Volume is top 30 feet in granite						
	Ripped using D9-size bulldozer						
3	Total Revegetation Costs	$ 2,000	$/ac	21.5	ac	$ 43,000	
4	Total Blast and Other Reclamation Activities Costs	$ 0.61	$/ton	1,239,944 2,595,000	BCY Ton	$ 1,582,950	
5	Subtotal: Total Direct Costs						$ 2,970,020
6	Private contract overhead costs (at 18.5% of Item 5)					18.5%	$ 549,454
7	MLRF Administrative Costs (at 5.0% of Item 5)					5.0%	$ 148,501
	Reclamation Cost Estimate *(Sum of Items 5 through 10)*						**$ 3,667,975**

Certification Statement

I, Paul Kos, Colorado P.E. 40848 herby certify that the information contained in Exhibit L was reviewed by me and that the information is complete and accurate to the best of my knowledge.

EXHIBIT M
OTHER PERMITS & LICENSES

EXHIBIT M
OTHER PERMITS AND LICENSES

US Forest Service Special Use Permit

Mine Safety and Health Administration (MSHA)
Mine ID# 0501443

Colorado Department of Public Health and Environment, Air Pollution Control Division
Permit #85EP365F Site material extraction, handling, stockpiling, hauling, drilling, blasting and associated transfer points
Permit #85EP258 Jaw Crusher (unit #C4)
Permit #07EP0723 Scalper Screen (unit #SC10)
Permit #07EP0722 Cone and Screen (unit #C3)
Permit #99EP0294 Cone and Screen (unit #C1)
Permit #95EP036 Screen (unit #SP4)

Colorado Department of Public Health and Environment, Water Quality Control Division
Permit #COR-340592 Stormwater Discharges Associated With Sand and Gravel Mining and Processing (And Other Nonmetallic Minerals Except Fuel)

Colorado Department of Labor and Employment, Division of Oil and Public Safety
ID#15298-4 Above Ground Storage Tank (AST) 10,000 gallon diesel
ID#15298-5 Above Ground Storage Tank (AST) 1,000 gallon gasoline

Colorado Department of Agriculture ICS/Measurement Standards
Scale License # 220-31333-11

Colorado Springs Fire Department
420110458 Haz Permit

Colorado Springs Public Utilities
P12804 Multiple Use Hydrant Permit (meter and backflow device)
P12924 Multiple Use Hydrant Permit (meter and backflow device)
P12822 Multiple Use Hydrant Permit (meter only)

United States Department of Agriculture
Forest Service
Pike and San Isabel National Forests Cimarron and Comanche National Grasslands
Supervisor's Office
1920 Valley Drive
Pueblo, CO 81008-1797
(719) 545-8737
TDD: (719) 585-3749
www.fs.fed.us/r2/psicc

File Code: 2720-2/2820
Date: DEC 3 2001

CASTLE CONCRETE COMPANY
ATTN: GERALD J HERMANS
PO BOX 2379
COLORADO SPRINGS, CO 80901

Dear Mr. Hermans;

Enclosed are copies of two new Special Use Permits allowing Castle Concrete to improve reclamation and slope stability for their Pikeview Quarry, by mining and reclaiming National Forest System land.

William R. Nelson, the District Ranger at our Pikes Peak District Office, 601 South Weber Street, Colorado Springs, CO 80903 (719/636-1602), is my representative for administering these permits and he will assist you if you have any questions.

Sincerely,

WILLIAM A. WOOD
Acting Forest Supervisor

Enclosures: as noted

CC: Pikes Peak District Office

Authorization ID: **PPK18**
Contact ID: **CC,CO**
Expiration Date: **12/31/2017**

FS-2700-4 (8/99)
OMB 0596-0082
562

U.S. DEPARTMENT OF AGRICULTURE
Forest Service
SPECIAL USE PERMIT
AUTHORITY:
ORGANIC ADMINISTRATION ACT June 4, 1897

CASTLE CONCRETE COMPANY of P.O. BOX 2379, COLORADO SPRINGS, CO 80901- (hereinafter called the Holder) is hereby authorized to use or occupy National Forest System lands, to use subject to the conditions set out below, on the **Pike** National Forest.

This permit covers **26 acres**, and is described as being in **Section 9, T.13S., R.67W.,6th Principle Meridian**, as shown on the location map, **Exhibit A** that is attached to and made a part of this permit, and is issued for the purpose of:

Use of National Forest System land adjacent to private land (Pikeview Quarry) to implement an enhanced reclamation plan for the quarry. The layback will involve up to 26 acres of National Forest and will include recontouring the disturbed area to represent natural appearing topography and revegetation of disturbed areas to reduce erosion, mitigate impacts and restore biological productivity.

The above described or defined area shall be referred to herein as the "permit area".

TERMS AND CONDITIONS

I. AUTHORITY AND GENERAL TERMS OF THE PERMIT

A. Authority. This permit is issued pursuant to the authorities enumerated at Title 36, Code of Federal Regulations, Section 251 Subpart B, as amended. This permit, and the activities or use authorized, shall be subject to the terms and conditions of the Secretary's regulations and any subsequent amendment to them.

B. Authorized Officer. The authorized officer is the Forest Supervisor or a delegated subordinate officer.

C. License. This permit is a license for the use of federally owned land and does not grant any permanent, possessory interest in real property, nor shall this permit constitute a contract for purposes of the Contract Disputes Act of 1978 (41 U.S.C. 611). Loss of the privileges granted by this permit by revocation, termination, or suspension is not compensable to the holder.

D. Amendment. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms, conditions, and stipulations as may be required by law, regulation, land management plans, or other management decisions.

E. Existing Rights. This permit is subject to all valid rights and claims of third parties. The United States is not liable to the holder for the exercise of any such right or claim.

F. Nonexclusive Use and Public Access. Unless expressly provided for in additional terms, use of the permit area is not exclusive. The Forest Service reserves the right to use or allow others to use any part of the permit area, including roads, for any purpose, provided, such use does not materially interfere with the holder's authorized use. A final determination of conflicting uses is reserved to the Forest Service.

G. Forest Service Right of Entry and Inspection. The Forest Service has the right of unrestricted access of the permitted area or facility to ensure compliance with laws, regulations, and ordinances and the terms and conditions of this permit.

H. Assignability. This permit is not assignable or transferable. If the holder through death, voluntary sale or transfer, enforcement of contract, foreclosure, or other valid legal proceeding ceases to be the owner of the improvements, this permit shall terminate.

I. Permit Limitations. Nothing in this permit allows or implies permission to build or maintain any structure or facility, or to conduct any activity unless specifically provided for in this permit. Any use not specifically identified in this permit must be approved by the authorized officer in the form of a new permit or permit amendment.

II. TENURE AND ISSUANCE OF A NEW PERMIT

A. Expiration at the End of the Authorized Period. This permit will expire at midnight on **December 31, 2017**. Expiration shall occur by operation of law and shall not require notice, any decision document, or any environmental analysis or other documentation.

B. Minimum Use or Occupancy of the Permit Area. Use or occupancy of the permit area shall be exercised at least **365** days each year, unless otherwise authorized in writing under additional terms of this permit.

C. Notification to Authorized Officer. If the holder desires issuance of a new permit after expiration, the holder shall notify the authorized officer in writing not less than six (6) months prior to the expiration date of this permit.

D. Conditions for Issuance of a New Permit. At the expiration or termination of an existing permit, a new permit may be issued to the holder of the previous permit or to a new holder subject to the following conditions:

1. The authorized use is compatible with the land use allocation in the Forest Land and Resource Management Plan.
2. The permit area is being used for the purposes previously authorized.
3. The permit area is being operated and maintained in accordance with the provisions of the permit.
4. The holder has shown previous good faith compliance with the terms and conditions of all prior or other existing permits, and has not engaged in any activity or transaction contrary to Federal contracts, permits, laws, or regulation.

E. Discretion of Forest Service. Notwithstanding any provisions of any prior or other permit, the authorized officer may prescribe new terms, conditions, and stipulations when a new permit is issued. The decision whether to issue a new permit to a holder or successor in interest is at the absolute discretion of the Forest Service.

F. Construction. Any construction authorized by this permit may commence by **date of issuance** and shall be completed by **December 31, 2014**. If construction is not completed within the prescribed time, this permit may be revoked or suspended.

III. RESPONSIBILITIES OF THE HOLDER

A. Compliance with Laws, Regulations, and other Legal Requirements. The holder shall comply with all applicable Federal, State, and local laws, regulations, and standards, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Control, and Liability Act, 42 U.S. C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, and maintenance of any facility, improvement, or equipment on the property.

B. Plans. Plans for development, layout, construction, reconstruction, or alteration of improvements on the permit area, as well as revisions of such plans, must be prepared by a qualified individual acceptable to the authorized officer and shall be approved in writing prior to commencement of work. The holder may be required to furnish as-built plans, maps, or surveys, or other similar information, upon completion of construction.

C. Maintenance. The holder shall maintain the improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this authorization. If requested, the holder shall comply with inspection requirements deemed appropriate by the authorized officer.

D. Hazard Analysis. The holder has a continuing responsibility to identify all hazardous conditions on the permit area which would affect the improvements, resources, or pose a risk of injury to individuals. Any non-emergency actions to abate such hazards shall be performed after consultation with the authorized officer. In emergency situations, the holder shall notify the authorized officer of its actions as soon as possible, but not more than 48 hours, after such actions have been taken.

E. Change of Address. The holder shall immediately notify the authorized officer of a change in address.

F. Change in Ownership. This permit is not assignable and terminates upon change of ownership of the improvements or control of the business entity. The holder shall immediately notify the authorized officer when a change in ownership or control of business entity is pending. Notification by the present holder and potential owner shall be executed using Form SF-299, Application For Transportaion and Utility Systems and Facilities on Federal Lands, or Form FS-2700-3a, Request for Termination of and Application for Special-Use Permit. Upon receipt of the proper documentation, the authorized officer may issue a permit to the party who acquires ownership of, or a controlling interest in, the improvements or business entity.

IV. LIABILITY

For purposes of this section, "holder" includes the holder's heirs, assigns, agents, employees, and contractors.

A. The holder assumes all risk of loss to the authorized improvements.

B. The holder shall indemnify, defend, and hold the United States harmless for any violations incurred under any such laws and regulations or for judgments, claims, or demands assessed against the United States in connection with the holder's use or occupancy of the property. The holder's indemnification of the United States shall include any loss by personal injury, loss of life or damage to property in connection with the occupancy or use of the property during the term of this permit. Indemnification shall include, but is not limited to, the value of resources damaged or destroyed; the costs of restoration, cleanup, or other mitigation; fire suppression or other types of abatement costs; third party claims and judgments; and all administrative, interest, and other legal costs. This paragraph shall survive the termination or revocation of this authorization, regardless of cause.

C. The holder has an affirmative duty to protect from damage the land, property, and interests of the United States.

D. In the event of any breach of the conditions of this authorization by the holder, the authorized officer may, on reasonable notice, cure the breach for the account at the expense of the holder. If the Forest Service at any time pays any sum of money or does any act which will require payment of money, or incurs any expense, including reasonable attorney's fees, in instituting, prosecuting, and/or defending any action or proceeding to enforce the United States rights hereunder, the sum or sums so paid by the United States, with all interests, costs and damages shall, at the election of the Forest Service, be deemed to be additional fees hereunder and shall be due from the holder to the Forest Service on the first day of the month following such election.

E. With respect to roads, the holder shall be proportionally liable for damages to all roads and trails of the United States open to public use caused by the holder's use to the same extent as provided above, except that liability shall not include reasonable and ordinary wear and tear.

F. The Forest Service has no duty to inspect the permit area or to warn of hazards and, if the Forest Service does inspect the permit area, it shall incur no additional duty nor liability for identified or non-identified hazards. This covenant may be enforced by the United States in a court of competent jurisdiction.

V. TERMINATION, REVOCATION, AND SUSPENSION

A. General. For purposes of this permit, "termination", "revocation", and "suspension" refer to the cessation of uses and privileges under the permit.

"Termination" refers to the cessation of the permit under its own terms without the necessity for any decision or action by the authorized officer. Termination occurs automatically when, by the terms of the permit, a fixed or agreed upon condition, event, or time occurs. For example, the permit terminates at expiration. Terminations are not appealable.

"Revocation" refers to an action by the authorized officer to end the permit because of noncompliance with any of the prescribed terms, or for reasons in the public interest. Revocations are appealable.

"Suspension" refers to a revocation which is temporary and the privileges may be restored upon the occurrence of prescribed actions or conditions. Suspensions are appealable.

B. Revocation or Suspension. The Forest Service may suspend or revoke this permit in whole or part for:

1. Noncompliance with Federal, State, or local laws and regulations.
2. Noncompliance with the terms and conditions of this permit.
3. Reasons in the public interest.
4. Abandonment or other failure of the holder to otherwise exercise the privileges granted.

C. Opportunity to Take Corrective Action. Prior to revocation or suspension for cause pursuant to Section V (B), the authorized officer shall give the holder written notice of the grounds for each action and a reasonable time, not to exceed 90 days, to complete the corrective action prescribed by the authorized officer.

D. Removal of Improvements. Prior to abandonment of the improvements or within a reasonable time following revocation or termination of this authorization, the holder shall prepare, for approval by the authorized officer, an abandonment plan for the permit area. The abandonment plan shall address removal of improvements and restoration of the permit area and prescribed time frames for these actions. If the holder fails to remove the improvements or restore the site within the prescribed time period, they become the property of the United States and may be sold, destroyed or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all cost associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

VI. FEES

A. Termination for Nonpayment. This permit shall automatically terminate without the necessity of prior notice when land use rental fees are 90 calendar days from the due date in arrears.

B. The holder shall pay an annual fee of **Six Thousand Three Hundred Seventy** Dollars **($6,370)** for the period from **January 1** to **December 31, 2002** and thereafter annually on **January 1**, **Six Thousand Three Hundred Seventy** Dollars **($6,370)**: Provided, charges for this use shall be made or readjusted whenever necessary to place the charges on a basis commensurate with the fair market value of the authorized use.

C. Payment Due Date. The payment due date shall be the close of business on of each calendar year payment is due. Payments due the United States for this use shall be deposited at **USDA FOREST SERVICE, File #71652, PO Box 60000, San Francisco, CA 94160-1652**, in the form of a check, draft, or money order payable to "Forest Service, USDA." Payments shall be credited on the date received by the designated Forest Service collection officer or deposit location. If the due date for the fee or fee calculation statement falls on a non workday, the charges shall not apply until the close of business on the next workday.

D. Late Payment Interest, Administrative Costs and Penalties Pursuant to 31 U.S.C. 3717, et seq., interest shall be charged on any fee amount not paid within 30 days from the date the fee or fee calculation financial statement specified in this authorization becomes due. The rate of interest assessed shall be the higher of the rate of the current value of funds to the U.S. Treasury (i.e., Treasury tax and loan account rate), as prescribed and published by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletins annually or quarterly or at the Prompt Payment Act rate. Interest on the principal shall accrue from the date the fee or fee calculation financial statement is due.

In the event the account becomes delinquent, administrative costs to cover processing and handling of the delinquency will be assessed.

A penalty of 6 percent per annum shall be assessed on the total amount delinquent in excess of 90 days and shall accrue from the same date on which interest charges begin to accrue.

Payments will be credited on the date received by the designated collection officer or deposit location. If the due date for the fee or fee calculation statement falls on a non-workday, the charges shall not apply until the close of business on the next workday.

Disputed fees are due and payable by the due date. No appeal of fees will be considered by the Forest Service without full payment of the disputed amount. Adjustments, if necessary, will be made in accordance with settlement terms or the appeal decision.

If the fees become delinquent, the Forest Service will:

Liquidate any security or collateral provided by the authorization.

If no security or collateral is provided, the authorization will terminate and the holder will be responsible for delinquent fees as well as any other costs of restoring the site to it's original condition including hazardous waste cleanup.

Upon termination or revocation of the authorization, delinquent fees and other charges associated with the authorization will be subject to all rights and remedies afforded the United States pursuant to 31 U.S.C. 3711 *et seq.* Delinquencies may be subject to any or all of the following conditions:

Administrative offset of payments due the holder from the Forest Service.

Delinquencies in excess of 60 days shall be referred to United States Department of Treasury for appropriate collection action as provided by 31 U.S.C. 3711 (g), (1).

The Secretary of the Treasury may offset an amount due the debtor for any delinquency as provided by 31 U.S.C. 3720, *et seq.*)

VII. OTHER PROVISIONS

A. Members of Congress. No Member of or Delegate to Congress or Resident Commissioner shall benefit from this permit either directly or indirectly, except when the authorized use provides a general benefit to a corporation.

B. Appeals and Remedies. Any discretionary decisions or determinations by the authorized officer are subject to the appeal regulations at 36 CFR 251, Subpart C, or revisions thereto.

C. Superior Clauses. In the event of any conflict between any of the preceding printed clauses or any provision thereof and any of the following clauses or any provision thereof, the preceding printed clauses shall control.

D. Explosives.

1. Only exploding bridgewire (EBWs) shall be used for blasting except for hand charging of snow release zones.

2. In the use of explosives, the holder shall exercise the utmost care not to endanger life or property and shall comply with the requirements of the Forest Service. The holder shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions that will prevent damage to surrounding objects. The holder shall furnish and erect special signs to warn the public of blasting operations. Such signs shall be placed and maintained so as to be clearly evident to the public during all critical periods of the blasting operations, and shall include a warning statement to have radio transmitters turned off.

3. All storage places for explosives shall be marked "DANGEROUS-EXPLOSIVES." The method of storing and handling explosives shall conform to procedures contained in the "Blasters Guide EM-7100-14," and Title 27, Code of Federal Regulations, parts 1 to 199, Alcohol, Tobacco Products, and Firearms (Bureau of Alcohol, Tobacco and Firearms (BATF)).

4. When using explosives, the holder shall adopt precautions which will prevent damage to landscape features and other surrounding objects. When directed by the Forest officer in charge, trees within an area designated to be cleared shall be left as a protective screen for surrounding vegetation during blasting operations. Trees so left shall be removed and disposed of after blasting has been completed. When necessary, and at any point of special danger, the holder shall use suitable mats or some other approved method to smother blasts.

E. Bonding. As a further guarantee of the faithful performance of the provisions of terms and condition of this authorization, the holder agrees to deliver and maintain a surety bond or other acceptable security in the amount of **$995,300.00**. Should the sureties or the bonds delivered under this authorization become unsatisfactory to the Forest Service, the holder shall, within thirty (30) days of demand, furnish a new bond with surety, solvent and satisfactory to the Forest Service. In lieu of surety bond, the holder may deposit into a Federal depository, as directed by the Forest Service, and maintain therein, cash in the amounts provided for above, or negotiable securities of the United States having a market value at time of deposit of not less than the dollar amounts provided above.

The holder's surety bond shall be released, or deposits in lieu of bond, shall be returned thirty (30) days after certification by the Forest Service that priority installations under the development plan are complete, and upon furnishing by the holder of proof satisfactory to the Forest Service that all claim for labor and material on said installations have been paid or released and satisfied. The holder agrees that all moneys deposited under this authorization may, upon failure on his or her part to fulfill all and singular the requirements herein set forth or made a part hereof, be retained by the United States to be applied to satisfy obligations assumed here under, without prejudice whatever to any rights and remedies of the United States. **See Exhibit C, attached**. **Note: Under a Memorandum of Understanding between Forest Service Region 2 and Colorado Mined Land Reclamation Division, the State of Colorado is the designated holder of the bond.**

Prior to undertaking additional construction or alteration work not provided for in the terms and conditions or when the improvements are to removed and the area restored, the holder shall deliver and maintain a surety bond in an amount set by the Forest Service, which amount shall not be in excess of the estimated loss which the Government would suffer upon default in preformance of this work.

F. Operating Plan. The holder shall provide an Operating Plan and revise the plan every **5 years**. The plan shall be prepared in consultation with the authorized officer or designated representative and cover operation and maintenance of facilities, dates or season of operations, and other information required by the authorized officer to manage and evaluate the occupation and/or use of National Forest System lands. The provisions of the Operating Plan and the annual revisions shall become a part of this authorization and shall be submitted by the holder and approved by the authorized officer or their designated representative(s). This Operating Plan is hereby made a part of the authorization. **See Exhibit B, attached.**

G. Surveys, Land Corners. The holder shall protect, in place, all public land survey monuments, private property corners, and Forest boundary markers. In the event that any such land markers or monuments are destroyed in the exercise of the privileges permitted by this authorization, depending on the type of monument destroyed, the holder shall see that they are reestablished or referenced in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States,"
(2) the specifications of the county surveyor, or (3) the specifications of the Forest Service.

Further, the holder shall cause such official survey records as are affected to be amended as provided by law. Nothing in this clause shall relieve the holder's liability for the willful destruction or modification of any Government survey marker as provided at 18 U.S.C. 1858.

H. Timber Payment. All National Forest timber cut or destroyed in the construction of the permitted improvements shall be paid for at current stumpage rates for similar timber in the National Forest. Young-growth timber below merchantable size will be paid for at current damage-appraisal value; and all slash and debris resulting from the cutting or destruction of such timber shall be disposed of as necessary or as the Forest Service may direct.

I. Archaeological-Paleontologian Discoveries. The holder shall immediately notify the authorized officer of any and all antiquities or other objects of historic or scientific interest. These include, but are not limited to, historic or prehistoric ruins, fossils, or artifacts discovered as the result of operations under this authorization, and shall leave such discoveries intact until authorized to proceed by the authorized officer. Protective and mitigative measures specified by the authorized officer shall be the responsibility of the holder.

This permit is accepted subject to the conditions set out above.

Date 11-14-01 Castle Concrete Inc.

(CORPORATE SEAL)

By _____
GERALD J. HERMANS
Vice President
Castle Concrete, Inc.

ATTEST:

(Assistant) Secretary

The following certificate shall be executed by the Secretary or Assistant Secretary of the Corporation:

I WILLIAM R LEHMPUHL certify that I am the Secretary of the Corporation that executed the above permit; that GERALD J. HERMANS who signed said permit on behalf of said Corporation was then VICE PRESIDENT of said Corporation; that I know his/her signature on said permit is genuine; and that said permit was duly signed, sealed, and attested to for and on behalf of said Corporation by authority of its governing body

(CORPORATE SEAL)

William R. Lehmpuhl
(Assistant Secretary)

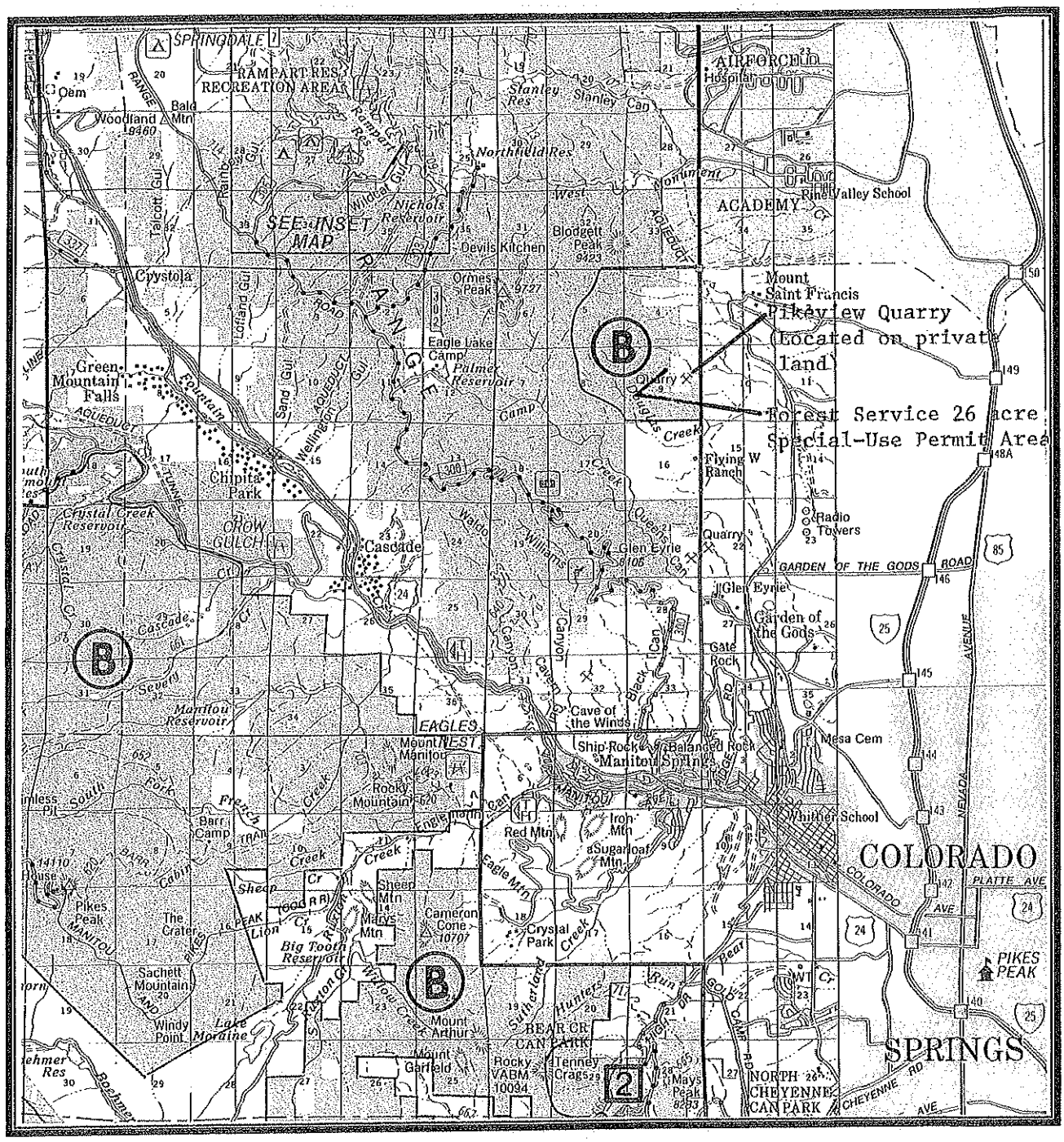
U. S. DEPARTMENT OF AGRICULTURE
Forest Service

By _____
WILLIAM A. WOOD
Acting Forest Supervisor
Pike and San Isabel National Forests,
Cimarron and Comanche National Grasslands

Date December 3, 2001

EXHIBIT A

LOCATION MAP
Pikeview Quarry



PIKE NATIONAL FOREST
PIKES PEAK RANGER DISTRICT
Castle Concrete's Pikeview Quarry "Enhanced Reclamation Project" – PPK18 & PPK79
Section 9, T. 13S., R. 67W., 6th PM, El Paso County, Colorado
Scale 1:126,720 J.Hovermale, 10/2001

N
S

Authorization ID: **PPK400701**
Contact ID: **CC,CO**
Use Code: **521**

FS-2700-23 (03/08)
OMB 0596-0082

U.S. DEPARTMENT OF AGRICULTURE
Forest Service
AMENDMENT
FOR
SPECIAL USE AUTHORIZATION
AMENDMENT NUMBER: 1

This amendment is attached to and made a part of the special use authorization (identified above) issued to **Castle Concrete Company** on **05/06/1996** which is hereby amended as follows:

Permit Cover Page:

Delete: This permit covers 5 acres

Add: Permit area covers **1.5 acres**

Delete: E1/2, NW1/4, SE1/4, SECTION 9, T13S, R67W, 6th P.M., in El PASO COUNTY

Add: **E1/2 NE1/4 SE1/4 Section 9, T. 13 S., R. 67 W, 6th P.M., El Paso County, Colorado**.

