Table of Contents

Table of Contents

Fremont County
Planning and Zoning Department
615 Macon Avenue, Room 210
Cañon City, CO 81212

STAFF REPORT

CUP 24-001

HOLCIM- Red Creek Quarry

DATE: June 24th 2025

PURPOSE

Holcim Red Creek Quarry will operate during daylight hours, 8-12 hours/day, 7 days a week, approximately 27 employees will work at the quarry. Employees and equipment currently working the Bear Creek Quarry will operate Red Creek Quarry.

The CUP boundary will encompass 1,492 acres to include 219.72 acres for the Materials Transport and Access Corridor (MTAC) between the cement plant and Red Creek Quarry (RCQ). This MTAC will be enclosed by a 6' high chain link fence and include a 40' wide roadway for vehicular traffic and conveyor that is approximately 6.7 miles long to transport material. The MTAC will include 13 wildlife crossings. The MTAC will included a County Road 112 conveyor crossing overpass.

The site will have improvements that include a 184'x70' metal building, a vault for sanitation, a water well and a 20,000 gallon double walled above ground fuel tank with concrete wall crash protection structure.

Red Creek Quarry includes six contiguous land sections: two sections in Fremont County and four sections in Pueblo County. The mining permit in Pueblo County is expected to be submitted in the near future. This application is for the two sections of land in Fremont County and permissions for the use of the MTAC to transport material from the four sections of land in Pueblo County providing that application is approved.
Red Creek Quarry will be the new limestone and sandstone source for Holcim and will provide material to the plant for approximately 100 years.
This CUP request is for Life of Use.

On June 11th, 2025, I received an email from K. Chandran a Senior Managing Consultant for AII4 regarding a Rebrand and Name Change for Holcim (letter is in packet). The letter details Holcim will know be known as Amrize.

Table of Contents

Fremont County
Planning and Zoning Department
615 Macon Avenue, Room 210
Cañon City, CO 81212

LOCATION

3500 US Highway 120, Florence CO 81226

SCHEDULE No.

99912030

BACKGROUND / ASSOCIATED CASES

Bear Creek Quarry (BCQ) is the current limestone and sandstone source for cement production at the Holcim plant and is reaching the end of its life.
Red Creek Quarry has previously held CUP 02-003 to allow for exploration.
A limestone quarry and four (4) generations of cement plants have been operating east of Florence, CO since the late 1890's. The current plant facility (Plant No. 4) increased production in 2001. About 3,200,000 tons of limestone are required per year to supply the current plant. Sandstone is supplied from a smaller quarry established into the floor of the limestone quarry and is extracted at an annual rate of approximately 120,000 tons.

LAND ZONING AND USE

ZONING: Residential Three

NORTH: Residential Three - Industrial

EAST: Pueblo County

SOUTH: Residential Three - Ranching

WEST: Residential Three - Ranching

ESTIMATED TRAFFIC COUNT: Current traffic volume of 54 trips per day (No Increase)

NUMBER OF ACCESS POINTS: 2

FIRE PROTECTION: Florence Fire Protection District

FLOODPLAIN: Yes

WATER: Well

SANITATION: Vault

Table of Contents

Fremont County
Planning and Zoning Department
615 Macon Avenue, Room 210
Cañon City, CO 81212

ELECTRIC: Utility Provider

REFUSE: Waste Management- weekly pick-up

NATURAL GAS/PROPANE: 2,000 gallon propane tank

LIGHTING: Around building area and along MTAC

NOXIOUS WEED CONTROL PLAN: Approved

ACCESS: State Highway 120, State Highway 96

PUBLIC COMMENTS/CONCERNS: None Received

AGENCY COMMENTS

Staff requested comments from various review agencies. Staff has incorporated comments received to date either in their entirety or in part into this staff report.

FCDPHE:

No concerns

FCDOT:

Fremont County does not maintain this roadway.

CDOT:

Access permits will not be required at this time. However, if traffic volumes in the future increase by greater than 20% of the permitted number the permittee is required to apply for a new access permit and may be required to construct highway improvements.

FC BUILDING AND ENVIROMENTAL HEALTH DEPARTMENT:
Permits for structures will be required.

FIRE PROTECTION PLAN**:**
Florence Fire Protection District does not have any opposition to these plans.

FREMONT CONSERVATION DISTRICT:
No comments at this time.

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY:
Bear Creek Quarry Permit Amendment for Red Creek Quarry decision: Approved.

Table of Contents

Fremont County
Planning and Zoning Department
615 Macon Avenue, Room 210
Cañon City, CO 81212

COLORADO PARKS AND WILDLIFE:
CPW recommends the project adhere to the Impact Avoidance, Minimization, and Mitigation recommendations outlined in the November 14, 2023 letter as well as adherence to the impact minimization recommendations outlined below.

- Avoid construction/development activities between November 1 and April 30. For exploration phases of the project, CPW recommends all work be completed outside the winter season.
- If adherence to the winter range timing limitation or density recommendations is not possible, as is the case with large scale mining, CPW recommends compensatory mitigation in the form of off-site habitat enhancements or protections to mitigate the direct habitat loss and functional habitat loss for big game species displaced from the project area. CPW is happy to assist in the identification of potential treatment areas and enhancement options or to discuss other potential opportunities such as, but not limited to; conservation easements or public access.

WAIVERS:

- Landscaping

PLANNING COMMISSION:

The Planning Commission voted to approve this project as presented.

RECOMMENDATION:

Having found the application is in compliance with the requirements of the Fremont County Zoning Resolution, staff recommends **APPROVAL** of the Conditional Use Permit application with the Landscaping waiver.

CONTINGENCIES:

In addition, the following contingencies shall be provided to the Department within six (6) months (**no extensions)** after final approval by the Board:

N/A

CONDITIONS:
N/A

Table of Contents

FREMONT COUNTY

DEPARTMENT OF PLANNING AND ZONING

615 MACON AVENUE, ROOM 210, CAÑON CITY, COLORADO, 81212
Telephone 719-276-7360 / Facsimile 719-276-7374
Email: Planning@fremontco.com

LAND USE APPLICATION

SPECIAL REVIEW USE, CONDITIONAL USE PERMIT, COMMERCIAL DEVELOPMENT PLAN

It is recommended that the applicant schedule an appointment with a Department of Planning & Zoning Representative prior to application preparation and submittal to discuss the project as currently planned and future project proposals.

Project Name: Red Creek Quarry formerly Ranch Land Rock Pit #1 CUP 02-3
Site Address: Sections 24 and 25, Township 20 South, Range 68 West, of the 6th Principal Meridian, Fremont County, CO

Applicant(s)
Name(s) Holcim (US) Inc., Hamza Mekhfi, Plant Manager
Address 3500 US Highway 120, Florence, CO 81226
Phone (719) 288-1424 Fax
Email hamza.mekhfi@holcim.com

Owner(s)
Name(s) Holcim (US) Inc. Hamza Mekhfi
Address 6211 Ann Arbor Road, Dundee, MI 48131
Phone (719) 288-1424 Fax
Email hamza.mekhfi@holcim.com

Authorized Representative / Agent / Consultant (*if other than owner*)
Name(s) Angela Bellantoni, Ph.D. of Environmental Alternatives Inc.
Address P.O. Box 326, Cañon City, CO 81212
Phone (719) 275-8951 Fax
Email angela@envalternatives.com

Type of Application / Application Fee (*There maybe additional fees for publications or professional reviews*):
☐Special Review Use Permit $1,800 ☒Major Modification to existing permit $500
☐Conditional Use Permit $1,750 ☒Major Modification to existing permit $500
☐Commercial Development Plan $1750 ☐Major Modification $500

The applicant shall provide **one (1) original document, and an electronic copy (either CD or flash/thumb drive) of the application**, site plan (**2 COPIES**) and all of its attachments (*copies of deeds, contracts, leases etcetera are acceptable*) at the time of application submittal along with the **application fee** set as per Resolution of the Board. Submittals shall be made to the Department no later than 3:00 pm on the submittal deadline date.