Delete: Maintaining and using a storage yard for stockpiling topsoil to be used in future reclamation work. Permitted improvements are limited to interior road system as shown on the attached map designated "Appendix B", which is a part of this permit.

Add: Land use of approximately **1.5** acres for topsoil stockpiling. Implementation of final surface restoration and noxious weed control for the authorized location previously used as a storage yard for stockpiling topsoil as shown on Appendix B.

This Amendment is accepted subject to the conditions set forth herein, and to conditions **H** to **I** attached hereto and made a part of this Amendment.

VII. Other Provisions

H. Noxious Weed Control (R2-D-103).

1. The holder shall be responsible for the prevention and control of noxious weeds and/or exotic plants of concern on the area authorized by this authorization and shall provide prevention and control measures prescribed by the Forest Service. Noxious weeds and exotic plants of concern are defined as those species recognized by El Paso County and/or Pike National Forest in which the authorized use is located.

2. When determined to be necessary by the authorized officer, the holder shall develop a site-specific plan for noxious weed and exotic plant prevention and control. Such plan shall be subject to Forest Service approval. Upon Forest Service approval, the noxious weed and exotic plant prevention and control plan shall become a part of this authorization, and its provisions shall be enforceable under the terms of this authorization.

3. The holder shall also be responsible for prevention and control of noxious weed and exotic plant infestations which are not within the authorized area, but which are determined by the Forest Service to have originated within the authorized area.

l. Revegetation of Ground Cover and Surface Restoration (D9). The holder shall be responsible for prevention and control of soil erosion and gullying on lands covered by this authorization and adjacent thereto, resulting from construction, operation, maintenance, and termination of the authorized use. The holder shall so construct permitted improvements to avoid the accumulation of excessive heads of water and to avoid encroachment on streams. The holder shall revegetate or otherwise stabilize all ground where the soil has been exposed as a result of the holder's construction, maintenance, operation, or termination of the authorized use and shall construct and maintain necessary preventive measures to supplement the vegetation.

Holder: **Castle Concrete Company**

By: Jerald Schmidt
Authorized Officer

Title: President
Castle Concrete Company

Date: 6-9-08

U.S. Department of Agriculture
Forest Service

By: Robert J. Leaverton
ROBERT J. LEAVERTON
Forest Supervisor
Pike and San Isabel Forests
Cimarron and Comanche National Grasslands

Date: 6/26/08

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (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 USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call toll free (866) 632-9992 (voice). TDD users can contact USDA through local relay or the Federal relay at (800) 877-8339 (TDD) or (866) 377-8642 (relay voice). USDA is an equal opportunity provider and employer.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

EXHIBIT N
SOURCE OF LEGAL RIGHT TO ENTER

EXHIBIT N
SOURCE OF LEGAL RIGHT TO ENTER

Transit Mix intends to seek a categorical exclusion during 2012 for the 4.46 acres of USFS land on the western perimeter of the property. This acreage is required to stabilize the quarry highwalls. The exact location of the fault will need to be assessed during field operations, and the slope laid back from that lineation. Should permit approval pre-date final issuance of the categorical exclusion, Transit Mix Concrete Company requests a conditional approval limiting access until the forest service document is finalized.

Proof of the legal right to enter the current permit area and perform mining and reclamation activities is provided in a notarized statement. This statement is found on the following page. This proof of legal right to enter is essentially identical to all former presentations of legal right to enter provided in the original permitting process as well as subsequent amendments. The document provided here, has new dates and signatures that reflect the current officer structure of the company. The officers of the company have changed since the prior 1994 notarized document.

TRANSIT MIX AGGREGATES

I, Jerald Schnabel, pursuant to the rules and regulations of the Colorado Mined Land Reclamation Board and the requirements of the Colorado Mined Land Reclamation Act, as amended, hereby state that Castle Concrete Company has or will acquire the legal right to enter and mine and conduct operations on all property legally described in Exhibit A of this application for permit amendment to permit number M-77-211.

Respectfully submitted this 7th day of May 2012

Castle Concrete Company

BY: Jerald Schnabel

TITLE: President TMCC

STATE OF COLORADO)

)

COUNTY OF EL PASO)

The foregoing Statament was acknowledged before me this 7th day of May, 2012, by Jerald Schnabel, of Castle Concrete Company.

Witnese my hand and official seal.

TRACIE GALERNO NOTARY PUBLIC STATE OF COLORADO

My commission expires:

2/7/2014

My Commission Expires 02/07/2014

EXHIBIT O
OWNER(S) OF RECORD OF AFFECTED LAND (SURFACE AREA) AND OWNERS OF SUBSTANCE TO BE MINED

The surface and subsurface of the permit are owned by either Castle Concrete Company or the US Forest Service, and shown in Exhibit C-1. The Amendment 1 expansion area of **4.5** acres is USDA Forest Service surface and mineral ownership.

EXHIBIT P
MUNICIPALITIES WITHIN TWO MILES

EXHIBIT P
MUNICIPALITIES WITHIN TWO MILES

The City of Colorado Springs is within two miles of the permit boundary. Their address is:

City Clerk
PO Box 1575, Mail Code 110
Colorado Springs, CO 80903

EXHIBIT Q
PROOF OF MAILING OF NOTICES TO COUNTY COMMISSION, SOIL CONSERVATION DISTRICT ADJACENT LANDOWNERS

TRANSIT MIX AGGREGATES

July 24, 2012

El Paso Board of County Commissioners
200 South Cascade Avenue, Suite 100
Colorado Springs, CO 80903-2202

Subject: Castle Concrete/ Transit Mix Aggregates Company/ Continental Materials Corporation
Amendment 03
Pikeview Quarry, M-77-211

Dear Board of Supervisors,

An amendment to the Reclamation Permit for Pikeview Quarry has been re-filed with the Colorado Division of Reclamation, Mining and Safety on July 23, 2012. The amendment describes a revised reclamation plan that has built on an exhaustive set of geotechnical evaluations that have been performed to identify the sources of instability at the site. The reclamation plan has been designed to achieve a stable configuration at the site using safe construction techniques, and to minimize further disturbance.

The submitted plan identifies the addition of two small parcels on the western perimeter totaling 4.46 acres. One acre will definitely be disturbed. The balance of these two parcels may not be disturbed, should geological conditions be exactly as projected. However, Castle Concrete (Castle) /Transit Mix Aggregates is taking the conservative approach to expand the permit area onto Forest Service land to minimize the potential for disruptions during reclamation. The post mining land use continues to be wildlife habitat.

The proposed reclamation plan will create a landscape consisting of a sequence of alternating benches and highwalls on approximately 15 acres between 7480' and 7923', which will result in a 1:1 (horizontal:vertical (H:V)) slope. The maximum height of this disturbance is expected to be 443', but an average height is closer to 200'. The reclaimed slope below will range from 3.7:1 (H:V) to 3.9:1 (H:V), and will extend across 101 acres between 7480' and 6950'.

Seegmiller International has performed a geotechnical evaluation of the proposed mine plan along three cross-sections, north, central and south which show a safety factors under dry, saturated, and both of

those cases with a seismic event. The analyses have been performed on the proposed benches as well as the sloped fill below.

The proposed revegetation plan differs from previously permitted plans, given the steeper slope configuration. Evergreens will be planted on the benches to provide visual variety. A post-mining reclamation density of 30 trees per acre is proposed, given site conditions. There will be no revegetation on the slopes between the benches, due to steep and potentially unsafe working condition. The gentler slopes below will be reclaimed with pinyon juniper with a reclamation objective of 21 to 43 trees per acre as the elevation rises. Reclaimed lands below 7250 will be revegetated with a Gambel's oak - mountain mahogany community. Plantings along waterways will be supplemented with deciduous species to diversify wildlife habitat.

A copy of the 112 Construction Materials application, the CDRMS Compliance list, and the complete permit amendment application is available at the El Paso County Clerk and Recorder's office.

We appreciate your interest in the satisfactory reclamation of the site.

Sincerely,

Cathy Besej, Norwest for

Mac Shafer
Vice President Aggregates
Transit Mix Aggregates

Certified Letter No. 7006 2150 0002 0457 3318

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

EL Paso Board of
County Commissioners
200 South Cascade Ave.
Suite 100
Colorado Springs, CO
80903-2202

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

COLORADO SPRINGS CO POSTMASTER JUL 25 2014

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7006 2150 0002 0457 3318

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT
FOR **REGULAR (112) CONSTRUCTION MATERIALS EXTRACTION OPERATION**
NOTICE TO THE BOARD OF COUNTY COMMISSIONERS
COUNTY

Castle Concrete/Transit Mix Aggregates Company/Continental Materials Corporation has applied for a Regular (112) reclamation permit from the Colorado Mined Land Reclamation Board (the "Board") to conduct the extraction of construction materials operations in County. The attached information is being provided to notify you of the location and nature of the proposed operation. The entire application is on file with the Division of Reclamation, Mining, and Safety (the "Division") and the local county clerk and recorder.

The applicant/operator proposes to reclaim the affected land to use. Pursuant to Section 34-32.5-116(4)(m), C.R.S., the Board may confer with the local Board of County Commissioners before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days of the date of last publication of notice pursuant to Section 34-32.5-112(10), C.R.S.

If you would like to discuss the proposed post-mining land use of Wildlife Habitat, or any other issue regarding this application, please contact the Division of Reclamation, Mining, and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.

TRANSIT MIX AGGREGATES

July 24, 2012

Board of Supervisors
El Paso County Conservation District
5610 Industrial Place, Suite 100
Colorado Springs, CO 80916

Subject: Castle Concrete/ Transit Mix Aggregates Company/ Continental Materials Corporation
Amendment 03
Pikeview Quarry, M-77-211

Dear Board of Supervisors,

An amendment to the Reclamation Permit for Pikeview Quarry has been re-filed with the Colorado Division of Reclamation, Mining and Safety on July 23, 2012. The amendment describes a revised reclamation plan that has built on an exhaustive set of geotechnical evaluations that have been performed to identify the sources of instability at the site. The reclamation plan has been designed to achieve a stable configuration at the site using safe construction techniques, and to minimize further disturbance.

The submitted plan identifies the addition of two small parcels on the western perimeter totaling 4.46 acres. One acre will definitely be disturbed. The balance of these two parcels may not be disturbed, should geological conditions be exactly as projected. However, Castle Concrete (Castle) /Transit Mix Aggregates is taking the conservative approach to expand the permit area onto Forest Service land to minimize the potential for disruptions during reclamation. The post mining land use continues to be wildlife habitat.

The proposed reclamation plan will create a landscape consisting of a sequence of alternating benches and highwalls on approximately 15 acres between 7480' and 7923', which will result in a 1:1 (horizontal: vertical (H:V)) slope. The maximum height of this disturbance is expected to be 443', but an average height is closer to 200'. The reclaimed slope below will range from 3.7:1 (H:V) to 3.9:1 (H:V), and will extend across 101 acres between 7480' and 6950'.

Seegmiller International has performed a geotechnical evaluation of the proposed mine plan along three cross-sections, north, central and south which show a safety factors under dry, saturated, and both of those cases with a seismic event. The analyses have been performed on the proposed benches as well as the sloped fill below.

The proposed revegetation plan differs from previously permitted plans, given the steeper slope configuration. Evergreens will be planted on the benches to provide visual variety. A post-mining reclamation density of 30 trees per acre is proposed, given site conditions. There will be no revegetation on the slopes between the benches, due to steep and potentially unsafe working condition. The gentler slopes below will be reclaimed with pinyon juniper with a reclamation objective of 21 to 43 trees per acre as the elevation rises. Reclaimed lands below 7250 will be revegetated with a Gambel's oak - mountain mahogany community. Plantings along waterways will be supplemented with deciduous species to diversify wildlife habitat.

A copy of the 112 Construction Materials application, the CDRMS Compliance list, and the complete permit amendment application is available at the El Paso County Clerk and Recorder's office.

We received a comment from your office in a mailing dated 5/15/2012 concerning the upper slope gradient. The mining and reclamation plan was focused on reclaiming the site in a stable configuration in a manner that minimized additional disturbance. Comments will be accepted through September 23, 2012, and the Public Comment period may be extended. We appreciate your interest in the satisfactory reclamation of the site.

Sincerely,

Cathy Beggs, Norwest for

Mac Shafer
Vice President Aggregates
Transit Mix Aggregates

CC El Paso County Commissioners

Certified Letter No. 7006 2150 0002 0457 3325

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT
FOR **REGULAR (112) CONSTRUCTION MATERIALS EXTRACTION OPERATION**
NOTICE TO THE BOARD OF SUPERVISORS
OF THE LOCAL CONSERVATION DISTRICT
DISTRICT

Castle Concrete/Transit Mix Aggregates Company/Continental Materials Corporation has applied for a Regular (112) reclamation permit from the Colorado Mined Land Reclamation Board (the "Board") to conduct the extraction of construction materials operations in County. The attached information is being provided to notify you of the location and nature of the proposed operation. The entire application is on file with the Division of Reclamation, Mining, and Safety (the "Division") and the local county clerk and recorder.

The applicant/operator proposes to reclaim the affected land to use. Pursuant to Section 34-32.5-116(4)(m), C.R.S., the Board may confer with the local Conservation Districts before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days of the date of last publication of notice pursuant to Section 34-32.5-112(10), C.R.S.

If you would like to discuss the proposed post-mining land use of wildlife habitat, or any other issue regarding this application, please contact the Division of Reclamation, Mining, and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Board of Supervisors
El Paso Cty Conservation District
5610 Industrial Place, Suite 100
Colorado Spgs, Co 80916

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Madeline Newell ☐ Agent ☐ Addressee

B. Received by (Printed Name) Madeline Newell C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7006 2150 0002 0457 3325

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE
COLORADO SPRINGS
26 JUL 2007 PM

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Norwest Corporation
950 S. Cherry St., Ste. 800
Denver, CO 80246-2666

Proposed Newspaper Public Notice and Notice to Landowners

Continental Materials Corporation/Castle Concrete Company/Transit Mix Aggregates Company, 444 East Costilla, Colorado Springs, CO 80903-3761, (719-475-0700), has filed an application for an amendment to their Regular (112) Reclamation Operation Permit with the Colorado Mined Land Reclamation Board under the provisions of the Colorado Mined Land Reclamation Act. The proposed amendment is known as the Amendment 3 of the Pikeview Quarry Permit and is located predominantly in Sections 9 and 10, Township 13 South, Range 67 West, 6th Prime Meridian. The quarry is located 7250 Allegheny Drive, Colorado Springs, CO, 80919-4204.

Activities associated with the proposed amendment will commence as soon as all necessary permits are obtained and the proposed date of completion of all associated reclamation is 2020. The proposed future use of the land is wildlife habitat. Additional information and tentative decision date may be obtained from the Division of Reclamation, Mining and Safety, 1313 Sherman St, Room 215, Denver, Colorado 80203, (303) 866-3567, or at the El Paso County Clerk and Recorder's Office, Wayne W. Williams, County Clerk, 1675 West Garden of the Gods, Colorado Springs, CO 80907, (719) 520-6202.

Anyone wishing to comment on the application may view the application at the locations listed above.

Comments must be in writing and must be received by the Division of Reclamation, Mining and Safety by 4:00 P.M. on September 23, 2012.

Filed in the Colorado Springs Gazette, August 6 - August 27, 2012

Colorado Springs Gazette

30 South Prospect Street, Colorado Springs, CO 80903

Phone 719-632-5511

Fax 719-636-0202

Gazlegals@Gazette.com

Section 34-32.5-102, 1.6.2(1)(d), Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials

The Gazette
gazette.com
30 South Prospect St. Colorado Springs, CO 80903

Client:	90357	Transit Mix Concrete (Legals)	Phone: (719) 475-0700
Address:	444 E Costilla St		Colorado Springs, CO 80903
Ad #	994351	Requested By:	Fax:
Sales Rep.:	0700	Recruitment Pool	Phone: (719) 632-5511
			Fax:
Class.:	0310	Legal Notices	
Start Date:	08/06/2012	End Date: 08/27/2012	
Publications:	Colorado Springs Gazette, gazette.com		
Paid Amount:	$0.00	Balance:	$563.00
Total Price:	$563.00		

Public Notice

Continental Materials Corporation/Castle Concrete Company/Transit Mix Aggregates Company, 444 East Costilla, Colorado Springs, CO 80903-3761, (719-475-0700), has filed an application for an amendment to their Regular (112) Reclamation Operation Permit with the Colorado Mined Land Reclamation Board under the provisions of the Colorado Mined Land Reclamation Board under the provisions of the Colorado Mined Land Reclamation Act. The proposed amendment is known as the Amendment 3 of the Pikeview Quarry Permit and is located predominantly in Sections 9 and 10, Township 13 South, Range 67 West, 6th Prime Meridian. The quarry is located 7250 Allegheny Drive, Colorado Springs, CO 80919-4204.

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Comments must be in writing and must be received by the Division of Reclamation, Mining and Safety by 4:00P.M. on September 23, 2012.

Published in The Gazette August 6, 13, 20, 27, 2012.

AFFIDAVIT OF PUBLICATION

STATE OF COLORADO
COUNTY OF EL PASO

I, Nicole Jones duly sworn, deposes and says that she is the Legal Sales Representative of FREEDOM COLORADO INFORMATION, INC., a corporation, the publishers of a daily public newspaper, which is printed and published daily in whole at the city of Colorado Springs in the County of El Paso, and the State of Colorado, and which is called The Gazette; that a notice of which the annexed is an exact copy, cut from said newspaper, was published in the regular and entire editions of said newspaper **4 time(s) to wit August 6, 13, 20, 27, 2012.**

That said newspaper has been published continuously and uninterruptedly in said County of El Paso for a period of at least six consecutive months next prior to the first issue thereof containing this notice; that said newspaper has a general circulation and that it has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879 and any amendment thereof, and is a newspaper duly qualified for the printing of legal notices and advertisement within the meaning of the laws of the State of Colorado.

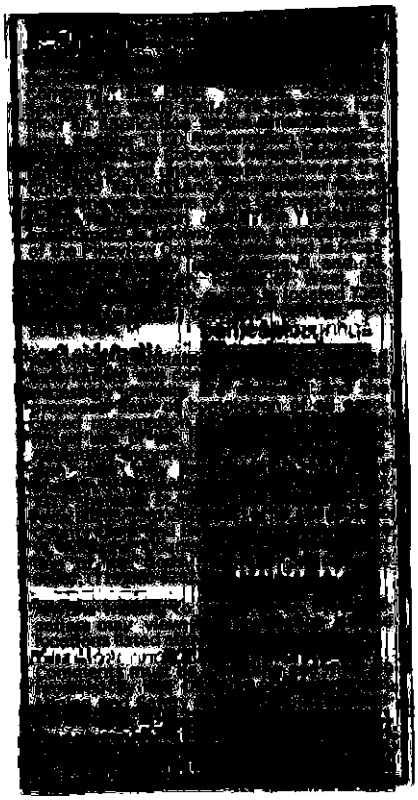
Nicole Jones
Legal Sales Representative

Subscribed and sworn to me this **28th day of August 2012** at said City of Colorado Springs, El Paso County, Colorado.
My commission expires September 28, 2015.

Lori A Conary

The Gazette

LORI A. CONARY
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires 9/28/2015



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Timothy & Stefanie Burgess
2811 Front Royal Drive
Co Spgs CO 80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery
8-25-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label)

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Ms. Mary Dunham
2841 Front Royal Dr.
Colo. Spgs Co
80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Mary Dunham ☐ Agent ☒ Addressee

B. Received by (Printed Name) Mary Dunham | C. Date of Delivery 8-27-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Robert & Aimee Hellum
2825 Coldwater Dr.
Colo Spgs Co
80919-4217

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☒ Addressee

B. Received by (Printed Name) Aimee Hellum | C. Date of Delivery 9/5/12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Jeff Hovermale
Pike and San Isabel National Forest
Pikes Peak Ranger Dist.
601 S. Weber
Colorado Springs CO 80903

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) [illegible] C. Date of Delivery 8-27-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

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2. Article Number
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1. Article Addressed to:

Ms. Heather Jensen
2835 Front Royal Dr.
Colo Spgs CO
80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
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1. Article Addressed to:

Guy + Kimberly Kendall
3815 Coldwater Drive
Co Spgs Co 80919-4217

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 8/25/12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Darold + Bonnie Kern
2823 Front Royal Dr.
Colo Spgs CO 80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Darold Kern
C. Date of Delivery SEP 6 2012

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label)

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1. Article Addressed to:

John David + Veronica McKenna
2829 Front Royal Dr.
Colo Spgs Co 80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☒ Addressee

B. Received by (Printed Name) V. McKenna
C. Date of Delivery 8-27-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label)

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1. Article Addressed to:

Mr. Jeffrey Rogers
2805 Coldwater Dr.
Colo Spgs Co
80919-4217

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 8-30-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label)

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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1. Article Addressed to:

Elis + Christian Salamone
8475 Red Spg Valley Rd
Colorado Spgs, Co
80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery: 8-31-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
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1. Article Addressed to:

Eric + Lisa Supancic
2835 Coldwater Dr.
Colo. Spgs CO 80919-4217

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery: 8-25-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
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1. Article Addressed to:

Timothy + Joy Townsend
2859 Front Royal Dr.
Colo. Spgs CO
80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery: 8-25-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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4. Restricted Delivery? (Extra Fee) ☐ Yes

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Samuel & Ofelia Velarde
2865 Front Royal Dr.
Colo Spgs CO
80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Sam F Velarde | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7006 2150 0002 0460 0403

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Verdoorn 1999 Charitable Unitrust
10463 Park Meadows Drive
Ste 207
Lone Tree CO
80124-5318

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C Hoon | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label)

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Terry Wolfe & Sunny Baker
3330 Chuckwagon Rd
Colo. Spgs CO 80919-3501

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☒ Addressee

B. Received by (Printed Name) | C. Date of Delivery

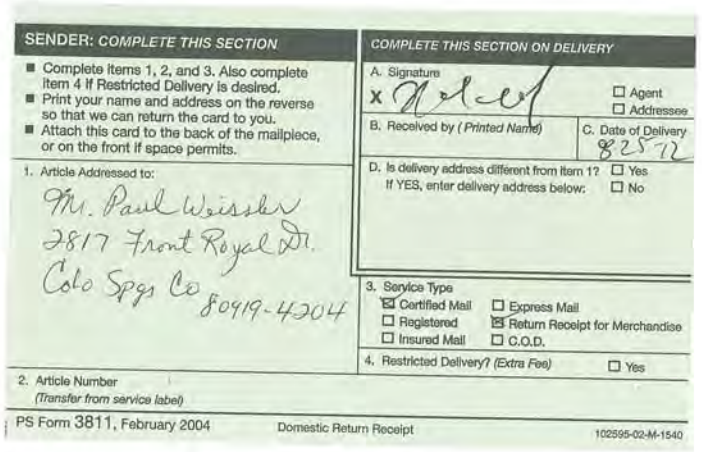
D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No
2153 Chuckwagon Rd S
Colorado Springs, Co.
80919

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label)

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540



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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Paul Weissler
2817 Front Royal Dr.
Colo Spgs Co 80919-4204

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery 8-25-12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

7011 2970 0002 5315 3699

Sent To: Mr. Jamie Richardson
Street, Apt. No., or PO Box No.: 295 Via Lado Vista
City, State, ZIP+4: Manitou Spgs 80829

PS Form 3800, August 2006 — See Reverse for Instructions

USPS.com® - Track & Confirm

Page 1 of 1

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Search USPS.com or Track Packages

Quick Tools Ship a Package Send Mail Manage Your Mail Shop Business Solutions

Track & Confirm

GET EMAIL UPDATES PRINT DETAILS

YOUR LABEL NUMBER	SERVICE	STATUS OF YOUR ITEM	DATE & TIME	LOCATION	FEATURES
70112970000253153699		Delivered	September 06, 2012, 12:28 pm	MANITOU SPRINGS, CO 80829	Certified Mail™
		Notice Left	August 27, 2012, 12:28 pm	MANITOU SPRINGS, CO 80829	
		Arrival at Unit	August 27, 2012, 7:57 am	MANITOU SPRINGS, CO 80829	
		Depart USPS Sort Facility	August 26, 2012	COLORADO SPRINGS, CO 80910	
		Processed through USPS Sort Facility	August 25, 2012, 6:16 pm	COLORADO SPRINGS, CO 80910	

Check on Another Item

What's your label (or receipt) number?

Find

TRANSIT MIX AGGREGATES

March 4, 2013

Landowner
Front Royal Dr.
Colorado Springs, CO 80919-4204

Re: Castle Concrete/Transit Mix Aggregates Company/Continental Materials Corporation
Pikeview Quarry
Addition of Inert Materials Repository

Dear Mr. and Mrs. Landowner,

This letter is being sent to you because Castle Concrete/Transit Mix Aggregates/Continental Materials Corporation is proposing to expand operations at the quarry to include landfill of inert materials in addition to mining. This information is being provided to you to address requirements associated with the Colorado Division of Mining Reclamation and Safety permit M-77-211, and is a component of Amendment 03. Please direct any questions on the proposal to the applicant or their consultant, identified below.
For questions specific to this project, please contact:

Mac Shafer
VP Aggregate Operations
Castle Concrete/Transit Mix Aggregates Company
Pikeview Quarry
7250 Allegheny Drive
Colorado Springs, CO 80919
719-598-0215

Jeremy Pritchett
Hydrologist
Norwest Corporation
950 S. Cherry Street Suite 800
Denver, CO 80246
720-889-6143

Transit Mix Aggregates Company/ Castle Concrete/ Continental Materials Corporation
Pikeview Quarry
CDRMS Landowner Notification

Section a
The quarry is located at 7250 Allegheny Drive, and currently holds a 236.5 acre permit with Colorado Division of Mining Reclamation and Safety. The proposed Inert Materials Repository will extend across 6.83 acres and was previously known as Area H. It is an existing pit within the quarry, and materials will be backfilled below grade. A temporary stockpile zone of 0.32 acres will be located on an adjacent bench to the pit.

The areas associated with the inert disposal area extend across 7.15 acres as shown on **Figure 1**.

Section b
This action seeks to allow Castle Concrete Company to include 30,000 cubic yards of concrete for structural fill at the Pikeview Quarry in an existing pit slated for reclamation.

Section c
A signed affidavit certifying that the materials are clean and inert, as identified by CDRMS Rule 1.1(20) will be associated with each load and retained at the quarry office for a period of three years.

Section d
Inert material disposal will begin as soon as permitting is in place and will continue for five years.

Section e
The post-mining land use of wildlife habitat will not be influenced by the addition of as much as 30,000 cy of inert material at a site where 5.775 million cy will **be** cut.

Section f
Materials will be stockpiled at the elevation of the shop bench prior to placement in the pit, to allow screening of unacceptable materials as shown on the Plot Plan in **Figure 1**. The bottom of the pit is approximately 7,130 feet. The total quantity would not exceed 30,000 cubic yards and an affidavit would accompany the material brought on site (attached). Material will be placed in the pit not more than 1,000 cubic yards at a time. Limestone fines, produced onsite, will be added to the pit along with waste during backfilling to fill voids and minimize settling. It is anticipated that there will be less than 30,000 cubic yards of materials, and that the limestone fines backfill will compact the space between the concrete sufficiently to avoid significant differential settling. Remote-controlled dozers will push approved waste into the pit to be used as backfill. Material will be placed using heavy equipment normally found in the mining industry and standard construction practices will be followed to insure proper compaction.

Transit Mix Aggregates Company/ Castle Concrete/ Continental Materials Corporation
Pikeview Quarry
CDRMS Landowner Notification

Three French drains will be installed at the current ground surface once backfilling reaches that elevation. These will intercept surface water recharge and direct the flow into the stormwater drainage system. The drains will have a minimum ten-foot bottom width, 2:1 side slopes and be at least 20 feet deep.

Please do not hesitate to contact Mac Shafer or Jeremy Pritchett if you have any questions.

Sincerely,

Mac Shafer
Vice President of Aggregates
Transit Mix/Castle Concrete/Continental Materials

Attachments
Figure 1 – Plot Plan

EXHIBIT R
PROOF OF FILING WITH COUNTY CLERK AND RECORDER

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT AMENDMENT
FOR REGULAR (112) DESIGNATED MINING OPERATION

NOTICE TO THE COUNTY CLERK
EL PASO COUNTY

Wayne Williams
200 South Cascade Avenue
Colorado Springs, CO 80903

Pikeview Quarry (Operator) has applied for an amendment to an existing 112 Designated Mining Operations reclamation permit from the Colorado Mined Land Reclamation Board to extend mining and reclamation operations in El Paso County.

The attached amendment application is being provided to you to allow for public review of the location and nature of the proposed amended operations. We request that you place the entire application in a place for public review but not be recorded. This request is made pursuant to C.R.S. §34-32-112(10)(a) and §1.6.2(1)(c) of the Hard Rock/Metal Mining Rules and Regulations of the Colorado Mined Land Reclamation Board.

Continental Materials Corp./Transit Mix Aggregates Company/Castle Concrete Company

Acknowledgement of Receipt:

By Heidi Bunsen

Title Recording Supervisor

Date 7/24/2012

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT AMENDMENT
FOR REGULAR (112) DESIGNATED MINING OPERATION

NOTICE TO THE COUNTY CLERK
EL PASO COUNTY

Wayne Williams
200 South Cascade Avenue
Colorado Springs, CO 80903

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Continental Materials Corp./Transit Mix Aggregates Company/Castle Concrete Company

Acknowledgement of Receipt:

By Heidi Bunsen

Title Recording Supervisor

Date 7/24/2012

EXHIBIT S
PERMANENT MAN MADE STRUCTURES

EXHIBIT S
PERMANENT MAN-MADE STRUCTURES

The only man-made structures are utility lines along Allegheny Road near the entrance to the property on the east end of the permit boundary. There are no permanent man-made structures within 200-feet of the Amendment area other than the Pikeview Quarry itself.

EXHIBIT T
HEALTH & SAFETY

Emergency Action Plan

Castle Concrete
(Pike View Quarry)

EMERGENCY ACTION PLAN

For

Facility Name: _Castle Concrete (Pike View Quarry) __

Facility Address: 7250 Allegheny Drive Colorado Springs, CO 80919

DATE PREPARED: _05 /_10/_2012_

EMERGENCY PERSONNEL NAMES AND PHONE NUMBERS

DESIGNATED RESPONSIBLE OFFICIAL (Highest Ranking Manager)

Name: Mac Shafer Phone: (719-491-3730)

EMERGENCY COORDINATOR:

Name: Chris Usry Phone: (719-499-5512)

Date 5/10/2012

EVACUATION ROUTES

- Evacuation route maps have been posted in each work area. The following information is marked on evacuation maps:

    1. Emergency exits
    2. Primary and secondary evacuation routes
    3. Locations of fire extinguishers
    4. Fire alarm pull stations' location
    a. Assembly points

- Site personnel should know at least two evacuation routes.

EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT: _911_____

PARAMEDICS: ___911_____

AMBULANCE: ___911_____

POLICE: ___911_____

- FEDERAL PROTECTIVE SERVICE: 202-282-8000

UTILITY COMPANY EMERGENCY CONTACTS

(Colorado Springs Utilities)

ELECTRIC: 719-448-4800

WATER: 719-448-4800

GAS (if applicable): 719-448-4800

Date: 05 / 10 /2012

EMERGENCY REPORTING AND EVACUATION PROCEDURES

Types of emergencies to be reported by site personnel are:

- MEDICAL
- FIRE
- SEVERE WEATHER
- BOMB THREAT
- CHEMICAL SPILL
- EXTENDED POWER LOSS

MEDICAL EMERGENCY

- Call medical emergency phone number (check applicable):

  - ☑ Paramedics
  - ☑ Ambulance
  - ☑ Fire Department
  - ☐ Other

  Provide the following information:
  a. Nature of medical emergency,
  b. Location of the emergency (address, building, room number), and
  c. Your name and phone number from which you are calling.
- Do not move victim unless absolutely necessary.
- Call the following personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of the professional medical help:

Name: Jim Moos Phone: 719-499-3958

Name: Mac Shafer Phone: 719-491-3730

- If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:
  1. Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
  2. Clear the air passages using the Heimlich maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if trained and qualified.

Date 05 /10 /2012

FIRE EMERGENCY

When fire is discovered:

- Activate the nearest fire alarm (if installed)
- Notify the local Fire Department by calling 911.
- If the fire alarm is not available, notify the site personnel about the fire emergency by the following means (check applicable):

☑ Voice Communication	☐ Radio
☐ Phone Paging	☐ Other (specify)

Fight the fire ONLY if:

- The Fire Department has been notified.
- The fire is small and is not spreading to other areas.
- Escaping the area is possible by backing up to the nearest exit.
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the building using the designated escape routes.
- Assemble in the designated area (specify location):
- Remain outside until the competent authority (Designated Official or designee) announces that it is safe to reenter.

Designated Official, Emergency Coordinator or supervisors must (underline one):

- Disconnect utilities and equipment unless doing so jeopardizes his/her safety.
- Coordinate an orderly evacuation of personnel.
- Perform an accurate head count of personnel reported to the designated area.
- Determine a rescue method to locate missing personnel.
- Provide the Fire Department personnel with the necessary information about the facility.
- Perform assessment and coordinate weather forecast office emergency closing procedures

Area/Floor Monitors must:

- Ensure that all employees have evacuated the area/floor.
- Report any problems to the Emergency Coordinator at the assembly area.

Assistants to Physically Challenged should:

- Assist all physically challenged employees in emergency evacuation.

Date 05/10/2012

EXTENDED POWER LOSS

In the event of extended power loss to a facility certain precautionary measures should be taken depending on the geographical location and environment of the facility:

- Unnecessary electrical equipment and appliances should be turned off in the event that power restoration would surge causing damage to electronics and effecting sensitive equipment.
- Facilities with freezing temperatures should turn off and drain the following lines in the event of a long term power loss.
    - Fire sprinkler system
    - Potable water lines
    - Toilets
- Add propylene-glycol to drains to prevent traps from freezing
- Equipment that contains fluids that may freeze due to long term exposure to freezing temperatures should be moved to heated areas, drained of liquids, or provided with auxiliary heat sources.

<u>Upon Restoration of heat and power</u>:

- Electronic equipment should be brought up to ambient temperatures before energizing to prevent condensate from forming on circuitry.
- Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

CHEMICAL SPILL

When a Large Chemical Spill has occurred:

- Immediately notify the designated official and Emergency Coordinator.
- Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.).
- Secure the area and alert other site personnel.
- Do not attempt to clean the spill unless trained to do so.
- Attend to injured personnel and call the medical emergency number, if required.
- Call the Fire Department (911) to perform a large chemical (e.g., mercury) spill cleanup.
- Evacuate building as necessary

When a Small Chemical Spill has occurred:

- Notify the Emergency Coordinator and/or supervisor (select one).
- If toxic fumes are present, secure the area (with caution tapes or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the MSDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.
- Review the general spill cleanup procedures.

Date 5 /10 /2012

TELEPHONE BOMB THREAT CHECKLIST

INSTRUCTIONS: BE CALM, BE COURTEOUS. LISTEN. DO NOT INTERRUPT THE CALLER.
YOUR NAME: _____ TIME: _____ DATE: _____
CALLER'S IDENTITY SEX: Male _____ Female ____ Adult ____ Juvenile ____ APPROXIMATE AGE: _____
ORIGIN OF CALL: Local _____ Long Distance _____ Telephone Booth _____

VOICE CHARACTERISTICS

___ Loud
___ High Pitch
___ Raspy
___ Intoxicated
___ Soft
___ Deep
___ Pleasant
_____ Other

ACCENT

___ Local
___ Foreign
___ Race
___ Not Local
___ Region

SPEECH

___ Fast
___ Distinct
___ Stutter
___ Slurred
___ Slow
___ Distorted
___ Nasal
_____ Other

MANNER

___ Calm
___ Rational
___ Coherent
___ Deliberate
___ Righteous
___ Angry
___ Irrational
___ Incoherent
___ Emotional
___ Laughing

LANGUAGE

___ Excellent
___ Fair
___ Foul
___ Good
___ Poor
_____ Other

BACKGROUND NOISES

___ Factory
___ Machines
___ Music
___ Office
___ Machines
___ Street
___ Traffic
___ Trains
___ Animals
___ Quiet
___ Voices
___ Airplanes
___ Party
___ Atmosphere

BOMB FACTS

PRETEND DIFFICULTY HEARING - KEEP CALLER TALKING - IF CALLER SEEMS AGREEABLE TO FURTHER CONVERSATION, ASK QUESTIONS LIKE:

When will it go off? Certain Hour ____Time Remaining_____

Where is it located? Building _____ Area _____

What kind of bomb? _____

What kind of package? _____

How do you know so much about the bomb? _____

What is your name and address? _____

If building is occupied, inform caller that detonation could cause injury or death.

Activate malicious call trace: Hang up phone and do not answer another line. Choose same line and dial *57 (if your phone system has this capability). Listen for the confirmation announcement and hang up.

Call the police at ____911_____ and relay information about call.

Did the caller appear familiar with plant or building (by his/her description of the bomb location)?
Write out the message in its entirety and any other comments on a separate sheet of paper and attach to this checklist.
Notify your supervisor immediately.

SEVERE WEATHER AND NATURAL DISASTERS

Tornado:

- When a warning is issued by sirens or other means, seek inside shelter. Consider the following:
  - Small interior rooms on the lowest floor and without windows,
  - Hallways on the lowest floor away from doors and windows, and
  - Rooms constructed with reinforced concrete, brick, or block with no windows.
- Stay away from outside walls and windows.
- Use arms to protect head and neck.
- Remain sheltered until the tornado threat is announced to be over.

Earthquake:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Keep away from overhead fixtures, windows, filing cabinets, and electrical power.
- Assist people with disabilities in finding a safe place.
- Evacuate as instructed by the Emergency Coordinator and/or the designated official.

Flood:

If indoors:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Follow the recommended primary or secondary evacuation routes.

If outdoors:

- Climb to high ground and stay there.
- Avoid walking or driving through flood water.
- If car stalls, abandon it immediately and climb to a higher ground.

Hurricane*:*

- The nature of a hurricane provides for more warning than other natural and weather disasters. A hurricane watch issued when a hurricane becomes a threat to a coastal area. A hurricane warning is issued when hurricane winds of 74 mph or higher, or a combination of dangerously high water and rough seas, are expected in the area within 24 hours.

Once a hurricane watch has been issued:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Moor any boats securely, or move to a safe place if time allows.
- Continue to monitor local TV and radio stations for instructions.
- Move early out of low-lying areas or from the coast, at the request of officials.
- If you are on high ground, away from the coast and plan to stay, secure the building, moving all loose items indoors and boarding up windows and

openings.
- Collect drinking water in appropriate containers.

Once a hurricane warning has been issued:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Leave areas that might be affected by storm tide or stream flooding.

During a hurricane:

- Remain indoors and consider the following:
  - Small interior rooms on the lowest floor and without windows,
  - Hallways on the lowest floor away from doors and windows, and
  - Rooms constructed with reinforced concrete, brick, or block with no windows.

Blizzard:

If indoors:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Stay indoors!
- If there is no heat:
  - Close off unneeded rooms or areas.
  - Stuff towels or rags in cracks under doors.
  - Cover windows at night.
- Eat and drink. Food provides the body with energy and heat. Fluids prevent dehydration.
- Wear layers of loose-fitting, light-weight, warm clothing, if available.

If outdoors:

- Find a dry shelter. Cover all exposed parts of the body.
- If shelter is not available:
  - Prepare a lean-to, wind break, or snow cave for protection from the wind.
  - Build a fire for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.
  - Do not eat snow. It will lower your body temperature. Melt it first.

If stranded in a car or truck:

- Stay in the vehicle!
- Run the motor about ten minutes each hour. Open the windows a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked.
- Make yourself visible to rescuers.
  - Turn on the dome light at night when running the engine.
  - Tie a colored cloth to your antenna or door.
  - Raise the hood after the snow stops falling.
- Exercise to keep blood circulating and to keep warm.

TRAINING

The following personnel have been trained to ensure a safe and orderly emergency evacuation of other employees:

Facility:

Name	Title	Responsibility	Date
Chris Usry	Emergency Coordinator	All emergencies	05/10/2012
Mac Shafer	VP Aggregates	All emergencies	05/10/2012

Castle Concrete Company
PIKEVIEW QUARRY

HAZARDOUS CHEMICAL LIST

	Product Name	*Manufacturer*
	133H Anti-Seize Lubricant 4oz.	Permatex, Inc.
	1620 Anti Spatter	Harris Welco
	82660 Belt Dressing	Hydrosol, Inc.
	82880 Red Grease	Hydrosol, Inc.
	85186 Anti-Seize	Hydrosol, Inc.
	964402 Enamel 1-GL 2PK Gloss Safety Red	Rust-Oleum Corporation
A	ABC Dry Chemical Fire Extinguishant	Amerex Corporation
	Acetylene C_2H_2	Western International Gas & Cyl., Inc.
	Acrylic Enamel Reducer, Medium Evaporating	Martin Senour Paints
	Acrylic Modified ALKYD Enamel (ALK-200)	PPG Industries, Inc.
	Alcohol Free Towelettes	Allegro Industries
	Assembly Grease (AS-8)	AGS Company
	ATF-3	ConocoPhillips Lubricants
	AWS Welding Electrode (multiple classifications)	Hobart Brothers
B	Brute Blast Penetrating Catalyst PAI# 82884	Parts Associates, Inc.
	Bug X® Insect Repellent Towelette & Lotion	CoreTex Products, Inc.

C	Carbon Dioxide Gas	Matheson Tri-Gas, Inc.
	Cat Cement	Chemtool Incorporated
	Cat Cooling System Cleaner	Chemtool Incorporated
	Cat Hydraulic Oil Additive	Chemtool Incorporated
	Cat Mojave Brown Paint Medium Gloss - Aerosol	Valspar Corporation
	Cat Transmission and Drive Train Oil (TDTO) SAE 50	Esso Imperial Oil
	Catalyst for ALK-200	PPG Industries, Inc.
	CCX-97 Aerosol	Certified Labs, Division of NCH Corp.
	Citgo Lithoplex® CM-2 Grease	Citgo Petroleum Corporation
	Citgo No. 1 Diesel Fuel, All Grades	Citgo Petroleum Corporation
	Citgo Premium Gear Oil (MP), SAE 80W-90	Citgo Petroleum Corporation
	Citgo Rock Drill Oil, Medium	Citgo Petroleum Corporation
	Crystal Simple Green® Industrial Cleaner/Degreaser Simple Green® Safety Towels (fluid only)	Sunshine Makers, Inc.
D	D-Con® Mouse Prufe® II	Reckitt Benckiser Inc.
	Diesel	Sinclair Oil Corporation
	Dolomitic Limestone	Transit Mix Aggregates, Pikeview Quarry
	Dynatex® 49495 Thread Sealant with PTFE	Dynatex, Inc.
	Dynatex® 49560 Anti-Seize & Lubricating Compound	Dynatex, Inc.
E	Enamel 1-GL 2PK Gloss Dunes Tan	Rust-Oleum Corporation

	Engine Priming Fuel	KBi/Kold-Ban International, Ltd.
	Envirolube® XE Heavy	The Whitmore Manufacturing Company
	ES Compleat Coolant EG Concentrate (Ethylene Glycol Based Antifreeze)	Cummins Filtration
F	Fast Gasket - Blue	Zep Inc.
	Fleetweld 37	The Lincoln Electric Company
	Fleetweld 47	The Lincoln Electric Company
	Flourescent Lamps	GE Consumer & Industrial Lighting
G	Gasolines	Frontier Oil & Refining Company
	Glass-Free Cleaner Towels	Kimball-Midwest
	Glove	Zep Inc.
	Goo Gone	Magic American Products, Inc.
	Granular Absorbent	Oil Dri Corporation of America
H	Herculiner™ Protective Coating	Old World Industries, Inc.
I	Ingersoll-Rand XHP605 Compressor Oil	Ingersoll-Rand
	Innershield NR-211MP	The Lincoln Electric Company
	IPC Bobcat Orange	Parts Associates, Inc.
J		

K		
L	Lead Acid Battery Wet, Filled with Acid	East Penn Manufacturing Company, Inc.
	Light Base	Rust-Oleum Corporation
M	Marvel Air Tool Oil	Marvel Oil Company, Inc.
	Maxi-Lube Red	Chemsearch Div. of NCH Corp.
	Meter Mist Country Candle Shop	Zep Manufacturing Company
	Mobil ALMO 527	Exxon Mobil Corporation
	Multiplex® Red (All Grades)	ConocoPhillips Lubricants
	Multi-Purpose Solvent	PPG Industries, Inc.
	Murematic S6	The Lincoln Electric Company
N	Nitrogen, Compressed	Praxair, Inc.
	NR-203 Nickel (1%) & NR-203 Nickel (1%)-H	The Lincoln Electric Company
O	Odorized Commercial Propane	AmeriGas Propane, L.P.
	Oxgen/ALIGAL ™ 3/LASAL ™ 2003	Air Liquide
P	Pangofol Black - Non Flammable	TruFlex/Pang Rubber Products Company, Inc.
	PartsAssociates, Aero-Chem Teflon Dry Lube	Eveready Products Corporation
	Pennzoil® Roadside™ Fix-A-Flat®	Pennzoil-Quaker State Company
	Permeon	Soil Tech

	Philube® HG Fluid	ConocoPhillips Lubricants
	Prelube	BG Products Inc.
	Propane	ConocoPhillips
Q		
R	Ring Master	Zep Inc.
S	Shielded Metal Arc Welding (SMAW) Electrodes	Hobart Brothers
	SMP Gear Oil	ConocoPhillips Lubricants
	Stainless Steel and High Alloys	Rockmount® Nassau
	Stripe Fluorescent Orange	Seymour of Sycamore
	Super D-Ice	Zep Inc.
	Super HD II Motor Oil	ConocoPhillips Lubricants
	Super Silicone	Parts Associates Inc.
T	T-Lube Plus Aerosol	Certified Labs, Div. of NCH Corp.
	Tekusolv II Red	Certified Labs, Div. of NCH Corp.
	Torque Fluid (All Grades)	ConocoPhillips Lubricants
U	Ultra Low Sulfur Diesel	Frontier Refining Inc.
	UTP 48	Boehler Thyssen Welding USA Inc.

V		
W	Wax and Grease Remover	PPG Industries, Inc.
X		
Y	Yellow Reflective	Seymour of Sycamore
Z	Zep Ice Melt	Zep Inc.
	Zep Scent-Ette	Zep Inc.
	Zep SPF 30+ Sun Screen Towel	Zep Inc.

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

PIKEVIEW QUARRY
M.L.R. PERMIT #77-211
7250 ALLEGHENY DRIVE
COLORADO SPRINGS, COLORADO
RGI #05394099

February 19, 2003

In accordance with 40 CFR 112.5(b), a review and evaluation of this SPCC Plan is conducted at least once every five (5) years. As a result of this review, Castle Concrete Company will amend the SPCC Plan within six (6) months of the review to include more effective control and prevention technology if: (1) such technology will significantly reduce the likelihood of a discharge from the facility; and (2) if such technology has been field-proven at the time of the review.

	Date	Amendment (Y/N)
Amended/Reviewed By: John Jankowsky	7-27-09	Y - App. A
Amended/Reviewed By:		
Amended/Reviewed By:		
Amended/Reviewed By:		

(Note: All technical amendments must be certified by a Professional Engineer per §40 CFR 112.5(c))

BG

RESOURCE GEOSCIENCE, INC.
Consulting Environmental Engineers and Earth Scientists

Thomas B. Lewis, P.E.
Richard A. Workentine, P.E.

February 19, 2003

Mr. B.J. Fuller
Castle Concrete Company
c/o Transit Mix Concrete Company
444 East Costilla Street
Colorado Springs, CO 80901

Re: **SPCC Plan**
Pikeview Quarry
M.L.R. Permit #77-211
7250 Allegheny Drive
Colorado Springs, Colorado
RGI #05394099

Dear Mr. Fuller:

Submitted herewith is the Spill Prevention, Control, and Countermeasure (SPCC) Plan for the referenced site. The SPCC Plan must be kept at the facility and made available for review by federal and state officials. The SPCC Plan must be approved by a level of management with the authority to commit those resources necessary to implement the plan. Do not forget to certify Attachment A, *Certification of Substantial Harm Determination Form,* found near the back of the Plan. Also, keep all inspection records up-to-date, as noted within the SPCC Plan.

The SPCC Plan must be amended whenever there is a change in the facility design, construction, operation, or maintenance which materially affects (i.e. increases or decreases) the facility's potential to discharge oil into or upon navigable waters. In addition, you are required to review and evaluate the SPCC plan at least once every five (5) years and to amend the SPCC Plan within six (6) months of the review to include more effective prevention and control technology if:

- Such technology will significantly reduce the likelihood of a discharge from the facility and
- The technology has been field-proven at the time of the review.