Table of Contents

Process & Requirements Overview

Any application which is not complete or does not include all minimum submittal requirements will be rejected by the Fremont County Department of Planning and Zoning (Department). Further, any application that is inadequate or incomplete, may be subject to postponement of placement on an agenda of the Fremont County Planning Commission (Commission), pending receipt of an adequate and complete application.

Upon receipt of a complete application, the Department will review the application and all attachments and prepare a Department Submittal Deficiency and Comment Letter (D & C Letter), which will state the submittal deficiencies which must be addressed by the applicant, Department comments and/or questions about the application, and the number of revised application packets to be supplied to the Department for placement on an agenda of the Commission. An additional full application fee may be charged to the applicant, as per Resolution approved by the Board of County Commissioners (Board), if all deficiencies as per the initial D & C Letter are not adequately addressed or provided. Each subsequent D & C Letter, based on resubmitted items, will result in another full application fee. All such fees shall be paid along with the deficiency submittal, prior to any further review of the application.

The Department, Commission, and/or Board may require additional information at any time during the application process as may be deemed necessary for thorough consideration of the application and to enable an informed final decision.

Any Land Use application for that has been submitted after the use requiring the permit has been established on the property may be subject to a penalty fee in addition to the set application fee for such permit. The penalty fee shall be equal to the initial application fee for the Land Use Application. As with all land use applications payment of associated fees do not ensure approval of the application.

If the application is approved by the Board with contingencies the contingencies shall be completed to the Department within six (6) months of the approval date, or the approval shall be deemed rescinded and the application expired, after which, re-submittal of the application, including fees, and procedural requirements, will be required.

In approving an application for Land Use, the Board may require higher standards for development than required by the Fremont County Zoning Resolution (FCZR).

Modifications, major or minor, to the Land Use Permit as approved, shall be accomplished in compliance with requirements of the Fremont County Zoning Resolution.

Applicants shall pay all application fees to the Fremont County Treasurer's Office. Upon receipt of a complete application, a Department representative will provide the applicant with a payment check list to present to the Treasurer's Office with payment.

Site & Development

(Section 1)

1. Describe the proposed type of operation to include days & hours of operation, number of employees, & machinery:
   Red Creek Quarry will operate during daylight hours, 8-10 hours/day, 5 days a week. Approximately 27 employees will work at the quarry. Employees and equipment currently working the Bear Creek Quarry will operate Red Creek Quarry. Please refer to Exhibit 1.1 DRMS Exhibit DL Mining Plan for specific mine development details, mining operation and equipment
2. Property address or schedule number: 99912030
3. Have the mineral interests been severed from the subject property? ☐ YES ☒ NO
   a. If yes (severed) who is the mineral interest owner? _____
4. Is the property currently developed? ☐ YES ☒ NO
5. Existing types & sizes of structures: No existing structures.
6. Proposed types & sizes of structures: 11,535 ft^2 metal maintenance shop/office/facilities with concrete floor.
7. Lot Coverage (indicate percent or square footage): Existing 0 Proposed < 0.0000002%
8. FCZR Citing 4.1.3.2 Property size (acres or square footage) 1,492 acres
9. Amount of the property the use will encumber: 1,492 acres
10. Zone District: Agricultural Forestry Land Use Mining
11. Please indicate the zone district & current land use for adjoining properties:
    a. Northerly: (ZD) Agricultural Forestry Land Use: Ranching
    b. Easterly: (ZD) Pueblo County Land Use: Mining
    c. Westerly: (ZD) Agricultural Forestry Land Use: Ranching
    d. Southerly: (ZD) Agricultural Forestry Land Use: Ranching
12. Master Plan – Planning District of property: Plains Planning District
    (please refer to Chapter four and planning district of the Fremont County Master Plan)
13. Name(s) and type(s) of road(s) the property is accessed from:
    Hwy 120 is access to Holcim Plant with interior road, MTAC, to Red Creek Quarry.
14. Is access through adjacent properties? ☐ YES ☒ NO If yes, is access legally established through:
    ☐ Deed of record ☐ Recorded Plat ☐ Court Order (Documentation shall be provided)
15. Estimated Traffic Count 54 existing (per day) Number of access points 1
16. Is access from or within five-hundred feet (500') of a Colorado Department of Transportation Controlled Road:
    ☒ YES ☐ NO (If yes, CDOT approval/comments shall be required) Existing Hwy 120 access to Holcim Plant will be used.
17. Does the property lie adjacent to or within three (3) miles of any municipal boundary lines (city/town limits)? ☒
    YES ☐ NO Municipality Name(s) Florence, CO
18. Does the property lie within the boundaries or within ¼ of a mile of any service district?

Table of Contents

☒ YES ☐ NO Entity Name(s) Upper Arkansas Water Conservation District, Florence Fire District

19. Requested duration of proposed use: _____ ☒ Life of use ☒ Estimated life of use years 100
20. Is temporary cessation proposed: ☐ YES ☒ NO Duration: _____
21. Is buffering required: ☐ YES ☒ NO (Contractor yards, Junk yards, Automobile graveyards, & Vehicle impoundment yards **require** buffering per FCZR 5.17.15)
22. Is landscaping proposed: ☐ YES ☒ NO a waiver is requested
23. Total parking spaces 20 standard size 20 compact 0 ADA 0
    (Standard 9' X 18') (Compact 7' X 15') (Please refer to section 5.3 & 5.4 of the FCZR)
24. Will the parking area include lighting? ☐ YES ☒ NO
25. Parking area surface type: Gravel Thickness: 4 inches
26. Is a loading/unloading area proposed? ☐ YES ☒ NO Size:_____ Thickness:_____
27. Will hazardous materials be stored on site? ☒ YES ☐ NO Diesel fuel in a double walled tank
28. Will noxious weed control measures be included in the scope of the project? ☒ YES ☐ NO
29. Will any equipment meeting the Colorado Revised Statute definition of Special Mobile Machinery be stored or used onsite? ☒ YES ☐ NO
30. Mark all services and facilities necessary to accommodate the proposed use in addition to Fire Protection, Emergency Medical Response, & Law Enforcement:

    ☐ Roadway Maintenance ☒ Hospital ☐ Park & Recreation

    ☐ Airport ☐ Search & Rescue ☐ Schools ☐ Library
31. Utility Provider information: Please provide the name of provider below:
    a) **Water:** Water well and bottled water.
    b) **Sanitation:** Septic vault
    c) **Electrical:** Black Hills
    d) **Telephone:** Cellular Provider
    e) **Refuse:** Waste Management
    f) **Irrigation Water:** NA
    g) **Natural Gas/Propane:** Mile High Propane
    h) **Cable Television:** NA

Table of Contents

Impact Analysis
(Section 2)

1. Dust and erosion control measures:

Holcim quarries operate under a Title V Air Permit No. 98FR0895 from the Air Pollution Control Division of CO Department of Public Health and Environment.

Holcim operates under a NPDES general permit COR500000 that will be provided to the county upon approval from WQCD of CDPHE.

2. Noise control measures:

Mining and hauling activities are sufficiently distant from private property development and public recreational areas to not necessitate implementation of noise control measures.

3. Odor control measures:

Nuisance odors are not anticipated.

4. Visual impact control measures:

Mining and hauling activities are sufficiently distant from public roads and private property owners/development to not necessitate construction of visual impact control measures.

5. Wildlife/plant habitat protection measures:

Please refer to Exhibit 2.5-1 Wildlife Information and Exhibit 2.5-2 Vegetation information

6. Water quality and/or water way(s) protection measures:

Exhibit 2.6-1 is Exhibit G from Holcim's CO DRMS 112 permit application that includes the protection measures that will be implemented.

7. Safety measures to protect adjacent properties, residents, & agricultural operations:

Perimeter berms and/or fences will be constructed along all mining and hauling development to protect the livestock and wildlife.

8. Measures to protect and/or preserve archaeologically or historically significant sites:

In the event archaeological or historical artifacts are encountered, activity will stop and the appropriate agency will be notified.

9. Measures to limit or control offsite discernable vibrations:

Blasting will be a regular practice during mining. Buildings and structures are at sufficient distances from blasting sites that vibrations will not be discernible. The Blasting Plan approved by DRMS is provided herein as Exhibit 2.9-1.

Table of Contents

Required Submittals Attachments
(Section 3)

1. Current Deed of Record
2. Water supply documentation: Public water source requires documentation evidencing ability to provide service. Wells require documentation of a well permit and/or documentation that the existing well is adequate for the proposed use
3. Fremont County's Colorado Division of Water Resources Information Form
4. Sanitation Documentation: Public sewer shall require documentation evidencing ability to provide service. Onsite Waste Water System (OWTS) shall require a percolation test and report and a design plan from a certified engineer. Existing OWTS systems shall require documentation that the existing system is adequate for the proposed use
5. Refuse Plan: Shall address the storage, collection, and disposal of refuse. It shall also document screening of refuse receptacles/areas. (Refuse plans require approval by the Fremont County Environmental Health Dept.)
6. Drainage Plan: Must contain all required items under FCZR 5.10 (Drainage plans require approval by the County Engineer).
7. Landscaping Plan or justification for waiver request.
8. Lighting Plan or justification for waiver request
9. Noxious Weed Control Plan or justification for waiver request. (Plans and waiver requests require approval by the Fremont County Noxious Weed Manager)
10. List of owners and mailing address for all properties located within a five-hundred (500') foot radius of the subject property
11. County Roadway Impact Analysis Form (If accessed off a county road)
12. Colorado Department of Transportation Access Permit (If accessed off a CDOT controlled road)
13. Statement indicating how the proposed use complies with "Goals Objectives, and Implementation Strategies" of the Fremont County Master Plan District
14. Statement indicating how the proposed use will be in harmony and compatible with surrounding land uses and development in the area and/or measures that can be taken to make it in harmony & compatible.
15. Fire protection plan addressing method of fire protection, location of hydrants or other means of protection. If located within a fire protection district the plan shall be approved by the District.
16. A detailed utility plan showing the proposed or existing location of all utilities.
17. Site Plan drawn to professional standards (3 hard copies 18" x 24" or 24" x 36")
18. Submittals and exhibits should be clearly identified with section and/or question number located on the bottom right hand corner, or otherwise tabbed or marked.

Table of Contents

If Applicable Submittals

19. CDOT Notification form of Proposed Land Use and comments (if access is from or within 500' of a CDOT controlled road)

20. Mineral Interest Notification and certified mailing receipt. Notification & Mailing shall be completed within 30 days prior to the scheduled Planning Commission Meeting. (this is only required if the minerals interests are severed)

21. Copies of all local, state and federal licenses and/or status of applications.

22. In circumstances of Corporate Ownership, documentation evidencing whom is eligible to execute documents on behalf of the corporation

23. In circumstances where the applicant is not the owner written authorization from the owner specifying the extent to which the representation is authorized

24. In circumstances where a consultant is making application on behalf of the owner, written authorization from the owner specifying the extent to which the representation is authorized

25. In circumstances where the property owner of record is not involved in the operation or application, documentation indicating right to occupy and use the property shall be provided. (lease or similar document)

26. Buffering Plan (If required)

27. Current registration for SMM equipment or documentation that equipment is on tax rolls associated with the property, to include list of machinery.

28. List of Hazardous materials stored and/or used on site, to include location of storage and management practices

29. Copies of mining and reclamation plans (CUP's)

30. Required information set forth in FCRZ 8.13.17.1 (Airports)

31. Required information set forth in FCRZ 8.13.17.2 (Adult Uses)

32. Required information set forth in FCRZ 8.13.17.3 (Kennels)

33. Required information set forth in FCRZ 8.13.17.4 (Antennas & Towers)

Site Plan Drawing Requirements

a. Drawing Size: Minimum sheet size 18” x 24” to a maximum sheet size of 24” x 36”;
b. Written and graphic scale with minimum of 1” = 200’ max 1” = 50’;
c. Appropriate title (SPECIAL REVIEW USE PERMIT, CONDITIONAL USE PERMIT, COMMERICAL DEVELOPMENT PLAN FOR {name};
d. Appropriate subtitle (brief description of the proposed use);
e. Boundary drawing of the property with bearings and dimensions illustrating the legal description;
f. Legal description of the property;
g. Acreage or square footage of the subject property;
h. Zoning classification of the subject property;
i. Zoning classification of the adjoining properties;
j. North Arrow;
k. Vicinity map locating the subject property in relation to surrounding areas;
l. Table indicating relationship between proposed and existing construction to remain on the property
m. Minimum lot size, maximum lot coverage, maximum building height, minimum lot width, minimum setback requirements (Front, Two sides, & Rear)
n. Size and shape of all existing & proposed structures: each structure shall be labeled/noted as existing or proposed. Dimensions from at least two property lines shall be noted;
o. Location of all parking areas to include size, dimensions, surface type & thickness, type of space (ADA, Standard, Compact) and a table specifying the minimum numbers of spaces required for each category;
p. Location of loading areas to include size, dimensions surface type & thickness;
q. Labeled access points including interior roadways with dimensions, surface type & thickness, circulation pattern, and dimensions from property lines;
r. Any proposed pedestrian areas & walkways to include dimensions, surface type & thickness;
s. Location and dimensions of refuse areas;
t. Identification and location of all drainageway, drainage facilities, including FEMA flood areas, to include dimensions from property lines;
u. Location, height & type of lighting for parking and off-loading areas;
v. Location, type, and size of all on-site identification signage (table may be used);
w. All easements (existing & proposed) to include dimensions from property lines (beginning, end, & centerline) width, and if they are to be vacated or relocated;
x. Significant natural features;
y. Soil types
z. Open space areas
aa. Legend identifying symbols and/or lines

By signing this Application, the Applicant, or the agent / representative / consultant acting with due authorization on behalf of the Applicant, hereby certifies that all information contained in the application and any attachments to the Application, is true and correct to the best of the Applicant's knowledge and belief.

The Applicant understands that required private or public improvements imposed as a contingency of approval for the application may be required as a part of the approval process.

Fremont County hereby advises the Applicant that if any material information contained herein is determined to be misleading, inaccurate or false, the Board of County Commissioners may take any and all reasonable and appropriate steps to declare null and void, any actions of the Board regarding the Application.

Signing this Application is a declaration by the applicant that all plans, drawings and commitments submitted with or contained within this Application are or will be in conformance with the requirements of the Fremont County Zoning Resolution.