As noted on the cover of the SPCC Plan, all technical amendments must be certified by a professional engineer.

The following modifications to the system must be made for the SPCC Plan to be fully effective:

1) The operator shall ensure that the on-site fueling truck is equipped with a spill kit / spill socks. See page 6.

2) There is presently no loading / unloading containment system in place at the site. The loading rack area must be equipped with a secondary means of containment "sufficiently impervious" to hold the contents of the single largest compartment of a cargo tank vehicle plus sufficient freeboard to contain precipitation. No specific type of secondary containment is required so long as it meets the required "sufficiently impervious" performance standard. See page 7.

3) The operator shall have vehicle chock blocks available at the tank truck unloading area. Drivers will be instructed to place chock block(s) in front of driver's side tire(s) and not remove them until all unloading connections are secured and valves are closed. See page 7.

4) A spill kit / spill socks shall be placed inside the vehicle maintenance garage to provide a means to quickly contain any releases in the warehouse area. See page 8.

5) The operator shall keep copies of all system inspections at the site as noted within the SPCC plan. See page 10.

6) The operator shall locate the tank-related records and maintain them at the facility. See page 12.

7) Fencing must be erected around bulk storage containers, piping and loading rack areas. See page 12.

8) The main oil pump starter control switch is located inside the vehicle maintenance garage which is locked and alarmed during non-operating hours. However, locks are necessary on the loading / unloading rack oil pump starter controls. See page 13.

If you have any questions regarding the attached, please call.

Respectfully submitted,

RESOURCE GEOSCIENCE, INC.

Thomas B. Lewis, P.E.
President

CERTIFICATION PAGE

Name and address of owner or operator:

Name:	Castle Concrete Company

Address:	7250 Allegheny Drive Colorado Springs, Colorado 80919 -4930

Designated person accountable for oil discharge prevention at facility:

Name and title:	~~Rick Mowers, Production Manager,~~ Castle Concrete Company

New Production Manager → ~~Chris Usry~~ Chris Usry Transit Mix Aggregates Operations Manager

MANAGEMENT CERTIFICATION

Signature of person who grants approval of this SPCC plan and has the level of authority to commit the necessary resources:

Name and title:	B.J. Fuller, Permit and Reclamation Specialist, Castle Concrete Company
Signature:	B.J. Fuller
Date:	12-30-03

§112.3(d) ENGINEER'S CERTIFICATION

I hereby attest that (i) I am familiar with the requirements of the SPCC rule; (ii) my agent or I have visited the facility; (iii) this SPCC Plan has been prepared in accordance with good engineering practice, industry standards, and with the requirements of the SPCC rule; (iv) procedures for required inspections and testing have been established; and (v) the Plan is adequate for the facility.

Name of Registered Professional Engineer:	Thomas B. Lewis, P.E. Colorado Registered Professional Engineer #25460

Signature:

GENERAL INFORMATION

40 CFR 112.7(a)(3) Facility description (see attached facility diagram):

- ☐ **Bulk Plant**
- ☐ **Service Station**
- ☐ **Government, Industrial, Commercial Facility**
- ☒ **Other** Quarry

Location: The site is located in the northwest portion of Colorado Springs against the Front Range uplift, El Paso County, Colorado.

Description: (general operations). **Figure 1, "Site Plan" shows the site boundaries, nearby waterways (if any), adjacent roadways, oil handling facilities, and office buildings.**

§112.7(a)(3)(i) Types of oil in each container:

TANK #	DIMENSIONS (feet)	APPROXIMATE CAPACITY (gallons)	HORIZONTAL (H) OR VERTICAL (V)	IN-SERVICE (I) OR OUT-OF-SERVICE (O)	PRODUCT STORED
1	10 x 17'1"	10,000	H	I	Off-Road Diesel
2	5 x 18	3,000	H	I	Gasoline
3	4 x 11	1,000	H	I	Diesel
4	4 x 4'1" x 2'6"	300	H	I	Transmission Fluid
5	9 x 3 x 2'6"	500	H	I	Hydraulic Fluid
6	2.5 x 4 x 2.3	170	H	I	Motor Oil
7	2.5 x 4 x 2.3	170	H	I	Gear Oil
8	2.5 x 4 x 2.3	170	H	I	Hydraulic Fluid
9	5 x 5 x 2.5	500	H	I	Waste Oil
10	4 x 11.25	1,000	H	I	Waste Oil
11*	2 x 3	55	V	I	Lube Oil / Solvent

*Twelve (12) 55-gallon drums were present in the drum containment area at the time of the site inspection. This number is likely to vary depending on usage rates.

Do any mobile or portable oil storage tanks exist at site?

YES	X	NO		N/A	

One (1) on-site fueling truck with a mobile storage volume of approximately 2,000 gallons (200-gallons hydraulic fluid, 200-gallons waste oil, 150-gallons transmission fluid, 150-gallons gear oil, 150-gallons antifreeze, 150-gallons hydraulic fluid, 1,000-gallons diesel fuel) was parked on-site at the time of our site visit. The operator shall ensure that the on-site fueling truck is equipped with a spill kit / spill socks.

§§112.7(a)(3)(ii), 112.7(h) Discharge Prevention Measures - including procedures for routine handling of products (loading/unloading, facility transfers, etc.)

Does tank car and tank truck loading/unloading procedures meet the minimum requirements and regulation of the Department of Transportation (refer to 49 CFR Parts 171, 173, 174, 177, and 179)?: (Include Attachment #5 - Tank Loading / Unloading)

YES	X	NO		N/A	

Does the unloading area have a quick drainage system?:

YES		NO	X	N/A	

Will the truck loading / unloading containment system hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant? (Required for bulk plants only):

YES		NO	X	N/A	

Describe the truck loading / unloading containment system design, construction materials, and volume:
There is presently no loading / unloading containment system in place at the site. The loading rack area must be equipped with a secondary means of containment "sufficiently impervious" to hold the contents of the single largest compartment of a cargo tank vehicle plus sufficient freeboard to contain precipitation. No specific type of secondary containment is required so long as it meets the required "sufficiently impervious" performance standard.

Describe procedure for warning vehicles entering the facility to avoid damaging above-ground piping:
No above ground piping that could be damaged is located at the site. All aboveground piping associated with the AST's is located within the containment berms. The pipelines from the AST areas to the fuel loading docks are within the containment berms.

Does the facility loading/unloading area have an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle brake interlock system to prevent vehicles from departing before disconnect of transfer lines?:

YES	X	NO		N/A	

Describe methods, procedures, and/or equipment used to prevent premature vehicular departure:
The operator requires drivers to remain standing beside the truck at all times during off-loading or fuel delivery. In addition, a sign is posted at the loading/unloading area to remind drivers of fuel loading / unloading rules and to disconnect transfer lines. Additional details and requirements are included in Attachment #5.
The operator shall have vehicle chock blocks available at tank truck unloading area. Drivers will be instructed to place chock block(s) in front of driver's side tire(s) and not remove them until all unloading connections are secured and valves are closed.

Are the drains and outlets on tank trucks and tank cars checked for leakage before loading/unloading or departure?:

YES	X	NO		N/A	

§§112.7(a)(3)(iii), 112.7(c), 112.8(c)(2) Discharge or drainage controls:

Describe secondary containment design, volume, and construction materials:	***Tanks 1-3:*** Tanks 1-3 were located in individual dirt-berm containment areas with buried plastic lining. The dirt-berm containment areas are more than adequate to contain at least 100% of the capacity of each AST plus sufficient freeboard for precipitation. In addition to the above, a spill kit is located along the southern edge of the AST and 55-gallon drum containment areas. ***Tanks 4-9:*** Tanks 4-9 were located in various areas inside the vehicle maintenance garage. No means of secondary containment was present. A spill kit / spill socks shall be placed inside the vehicle maintenance garage to provide a means to quickly contain any releases in the warehouse area. ***Tank 10:*** Tank 10 was located outside, along the west end of the vehicle maintenance garage inside a steel (wall and floor) secondary containment area with dimensions of 12' x 4.5' x 5' for an approximate containment volume of 2,020 gallons. The containment area is more than adequate to contain at least 100% of the capacity of each drum plus sufficient freeboard for precipitation. ***55-gallon drums (Tank 11*):*** The 55-gallon drums are located within a concrete (walls and floor) secondary containment area with dimensions of 14' x 16.3' x 1' for an approximate containment volume of 1,700 gallons. The containment area is more than adequate to contain at least 100% of the capacity of each drum plus sufficient freeboard for precipitation.

Is secondary containment volume adequate to hold the volume of the largest tank plus sufficient freeboard for precipitation?

YES	X*	NO		N/A	

*Tanks 1-3, 10, and 55-gallon drums, yes. Tanks 4-9 currently have no secondary containment. See above.

Is secondary containment area free of vegetation, debris, and stormwater?

YES	X	NO		N/A	

112.7(a)(3)(iv) Countermeasures for discharge discovery, response, and cleanup:

(See Attachment #4)

112.7(a)(3)(v) Methods of disposal of recovered materials:

(See Attachment #4)

112.7(a)(3)(vi) Contact list and phone numbers of facility response coordinator, regulatory reporting agencies, and discharge response contractors:

Contact (Please use Discharge Report form to document contacts)	Phone number
Facility Response Coordinator: Transit Mix Concrete Co Andre Laroche, Permit Specialist	719-491-0288 Cell 24/7
Local Emergency Response:	911
State Oil Regulatory Agency: CO Div. Oil & Pub. Safety CO Dept. of Health & Env	(303) 318-8547 (877) 518-5608
EPA Regional Office: Region 8	(800) 227-8917
* **Discharge Response Contractor(s):** ~~Resource Geoscience, Inc.~~	~~(719) 635-0229~~

112.7(a)(4) Discharge reporting procedures:

(See Attachment #3)

* Belfor Environmental, Inc.
5735 Observation Court
Colorado Springs, CO 80903
719-598-1222
800-930-0011 - 24 HR # cell
719-598-1474 - FAX

112.7(a)(5) Discharge response procedures:

(See Attachment #4)

112.7(b) Potential Discharges - Prediction & Control:

Source	See Facility Storage Table
Direction of Flow	East
Rate (gals/hr)	17,470 gallons/hour (Assuming 12 55-gallon drums present at site. 16,810 gallons without drums.) (estimated worst case is total volume in less than 1 hour)
Quantity (gals)	17,470 gallons (Assuming 12 55-gallon drums present at site. 16,810 gallons without drums.) (estimated worst case is total volume of each tank)
Major Type of Failure	Rupture or overfill

* Custom Environmental
4630 Forge Road Unit A # 719-598-1557
Colorado Springs, CO 80907 800-310-7445 24 HR.
719-598-2687 FAX

Has facility experienced a reportable oil discharge event? (Complete Attachment #1 - Discharge History)

YES		NO	X	N/A	

§112.7(c) Are containment berm(s) and floor(s) constructed of material sufficiently impervious to contain oil?

YES	X	NO		N/A	

§112.7(d) Is containment or diversionary structures or equipment to prevent oil from reaching navigable waters practicable?

YES	X*	NO		N/A	

*With the above-mentioned spill kit placement inside the vehicle maintenance garage.

112.7(e) Inspections, Tests per 112.8(c), and Records

Does the operator have written inspection procedures?

YES	X	NO		N/A	

Are the written procedures and a record of inspections, signed by the appropriate supervisor or inspector, attached? (Include as Attachment #2 or use Example Inspection Form included in Attachment #2)

YES	X	NO		N/A	

General discussion regarding inspection procedures for oil-handling employees:
Site inspections are made monthly and records are kept at the main Transit Mix Concrete Company office in Colorado Springs. The operator shall keep copies of all system inspections at the site as noted within the SPCC plan. An example of an inspection form is included in Attachment #2. All inspection records are to be kept for a minimum of three (3) years. Inspections are also completed by the Colorado Division of Oil and Public Safety.

§112.7(f) Personnel training and discharge prevention procedures:

Are oil-handling personnel properly instructed in the following?:

(1) operation and maintenance of equipment to prevent oil discharges:

YES	X	NO		N/A	

(2) **applicable pollution control laws, rules, and regulations:**

YES	X	NO		N/A	

Describe procedures employed for instruction:
Operating personnel are required to review the SPCC Plan yearly. New personnel are required to review the SPCC Plan prior to operation of the system. All personnel meet yearly to review the system operation. Personnel also review the usage of State of Colorado Regulations for underground and aboveground fuel storage systems.

Designated person accountable for oil spill prevention at facility:

Name and title:	~~Rick Mowers, Production Manager~~, Castle Concrete Company

Chris Usry

Operations Manager

Are scheduled prevention briefings for the oil-handling personnel conducted frequently enough to assure adequate understanding of the SPCC Plan? (minimum = annually)

YES	X	NO		N/A	

Describe briefing program:
All oil-handling employees will be made aware of the SPCC Plan at the time of implementation. The Plan will be reviewed and spill prevention and response procedures will be covered. Any changes to the system will also be reviewed. All new oil-handling employees will be required to review the SPCC plan. The plan will be reviewed at annual meetings.

Does the owner maintain the following records (based on interviews with owner)?

Record	YES	NO	N/A
Installation permits [1]	The operator shall locate the tank-related records and maintain them at the facility.		
Registration Records [2]			
Records of Repair [3]			
Monthly Visual Inspection [4]			
Underground Piping Documents [5]			
Tank History Documents [6]			
Tank Ullage Documents [7]			
Free Product Removal Records [8]			
Changes in Status Records [9]			

Notes:
1) Installation permits for newly installed tanks, reinstalled used tanks or permits for upgrading existing tanks must be maintained for 5 years.
2) Tank registration records or record of facility ID number must be retained until closure.
3) Records of repairs that have been performed within the last 5 years.
4) Monthly visual inspection records of the AST system must be kept for 1 year.
5) Most recent underground piping precision test records must be maintained.
6) Records showing the history of each AST in terms of which Class and type of product has been stored in that tank shall be maintained for at least 1 year.
7) Records to document that tank ullage was properly checked prior to filling tanks must be maintained for at least 6 months.
8) Free product removal records must be maintained to document proper operation following any release of product within the last 5 years.
9) Records showing the changes in status of tanks that have been taken out of service or temporarily closed at times then returned to service should be maintained for at least 2 years. Records need not be kept for tanks that have been permanently closed.

§112.7(g) Security

Is the area handling, processing, or storing oil fenced?:

YES		NO	X	N/A	

Fencing must be erected around bulk storage containers, piping and loading rack areas.

Are entrance gates locked and/or guarded when the plant is unattended or not in production?:

YES	X	NO		N/A	

Are valves which permit direct outward flow of a tank's contents locked closed when in non-operating or standby status?:

YES		NO		N/A	X

Are starter controls on all oil pumps in non-operating or standby status:

(a) locked in the off position?:

YES		NO	X	N/A	

The main oil pump starter control switch is located inside the vehicle maintenance garage which is locked and alarmed during non-operating hours. However, locks are necessary on the loading / unloading rack oil pump starter controls.

(b) located at site accessible only to authorized personnel?:

YES	X	NO		N/A	

Discussion of security information, as appropriate:

Description of lighting around the facility:
One pole-mounted light is present at the fuel loading / unloading rack of the 10,000 gallon off-road diesel AST.

§112.7(i) Have field-constructed ASTs been evaluated for risk of discharge or failure due to brittle fracture or other catastrophe, and have appropriate actions been taken?

YES		NO		N/A	X

§§112.7(j), 112.8(b), 112.8(c)(3) Facility Drainage:

Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc.) (Note: Flapper-type valves should not be used):

Pump. Manually operated as needed.

Drainage from undiked storage areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to facility, including discussion of any lift stations):

N/A

The procedure for supervising the drainage of liquid from secondary containment into a storm drain or an open watercourse is as follows: (Complete Attachment #3 - Discharge Reports and Attachment #4 - Discharge Response Procedures)

A)	Liquid in secondary containment area will be visually observed for sheen and odor.
B)	If liquid is not contaminated with petroleum, liquid will be pumped out by a manually operated pump which will be placed by hand. If liquid is contaminated with petroleum, oil disposal contractor will be contacted for liquid disposal.

Are plant effluents discharged into navigable waters observed frequently for indications of possible upsets which may cause an oil discharge event?

YES		NO		N/A	X

§112.8(c) Bulk Storage Containers

Describe tank design, materials of construction, fail-safe engineering features, and if needed, corrosion protection:
All tanks are of steel construction.

Are tanks compatible with material stored?

YES	X	NO		N/A	

Do buried or partially buried tanks have corrosion protection?

YES		NO		N/A	X

Do any tanks at site have internal heating coils?

YES		NO	X	N/A	

§112.8(c)(8) Has each container installation been updated in accordance with good engineering practice to avoid discharge?

YES		NO		N/A	X

Describe device(s) used to avoid discharge:
N/A

§112.8(d) Facility transfer operations, pumping, and facility process:

Corrosion protection for buried pipelines:

(a) **Are pipelines wrapped and coated to reduce corrosion?:**

YES		NO		N/A	X

(b) **Is cathodic protection provided for pipelines if determined necessary by electrolytic testing?:**

YES		NO		N/A	X

(c) **When a pipeline section is exposed, it is examined and corrective action taken as necessary?:**

YES		NO		N/A	X

Are pipelines drained and terminal connections capped or blank-flanged and marked if the pipeline is not in service or on standby service for extended periods?:

YES	X	NO		N/A	

Describe criteria for determining when to drain and cap or blank-flange pipelines:
Pipelines are drained, then capped or blank-flanged when not in use for extended periods.

Are pipe supports designed to minimize abrasion and corrosion and allow for expansion and contraction?:

YES	X	NO		N/A	

Describe pipe support design:
Pipes are set on steel cradles or braced with steel supports. Due to their relatively short length, the pipes are not anticipated to be greatly influenced by expansion and contraction. The pipe supports will be visually inspected periodically for abrasion and corrosion.

§112.7(j) Description of conformance with any applicable more stringent State rules, regulations or guidelines:

Minimum AST requirements (Fail-Safe Engineered) (OBTAINED FROM OPS INSPECTION, NOT CONFIRMED):

Record	YES	NO	N/A
Static Protection [3-4-5]	OPS Inspection not available at the time of site visit.		
Spill Control [3-4-2]			
Overfill Prevention Control [3-4-2]			
SPCC Plan [3-6-3]			
Emergency Relief Venting (U.L. 142 or Equivalent) [3-3-2]			
Normal Venting [3-3-10]			
Adequate Ventilation [3-3-10]			
Diking [3-4-2]			
Corrosion Protection [3-5-1]			
External Visual Inspection [3-5-1]			
Internal Visual Inspection [3-5-1]			
Other Leakage Test [3-5-1]			
Any Recognized Hazard [3-4-1]			

§40 CFR 112 APPENDIX C - CERTIFICATION OF SUBSTANTIAL HARM DETERMINATION FORM

FACILITY NAME:	Pikeview Quarry

FACILITY ADDRESS:	7250 Allegheny Drive, Colorado Springs, Colorado

1. **Does the non-transportation-related facility have a total oil storage capacity greater than or equal to 42,000 gallons and do the operations include over water transfers of oil to or from vessels?**

YES		NO	X

2. **Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility without secondary containment for each aboveground storage area sufficiently large to contain the capacity of the largest aboveground storage tank within the storage area?**

YES		NO	X

3. **Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance which could shut down a public drinking water intake?**

YES		NO	X

4. **Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance which could adversely impact an environmentally sensitive area as defined in 40 CFR 112, Appendix D?**

YES		NO	X

5. **Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallon and within the past 5 years, has the facility experienced a reportable spill greater than or equal to 10,000 gallons?**

YES		NO	X

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Name and title:	B.J. Fuller, Permit and Reclamation Specialist, Castle Concrete Company
Signature:	BJ Fuller
Date:	12-30-03

ATTACHMENT #1
DISCHARGE HISTORY

(Complete this form for any reportable discharge(s) that has (have) occurred from this facility into any navigable water).

Date:	Volume:	Cause:	Corrective action taken:	Plans for preventing recurrence:

Date:	Volume:	Cause:	Corrective action taken:	Plans for preventing recurrence:

Date:	Volume:	Cause:	Corrective action taken:	Plans for preventing recurrence:

Date:	Volume:	Cause:	Corrective action taken:	Plans for preventing recurrence:

Date:	Volume:	Cause:	Corrective action taken:	Plans for preventing recurrence:

ATTACHMENT #2
EXAMPLE INSPECTION FORM

Inspection Procedure: **(Following is a partial list only. Not all of the following items may apply to your particular system. Inspections should be performed to ensure compliance with State and Federal regulations as well as operation of the particular system).**

1. **Shell thickness testing (every 5 - 10 years).**
2. **Pipe supports, pipes, valves and pumps (regular visual inspections)**
3. **Storage tank flow valves, supports, foundations (regular visual inspections)**
4. **Storage tank level gauges (regular mechanical function testing)**
5. **Containment dikes and berm integrity (regular visual inspections)**
6. **Line tests required every three (3) years**

DATE	NOTES	INSPECTOR

NOTE: CORRECT ALL OIL LEAKS PROMPTLY

ATTACHMENT #3
DISCHARGE REPORTS

Spill #: _____

I. Date: _____
Time: _____
Discharge location information and conditions: _____
Address/Location: _____
Facility phone number: _____

II. Brief description of the discharge:
Liquid Type: _____
Discharge Volume (1): _____
Source: _____
Cause: _____
Damage/Injuries: _____

III. Action taken to stop, remove, and mitigate effects of discharge:

_____

_____

Evacuation needed? Yes_____ No_____

IV. Names of personnel involved with the discharge:

_____

_____

_____

V. Discharge follow-up (repairs, maintenance, inspections):

_____

_____

_____

_____

Notifications:

Called	Yes/No	Who Talked To	Time
Facility Response Coordinator	_____	_____	_____
HazMat Team	_____	_____	_____
Site Manager	_____	_____	_____
Fire Department	_____	_____	_____
National Response Center 1-800-424-8802	_____	_____	_____
Division of Oil and Public Safety 303-318-8547 or (24 hour) 1-877-518-5608	_____	_____	_____

Facility Response Coordinator: _____

Note: (1) Whenever bulk facility has discharged 1.) More than 1,000 gallons of oil in single discharge or 2.) More than 42 gallons into navigable waters in each of two discharges within a twelve month period, a report must be made to the EPA and the Colorado Division of Oil and Public Safety.

Copies sent to: _____

_____

ATTACHMENT #4
DISCHARGE RESPONSE PROCEDURES

Employees shall take every precaution to protect the public, themselves, and the environment from contamination. All oil-handling personnel shall be trained in oil discharge precautions/cleanup procedures and shall be provided a refresher course.

Discharge Response Steps

In the event of an emergency situation (fire, explosion and/or discharge), the Facility Response Coordinator will be notified. The Facility Response Coordinator, if needed, will notify the local fire and police departments.

1. Identify - This SPCC Plan considers a release of oil products. Refer to the MSDS for further specific precautions.

   Remember safety first! If evacuation is needed - skip directly to Step 5.

   Wear appropriate protective equipment before getting any closer to the release. Don't take chances!

2. Shut Off The Source - Immediately shut off the source of the discharge (plug the leak, close the valve, upright the container...) Act quickly to minimize the discharge.

3. Eliminate Flame - Extinguish any source of spark or flame in the area. Remember that flammables like gasoline and solvents can be very volatile. If feasible, electrical panels controlling the affected area will be shut off to eliminate possible sources of ignition. Consider shutdown of gas lines to the affected area. If office areas are affected, all doors in the facility will be closed to prevent drafts. Remove all surrounding material that could be especially reactive with the materials in the discharge.

4. Notify - Get help. Report the discharge as soon as possible to the Facility Response Coordinator. Immediately calling for help is the best thing to do in most situations.

5. Evacuate - As needed, evacuate non-essential persons from the area. Control the perimeter of the discharge area and, if needed, establish a hot zone for necessary response personnel only. For small discharges or leaks, isolate at least 50 ft. in all directions. For large discharges, initially isolate at least 100 ft. in all directions and keep all persons upwind of discharge.

6. Protect Drains - Protect floor and storm drains from contamination by the discharged product. Protecting a drain could be the most valuable activity you perform during discharge response.

7. Contain and Absorb - Keep the discharge from spreading by damming or blocking the flow of the discharged product, and prevent the discharge from reaching the storm sewer inlets or sumps. Spill socks, soil, floor dry and/or other products can be used for this purpose. If the contained product is reusable, it can be recovered at this point. Put on protective clothing and equipment, as applicable. If a flammable waste is involved, remove all ignition sources, and use spark and explosion proof equipment and clothing. Absorbents can be laid on the product for absorption (small volumes) or the product may be vacuumed up by a waste recovery company.

If the discharge is of a magnitude where it cannot be contained by the existing manpower, materials, and equipment on site, the local Fire Department (911) will be notified and requested to respond to the scene with their Hazardous Materials Unit. It is extremely important to provide the Fire Communication Center with sufficient details of the discharge location, approximate amount of contaminant discharged, and whether fire is involved. The Hazardous Materials Unit will not be responsible for the recovery or disposal of the materials.

8. Clean Up and Decontaminate - Once all the discharged substance has been contained and absorbed, the clean-up process begins. An area will be designated for decontamination of emergency equipment. As needed, a neutralizer solution can be spread over the surface until the hazardous residue has been eliminated. Air packs and other reusable items can be decontaminated and restored by using a washing solution.