Hamza Mekhfi		March 28, 2024	Applicant
Printed Name	Applicant Signature	Date	
Hamza Mekhfi		March 28, 2024	Owner
Printed Name	Owner Signature	Date	

Table of Contents

CUP Exhibit 1.1 Description of Proposed Operation

CO DRMS 112 Permit Exhibit D: Mining Plan (Rule 6.4.4)
Section 2.4

A limestone quarry and four (4) generations of cement plants have been operating east of Florence, CO since the late 1890's. The current plant facility (Plant No. 4) increased production in 2001. About 3,200,000 tons of limestone are required per year to supply the current plant. Sandstone is supplied from a smaller quarry established into the floor of the limestone quarry and is extracted at an annual rate of approximately 120,000 tons. Other raw materials are purchased.

The purpose of this Conditional Use Permit major modification application is to increase the permit area boundary to include both Sections 24 and 25 for a new limestone resource to be known as Red Creek Quarry (RCQ).

2.4.1 Mine Progression

Mining will commence in the northwest corner of the resource area and progress south and east through the resource over the course of approximately 100 years. The mine plan is set up in 10-year blocks based on plant capacity (Figure 2.4.1-1). During Years 0 to 10, mining will be initiated in the west side of the property with extraction progressing north in Section 24 and south into Section 25 in Fremont County simultaneously. Anticipated acres affected each 10-year period is provided in Table 2.4.1-1.

Table 2.4.1-1 Acres Affected Per 10 Years

CUT NO.	AREA (ACRES)
Development	18
0 to 10 years	216
10 to 20 years	269
20 to 30 years	240
30 to 40 years	478
40 to 50 years	679
50 to 60 years	276
60 to 70 years	334
70 to 80 years	273
80 to 90 years	101
90 to 100 years	191
TOTAL	**3,074**

In Years 0 to 10, initial mine development will occur within 18 acres to provide a cleared area for construction of the shop and office building, utilities, MTAC and secondary crusher. It is anticipated to take up to two years to complete the infrastructure development. Upon completion of development, mining will continue in Sections 24 and 25 for the remaining eight years on approximately 216 acres. Codell sandstone will be mined in this area to a depth of 15 feet, crushed and transported to the plant.

In Years 10 to 20, mining will continue in the northwest corner of Section 24, depleting the limestone in this area by Year 20. Mining will also continue south into Section 25 during Years 10 to 20.

Table of Contents

Approximately 269 acres will be mined in Sections 24 and 25 during this period, including continued extraction of Codell sandstone in Section 24.

At the end of year 20, contemporaneous reclamation will begin in Section 24. As mining progresses into the east portion of Section 25, overburden may be hauled to Section 24 for rebuilding slopes to 3H:1V. Reclamation will continue similarly as mining progresses into the Pueblo County sections.

In Years 20 to 30 mining will continue in Section 25 moving east across the resource. This period will experience the highest strip ratio as the thickness of the overburden will be the thickest throughout the deposit. Extraction from the top 15 feet of the Codell sandstone will continue in Section 25 once sufficient acres of limestone have been removed to expose the top of the Codell sandstone. Phase reclamation will continue in Section 24 and the area used for sandstone extraction in Section 24 will be backfilled and reclaimed. Approximately 240 acres will be affected during this period.

In Years 30 to 40 mining will continue in an easterly direction. Extraction from the top 15 feet of the Codell sandstone will continue in Section 25. It is estimated that the limestone in Section 25 will be depleted during the last half of this 10-year period and mining will continue moving eastward into Sections 19 and 30 in Pueblo County. Approximate affected acreage during this 10-year period is 478 acres.

During Years 40 to 100 (approximate life of mine) mining progression is speculative at best. Mining will continue eastward through the deposit in similar manner as described above including contemporaneous reclamation in mined out areas.

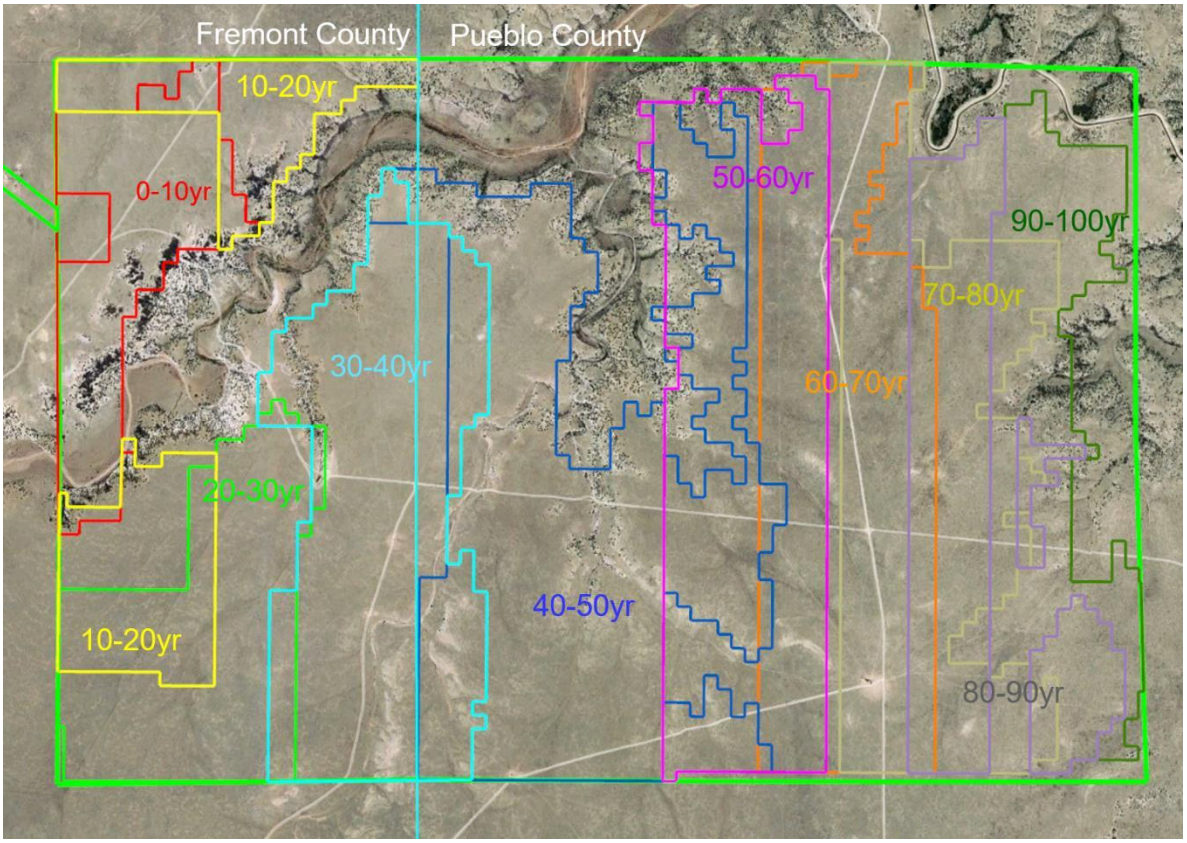

Figure 2.4.1-1 Mine Plan Blocks

Table of Contents

2.4.2 Mine Infrastructure Development

The mine will develop as two distinct development projects. MTAC from the plant to RCQ. Once safe access is available for contractors, vendors and employees, development of the mine infrastructure will begin including fencing and RCQ mine buildings and utilities.

2.4.2.1 Material Transport and Access Corridor

MTAC will include an access road for employees and vendors and the planned overland conveyor system. The corridor will extend from the plant to RCQ or approximately 6.7 miles. The conveyor and a maintenance road will lie inside a chain link fence. The access road will lie west of the conveyor fence.

The gravel access road will be 40-foot-wide to allow safe passage of both employees and equipment in both directions. The road will be constructed with road base as the sub grade and 8 inches of gravel. The road will have 10-foot-wide graded shoulders.