9. Dispose - After decontamination, all disposable materials must be packaged and labeled in accordance with disposal procedures. These materials include spent absorbents, rags, tools, clothing, and other disposables. Wastes which may be incompatible with the released material will be stored separately during and after cleanup operations. All discharge residues shall be removed and deposited in a landfill approved for such wastes or handled in accordance with acceptable removal methods. Affected areas shall be reconditioned with clean material.

10. Restore Surrounding - Be sure that all safety and clean-up equipment is replaced and is ready for future use.

11. Repair and Test - The equipment that failed must be disposed of or repaired and tested prior to being returned to operation.

Note: The Facility Response Coordinator will act as the Emergency Coordinator. After the "all clear" signal is given by the Facility Response Coordinator, normal work duties can resume in the work area.

A discharge report will be compiled by the Facility Response Coordinator.

ATTACHMENT #5
TANK LOADING/UNLOADING

In order to minimize the potential for a discharge during truck unloading and loading, the following measures are in place (includes minimum DOT regulations that shall be followed during loading/unloading of fuel):

1. The supply truck driver shall obey all warning signs posted at the facility.

2. Keep fire away while loading/unloading. Persons in the vicinity are forbidden to smoke, light matches, or carry any flame or lighted cigar, pipe, or cigarette. 49 CFR 177.834(d)

3. Fuel shall not be loaded/unloaded from any motor vehicle while the engine is running. The exception is when the engine of the vehicle is to be used in the operation of the pump. 49CFR 177.837(a).

4. The supply truck driver will be escorted to the tank by personnel of the operator only.

5. The tank records shall be reviewed to determine the theoretical tank level. 40 CFR 280.3(a).

6. The tank level gauge will be inspected to determine the actual tank level. (Note: Any discrepancies will be resolved prior to hooking up to the tank).

7. The supply truck driver and a trained site representative shall observe the transfer during the entire operation.

8. Enough containment boom to surround the truck and its transfer lines to limit outward flow shall be available in the immediate area for those areas outside the containment area (including airplane refueling operations).

9. Once the truck is in position, its emergency brake will be applied and a block placed behind a downhill tire as a form of interlocked physical barrier system. 49 CFR 177.834(e).

10. Signs must be posted that remind drivers NOT to pull away before detaching hoses. 40 CFR 112.7(h)(3).

11. Containers and cargo tanks shall be grounded prior to and during transfer. 49 CFR 177.837(b) & (c).

12. All outlets to the vehicle and tank and the transfer line shall be checked for leakage. Any problems shall be fixed prior to hooking up any lines.

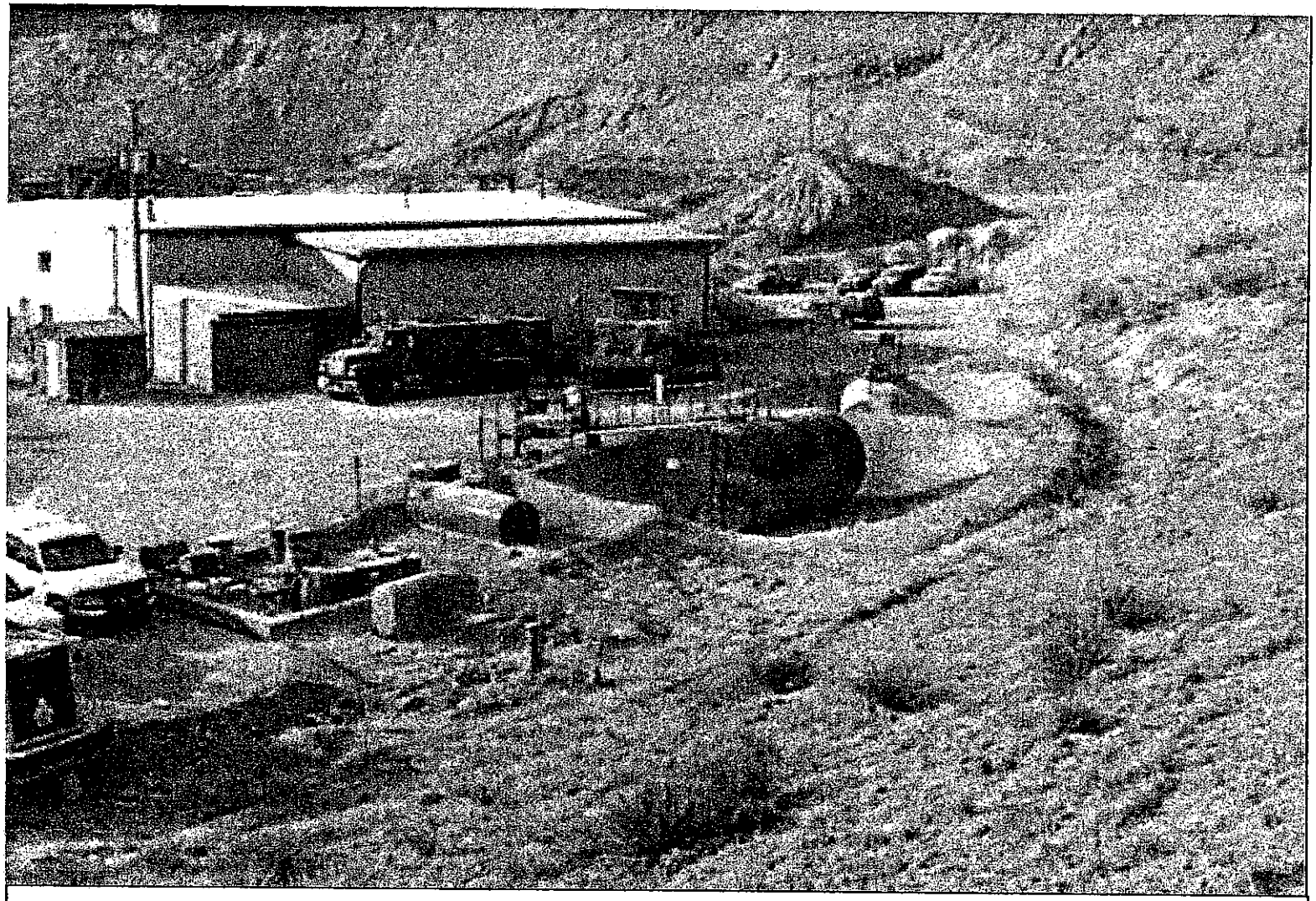
13. Place a drip pan at the outlet of the fuel truck.

14. Assure the transfer line is properly engaged at each end before opening any valves.

15. Check for leaks after starting transfer.

16. Assure all valving is properly shut-off prior to disengaging the transfer line. Assure that transfer lines are properly disengaged and that there are no leaks from the valves and piping of both the tank and truck before allowing the truck to leave the site.

17. In the event of a discharge, immediately shut down the transfer system and contact Facility Response Coordinator.



View of AST containment areas, fuel loading racks, and vehicle maintenance garage, viewed from the north.

APPENDIX A
SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN REVIEW AND EVALUATION

112.5(b) Notwithstanding compliance with paragraph (a) of this section, complete a review and evaluation of the SPCC Plan at least once every five years from the date your facility becomes subject to this part; or, if your facility was in operation on or before August 16, 2002, five years from the date your last review was required under this part. As a result of this review and evaluation, you must amend your SPCC Plan within six months of the review to include more effective prevention and control technology if the technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge as described in § 112.1(b) from the facility. You must implement any amendment as soon as possible, but not later than six months following preparation of any amendment. You must document your completion of the review and evaluation, and must sign a statement as to whether you will amend the Plan, either at the beginning or end of the Plan or in a log or an appendix to the Plan. The following words will suffice, "I have completed review and evaluation of the SPCC Plan for (name of facility) on (date), and will (will not) amend the Plan as a result."

In accordance with 40 CFR 112.5(b), a review and evaluation of this SPCC Plan is required to be conducted at least once every five (5) years. As a result of this review and evaluation, the Owner will amend the SPCC Plan within six months of the review to include more effective prevention and control technology if: (1) such technology will significantly reduce the likelihood of a spill event from the facility; and (2) if such technology has been field-proven at the time of review. Any technical amendment to the SPCC Plan will be certified by a Professional Engineer within six months after a change in the facility design, construction, operation, or maintenance occurs which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines.

Engineer's Statement:

I have completed review and evaluation of the SPCC Plan for the Pikeview Quarry on July 27, 2009, and will amend the Plan as a result.

Review Dates	Signature
1 7-27-2009	John L Jankousky

See attached changes.

SPCC PLAN CHANGES

A1. REGULATORY CROSS-REFERENCE

A regulatory cross-reference has been added. Where the information is included in this Appendix A, the Section Number is given as AX, where X is the section in Appendix A. Att. Y stands for Attachment Y, where Y will be from 1 to 5 for Attachments 1 through 5 in the original SPCC Plan.

REGULATORY CROSS-REFERENCE

SITE: Pikeview Quarry

Regulatory Citation	Description of Regulatory Requirement	Section Number
§112.3 (d)(3)	Professional Engineer Certification	Cert. Page
§112.5 (a),(c)	Plan Amendments and Certification	Cover, Cert. Page
§112.5(b)	Plan Review	Cover, App. A
§112.6	Qualified Facility – Self-Certification of Plan	Not Applicable
§112.7	General Requirements - Management Approval	Cert. Page
§112.7	General Requirements - Sequence or Cross-Reference	A1
§112.7	General Requirements - Discussion of Facilities Not Yet Fully Operational	Letter, A2
§112.7(a)(2)	Deviation from Requirements: Reasons, Methods, and Equivalent Protection	A3
§112.7(a)(3)	Physical Layout and Facility Diagram	p. 5, Fig. 1, A4
§112.7(a)(3)(i)	Container Capacity and Type of Oil	p. 6, A5
§112.7(a)(3)(ii)	Discharge Prevention Measures	p. 6, A6
§112.7(a)(3)(iii)	Discharge or Drainage Controls	p. 8, Att. 4
§112.7(a)(3)(iv)	Countermeasures: Discover, Response, and Cleanup	p. 8, Att. 4
§112.7(a)(3)(v)	Disposal: Legal Requirements	p. 8, Att. 4
§112.7(a)(3)(vi)	Notification Phone Lists	p. 9, A7
§112.7(a)(4)	Discharge Notification Form	Att. 3
§112.7(a)(5)	Discharge Procedures Organized	Att. 4
§112.7(b)	Fault Analysis	p. 9
§112.7(c)	Adequate Secondary Containment	p. 10, A6
§112.7(d)(1)	Contingency Planning	Not required
§112.7(d)(2)	Commitment of Resources	Not required
§112.7(e)	Inspections, Tests, and Records - Written Procedures	p. 12
§112.7(e)	Inspections, Tests, and Records - Records of Inspections & Tests; Signatures	p. 12
§112.7(e)	Inspections, Tests, and Records - Records Maintenance	p. 12
§112.7(f)(1)	Personnel Training	p. 10-11
§112.7(f)(2)	Designated Person Accountable for Spill Prevention	p. 11, A7
§112.7(f)(3)	Spill Prevention Briefings	p. 11
§112.7(g)(1)	Security	p. 12, A8
§112.7(g)(2)	Flow and Drain Valves Secured	p. 12
§112.7(g)(3)	Pump Controls Locked Off; Facility Access Secured	p. 13
§112.7(g)(4)	Loading/Unloading Connections Sealed	A8
§112.7(g)(5)	Lighting Appropriate for Facility	p. 13
§112.7(h)	Tank Truck Loading/Unloading Area	Not Applicable, A6
§112.7(i)	Brittle Fracture Evaluation	p. 13
§112.7(j)	Conformance with State Requirements	p. 16, A9
§112.8(b)	Non-production facility drainage	p. 13-14
§112.8(c)	Non-production facility bulk storage containers	p. 14, A10
§112.8(d)	Non-production facility transfer operations, pumping and facility process	p. 15, A11
§112.9(b)	Oil production facility drainage	Not Applicable
§112.9(c)	Oil production facility bulk storage containers	Not Applicable
§112.9(d)	Facility transfer operations, oil production facility	Not Applicable
§112.10(b)	Mobile facilities	Not Applicable
§112.10(c)	Secondary containment - catchment basins or diversion structures	Not Applicable
§112.10(d)	Blowout prevention (BOP)	Not Applicable
§112.11	Plan Requirements for offshore oil drilling, production, or workover Facilities	Not Applicable
§112.12	SPCC plan requirements (animal fats or vegetable oil)	Not Applicable
§112.20	Facility Response Plans / Certification of Applicability of Substantial Harm Criteria	p. 17

A2. §112.7 - General Requirements - Discussion of Facilities Not Yet Fully Operational

The cover letter to the 2003 Plan listed several items that needed to be implemented. These included requirements under 112.7(h) for tank truck loading/unloading racks. The Pikeview Quarry does not have loading/unloading racks and is not subject to this provision. The cover letter also stated that "Fencing must be erected around bulk storage containers, piping and loading areas." However, this is not correct, because the entire facility is fenced with a locked gate. The remainder of the requirements listed in the letter has been implemented.

A3 §112.7(a)(2) - Deviation from Requirements: Reasons, Methods, and Equivalent Protection

There are no deviations from requirements.

A4 §112.7(a)(3) - Physical Layout and Facility Diagram

The facility diagram has been changed to show the entire Site boundary and to reflect changes on the Site. See the attached figures.

A5 §112.7(a)(3)(i) - Container Capacity and Type of Oil

The list of containers on page 6 of the 2003 Plan is replaced with the following list:

Drums/ Containers	Vol-ume	Contents	Location	Type of Failure	Rate (gal/hr)	Direction of flow	Contain-ment (gallons)	Type
1 ASTs @ 10,500 gallons	10,500 gal.	Diesel	Fuel storage (by garage)	AST rupture or leak	10,500	South	> 10,500	Concrete Containment, then Detention
1 AST @ 1,050 gallons	1,050 gal.	Gasoline	Fuel storage (by garage)	AST rupture or leak	1,050	South	> 500	Concrete Containment, then Detention
AST with Space Heater	500 gal.	Used Oil	Truck Maint. Garage	AST rupture or leak	500	South	> 500	Garage, then Detention
Waste Oil AST	600 gal.	Used Oil	Shed/ containm ent at garage	AST rupture or leak	600	South	> 600	Shed/ containment, then Detention
Oil AST	500 gal.	Oil	Truck Maint. Garage	AST rupture or leak	500	South	> 500	Garage, then Detention
Oil AST	300 gal.	Oil	Truck Maint. Garage	AST rupture or leak	300	South	> 300	Garage, then Detention
Oil & Hyd. Fluid ASTs	(3) x 160 gal.	Oil and Hydraulic Fluid	Truck Maint. Garage	AST rupture or leak	160	South	> 160	Garage, then Detention

Drums/ Containers	Vol-ume	Contents	Location	Type of Failure	Rate (gal/hr)	Direction of flow	Contain-ment (gallons)	Type
Drums – in cont. (20 to 30)	55 gal. each	Oil, Hyd. Fluid, other	Contain ment by Garage	Drum rupture or leak	55	South	> 55	Concrete Containment, then Detention
Drums – in garage (4 to 10)	55 gal. each	Oil, Hyd. Fluid, other	Truck Maint. Garage	Drum rupture or leak	55	South	> 55	Garage, then Detention

The number of 55-gallon drums on site will vary, but the total number of drums is expected to be less than 40.

A6 §112.7(a)(3)(ii) - Discharge Prevention Measures

Page 5 of the Plan includes requirements under 112.7(h) for tank truck loading/unloading racks. The Pikeview Quarry does not have loading/unloading racks and is not subject to this provision. The truck loading *area* drains south through a parking lot toward Detention Basin #3 (see Figure 2). The truck driver and a qualified site representative must attend fuel delivery operations at all times. A spill prevention kit is available at the AST loading location. If a spill occurs at the fuel loading area, the site representative will initiate active containment measures immediately, including deploying booms or other measures and calling 911 if it appears likely that these measures may not be adequate to prevent the discharge from reaching Detention Basin #3. After flowing to Detention Basin #3, a spill would have to flow to Detention Basin #4 prior to exiting the Site at Outfall 1. There would be opportunities to intercept the spill and prevent an off-site discharge to waters of the State.

Some containment structures have been modified since the 2003 Plan was implemented. The 10,500-gallon diesel AST and the 1,050-gallon gasoline AST are located in a concrete containment with walls and roof that measures 42'2" x 13'9" x 48" deep. This containment provides adequate capacity for the largest AST (no precipitation can enter the containment). The 600-gallon waste oil tank is located in a shed/concrete containment with walls and roof that measures approximately 5' x 14' x 5' deep. This containment provides adequate capacity for the AST (no precipitation can enter the containment).

A spill kit is provided adjacent to the fueling area north of the truck maintenance garage. This spill kit is available for spills in the truck maintenance garage. The grading around the truck maintenance garage provides some ponding to prevent the movement of a spill that escapes through a doorway of the truck maintenance garage.

A7 §112.7(a)(3)(vi) - Notification Phone Lists; §112.7(f)(2), Designated Person Accountable for Spill Prevention

The Designated Person Accountable for Spill Prevention has been changed to Chris Usry, the Site Manager, Ofc: (719) 475-0070, Cell: (719) 499-5512.

Table 1 presents the hierarchy of personnel to call in the event of a spill. Attempt to notify the first person in the table. If unable to notify the first person, work down the list.

Table 1. Personnel to Notify in Event of a Spill

Name	Title	Telephone Number(s)
Chris Usry	~~Site Manager~~ Operations Manager	Ofc: (719) 475-0070 Cell: (719) 499-5512
~~Mac Shafer~~ Andre Laroche	~~Vice President Aggregates~~ Permit Specialist	Ofc: (719) 475-0700 ~~Cell: (719) 491-3730~~ Cell: 719-491-0288 cell

A8 §112.7(g)(1) – Security; §112.7(g)(4) – Loading/Unloading Connections Sealed

The cover letter to the 2003 Plan stated that "Fencing must be erected around bulk storage containers, piping and loading areas." However, this is not correct, because the entire facility is fenced with a locked gate.

§112.7(g)(4), Loading/Unloading Connections Sealed is not applicable. If necessary, the Owner will cap or blank-flange the loading/unloading connection of oil pipelines or facility piping when not in service or when in standby service for an extended time.

A9 §112.7(j) - Conformance with State Requirements

Any AST with a capacity of 660 gallons or greater is subject to regulation by the Colorado Department of Labor and Employment, Division of Oil and Public Safety (OPS). These regulations require registration, standards for installation of equipment, and monthly inspections. The site will maintain its registration with OPS and comply with OPS requirements regarding equipment standards and monthly inspections.

A10 §112.8(c)(6) – Integrity Testing of Containers

The Owner will comply with the inspection and integrity testing recommendations provided in *SP001, Standard for the Inspection of Aboveground Storage Tanks*, 4th Edition, issued July 2006 by Steel Tank Institute (or latest edition). Alternate industry standards may also be proposed, followed, and documented.

A11 §112.8(d)(4) and (d)(5) – Facility Transfer Operation, Pumping, and Facility Process

§112.8(d)(4) Inspection of piping

The Owner will regularly inspect all aboveground valves, piping, and appurtenances, assessing the general condition of items such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. The Owner will conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.

§112.8(d)(5) Warn vehicles to be sure that no vehicle will endanger aboveground piping or other oil transfer operations

The only piping that could possibly be damaged by vehicle traffic is the piping to the vehicle fueling location, adjacent to the diesel and gasoline ASTs. This piping is protected by being mounted on top of large concrete barricades and by bollards.

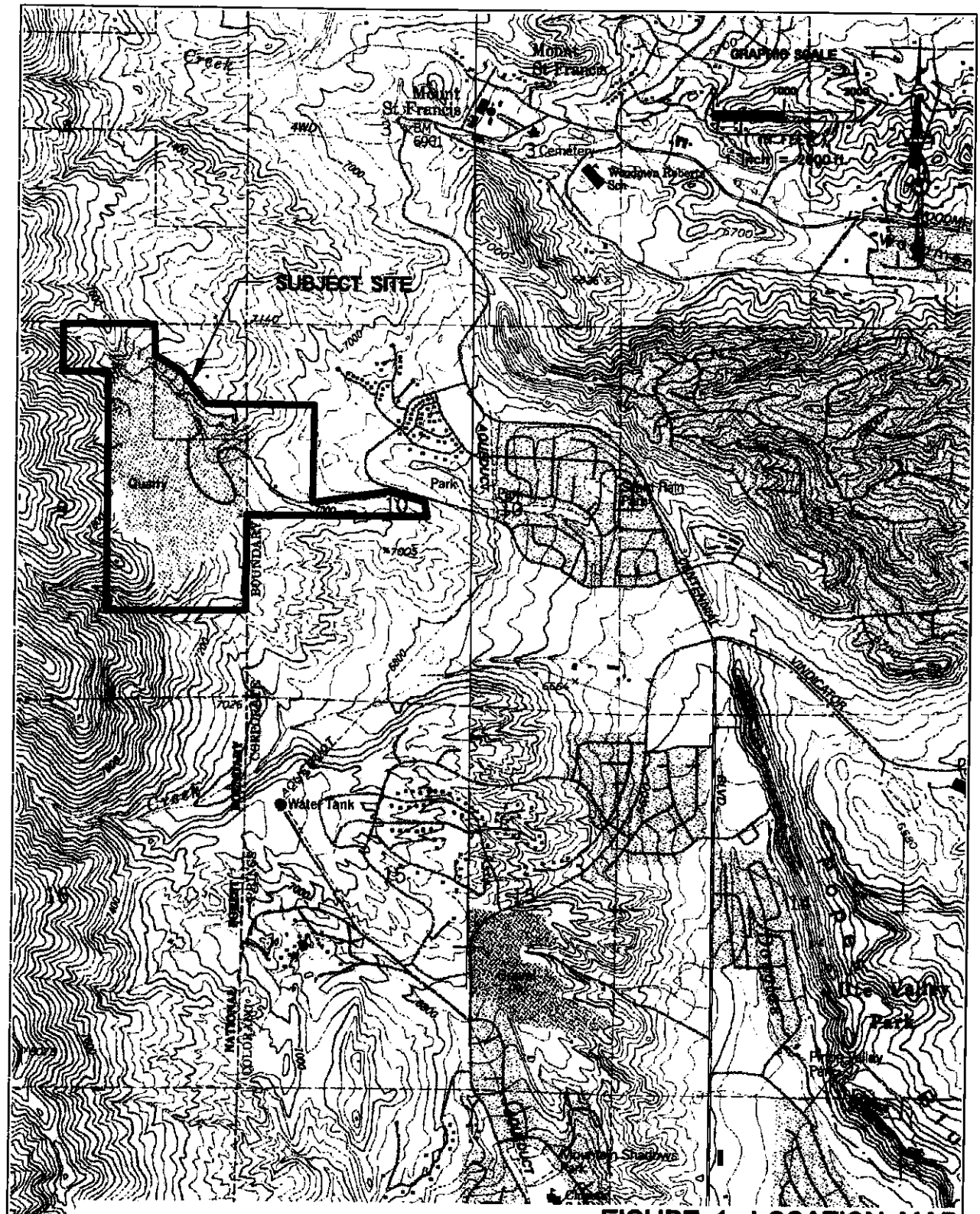


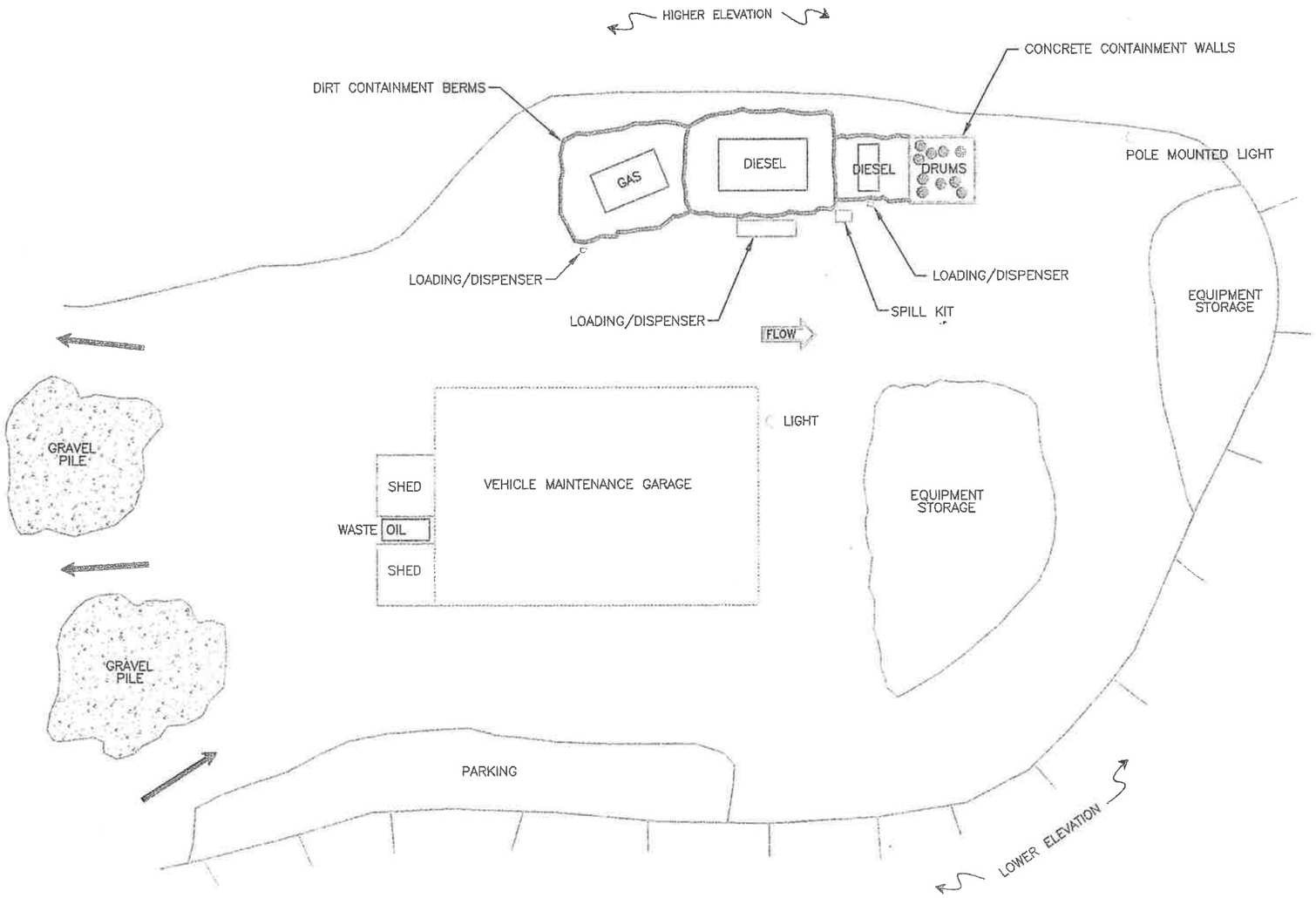
FIGURE 1: LOCATION MAP

PREPARED BY:	PREPARED FOR:	PROJECT:
BANKS AND GESSO,LLC. 720 KIPLING ST., SUITE 117 LAKEWOOD, COLORADO 80215 (303) 274-4277	TRANSIT MIX CONCRETE CO. 444 E COSTILLA STREET COLORADO SPRINGS, CO 80903 (719) 475-0700	PIKEVIEW QUARRY 7250 ALLEGHENY DRIVE COLORADO SPRING, COLORADO

JOB NO	DATE	SCALE	DRAWN BY	DESIGNED BY	APPROVAL	REV	SHEET
08036	7/21/09	1"=2000'	DRF	JJ			

Legend:

FLOW — SURFACE FLOW DIRECTION



NOT TO SCALE

CASTLE CONCRETE COMPANY
PIKEVIEW QUARRY
7250 ALLEGHENY DRIVE
COLORADO SPRINGS, COLORADO

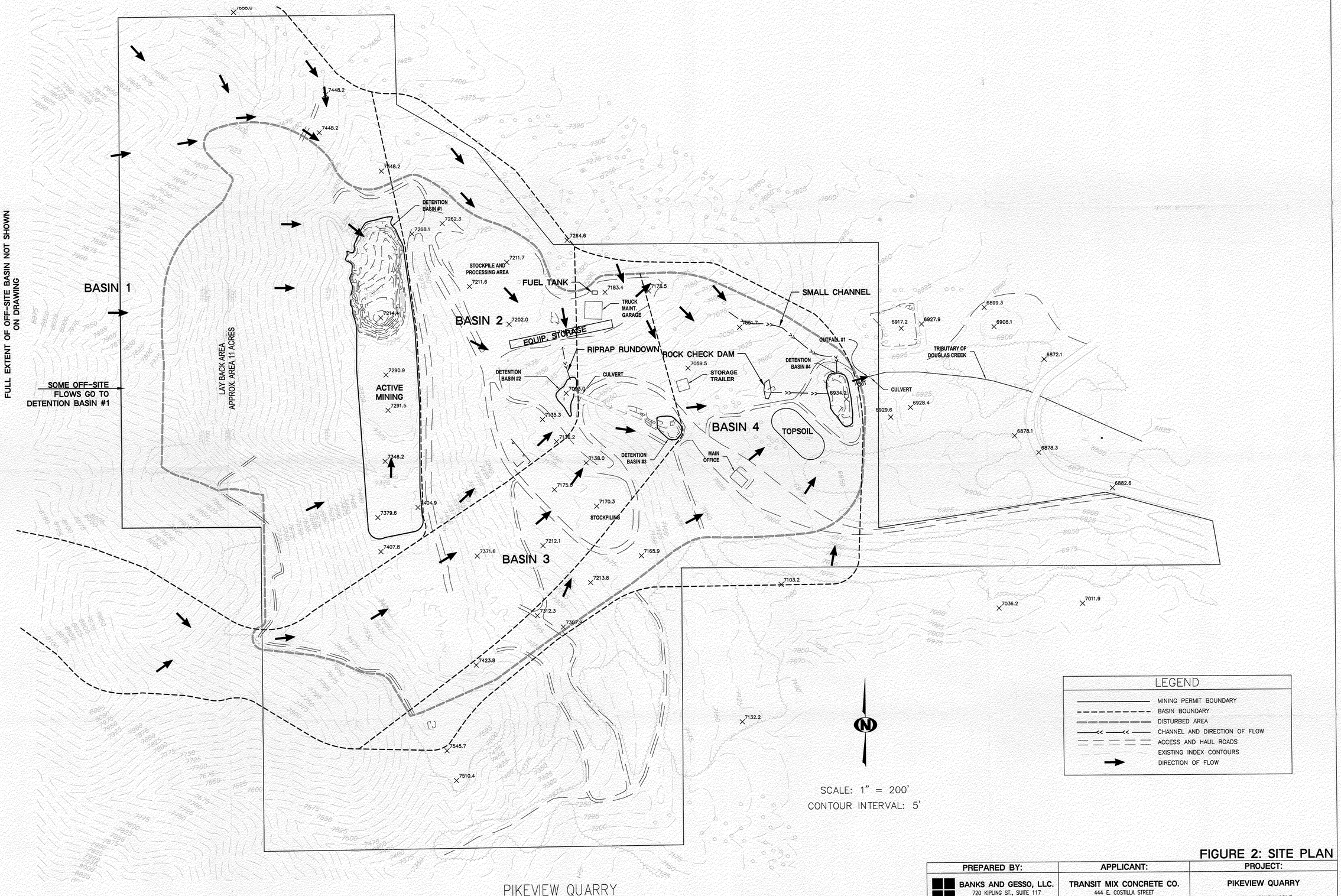
SITE MAP

FIGURE 1

RESOURCE GEOSCIENCE, INC.
19 East Willamette Avenue
Colorado Springs, CO 80903

RGI #05394099

/539/PIKEVIEWQUARRY.dwg



SCALE: 1" = 200'
CONTOUR INTERVAL: 5'

LEGEND

- MINING PERMIT BOUNDARY
- BASIN BOUNDARY
- DISTURBED AREA
- CHANNEL AND DIRECTION OF FLOW
- ACCESS AND HAUL ROADS
- EXISTING INDEX CONTOURS
- DIRECTION OF FLOW

PIKEVIEW QUARRY

FIGURE 2: SITE PLAN

PREPARED BY:	APPLICANT:	PROJECT:
BANKS AND GESSO, LLC. 720 KIPLING ST., SUITE 117 LAKEWOOD, COLORADO 80215 (303) 274-4277	TRANSIT MIX CONCRETE CO. 444 E. COSTILLA STREET COLORADO SPRINGS, CO 80903 (719) 475-0700	PIKEVIEW QUARRY 7250 ALLEGHENY DRIVE COLORADO SPRINGS, COLORADO

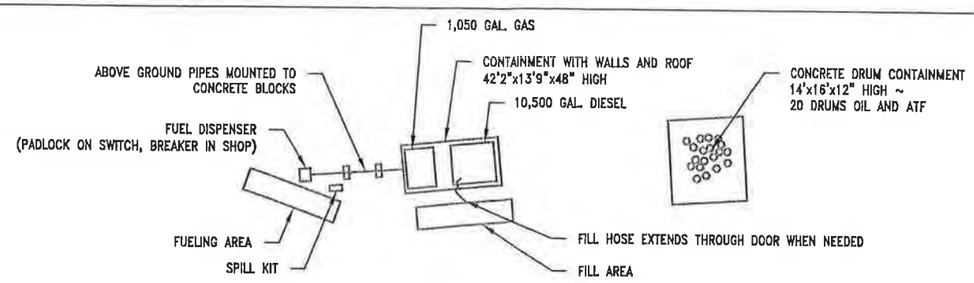
JOB NO	DATE	SCALE	DRAWN BY	DESIGNED BY	APPROVAL	REV	SHEET
08036	7/21/09	1"=200'	DRF	JJ	PB		

LEGEND

BASIN BOUNDARY

FLOW DIRECTION

SITE ENTRANCE IS GATED AND LOCKED

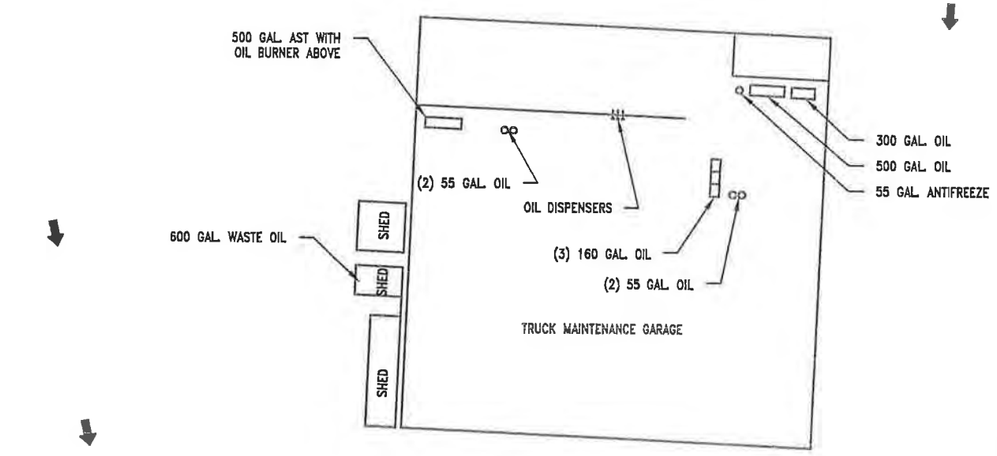


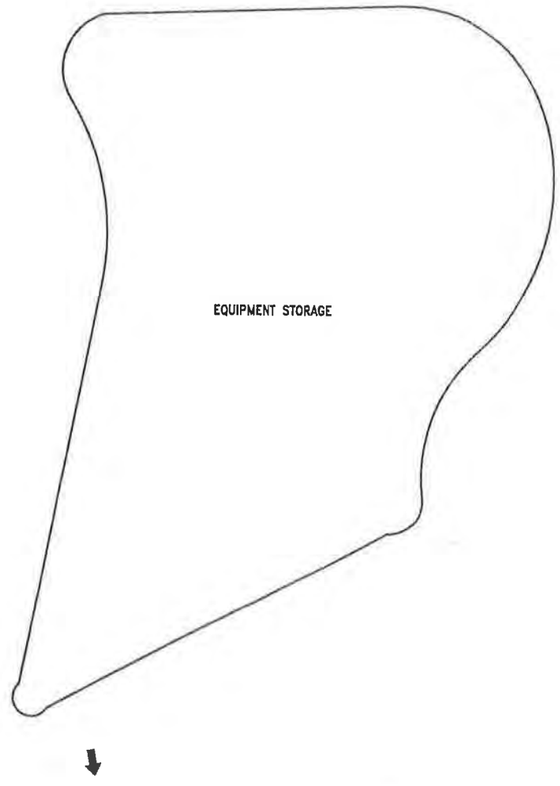
GRAPHIC SCALE

0 5 30

(IN FEET)

1 inch = 30 ft.





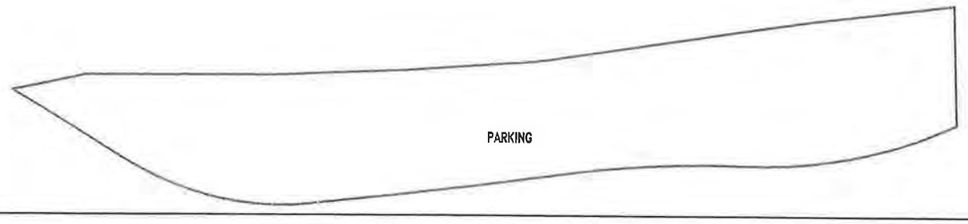


FIGURE 3: TRUCK MAINTENANCE GARAGE DETAIL

PREPARED BY:	APPLICANT:	PROJECT:
BANKS AND GESSO, LLC. 720 KIPLING ST., SUITE 117 LAKEWOOD, COLORADO 80215 (303) 274-4277	TRANSIT MIX CONCRETE CO. 444 E. COSTILLA STREET COLORADO SPRINGS, CO 80903 (719) 475-0700	PIKEVIEW QUARRY 7250 ALLEGHENY DRIVE COLORADO SPRINGS, COLORADO

JOB NO	DATE	SCALE	DRAWN BY	DESIGNED BY	APPROVAL	REV	SHEET
08036	7/21/09	1"=30'	DRF	JJ	PB		

TRANSIT MIX AGGREGATES

On _____, 20___, Transit Mix received inert material from _____ _____

Date *Year* *Street Address*

Colorado Springs, CO. This residence was constructed by _____

Builder's Name

No hazardous materials were used by this builder in the construction of the foundation, curbs or gutters on the property. The inert material contains no significant concentrations of ash, rubble or trash from the site, and has no evidence of hydrocarbon contamination. There may be a small quantity of earthen material associated with the inert material.

_____ _____

Mac Shafer Date

Vice President Aggregates

Transit Mix Aggregates

EXHIBIT 6.5
GEOTECHNICAL EXHIBIT

Proposed Procedures: Pikeview Quarry Reclamation (3/4/13)

Rampart Range Fault Evaluations

Further knowledge of the exact location of the Rampart Range Fault is definitely needed prior to commencing major reclamation work in the Pikes Peak Granite west of the fault. Specifically, the surface trace location is needed as well as the location of any significant splays. This information will be collected on the north end of the quarry for approximately 1100 feet between the edge of the proposed reclamation (near the existing culvert) through the stable portion of the quarry, and for approximately 600 feet on the south end between the existing road, which is south of the proposed regrade limit, and the unstable portion of the quarry. This investigation area covers Phases 1 and 2 and part of Phase 4. Investigation of the fault for Phase 3 and the remaining part of Phase 4 will be performed prior to mining these areas, once the stability improves by constructing a buttress at the toe of the landslide. The location determination may best be done using a D9 dozer to create a road on top of the fault trace. The road needs to be wide enough so that the fault and any splays can be visually identified. In several locations along the excavated roads an east-west trench should be dug so that the fault and any splays can be examined in the vertical direction. These trenches should be about five feet deep and wide enough so that trench stability is not a safety issue for technical persons examining the fault/splays. Once the fault/splay location(s) are identified, the reclamation inflection line (granite @ 45° and landslide rubble/debris/fill @ 14°-15°) may be established along the west side of the quarry. With the establishment of the inflection line, the location of the approximate limit of reclamation in the granite may be determined.

Granite Fracture/Joint Analysis

The upper limit reclamation line would then serve as the location for collection of additional granite fracture and joint data. As with the fault evaluation, a large dozer (and other drill/blast equipment, as needed) should be used to create an upper bench at the reclamation limit in a north-south direction. The bench would be at least 15 feet wide and allow detailed mapping of the fractures/joints to be made in the back slope on the west side. This additional data should include fracture/joint location, orientation (strike and dip), trace length, spacing (of parallel structures), joint roughness coefficient (JRC), waviness (asperity deviation in inches per 5 feet), infilling type/thickness and fractures/joint set intensity.

The collected fracture/joint data should be plotted on equal area Schmidt nets, which allow fracture/joint sets to be identified. These fracture/joint sets may then be stereographically plotted to determine the existence of potential planar and/or wedge mode failures in the overall 45° (1:1) granite slope and the 63.4° (1:2) bench face slope. Undercutting planes/wedges (if they exist) may then have their safety factors against failure calculated. If needed, the overall slope and bench face angles may be modified to get acceptable safety factors. Thus, the

proposed granite slopes (overall and bench face) may be confirmed or modified to get acceptable long term stability. As reclamation in the granite slopes (from top to the inflection line) proceeds, each established bench should have the fractures/joints examined for potential stability problems and modified, as required, to get acceptable long term stability.

Certification Statement

I, Paul Kos, Colorado P.E. 40848 herby certify that the information contained in the March 4, 2013 supplement to Exhibit 6.5 was reviewed by me and that the information is complete and accurate to the best of my knowledge.

SEEGMILLER INTERNATIONAL

MINING GEOTECHNICAL CONSULTANTS / ENGINEERS

143 South 400 East
Salt Lake City, Utah 84111 U.S.A.
Telephone (801) 363-0606 FAX (801) 363-4700
SeegmillerInternational@Yahoo.com

B. L. SEEGMILLER, Ph.D., P.E.

July 19, 2012

Mr. Paul Kos
Project Manager
Norwest Corporation
950 S. Cherry Street
Suite 800
Denver, Colorado 80264

REF: Pikeview Quarry
Stability Analysis
Reclaimed Slopes

Dear Mr. Kos

A detailed follow-up study and stability evaluation for the Pikeview Quarry, El Paso County, Colorado has been completed by our firm and is attached to this cover letter. This work has analyzed the Norwest Sections (XX', YY' and ZZ') through the proposed reclaimed slopes at the Quarry. In addition, an evaluation of granite slopes, including bench and overall slopes, were completed for slopes west of the Rampart Range Fault.

All slope models were evaluated using dry conditions, saturated conditions, dry conditions with earthquake and saturated conditions with earthquake. All model results have safety factors in excess of the 1.20 minimum required safety factor as specified by CDMRS. Under seismic loading conditions all slope models had safety factors in excess of the standard 1.10 minimum required.

The report also makes recommendations concerning safety and stability during reclamation work and in the long term.

Thank you for allowing us to do this work for Norwest. Should you have questions or concerns please call or email me.

Respectively Submitted,

COLORADO REGISTERED
BEN L. SEEGMILLER
14467
7-19-12
PROFESSIONAL ENGINEER

Dr. Ben L. Seegmiller, P.E. # 14467, Colorado
President, Seegmiller International

BLS/eah

SEEGMILLER INTERNATIONAL
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FAX: (801) 363-4700
email: SeegmillerInternational@Yahoo.com

STABILITY ANALYSIS
RECLAIMED SLOPE DESIGN
Pikeview Quarry
El Paso County, Colorado

Prepared for

Norwest Corporation
Denver, Colorado

Approved:
Ben L. Seegmiller, P.E. #14467 Co
President, Seegmiller International

by
Dr. Ben L. Seegmiller
Principal Consultant

July 2012

TABLE OF CONTENTS

PAGE

LIST OF FIGURES v

LIST OF TABLES v

SUMMARY AND CONCLUSIONS vi

INTRODUCTION 1

STABILITY PARAMETERS 2

Reclaimed Quarry Geometry 2

Geologic Discontinuities 2
Previous Studies 2
Surface Site Data 2
Discontinuities Consensus 4

Rock Mass Strength 4
Previous Studies/Procedures 4
Surface Site Data 5
Shear Strength Parameters- Clay and Mine Fill 5
Shear Strength Parameters- Landslide Rubble and Mine Waste Rock 5
Strength Related Properties (Sandstone, Limestone and Granite) 5
Overview 5
Sandstone 7
Limestone 7
Granite 7
Rock Mass Friction (Sandstone, Limestone and Granite) 7
Rock Mass Cohesion (Sandstone, Limestone and Granite) 8
Rock Mass Strength Consensus 8

Groundwater Pressurization 12
Slope Stability Effects 12
Previous Studies 12
Seegmiller Observations 12
Pressurization Consensus 12

Seismicity Considerations 13

STABILITY ANALYSIS 14

Failure Mode Analysis 14
Discontinuity Controlled Failure 14
Rock Mass Shear Failure 14

Limiting Equilibrium Methodology 15
Basic Concepts 15
Stability Criteria 15

Quarry Stability: Reclaimed Slopes (Rock Mass Failure) 15
Overview 15
Analysis Section XX' 16
Analysis Section YY' 16
Analysis Section ZZ' 16
Granite Slopes 16
Analyses Summary 16

Safety/Stability: During Reclamation and Long Term 16
Overview 16
Visual Monitoring 16
Displacement Monitoring 19
Surface Water Diversion 19
Discontinuity Observation 19
Safety Adherence 19

REFERENCES 20

DISCLAIMER 22

APPENDIX I - Field Site Data I-1

APPENDIX II - Computer Analysis Output Examples II-1

LIST OF FIGURES

FIGURE		PAGE
1	Surface Site Data Locations	3
A2	Section YY' Saturated	II-2
A2'	Granite Slope - 200ft High @ 45° with Earthquake	II-3
A2"	Granite Bench - 30ft High @ 63.4° Saturated	II-4

LIST OF TABLES

TABLE		PAGE
I	Surface Site Strength Characteristics	6
II	Rock Mass Friction- Sandstone, Limestone and Granite	9
III	Rock Mass Cohesion- Sandstone, Limestone and Granite	10
IV	Rock Mass Strength Consensus	11
V	Stability Analysis Results: Sections XX', YY' and ZZ'	17
VI	Stability Analysis Results: Granite Slopes	18

SUMMARY AND CONCLUSIONS

The stability of reclaimed slopes in the Pikeview Quarry, El Paso County, Colorado is addressed in this report. The Pikeview Quarry is presently an inactive limestone quarry with a major landslide along its west slope. The present evaluation is a follow-up study to an earlier preliminary *Seegmiller* study completed on 27 April 2012. Field data collected at fifteen sites in and adjacent to the quarry and earlier consultant's work form the basis of the present stability evaluations.

Norwest developed a reclamation plan for the west slope of the quarry using 14˚ to 15˚ slopes in the sediments and 45˚ slopes in the granite west of the Rampart Range Fault. Sections through these reclaimed slopes were analyzed using limiting equilibrium methodologies and procedures. The geological discontinuity data (faults, bedding and joints) were primarily collected at the fifteen field sites. Rock/soil mass shear strengths were developed from previous consultant's work, *Seegmiller* field data on uniaxial compressive strength, RQD and joint spacing and *Seegmiller* experience. Groundwater data came from fifteen on-site piezometers, discussions with TMA (Transit Mix Aggregates Company) personnel and site observations. Seismic loading criteria were taken from the Uniform Building Code applicable to the site. In excess of 100,000 stability evaluations were conducted to determine the most-critical safety factors for these analysis sections and the granite slopes under dry, saturated and seismic loaded conditions.

Based on the stability parameter evaluations and the various stability calculations, the following are concluded:

- All reclaimed slopes have safety factors against failure in excess of 1.2 under static conditions. The minimum safety factory was 2.2 in saturated sediments and 1.8 in the saturated granite highwall.
- All reclaimed slopes have safety factors against slope failure in excess of 1.1 under earthquake loading conditions. The minimum safety factor was 1.7 in saturated sediments and 1.6 in the saturated granite highwall.

Recommendations to maintain safety/stability include:

- Visual monitoring
- Displacement monitoring
- Surface water diversion
- Discontinuity observation
- Safety adherence

INTRODUCTION

A follow-up slope stability evaluation for the reclamation of the Pikeview Quarry, El Paso County, Colorado, is the subject of this report. This work was undertaken as per a contract between Seegmiller International *(Seegmiller)* and Norwest Corporation (Norwest), Denver, Colorado. Norwest is providing reclamation services for the Pikeview Quarry to quarry owner, Transit Mix Aggregates Company (TMA) of Colorado Springs, Colorado. The regulatory authority handling oversight for the Quarry reclamation is the Colorado Diversion of Reclamation, Mining and Safety (CDRMS). A preliminary geotechnical evaluation[1] of the Pikeview Quarry stability was developed by *Seegmiller* and submitted to Norwest on 27 April 2012.

The Pikeview Quarry, where limestone has been extracted by drill and blast procedures, has had a long history of slope instabilities and failures dating back to the 1970's. The primary reason for the slope failures relates to mining and undercutting of the limestone bedding planes, which dip eastward out of the west quarry wall. A major slope failure occurred in the west quarry wall on 2 December 2008. Since that time, the quarry has remained closed and the failure has been investigated by various government agencies and consultants. The most-detailed of these is the work preformed by the firm Exponent[2]. A preliminary evaluation of the Norwest reclamation plan was produced by *Seegmiller* in early April 2012. The present report is a follow-up study proposed and outlined by *Seegmiller* in their preliminary report.

The purpose of this study and report are to (1) provide a detailed evaluation of the stability variables, (2) analyze future slope stability for the proposed reclaimed slopes and (3) outline procedures to improve stability and safety during the reclamation process and in the long term. The sources of information for the follow-up study include (1) collected field data, (2) reports and maps provided by Norwest, (3) discussions with Norwest, TMA and CDRMS personnel and (4) *Seegmiller* experience.

The report begins with a presentation of stability related data including the reclaimed quarry geometry, geologic discontinuities, rock mass strength, groundwater pressurization and seismicity. The stability analyses follow and recommendations for future stability and safety improvements are made. Field data are appended, as is an example of the graphic computer analysis output.

STABILITY PARAMETERS

Reclaimed Quarry Geometry

Norwest developed a reclamation plan for the Pikeview Quarry which, in essence, uses a 1:1(45˚) slope in the Pikes Peak Granite west of the Rampart Range Fault. This fault is a major north-south trending fault that passes through the quarry along its western side. On the eastern side of the Rampart Range Fault a reclaimed slope angle of 3.9:1(14.4˚) to 3.7:1(15.1˚) is used in the sediment landslide rubble and waste rock fill. Three east-west sections, showing the reclaimed geometries of the Pikeview Quarry were also prepared by Norwest. These three sections have been designated XX', YY' and ZZ'. Further details of the reclaimed quarry plan, the three sections and their characteristics are presented in the body of the Norwest report. The geometries of the reclaimed plan and sections form the basis of the *Seegmiller* stability analysis work.