The conveyor will be constructed as the road is being constructed. The conveyor will be an overland system with 13 elevated wildlife crossings. The wildlife crossings will be constructed over shallow natural ravines or dry stream beds. The elevated section will span approximately 95 feet, reaching an elevated height of 10 feet 9 inches, allowing the safe passage of wildlife along MTAC. The conveyor will be supported by steel supports on precast concrete pads set on the graded and leveled ground surface every 9 feet.

The conveyor system and conveyor service road will be enclosed by a 6-foot-high chain link fence to prevent wildlife from coming in contact with the moving conveyor. The fence will end as the conveyor begins to elevate for the wildlife crossings and recommence as the conveyor elevation drops to within 6 feet of the ground surface. The fence will have security gates on each end of the overland stretches of conveyor.

2.4.2.2 Red Creek Quarry Infrastructure Development

RCQ development will include building a shop/office building, installing a sanitation vault, grading areas for equipment and vehicle storage and an area for the secondary crusher in the northwest corner of Section 24. The area will be prepared by drilling, blasting and excavating material from a 1,000 feet by 800 feet area using a bulldozer, a loader and off-road haul trucks.

The quarry shop and offices will be located in a 184-foot by 70-foot metal building constructed on a concrete slab. The concrete slab will be reinforced with rebar and will be 8 inches thick in the warehouse, 4 inches thick in the office and 12 inches thick in the shop. The shop building will have electricity from the area provider, a septic vault engineered for up to 25 employees and a water well for sanitation and equipment maintenance needs. Equipment will be maintained and repaired in the shop. The shop will include wash bays and floor drains that discharge into an oil/water separator. Diesel fuel will be stored on site in a 20,000-gallon double walled above ground fuel tank with concrete wall crash protection structure.

2.4.3 Mine Development

Mining will occur as a conventional open pit mine utilizing drilling, blasting, loading, and hauling equipment. Limestone for the plant will be transported from the blasted working faces by excavators to potentially two in-pit mobile crushers located in the vicinity of the working face. This initial crushing will produce 8-inch minus material. The 8-inch minus material will be conveyed to the secondary crusher in the northwest corner of Section 24. The secondary crusher will reduce the feedstock to 4-inch minus +/- 0.5 inch that will be transported by conveyor approximately 5.7 miles to the blending hall for further processing.

Table of Contents

Plant growth material will be salvaged and stockpiled during all site development and mining activities. Up to two feet of plant growth material will be ripped and pushed into a temporary stockpile. Haul trucks will transport the material to the property boundary and planned quarry area for construction of a 10-foot-high perimeter berm. In the event plant growth material will not be used in reclamation within one year, it will be seeded with a temporary seed mix to stabilize the surface until the material is needed in final reclamation.

During initial mine development, a temporary stockpile will be located in the northwest corner of Section 24 (Figure 2.4.3-1). The temporary stockpiles will be 1,200 feet by 800 feet with a total capacity of 3.1M tons. It will be constructed in separate stockpiles of overburden and limestone. Once sufficient mine floor is mined out, the overburden stockpile material will be pushed into the quarry as backfill for slopes. The anticipated life of the temporary stockpiles is less than 20 years.

The limestone mine will develop as a surface mine with benches and a perimeter berm (Figure 2.4. 3-2). Limestone will be mined by cutting benches with a vertical face of 36 feet and a bench of 20 feet. The depth of limestone is approximately 140 feet deep with Codell sandstone below the limestone deposit. The crest of the mine bench will be 150 to 200 feet within the permit boundary. A 10-foot berm will be constructed of overburden approximately 100 feet from the crest of the limestone bench.

The sandstone mine will be an open pit mine in the floor of the limestone mine. After extracting the limestone, a sandstone pit will be developed in the Codell. Sandstone will be mined from two 23-acre locations along the west boundary; one in each Section. Sandstone will be mined to a depth of 15 feet as a typical open pit mine using backhoes and haul trucks. The slopes of the sandstone pit will be 3H:1V.

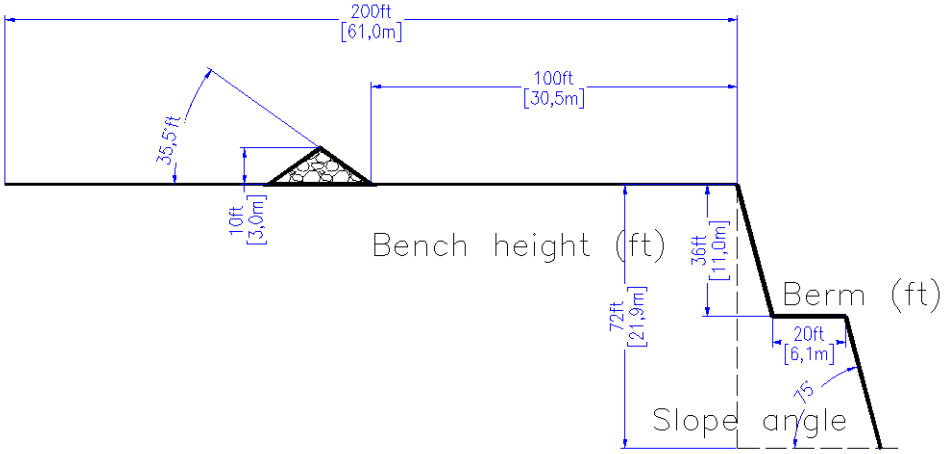

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Figure 2.4.3-2 Limestone bench mining cross section

Daily mining activity will be performed by diesel fueled loaders, a dozer, motor grader, three 100-ton off-road haul trucks, a 20,000-gallon water truck, and electric backhoes. Once the plant growth material is salvaged and the mine area is leveled, the mine area will be drilled in preparation for blasting at depths based on the geologic stratigraphy of overburden, translime, Fort Hays limestone and Codell sandstone. The drilling patterns are described in the Blasting Plan (Appendix 4.1). The blasted material is segregate as overburden and limestone. Overburden is hauled to the waste dump area and stockpiled for use during final reclamation to rebuild slopes and bring up the elevation of the mine floor or it will be used to construct the perimeter berm.

Limestone is processed twice in the RCQ, prior to being conveyed to the BCQ. Electric backhoes will feed one of two electric primary jaw crushers (each rated at 650 tons per hour [tph]) located near the working face. The crushed limestone will be conveyed to the electric secondary cone or impact crusher

Table of Contents

Exhibit 2.5-1 Wildlife Information

CO DRMS 112 Permit Exhibit H: Wildlife Information (Rule 6.4.8) Section 2.8

Wildlife information was obtained for the proposed permit area from two wildlife database sources: Colorado's Conservation Data Explorer (CODEX) and US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC). CODEX includes a 1-mile buffer area around the subject area. The IPaC requested search area of interest was larger than actual parcels and extends the area of interest to include migration paths, for example, since species move and change location based on seasons. The proposed permit area was surveyed for wildlife habitat, presence and evidence of presence from August 8-10, 2023.

Three IPaC reports were generated for areas that included the Mining Permit and Affected Area Boundary on July 20, 2023. The following species listed under the Endangered Species Act were identified as potentially being in the area:

- Gray wolf, *Canis lupus* – Endangered
- Eastern Black Rail, *Laterallus jamaicensis ssp jamaicensis* - Threatened
- Greenback Cutthroat Trout, *Oncoryhnchus clarkia stomias* – Threatened
- Monarch Butterfly, Danaus plexippus – Candidate

No critical habitats for any listed species occur in the area.

Both Bald and Golden eagles are listed as potentially being within the area, but neither are listed federally as a Bird of Conservation Concern.