Geologic Discontinuities

Previous Studies. A number of studies related to the Pikeview Quarry stability have been professionally performed by various consultants and regulatory authorities. The most-significant of these is the in-depth study[2] performed by Exponent in 2011. This study provides a good basis for the quarry geology and important geologic structures. The orientation of the strata bedding, which dips from 20˚-42˚ to the east, is the single most important factor in the past stability/instability of the west slope of the Pikeview Quarry.

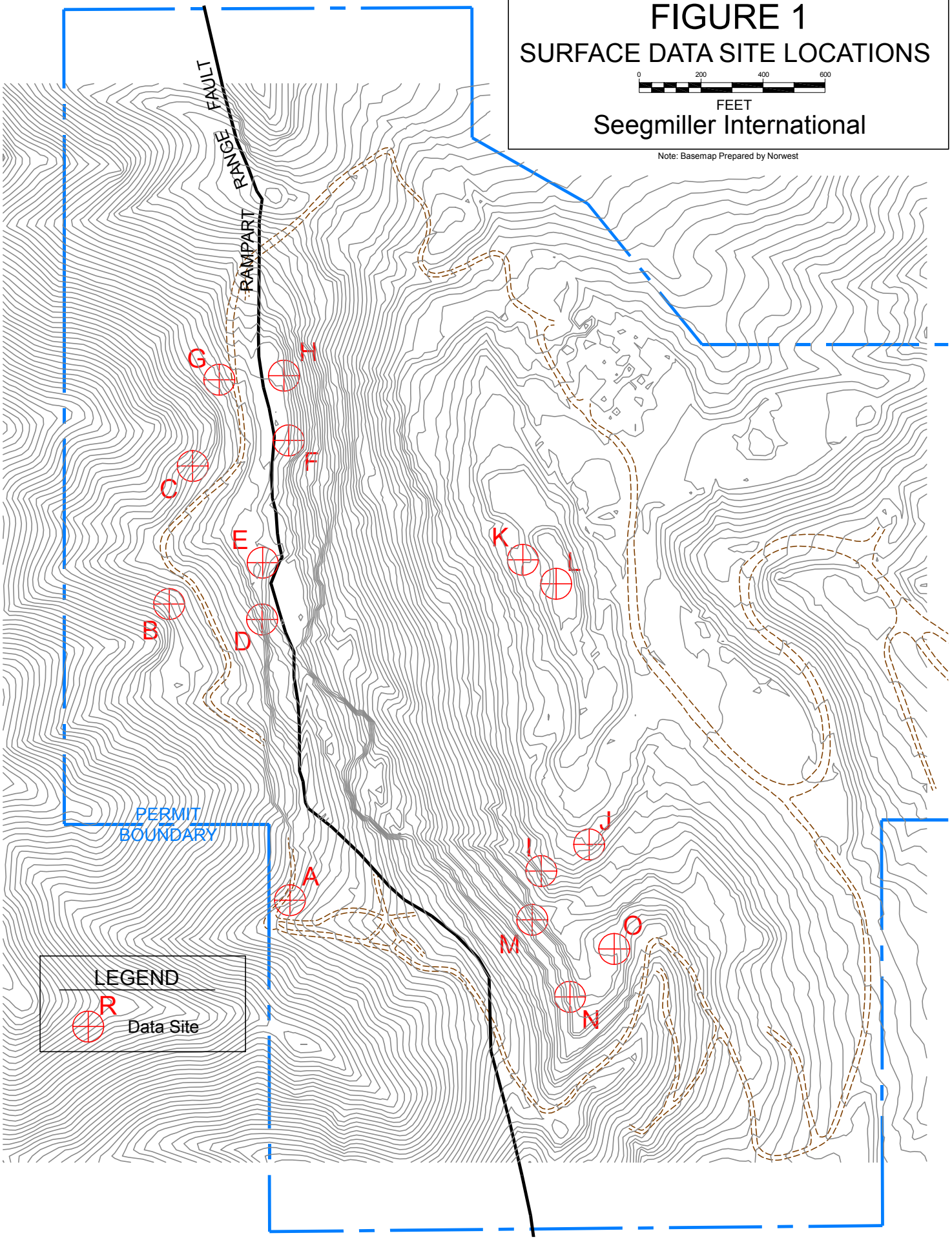
Surface Site Data. Site data were collected during a *Seegmiller*/Norwest site visit on 10 April 2012. Some 15 sites were examined on all sides of the Pikeview Quarry. Locations of these sites are presented in Figure 1. Data on joint/bedding included spacial orientation (strike and dip), spacing, roughness, continuity, infilling, relative waviness, and general character. In general, three orthogonal discontinuity sets were found at each site. In the strata the beds all dip to the east (many dipping 30˚-35˚ E). Strata joints generally had steep dips with most 65˚-90˚. Granite joints were usually comprised of two steeply dipping and one shallow dipping. Except for the undercutting nature of the strata bedding planes, no other discontinuities appeared to present stability problem potential (i.e., planar, wedge or toppling mode failures). Further details of the data collected at each site are given in Appendix I.

FIGURE 1
SURFACE DATA SITE LOCATIONS

0 200 400 600
FEET

Seegmiller International

Note: Basemap Prepared by Norwest



Discontinuity Consensus. For purposes of the present reclamation stability study, adverse bedding dips are the most significant discontinuity characteristic. Potential for further slope failure along bedding planes will have been removed by reducing the sediment slope in the sediments to about 15˚ or less. Such a reclaimed shallow angle will likely be much less than the sliding friction angle along the bedding planes, even if they have clayey infilling. Furthermore, the driving stresses that could cause slope displacements along the bedding planes will be greatly reduced. Although there are some faults in the quarry area, none are known to undercut the planned reclaimed slopes. Consequently, fault-related instabilities are not expected. The joint sets in the granite do not appear to create wedge, planar or toppling failure modes, based on the limited data collected in the study. Furthermore, the joint surfaces appear to have adequate shearing resistance, based on roughness and waviness, such that jointed rock failures, in the form of wedge or planar modes, are not considered likely.

Rock Mass Strength

Previous Studies/Procedures. The most-significant previous study has been the Exponent study [2]. In terms of material property evaluation the Exponent work is based on soil mechanics principles. For the materials which are soils or soil-like, this approach is logical and correct. Consequently, the Exponent work in determining shear strength properties for materials, such as Fill and Clay, follow proper procedures and their shear strengths should be considered acceptable. The unit weights for each material type were determined by Exponent and appear to be within the range that should be acceptable. Therefore, the Exponent unit weights will be used in the present study, except for Granite, will be taken 5 pcf higher to err on the safe side. For the shear strength of materials, such as Mine Waste Rock and Landslide Rubble, an investigator should rely on experience that he and other people have had in previous studies involving such materials (assuming that field and laboratory testing cannot be performed, because it is either too impractical or too time consuming). For rock materials such as Sandstone, Limestone and Granite, the rock mechanics approach to shear strength is appropriate. Assuming that all rock has a set friction angle and then bach-calculating the cohesion, at a safety factor of 1.00, does not allow individual rock types to be considered. Each rock type has its own characteristic rock mass friction angle and rock mass cohesion. These magnitudes should be determined based on the rock characteristics and the effective joint spacing. For the present Pikeview Quarry evaluation, a linear failure criteria will be used, but it will be based on rock mechanics principles and not soil mechanics principles.

Alternatively, it is acceptable to use a non-linear failure criteria for the rock mass, but it must be based on rock mechanics principles.

Surface Site Data. In addition to the discontinuity data collected at the 15 field sites adjacent to the Pikeview Quarry, rock strength characteristic data were also collected. These data include rock type, estimated uniaxial compressive strength, joint spacing in terms of joints per meter (j/m), estimated rock quality designation (RQD), rock and rock mass character, stability and estimated stable slope angle. These data are presented in Appendix I for each site. The most significant items collected at each site are the rock type, estimated uniaxial compressive strength, j/m, and estimated RQD. A summary of these magnitudes are presented in Table I.

Shear Strength Parameters- Clay and Mine Fill. These two materials are basically soils and thus, the magnitudes selected by Exponent are believed representative. For Clay the shear strength parameters are: γ=130 pcf, ϕ=24˚and C= 0 psf. For the Mine Fill, which only occurs in a very limited zone on the east side of the quarry, the shear strength parameters are: γ=120 pcf, ϕ=30˚ and C=0 psf.

Shear Strength Parameters- Landslide Rubble and Mine Waste Rock. These two material types are believed to be somewhat similar, except that Landslide Rubble may have more fines in it and be less graded. Rubble may or may not be displaced large distances. Waste rock is usually re-handled and re-stacked material and thus, may be more homogeneous. *Seegmiller* has had much experience in sandstone material in projects [3,4,5] in New Mexico uranium and Wyoming coal. These projects involved the evaluation of dump materials (broken sandstone and broken claystone) in long term waste rock dumps. Typical friction angles ranged from 35˚ to 37˚. The cohesions varied from about 720 psf to upwards of 1150 psf. Investigations[6] performed by the U.S. Forest Service indicate that granular overburden material placed by end-dumping have a friction angle varying from 30˚ to 36˚. Work done by Leps[7] suggests that waste rock should be expected to have a friction angle in the range of 40˚ to 50˚. For the Pikeview Quarry a conservative approach has been taken to assure long-term stability. The Landslide Rubble is assumed to have the following shear strength parameters: γ=120 pcf, ϕ=30˚and C= 100 psf. For the Mine Waste Rock the assumed shear strength parameters are: γ=120 pcf, ϕ=35˚ and C=500 psf.

Strength Related Properties (Sandstone, Limestone and Granite).

OVERVIEW. In order to conduct a rock mechanics evaluation of shear strength parameters for Sandstone, Limestone and Granite, a consensus of strength related properties must be undertaken. This consensus is based on the field site data collected and *Seegmiller* experience in similar rock types.

TABLE I

SURFACE SITE STRENGTH CHARACTERISTICS

SITE	ROCK TYPE	ESTIMATED MAGNITUDES		
		ESTIMATED COMPRESSION STRENGTH, psi	ESTIMATED RQD	JOINT SPACING (j/m)
A	Granite	7500	75	3
B	Granite	3500	65	3
C	Granite	4000	75	4
D	Granite	500	10	20
E	Sandstone	500	15	20
F	Limestone	9000	75	5
G	Granite	250	10	20
H	Limestone	9000	80	3
I	Limestone	6000	65	4
J	Limestone	7000	75	3
K	Limestone	9000	80	2
L	Limestone	12000	75	3
M	Limestone	12000	80	3
N	Limestone	15000	90	1
O	Limestone	9000	80	3

rock mass friction angle is then determined from the total rating. For the present study, the rock mass friction angle for the Sandstone, Limestone and Granite has been estimated using this method. A summary of results is presented in Table II.

Rock Mass Cohesion (Sandstone, Limestone and Granite). The rock mass cohesion may be estimated using the RMR methodology. However, more than 40 years of experience in determining rock mass cohesion has led *Seegmiller* to the conclusion that the RMR method overestimates the rock mass cohesion. Another method developed in East Europe in the late 1960's by Manev and Arramova-Tacheva[12] uses the intact rock cohesion and the joint frequency to get the rock mass cohesion. Basically, the rock mass cohesion (C_m) would be approximately the same as the intact rock cohesion (C_i), if there were no joints. The more joints there are per meter (j/m), the lower the rock mass cohesion down to a minimum value of 0.02 times the intact rock cohesion. This method has been found by *Seegmiller* to give reasonable estimates of the rock mass cohesion. The equation used to calculate the rock mass cohesion uses only the intact rock cohesion (C_i) and the j/m. It may be stated as follows:

$$C_m = C_i \, [0.114e^{-0.48(I-2)} + 0.02]$$

where C_m = rock mass cohesion

C_i = intact rock cohesion

I = joints per meter

For Sandstone, Limestone and Granite the rock mass cohesions are computed to be as shown in Table III.

Rock Mass Strength Consensus. To conduct overall stability analysis of a quarry highwall, a consensus of the total rock mass strength needs to be developed. Based on all data and all strength related factors, the rock mass strength consensus for the present study is given in Table IV.

SANDSTONE. Only one site could be examined in Sandstone and that was at Site E. The rock was of very poor quality and not deemed representative of the sandstones in the Pikeview Quarry. Based on the Exponent work[2], the Sandstone should be identical to the Granite, because it was concluded that they had the same unit weight (160 pcf), the same friction angle (20˚) and the same cohesion (94,000 psf). Based on *Seegmiller* experience [8.9,10] in sandstone testing and sandstone mine slope design, it will be assumed that the Sandstone has a uniaxial compressive strength of 2500 psi, an RQD of 50 and a joint spacing of 5 j/m. The ratio of uniaxial compressive strength to rock cohesion is estimated to be about 5.5:1 for the sandstone (i.e., a sandstone internal friction angle of about 50˚).

LIMESTONE. There were nine sites where strength-related data could be collected in Limestone. Of these sites, only sites F, H, I, J, K, and L are considered to represent strength parameters in the vicinity of the slope failure. The remaining three sites (M, N and O) are located toward the south end of the quarry and have higher strength-related properties. The strength-related properties of the six sites in the vicinity of the slope failure have the following typical properties: uniaxial compressive strength of about 8500 psi, an RQD of about 75 and j/m of about 4. The ratio of uniaxial compressive to rock cohesion is estimated to be about 8:1 for Limestone (i.e., an internal friction angle of about 62˚).

GRANITE. There were five sites where data could be collected in Granite including A, B, C, D and G all located west of the Rampart Range Fault in the Pikes Peak Granite. Sites A, B, and C were used to develop the strength-related properties, because sites D and G were highly weathered and considered to be unrealistically low for strength property magnitudes. Sites B and C had unrealistically low compressive strengths due to weathering. Consequently, the Pikes Peak Granite was considered to have a characteristic uniaxial compressive strength at depth in less weathered rock of 7500 psi. The Granite RQD at depth is considered to be about 75 with joints/meter of 4. The ratio of the uniaxial compressive strength to the rock cohesion is estimated to be about 8:1 for the granite (i.e., an internal friction angle of about 62˚)

Rock Mass Friction (Sandstone, Limestone and Granite). The method employed to estimate the rock mass friction angle was developed by Bieniawski [11], when he worked at the CSIR group in South Africa in the mid-1970's. This method is the original RMR (Rock Mass Rating) method commonly employed today in many rock engineering projects. The method has been found by *Seegmiller* to give useful information concerning rock mass friction angles. The method consists of an analysis of six different material characteristics which are evaluated, rated and totaled. The

TABLE II

ROCK MASS FRICTION- Sandstone, Limestone & Granite

	MAGNITUDE/RATING		
FACTOR	**SANDSTONE**	**LIMESTONE**	**GRANITE**
Rock Strength, psi	2500/2.0	8500/6.0	7500/5.5
RQD, %	50/10.5	75/15.0	75/15.0
Joint Spacing, j/m	5/11.25	4/12.5	4/12.5
Joint Condition	Slightly Rough/9.0	Rough/18.0	Slightly Rough/13.0
Groundwater	Some water/5.5	Some water/8.0	Some water/4.0
Strike/Dip Adjustment	Fair/-25	Fair/-20	Favorable/-10
Total (RMR)	13.25	39.5	40.0
Rock Mass Friction (RMR + 100)/4	28˚	35˚	35˚

TABLE III

ROCK MASS COHESION- Sandstone, Limestone & Granite

Factor	Sandstone	Limestone	Granite
j/m	5	4	4
C_i, psi	460	1060	900
C_m, psi	22	67	54
C_m, psf	3100	9500	7500

TABLE IV

ROCK MASS STRENGTH CONSENSUS

STRENGTH FACTOR	CLAY BED	MINE FILL	LANDSLIDE RUBBLE	WASTE ROCK	SANDSTONE	LIMESTONE	GRANITE
Rock Mass Friction (ϕ_m)	24	30	30	35	28	35	35
Rock Mass Cohesion (C_m), psf	0	0	100	500	3100	9500	7500
γ_m, pcf	130	120	120	120	160	165	165

Groundwater Pressurization

Slope Stability Effects. The primary effects of groundwater are: (1) loss of the effective shear strength, and (2) adverse horizontal thrust forces in tension cracks. There are, in addition, several secondary effects, including: (1) accelerated weathering, (2) pressure buildups due to freezing, and (3) erosional effects. The removal of the groundwater and/or the reduction of the water pressure may be referred to as depressurization. Depressurization may be accomplished by: (1) diversion of surface runoff, (2) vertical wells, (3) horizontal drains, and/or (4) subsurface drainage galleries.

Previous Studies. The work[2] undertaken by Exponent involved the most-complete groundwater study relative to the Pikeview Quarry and related slope failure. Their work involved the placement of some fifteen piezometers concentrated adjacent to the failed slope in the lower quarry area. Several of the piezometers (PZ-1, PZ-2 and PZ-3) were located on the quarry slope west of the Rampart Range Fault. Water level data collected between 5/25/11 and 6/7/11 indicate that groundwater to the west of the Rampart Range Fault in Granite may be at least 57 feet or more below the ground surface. In the bottom of the quarry the groundwater may be within 2 to 10 feet of the quarry floor. In the south end of the quarry the groundwater may be within about 30 to 40 feet of the quarry floor, as evidence by readings from PZ-4, PZ-5 and PZ-6.

Seegmiller Observations. The *Seegmiller* site visit of 10 April 2012 resulted in the following observations: (1) there are no visible seeps in the face of the slide rubble at any elevation; (2) there are no green plant growths in any of the slide materials; (3) there is no ponded water in the lowermost portion of the quarry; and (4) there has been little or no significant runoff into the quarry from atmospheric moisture events. Discussions with site personnel[13] indicate that some ponding may occur in the lowermost portions of the quarry at certain times of the year due to atmospheric moisture events. Also, a small amount ("just a trickle") of water sometimes runs down and eastward from the quarry.

Pressurization Consensus. For the present stability analysis it is concluded that significant groundwater pressurization in the Granite probably occurs below 50 feet of the ground surface. In the bottom of the quarry groundwater pressurization should be assumed to occur immediately below the ground surface. Therefore, the present stability analysis will have safety factors evaluated under dry conditions and under slope saturated conditions. In that way the best and worst scenarios are evaluated relative to groundwater pressurization.

Seismic Considerations

The Pikeview Quarry is located in a seismic zone designated[14] Zone 1, which covers about 80% of the state of Colorado. A small area (less than about 3% of the state), in the vicinity south of Alamosa, is in a Zone 2B. The remaining part of the state, about 15%, which comprises approximately the eastern 1/6 of the state, is located in a Zone 0. The ground acceleration that should be used in a Zone 1 is 0.075g , when designing or evaluating earthen slopes. For comparative purposes Zone 2B would use a 0.20g ground acceleration and a Zone 0 would have a 0.0g ground acceleration.

STABILITY ANALYSIS

Failure Mode Analysis

Discontinuity Controlled Failure. The possibility of slope failure controlled by geologic discontinuities needs consideration where there are distinct discontinuity sets and/or major discontinuities. Such slope failure could be planar, wedge and/or toppling mode failure. For the Pikeview Quarry the proposed reclaimed slopes in sediments, virtually eliminate any possibility of wedge, planar or toppling mode failures controlled by discontinuity orientation. This is because the reclaimed slope angles of 14˚-15˚ prevent any adverse discontinuity, or discontinuity set combinations from occurring in the sedimentary strata. In the proposed Granite slopes of 45˚ (1:1), there are orthogonal steeply dipping joints or moderately flat dipping joints. Wedge, planar and/or toppling modes do not appear probable based on the field data collected. Some minor quarry slope and/or bench undercutting occurs in most surface mines. Consequently, some small partial slope failures may occur, but total slope failure should not. Furthermore, small scale planar or wedge mode failure could occur where unknown major faults intersect the highwalls. Such cases should be isolated, one-of-a-kind failures, and are not considered representative of the quarry as a whole. Prevention and/or minimizing of such failure should be done by continued visual observation of the highwalls during reclamation. These potential failure problems may be observed prior to occurring and then handled in such a manner that safety and future stability are maximized. Such remedial work is best done as an ongoing project by the quarry reclamation staff under the guidance of a stability engineer.

Rock Mass Shear Failure. The possibility that some rotational shear failure could occur always exists in a slope. Such rotational shear may be influenced by various discontinuities and may, in fact, be a complex multi-mode failure potential. Major stability factors include the slope height, slope angle, rock mass strength, groundwater pressurization and seismic loading. Consequently, rotational shear evaluation is generally appropriate[15] to make judgements regarding potential stability. Such an evaluation was done for three slope sections, XX', YY' and ZZ'. In addition, the Granite benches and overall Granite slopes were evaluated.

Limiting Equilibrium Methodology

Basic Concepts. The analysis method that was employed is based on limiting equilibrium concepts. At limiting equilibrium, the forces tending to create stability are exactly in balance with the forces tending to cause slope failure and, therefore, a safety factor of 1.00 exists. Greater or lesser safety factors allow the relative degree of safety of a slope to be measured. The computer code used for rotational shear is MCSLOPE. This code was created using the popular code PCSTABLE5 developed[16] at Purdue University as a basis. The PCSTABLE5 code is used by many U.S. state highway departments to evaluate highway slope stability. The MCSLOPE code calculates a deterministic static safety factor (SF_d) to judge the safety of a proposed slope.

Stability Criteria. The magnitude of the selected safety criteria depends on many factors including the risk of failure, quality of input data, regulatory requirements and the person doing the analyses. The standard mining industry static safety factor considered prudent for highwall stability is usually 1.20 to 1.30. For the present study, a minimum static safety factor of 1.20 has been specified by CDRMS[17]. For seismic loading conditions, the standard minimum safety factor of approximately 1.1 will be considered safe.

Quarry Stability: Reclaimed Slopes (Rock Mass Failure)

Overview. Stability analyses were performed on the Norwest Analysis Sections XX', YY' and ZZ' (which run from north to south) under the following conditions: (1) dry slope; (2) dry slope with earthquake; (3) saturated slope; and (4) saturated slope with earthquake. In addition for the (a) approximately 200-foot high reclaimed Granite slope (at 45˚) and the (b) 30-foot high Granite bench (63.4˚), the same four conditions of dry, dry with earthquake, saturated and saturated with earthquake were evaluated. When the saturated condition is used the sections have a water table that is at the elevation of the top of the pre-reclaimed quarry on the east side. The water table then goes to the west until it meets the Clay Bed. It then follows the Clay Bed up the slope to where the Clay Bed daylights. It then follows the ground surface to the top of the hill on the west side. This is the maximum groundwater pressurization that could probably exist or water would drain from the reclaimed slope toe on the east side of the quarry. Examples of plotted analysis results are presented in Appendix II for three of the stability analyses completed.

Analysis Section XX'. Under dry conditions this section has a calculated safety factor of 3.16. Under earthquake loading the safety factor is calculated to be reduced to 2.48. When the section is saturated a safety factor of 2.69 is computed. Under saturated conditions and with an earthquake, the safety factor is computed to be 2.12. These are all very safe conditions and far in excess of the 1.20 and 1.10 minimum allowable safety factors.

Analysis Section YY'. Safety factors for this section are 2.39 when dry; 1.85 dry with earthquake; 2.17 for saturated; and 1.70 for saturated with earthquake. As with Section XX', these safety factors are far in excess of the 1.20 and 1.10 minimum allowed safety factors.

Analysis Section ZZ'. Safety factors for this section are 2.85 dry; 2.23 dry with earthquake; 2.38 saturated; and 1.87 for saturated with earthquake. As with Section XX' and Section YY', these safety factors are far in excess of the 1.20 and 1.10 minimum allowed safety factors.

Granite Slopes. Safety factors for the approximately 200-foot high Granite slope are 2.50 dry; 2.18 dry with earthquake; 1.80 saturated; and 1.55 saturated with earthquake. For any single Granite 30-foot high bench with a 63.4˚ (1:2) bench face angle, the safety factors are 9.94 dry; 9.14 dry with earthquake; 8.87 saturated; and 8.14 saturated with earthquake. These Granite bench slopes have extremely high safety factors, greatly in excess of the minimum requirements.

Analyses Summary. A summary of results for the three analyses sections (XX', YY' and ZZ') is presented in Table V. A summary of results for the Granite slopes is presented in Table VI. All reclaimed slopes appear, based on the stability analysis conducted for this study, to have excellent long term stability.

Safety/Stability: During Reclamation and Long Term

Overview. During the actual reclamation process, when various personnel and equipment are operating in the quarry, a vigilant effort should be made to ensure that safety prevails. Furthermore, following reclamation the safety/stability of the quarry in the long term should be monitored. Suggestions and recommendations to accomplish these goals are outlined in the following paragraphs.

Visual Monitoring. During reclamation, the quarry slopes should be inspected on a daily basis. Such inspection should be done by a qualified individual who would

TABLE V

STABILITY ANALYSIS RESULTS: Sections XX', YY' and ZZ'

	SAFETY FACTOR			
ANALYSIS SECTION	**DRY**	**DRY (w/EQUAKE)**	**SATURATED**	**SATURATED (w/ EQUAKE)**
XX'	3.16	2.48	2.69	2.12
YY'	2.39	1.85	2.17	1.70
ZZ'	2.85	2.23	2.38	1.87

TABLE VI

STABILITY ANALYSIS RESULTS: Granite Slopes

	SAFETY FACTOR			
SLOPE PROFILE	**DRY**	**DRY (w/EQUAKE)**	**SATURATED**	**SATURATED (w/ EQUAKE)**
200 ft Slope @ (1:1)	2.50	2.18	1.80	1.55
30 ft Slope @ 63.4˚ (1:2)	9.94	9.14	8.87	8.14

be looking for tension cracks, potential rock falls and other signs of instability in the quarry walls and surfaces where equipment is operating. In the post-reclamation period such inspections should be done on a monthly basis for at least one year, then on a biannual basis for at least five years and then on an annual basis until a qualified stability engineer deems that it is no longer required.

Displacement Monitoring. A displacement monitoring program should be undertaken during the reclamation process and in the long term. Surface points in critical stability areas should have their displacements measured daily during on-site reclamation activities using survey net procedures and/or simple surface extensometers. All data should be plotted and stability forecasts made using procedures[18] developed over many years. In the post-reclamation era displacement monitoring and stability forecasting should be undertaken on a monthly basis for one year, a biannual basis for five years and then on an annual basis until a qualified stability engineer deems that it is no longer needed.

Surface Water Diversion. Surface runoff water should be diverted from the quarry and not allowed to enter the final slopes. A slope with marginal stability could fail catastrophically if runoff water were to enter it. Little adverse surface drainage is expected due to the site geometry. However, any diversion ditches used at the site must drain water *away* from the quarry and not serve as catchment channels allowing water to seep into the quarry slope crest.

Discontinuity Observation. During the reclamation process, new exposures of Granite will be created. Discontinuity data in these exposures should be examined. Such data should, as a minimum, include spacial orientation data (strike, dip and location) for the various joint sets and any encountered faults. Qualified stability personnel should map the Granite exposures as they become exposed. If adverse discontinuity orientations are encountered, a new bench geometry should be designed and used to prevent slope instabilities.

Safety Adherence. Whatever reclamation plans and procedures are selected, quarry personnel should give the highest priority to safety. Reclamation operations should have adequate safety measures set up to prevent injuries/fatalities to individuals on or around the highwalls.

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A P P E N D I X I

FIELD SITE DATA

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site A
Location ..... Southwest Quarry Area
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Joint A
STRIKE — N 65 W — DIP — 90 — SPACING — 1.0 ft
ROUGHNESS (JRC) — 5 — CONTINUITY — STRIKE: 6.0 ft DIP: 6.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 5'
GENERAL — Major Set; Strong Set

S E T B — TYPE — Joint B
STRIKE — N 60 E — DIP — 90 — SPACING — 1.0 ft
ROUGHNESS (JRC) — 15 — CONTINUITY — STRIKE: 6.0 ft DIP: 6.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 3" in 5'
GENERAL — Major Set; Strong Set

S E T C — TYPE — Joint C
STRIKE — N 35 E — DIP — 15 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 3.0 ft DIP: 3.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 2'
GENERAL — Moderate Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Slightly Weathered Granite
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 7500 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 75
GENERAL ROCK MASS CHARACTER —
Brown-pink Color;Semi-massive;Moderate Rock Mod;Low-med Rock Mass Mod
POTENTIAL STABILITY —
Very Good(Discontinuity/Rock Mass Controlled)
STABLE SLOPE ANGLE (500' high slope) — 50˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site B
Location ..... 75 ft West of Control Point LWA
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Joint A
STRIKE — N 85 W — DIP — 85 W — SPACING — 5.0 ft
ROUGHNESS (JRC) — 18 — CONTINUITY — STRIKE: 7.0 ft DIP: 7.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 5" in 5'
GENERAL — Major Set

S E T B — TYPE — Joint B
STRIKE — N 80 W — DIP — 40 E — SPACING — 2.0 ft
ROUGHNESS (JRC) — 15 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 6'
GENERAL — Major Set

S E T C — TYPE — Joint C
STRIKE — N 10 E — DIP — 65 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 13 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Brown-Pink Weathered Granite
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 3500 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 65
GENERAL ROCK MASS CHARACTER —
Brown-pink Color;Semi-massive; Med Rock Mod;Low-med Rock Mass Mod
POTENTIAL STABILITY —
Very Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 50˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site C
Location ..... North Peak / Kiewit Cliffs Area
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Joint A
STRIKE — N 45 E — DIP — 75 E — SPACING — 5.0 ft
ROUGHNESS (JRC) — 13 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: FeOx — THICKNESS: Trace
RELATIVE WAVINESS — 4" in 10'
GENERAL — Moderate Set

S E T B — TYPE — Joint B
STRIKE — N 05 W — DIP — 45 W — SPACING — 2.0 ft
ROUGHNESS (JRC) — 10 — CONTINUITY — STRIKE: 3.0 ft DIP: 3.0 ft
INFILLING — TYPE: FeOx — THICKNESS: Trace
RELATIVE WAVINESS — 3" in 5'
GENERAL — Strong Set

S E T C — TYPE — Joint C
STRIKE — N 10 E — DIP — 55 E — SPACING — 2.0 ft
ROUGHNESS (JRC) — 8 — CONTINUITY — STRIKE: 7.0 ft DIP: 7.0 ft
INFILLING — TYPE: FeOx — THICKNESS: Trace
RELATIVE WAVINESS — 6" in 5'
GENERAL — Strong Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Brown-Pink Granite
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 4000 psi
JOINTS PER METER (j/m) — 4.0 — ESTIMATED RQD — 75
GENERAL ROCK MASS CHARACTER —
Brown Color;Semi-massive;Med Rock Mod;Low-Med Rock Mass Mod
POTENTIAL STABILITY —
Very Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 50˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site D
Location ..... In Quarry Adjacent to Fault Plane
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Joint (NW - Steep)
STRIKE — N 60 W — DIP — 90 — SPACING — .1 ft
ROUGHNESS (JRC) — 5 — CONTINUITY — STRIKE: 3.0 ft DIP: 3.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 0.5" in 5'
GENERAL — Major Set

S E T B — TYPE — Joint (NS - Steep)
STRIKE — N 20 E — DIP — 90 — SPACING — .1 ft
ROUGHNESS (JRC) — 3 — CONTINUITY — STRIKE: 5.0 ft DIP: 5.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 0.5" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (Flat)
STRIKE — N 10 E — DIP — 10 E — SPACING — .1 ft
ROUGHNESS (JRC) — 1 — CONTINUITY — STRIKE: .5 ft DIP: .5 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 0.05" in 5'
GENERAL — Very Minor/Subtle

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Highly Weathered Granite
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 500 psi
JOINTS PER METER (j/m) — 20.0 — ESTIMATED RQD — 10
GENERAL ROCK MASS CHARACTER —
Pink-brown Color;Highly Fragmented/Broken;Low Rock Mod;Very Low Rock Mass Mod
POTENTIAL STABILITY —
Fair (Rock Mass Controlled)
STABLE SLOPE ANGLE (500' high slope) — 30˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site E
Location ..... On North Wall of North Grabin
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 0 E — DIP — 90 — SPACING — .1 ft
ROUGHNESS (JRC) — 1 — CONTINUITY — STRIKE: 5.0 ft DIP: 5.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1' in 15'
GENERAL — Major Set;Parallel Limestone Bedding

S E T B — TYPE —
STRIKE — — DIP — — SPACING — ft
ROUGHNESS (JRC) — — CONTINUITY — STRIKE: ft DIP: ft
INFILLING — TYPE: — THICKNESS:
RELATIVE WAVINESS —
GENERAL —

S E T C — TYPE —
STRIKE — — DIP — — SPACING — ft
ROUGHNESS (JRC) — — CONTINUITY — STRIKE: ft DIP: ft
INFILLING — TYPE: — THICKNESS:
RELATIVE WAVINESS —
GENERAL —

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Sandstone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 500 psi
JOINTS PER METER (j/m) — 20.0 — ESTIMATED RQD — 15
GENERAL ROCK MASS CHARACTER —
Reddish-green Color;Blocks;Low Rock Mod;Very Low Rock Mass Mod
POTENTIAL STABILITY —
Fair (Rock Mass Controlled/Discontinuity)
STABLE SLOPE ANGLE (500' high slope) — 30°

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site F
Location ..... Kiewit Cliffs in Unfailed Limestone
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 05 W — DIP — 30 E — SPACING — .5 ft
ROUGHNESS (JRC) — 5 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: FeOx — THICKNESS: Trace
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint
STRIKE — N 70 E — DIP — 65 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 6 — CONTINUITY — STRIKE: 5.0 ft DIP: 5.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint
STRIKE — N 15 W — DIP — 80 W — SPACING — 1.5 ft
ROUGHNESS (JRC) — 10 — CONTINUITY — STRIKE: 7.0 ft DIP: 7.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 8'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone (In-plane, Unfailed)
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 9000 psi
JOINTS PER METER (j/m) — 5.0 — ESTIMATED RQD — 75
GENERAL ROCK MASS CHARACTER —
Pink-white Color;Semi-massive;Very High Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Good if Not Undercut
STABLE SLOPE ANGLE (500' high slope) — 50˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site G
Location ..... North Peak West of Fault
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Joint (NE)
STRIKE — N 80 E — DIP — 80 E — SPACING — .1 ft
ROUGHNESS (JRC) — 10 — CONTINUITY — STRIKE: 5.0 ft DIP: 5.0 ft
INFILLING — TYPE: FeOx — THICKNESS: 1 mm
RELATIVE WAVINESS — 1" in 3'
GENERAL — Subtle

S E T B — TYPE — Joint (NS - Steep)
STRIKE — N 20 W — DIP — 75 W — SPACING — .1 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 1.0 ft DIP: 1.0 ft
INFILLING — TYPE: FeOx — THICKNESS: Trace
RELATIVE WAVINESS — 1" in 2'
GENERAL — Subtle

S E T C — TYPE — Joint (NS - Flat)
STRIKE — N 10 W — DIP — 20 E — SPACING — .2 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 2.0 ft DIP: 2.0 ft
INFILLING — TYPE: FeOx — THICKNESS: trace
RELATIVE WAVINESS — 1" in 2'
GENERAL — Subtle

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Highly Weathered Granite
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 250 psi
JOINTS PER METER (j/m) — 20.0 — ESTIMATED RQD — 10
GENERAL ROCK MASS CHARACTER —
Brown Color;Completely Broken;Low Rock Mod;Extremely Low rock Mass Mod
POTENTIAL STABILITY —
Fair (Rock Mass Controlled)
STABLE SLOPE ANGLE (500' high slope) — 30˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site H
Location ..... Kiewit Cliffs Adjacent to Granite Fill
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 5 W — DIP — 30 — SPACING — 1.0 ft
ROUGHNESS (JRC) — 6 — CONTINUITY — STRIKE: 15.0 ft DIP: 15.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 10'
GENERAL — Major Set

S E T B — TYPE — Joint (90 NE)
STRIKE — N 20 E — DIP — — SPACING — 2.0 ft
ROUGHNESS (JRC) — 8 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (NW)
STRIKE — N 80 W — DIP — 80 W — SPACING — 1.5 ft
ROUGHNESS (JRC) — 8 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 9000 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 80
GENERAL ROCK MASS CHARACTER —
Pink-white Color;Semi-massive;High Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Fair (Controlled by Bedding)
STABLE SLOPE ANGLE (500' high slope) — 50˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site I
Location ..... South End of Quarry at Edge of Failure
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 15 W — DIP — 20 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 10 — CONTINUITY — STRIKE: 20.0 ft DIP: 20.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 5'
GENERAL — Major Set;Strongest Set

S E T B — TYPE — Joint (NW)
STRIKE — N 75 W — DIP — 85 W — SPACING — 2.0 ft
ROUGHNESS (JRC) — 10 — CONTINUITY — STRIKE: 15.0 ft DIP: 15.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 10 W — DIP — 85 W — SPACING — 3.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 6000 psi
JOINTS PER METER (j/m) — 4.0 — ESTIMATED RQD — 65
GENERAL ROCK MASS CHARACTER —
Reddish Color;Semi-massive;Low Rock Mod;Very Low Rock Mass Mod
POTENTIAL STABILITY —
Good (Discontinuity/Rock Mass Controlled)
STABLE SLOPE ANGLE (500' high slope) — 45°

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site J
Location ..... South East Corner of Quarry (SE Slope)
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 15 w — DIP — 35 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 6 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint (NE)
STRIKE — N 40 E — DIP — 65 W — SPACING — 2.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 20 W — DIP — 55 W — SPACING — 3.0 ft
ROUGHNESS (JRC) — 15 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 7000 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 75
GENERAL ROCK MASS CHARACTER —
Pink-white Color;Massive;Med-high Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Very Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 53˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site K
Location ..... Bottom of Quarry - West Side
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 20 W — DIP — 30 E — SPACING — 2.0 ft
ROUGHNESS (JRC) — 6 — CONTINUITY — STRIKE: 20.0 ft DIP: 20.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint (NW)
STRIKE — N 75 E — DIP — 90 — SPACING — 5.0 ft
ROUGHNESS (JRC) — 13 — CONTINUITY — STRIKE: 4.0 ft DIP: 4.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 15 E — DIP — 65 W — SPACING — 2.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 3.0 ft DIP: 3.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 9000 psi
JOINTS PER METER (j/m) — 2.0 — ESTIMATED RQD — 80
GENERAL ROCK MASS CHARACTER —
Pink Color;Massive;High Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Good (Bedding Plane Controlled)
STABLE SLOPE ANGLE (500' high slope) — 55˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site L
Location ..... Bottom of Quarry (100 ft NE of P-7)
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 15 W — DIP — 35 E — SPACING — 2.0 ft
ROUGHNESS (JRC) — 7 — CONTINUITY — STRIKE: ft DIP: ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set

S E T B — TYPE — Joint (NE)
STRIKE — N 75 W — DIP — 75 W — SPACING — 3.0 ft
ROUGHNESS (JRC) — 18 — CONTINUITY — STRIKE: 3.0 ft DIP: 3.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 4" in 5'
GENERAL — Major Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 10 E — DIP — 75 W — SPACING — 5.0 ft
ROUGHNESS (JRC) — 8 — CONTINUITY — STRIKE: 15.0 ft DIP: 15.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 8'
GENERAL — Moderate to Major Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 12000 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 75
GENERAL ROCK MASS CHARACTER —
Pink-white Color;Massive;High Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 55˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site M
Location ..... South End of Quarry: 7300 ft Elevation
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 10 W — DIP — 15 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 7 — CONTINUITY — STRIKE: 15.0 ft DIP: 15.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint (West)
STRIKE — N 80 E — DIP — 90 — SPACING — 2.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Moderate Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 10 E — DIP — 90 — SPACING — 2.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 5'
GENERAL — Moderate Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 12000 psi
JOINTS PER METER (j/m) — 2.0 — ESTIMATED RQD — 80
GENERAL ROCK MASS CHARACTER —
Pink-brown Color;Massive;High Rock Mod;Med Rock Mass Mod
POTENTIAL STABILITY —
Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 55˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site N
Location ..... Far South End of Quarry: 7390 ft Elev
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 05 E — DIP — ~2 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 3 — CONTINUITY — STRIKE: 40.0 ft DIP: 40.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint (W)
STRIKE — N 80 W — DIP — 90 — SPACING — 5.0 ft
ROUGHNESS (JRC) — 15 — CONTINUITY — STRIKE: 10.0 ft DIP: 10.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 3" in 5'
GENERAL — Moderate Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 05 E — DIP — 85 W — SPACING — 4.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 4'
GENERAL — Moderate Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 15000 psi
JOINTS PER METER (j/m) — 1.0 — ESTIMATED RQD — 90
GENERAL ROCK MASS CHARACTER —
Pink-brown Color;Massive;Very High Rock Mod;Med-high Rock Mass Mod
POTENTIAL STABILITY —
Very Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 60˚

S E E G M I L L E R I N T E R N A T I O N A L
Mining Geotechnical Consultants/Engineers
Field Geotechnical Data: SITE DATA

Date .. 4/10/12
Company ..... NORWEST CORPORATION
Project ..... Pikeview
Designation ..... Site O
Location ..... Far South End of Quarry:~7390 ft Elev
By .. BLS

DISCONTINUITIES DATA [Major Sets] ———

S E T A — TYPE — Bedding
STRIKE — N 30 E — DIP — 15 E — SPACING — 1.0 ft
ROUGHNESS (JRC) — 6 — CONTINUITY — STRIKE: 15.0 ft DIP: 15.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 1" in 10'
GENERAL — Major Set; Strongest Set

S E T B — TYPE — Joint (W)
STRIKE — N 40 E — DIP — 90 — SPACING — 3.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 8.0 ft DIP: 8.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 2" in 5'
GENERAL — Moderate Set

S E T C — TYPE — Joint (N - S)
STRIKE — N 30 W — DIP — 90 — SPACING — 4.0 ft
ROUGHNESS (JRC) — 12 — CONTINUITY — STRIKE: 12.0 ft DIP: 12.0 ft
INFILLING — TYPE: Clean — THICKNESS: N/A
RELATIVE WAVINESS — 3" in 5'
GENERAL — Moderate Set

GEOTECHNICAL CHARACTERISTICS ——— ROCK TYPE — Limestone
ESTIMATED UNIAXIAL COMPRESSIVE STRENGTH — 9000 psi
JOINTS PER METER (j/m) — 3.0 — ESTIMATED RQD — 80
GENERAL ROCK MASS CHARACTER —
Pink-white Color;Semi-massive;High Rock Mod;Low-med Rock Mass Mod
POTENTIAL STABILITY —
Good (Discontinuity Controlled)
STABLE SLOPE ANGLE (500' high slope) — 53˚

A P P E N D I X II

COMPUTER ANALYSIS OUTPUT EXAMPLES

FIGURE A2
SECTION YY' SATURATED

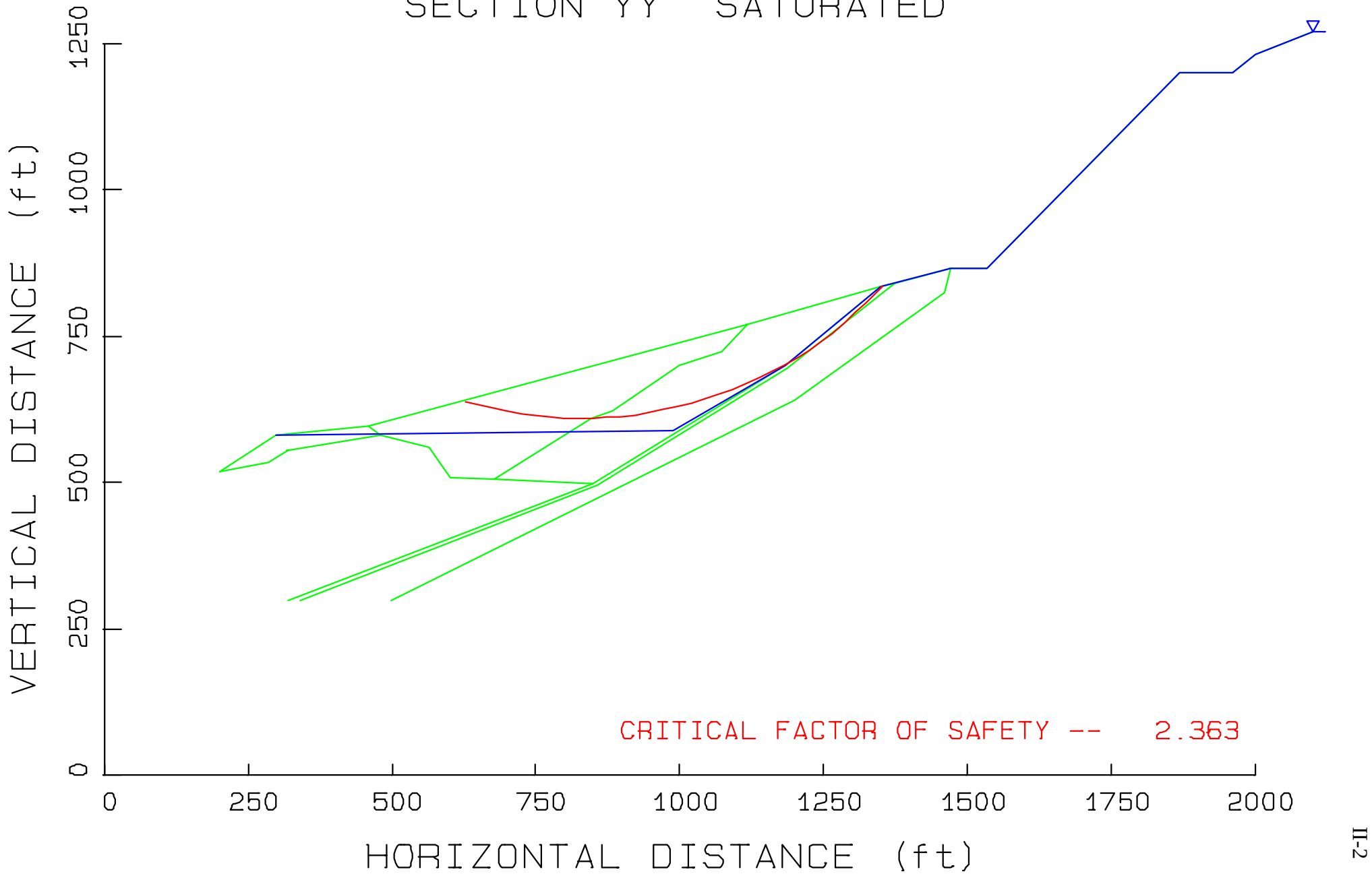

FIGURE A2' GRANITE SLOPE - 200 FT HIGH
45 DEGREES WITH EARTHQUAKE

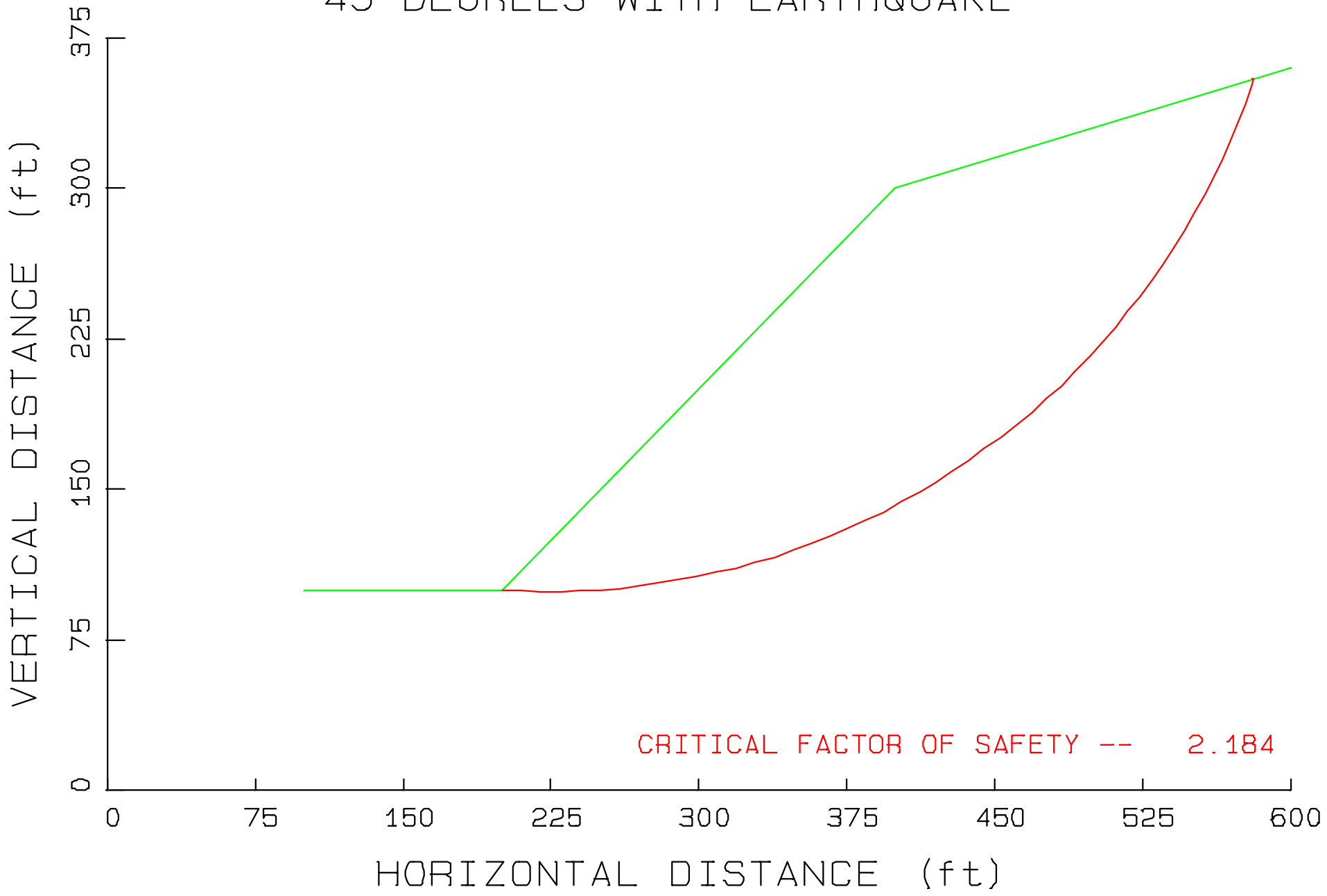

FIGURE A2'' GRANITE BENCH - 30 FT HIGH
63.4 DEGREES SATURATED