Three CODEX reports were requested for the Mining Permit and Affected Area Boundary. One report is for RCQ, where the mining will take place, and the others are for the MTAC. CODEX lists species that have a regulatory status that have been confirmed as documented to occur within one mile of a project area as well as potential species based on models, range maps and unconfirmed records. A CODEX Project Review Report was produced on July 20, 2023 and the following species were identified by CODEX as documented within a mile of the Mining Permit and Affected Area Boundary:

- Bald Eagle – Special Concern
- Southern redbelly dace – State endangered

Species with a status of State endangered, threatened or a species of special concern identified as potentially occurring within the Mining Permit and Affected Area Boundary by CODEX include:

- Black-footed ferret – State endangered
- Burrowing owl - State threatened
- Mountain plover – Special concern
- Black-tailed prairie dog - special concern
- Colorado checkered whiptail – special concern

None of the species identified as being federally or state listed as endangered, threatened or of special concern were observed within the Mining Permit and Affected Area Boundary. The absence of observation does not guarantee a species is not present, however. Therefore, each of those species is

Table of Contents

discussed below relative to its potential for being present within the Mining Permit and Affected Area Boundary.

2.8.1 Gray wolf

The USFWS states in the IPaC report that gray wolves would only be present in Colorado as lone, dispersing wolves. Colorado is completely outside of the current range map for gray wolves (USFWS 2023a.

The likelihood of gray wolves being present within the Mining Permit and Affected Area Boundary is very low.

2.8.2 Eastern Black Rail

Colorado Parks and Wildlife documented in 2016 that the species is found in dense emergent vegetation, with a mix of new and residual growth. Also, Colorado-based research (USFWS 2023b) defined black rail habitat as emergent marsh wetlands that consisted of cattails and other wetland species, like hardstem bulrush (Schoenoplectus acutus).

The Mining Permit and Affected Area Boundary is within the known range of the Eastern black rail. However, very little, if any, habitat for this species can be found within the Mining Permit and Affected Area Boundary. While there are emergent wetland plant species found in the area, they are located in and along Red Creek and not in any emergent marshes. The overstory habitat favored by Eastern black rails is absent in these areas as well.

Therefore, the likelihood of Eastern black rails being present within the Mining Permit and Affected Area Boundary is very low.

2.8.3 Greenback Cutthroat Trout

Greenback cutthroat trout are cold water fish belonging to the trout, salmon and whitefish family. This species inhabits cold water streams and cold-water lakes with adequate stream spawning habitat present during spring. In general, trout require different habitat types for different life stages: juvenile (protective cover and low velocity flow, in side channels and small tributaries); spawning (riffles with clean gravels); over-winter (deep water with low velocity flow and protective cover); and adult (juxtaposition of slow water areas for resting and fast water areas for feeding, with protective cover from boulders, logs, overhanging vegetation or undercut banks). Both water quality and quantity are important. Greenbacks, like other cutthroat trout, generally require clear, cold, well-oxygenated water.

The range of the greenback cutthroat trout does not extend into Fremont County, but the range does fall within Pueblo County, through which the Arkansas River flows. The only waterbody of any substantial size within the Mining Permit and Affected Area Boundary is Red Creek. Red Creek in this area does not have enough water flow to support greenback cutthroat trout nor do the habitats exist in Red Creek that are needed to support the different life stages of the species, as described above.

Therefore, the likelihood of Greenback cutthroat trout being present within the Mining Permit and Affected Area Boundary is extremely low.

2.8.4 Monarch Butterfly

The monarch butterfly is not listed as an endangered or threatened species yet and is therefore not afforded the protections of the Endangered Species Act. However, a few milkweed plants of three different species (zyzotes, broadleaf and narrowleaf) were observed during the vegetation surveys. Therefore, it is possible that monarch butterflies could be present within the Mining Permit and Affected Area Boundary, but it is unlikely that they would be present in any large numbers. The Western Monarch

Table of Contents

Milkweed Mapper, which relies on citizen science data, has milkweed locations recorded in the area north of Lake Pueblo State Park and east of Florence, CO, but no recorded sightings of monarch butterflies. The closest monarch butterfly sightings were recorded in Canon City and in the northern area of Pueblo.

2.8.5 Bald and Golden Eagles

According to the online Cornell Lab of Ornithology eBird map (https://ebird.org/map), both bald and golden eagles are abundant along the Arkansas River and its tributaries, including Hardscrabble Creek which is to the north and east of the Mining Permit and Affected Area Boundary. Numerous sightings have also been reported along Route 96 which is the closest road south of the Mining Permit and Affected Area Boundary.

Therefore, it is highly likely that Bald and Golden eagles may be present within the Mining Permit and Affected Area Boundary. However, there are very few areas that would be suitable for eagles to build nests, so the project area would likely be a hunting ground for the eagles rather than support any breeding pairs.

2.8.6 Southern redbelly dace

The southern redbelly dace is an energetic, schooling fish that inhabits clear, cool waters in small to medium streams in the Mississippi, Ohio and Missouri river drainages. Their populations are widely scattered across the Great Plains, but most of their population range occurs to the east. In the western part of their range, southern redbelly dace are restricted to rather small, scattered populations near the headwaters of tributaries of larger rivers like the Missouri, Kansas and Arkansas rivers. They are restricted to relatively small regions where the cold water from springs and headwater streams creates similar conditions to the last glacial retreat from the Great Plains Region. The optimal habitat for dace is clear, cool streams which are fed by groundwater with heavy vegetation for cover and gravel or sand substrate. Southern redbelly dace require clean gravel substrates for reproduction and feeding. They rely on their sight to feed and recognize brilliant color patterns of potential mates during spawning.

While Red Creek is a tributary to the Arkansas River, the creek is intermittently fed by connection to the groundwater along its length within the Mining Permit and Affected Area Boundary. It is possible that Southern redbelly dace could occur within Red Creek, but with the lack of consistent flow within the Mining Permit and Affected Area Boundary portion of the creek, it is unlikely that they would occur in that portion given the lack of clear stream flow and heavy riparian vegetation.

2.8.7 Black-tailed prairie dog and associated species (Black-footed ferret, Burrowing owl)

Black-tailed prairie dogs are found within the area that borders the Mining Permit and Affected Area Boundary. Prairie dogs were observed a good distance off to the west of Transect 17 of the vegetation survey. In Colorado, it is unlawful to capture, transport, and relocate black-tailed prairie dogs from one site to another suitable site without a permit from Colorado Parks and Wildlife.

The burrowing owl and the black-footed ferret are species closely associated with, and dependent on, black-tailed prairie dogs. The black-footed ferret was extirpated from this area but there are release sites in the vicinity.

As of this report, there are no black-tailed prairie dogs, burrowing owls or black-footed ferrets within the Mining Permit and Affected Area Boundary.

2.8.8 Mountain plover

The mountain plover nests in flat, dry landscapes characterized by very short, sparse vegetation (preferably less than 3 inches), with at least 30% bare ground and a slope less than 5 degrees (less than 2 degrees optimal). A conspicuous object (e.g., manure pile, clump of vegetation, rock) is usually found

Table of Contents

near nest sites. In Colorado, the mountain plover is commonly associated with heavily grazed blue grama (Bouteloua gracilis) or buffalograss (Buchloe dactyloides) on the eastern plains. The mountain plover is strongly associated with black-tailed prairie dog towns in some parts of its breeding range. The mountain plover feeds almost exclusively on invertebrates. Grasshoppers and beetles have been reported as the most common prey.

According to the online Cornell Lab of Ornithology eBird map (https://ebird.org/map), the most recent sighting of mountain plovers near the Mining Permit and Affected Area Boundary was in 2014. Older sightings range from 1975 to 2010.

The habitat within the Mining Permit and Affected Area Boundary could potentially support mountain plovers, particularly in the vicinity of the known black-tailed prairie dogs if mountain plovers nest away from the colonies. Mountain plovers, while listed as a State species of special concern, are not afforded any legal protection beyond requiring a permit to capture or handle.

2.8.9 Colorado checkered whiptail

The native range of the Colorado checkered whiptail is restricted to the Arkansas River drainage of southeastern Colorado. Colorado checkered whiptails occupy a native range restricted to the Arkansas River drainage and its tributaries in southeastern Colorado. Occupied habitat includes canyons, the vicinity of hillsides, rivers, arroyos, and creeks, as well as heavily altered habitats with slopes. This lizard often is encountered in areas of Ponderosa pine, Gambel's oak, pinyon-juniper woodland, and shrublands and grasslands with rabbitbrush, cholla, and yucca. Colorado Checkered Whiptails forage opportunistically, and the most common food items for adults are grasshoppers and termites, while spiders and leafhoppers were the primary food items for young lizards.

Within the Mining Permit and Affected Area Boundary there are areas of habitat suitable for Colorado checkered whiptails but a large percentage of the habitat in the area is not their preferred habitat. Colorado checkered whiptails are a State species of special concern and are not afforded any legal protection beyond requiring a permit to capture or handle.

2.8.10 Wildlife Impact Mitigation Measures

Colorado Parks and Wildlife (CPW) was invited to conduct a site visit on October 19, 2023. The visit included review of project maps, explanation of mine development and contemporaneous reclamation. Upon receipt of CPW's November 14, 2023, comment letter, Holcim requested a follow up virtual meeting to discuss CPW's recommendations. Ms. Cassidy English, CPW's SE Region Land Use Coordinator, represented CPW during the virtual meeting. Ms. English clarified that the recommendations were just that, recommendations, as opposed to mitigation directives. The following wildlife impact mitigation measures will be implemented to minimize and avoid impacts to wildlife.

Contemporaneous reclamation is the primary mitigation measure that will minimize impacts to wildlife. Approximately 10% of the proposed permit area, or 450 acres, will be impacted at any one time. This will preserve approximately 4000 acres for wildlife habitat and winter range.

2.8.10.1 Raptors

Raptor nests were not observed within the Mining Permit and Affected Area Boundary on August 8, 2023. However, there is a potential for foraging raptors, such as bald and golden eagles, to be present outside the Mining Permit and Affected Area Boundary. Holcim will conduct raptor surveys to identify areas with raptor nests prior to commencing surface disturbances. If nesting areas are identified, the best management practices outlined in the *Colorado Parks and Wildlife Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW, 2020) guidance will be implemented.

Table of Contents

2.8.10.2 Prairie Dogs

Prairie dogs were not observed within the Mining Permit and Affected Area Boundary on December 17, 2023. However, prairie dogs were observed to the west of MTAC indicating the possibility for prairie dog colonies to develop within the Mining Permit and Affected Area Boundary in the future. Burrowing owls utilize abandoned prairie dog burrows. Holcim will conduct surveys of burrows within the current mining operation phase in accordance with the CPW *Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls (CPW, 2021).* If nesting burrowing owls are identified, the best management practices outlined in the *Colorado Parks and Wildlife Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CPW, 2020) guidance will be implemented.

2.8.10.3 Aquatic Habitat

The Mining Permit and Affected Area Boundary includes several drainages along the MTAC and within the RCQ area. Holcim will implement erosion and sediment control best management practices (BMPs) to prevent sedimentation of aquatic habitats.

Table of Contents

COLORADO
Parks and Wildlife
Department of Natural Resources

Southeast Region
4255 Sinton Road
Colorado Springs, CO 80907
P 719.227.5200

April 9, 2025

JoAnne Kohl
Planning and Zoning Department
615 Macon Avenue
Canyon City, 81212
joanne.kohl@fremontco.com

Subject: Resubmittal MM CUP 24-001 Red Creek Quarry

Dear Ms. Kohl,

At the request of the Fremont County Planning and Zoning Department, Colorado Parks and Wildlife (CPW) reviewed the resubmittal for the proposed MM CUP 24-001 Red Creek Quarry Project in Fremont County, Colorado. On November 14, 2023, CPW submitted comments regarding the project (File No. M-1977-344). Following revisions to the submission package, CPW reviewed the resubmission to identify potential impacts and provide recommendations to avoid or minimize impacts on wildlife and wildlife resources. This letter outlines CPW's statutory responsibilities, our understanding of the project, general comments, potential impacts to wildlife resources, and conservation recommendations.

CPW'S STATUTORY RESPONSIBILITY

CPW has a statutory responsibility to manage all wildlife species in Colorado. As such, we encourage protection for Colorado's wildlife species and habitats through responsible energy development and land use planning. The protection of core wildlife areas, quality fisheries and habitat, big game winter range and seasonal migration corridors, and raptor nesting locations is of extreme importance. CPW recommends that all proposed projects be assessed to avoid, minimize, or mitigate impacts to sensitive wildlife habitats and species. This includes species of concern as well as Federally and/or State-listed species; big game wildlife (migration corridors, winter range, and parturition areas); breeding and nesting habitats for sensitive ground-nesting birds; and nests of raptors sensitive to development, to prevent the loss or fragmentation of habitat. The U.S. Fish and Wildlife Service (USFWS) should be consulted on any Federally-listed Endangered and Threatened Species that might be present at the location.

Table of Contents

UNDERSTANDING OF THE PROJECT

The proposed quarry will be a 100 year operation and will begin in Fremont County and move eastward into Pueblo County. Reclamation will commence approximately 20 years after initial development. The quarry and conveyor will total 4076.08 acres. CPW is familiar with the project area as well as the surrounding area.

GENERAL COMMENTS

CPW recommends that project proponents adhere to the Impact Avoidance, Minimization, and Mitigation Recommendations outlined in the November 14, 2023 comment letter which has been attached for your consideration. Additionally, we recommend adherence to the impact minimization recommendation outlined below in response to updates presented in the resubmission package.

POTENTIAL IMPACTS TO WILDLIFE RESOURCES

High Priority Habitats (HPH) are sensitive areas identified using CPW's Species Activity Mapping (SAM) database. SAM maps, updated every four years, incorporate scientific data and field observations of wildlife use and are publicly available for environmental assessments and land-use planning. CPW also considers Species of Greatest Conservation Need (SGCN) identified in the State Wildlife Action Plan (SWAP). These species face population declines, habitat threats, or ecological vulnerabilities requiring proactive conservation efforts. SGCN may include Federally- or State-listed threatened, endangered, or special-concern species, as well as species with restricted ranges, declining populations, or significant ecological roles.

Big Game Severe Winter Range and Winter Concentration Areas

The proposed mining lease area is in important winter range for bighorn sheep, mule deer, and elk. This area also includes important winter concentration area for pronghorn. Severe Winter Range is the portion of a species' habitat where 90% of individuals in a given area are located during an average of five winters out of ten, from the first heavy snowfall to spring green-up. Winter Concentration Areas are part of the winter range where species densities area at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten. This information is based on CPW field personnel observations and is updated every four years via SAM.

The expanded hours of operation for the quarry has the potential to increase adverse impacts to big game species. As such, CPW recommends the following impact minimization measures.

- Avoid construction/development activities between November 1 and April 30 in order to minimize displacement of wintering bighorn sheep, mule deer, elk and pronghorn from the project area. For the exploratory phases of the project, CPW recommends all work be completed outside the winter season.
- If adherence to the winter range timing limitation or density recommendations is not possible, as is the case with large scale mining, CPW recommends compensatory mitigation in the form of off-site habitat enhancements or protections to mitigate the direct habitat loss and the functional habitat loss for big game species displaced from

Table of Contents

the project area. CPW is happy to assist in the identification of potential treatment areas and enhancement options or to discuss other potential opportunities such as, but not limited to; conservation easements or increased public access.

CPW appreciates this opportunity to review the resubmittal of the MM CUP 24-001 Red Creek Quarry Project. CPW believes that impacts of the project are unavoidable but that the implementation of seasonal timing limitiations along with impact offset through offsite mitigation would greatly decrease adverse impacts to species of conservation concern within and around the project area. If the timing or scope of this project changes and/or if you have any questions, comments, or concerns, please contact District Wildlife Manager Zach Holder at 719-269-0656 or zach.holder@state.co.us or the Southeast Region Land Use Specialist Carolyn Craveiro de Sá at 719-747-3838 or carolyn.craveirodesa@state.co.us.

Sincerely,

Sean Shepherd

Sean Shepherd
Area Wildlife Manager - Area 13
P 719.539.5991
7405 U.S. Hwy 50, Salida, CO 81201
sean.shepherd@state.co.us

Cc: Carolyn Craveiro de Sá, SE Land Use Specialist- carolyn.craveirodesa@state.co.us
Zach Holder, District Wildlife Manager- zach.holder@state.co.us

Table of Contents

COLORADO
Parks and Wildlife
Department of Natural Resources

Southeast Region
4255 Sinton Road
Colorado Springs, 80907
P 719.227.5200 | F 719.227.5264

November 14, 2023

Timothy A. Cazier, P.E.
Division of Reclamation, Mining, and Safety
1313 Sherman St. Room 215
Denver, CO 80203

RE: Portland Limestone Quarry-File No. M-1977-344, Holcim (US) Inc. Amendment (AM-2) Bear Creek Quarry Permit Amendment for Red Creek Quarry

Dear Mr. Cazier,

Colorado Parks and Wildlife (CPW) has received the request to review the application to amend the Portland Limestone Quarry to include the Red Creek Quarry. The proposed quarry is located in Fremont and Pueblo Counties. The proposed quarry will be a 100 year operation and will begin in Fremont County and move eastward into Pueblo County. Reclamation will start at approximately the 20 year mark. The quarry and conveyor will total 4078.72 acres. CPW is familiar with the project area as well as the surrounding area.

Early communication and collaboration are paramount when it comes to avoiding, minimizing and mitigating potential adverse impacts to wildlife. CPW appreciates the communication and the site-visit held on October 19, 2023 with Holcim and Environmental Alternatives, INC. As you may be aware, CPW has a statutory responsibility to manage the fish and wildlife species in Colorado. This responsibility is embraced and fulfilled through CPW's mission to perpetuate the wildlife resources of Colorado and provide sustainable outdoor recreation opportunities that educate and inspire future generations. One way that we fulfill our mission is to review land use proposals such as this, and provide science-based recommendations to limit the potential impacts on wildlife and their habitats.

After our initial review of the project and site visit, we have prepared the following comments for your consideration.

Potential Impacts to Wildlife Resources:

CPW maintains a list of species-specific high priority habitats (HPH) in Colorado along with recommendations for management actions that may be implemented to avoid, minimize, and mitigate impacts to wildlife during land use development. Our review and GIS analysis showed

Table of Contents

an overlap with several species and habitats that CPW has identified as high priority and potentially impacted by this type of development.

Big Game:
The proposed mining lease area is in important winter range for Bighorn sheep, mule deer, and elk. This area also includes important winter concentration area for pronghorn. Habitat for big game winter range and migration corridors are both a federal and state priority and supported by Federal Secretarial Order (SO) 3362 Improving Habitat Quality in Western Big-Game Winter Range and Migration (2018) and Executive Order D 2019 011 from Colorado Governor Jared Polis Conserving Colorado's Big Game Winter Range and Migration Corridors (2019).

CPW anticipates the effects on big game species would be significant from a large mining operation with the direct loss of habitat, and a larger indirect impact from increased human presence, increased traffic, light and noise. There will be a direct long-term loss of up to 4,078.72 acres of winter range for bighorn sheep, mule deer, elk, and pronghorn. In addition to the direct loss of habitat, there also will be an indirect loss of winter range and year round habitat for bighorn sheep, mule deer, elk and pronghorn in areas surrounding the mine due to a decrease in the use of these habitats as a result of a significant increase in traffic and human activity in the area. Although the amount of indirect winter habitat loss in areas surrounding the mine is difficult to estimate, it is likely to be significantly higher than the direct impact, particularly for the bighorn sheep herds in the vicinity. Rocky Mountain bighorn sheep winter range is that part of the overall range where 90% of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up. For these habitats CPW recommends a no surface occupancy stipulation and no human encroachment, including over flights, from November 1 through April 15 for all mapped Rocky Mountain bighorn sheep winter concentration areas and winter range.

Burrowing Owls:
The presence of mapped active black-tailed prairie dog colonies on the site indicates the potential presence of nesting burrowing owls. Burrowing owls are listed as State Threatened, and nest in active or inactive prairie dog burrows. Where there are black-tailed prairie dog colonies on the location of the proposed project, specific recommendations for pre-construction surveys and buffers around active burrowing owl nests are included in the referenced BMP document.

Raptors and Migratory Birds:
There is suitable habitat for nesting raptors and migratory birds on the proposed lease site. Consultation with USFWS is recommended to ensure compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Act. To avoid impacts to the nesting efforts of migratory birds, CPW recommends any proposed development or exploration of the site focus, seismic work, construction, and vegetation clearing activities outside of the breeding season (March 15th –August 31st). If construction must occur during the breeding season, surveys for active nests should be conducted prior to groundbreaking.

All migratory birds are protected under the Migratory Bird Treaty Act and removal or disturbance of any migratory bird nest would require consultation with CPW and USFWS prior

Table of Contents

to disturbance. CPW also recommends the use of preconstruction surveys to identify raptor nests within the project area and the implementation of appropriate restrictions. CPW recommends adherence to the recommended buffer distances and timing stipulations identified in the CPW document "Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors" available on the CPW website.

Riparian Areas:
Riparian areas and drainages are important habitats for a variety of wildlife and need to be connected as much as possible so a layout that maintains access for wildlife to those areas in particular is preferred. The proposed location also includes **short grass prairie** habitat. Native short grass prairies in this area provide critical habitat for species including Burrowing Owl, Black-tailed prairie dog, Ferruginous Hawk, Swainson's Hawk, Prairie Falcon, Golden Eagle, Swift Fox, and Pronghorn. It would be important that any disturbed soil in this area be replanted in native grasses as soon as possible to minimize loss of top soil and the introduction of invasive noxious weeds.

Noxious weed management:
Also of importance are revegetation of disturbed soils and the control of noxious weed species through the development of a noxious weed management plan prior to initiating construction activities. The documentation for the project identifies the presence of several species of invasive weeds at the site and the construction plan should address the existing conditions, treatment of invasive weeds on site, and best management practices to prevent the spread of noxious weeds. The revegetation of disturbed areas and control of invasive weed species are important components of the project and it is highly preferred that the site be restored to a native plant community. CPW prefers that native vegetation be retained on site during the operational lifespan of the project, both as habitat for wildlife and to ensure successful reclamation of the project area. Proper reclamation, from a wildlife perspective, involves not only stabilizing the soil and establishing ground cover, but fostering plant communities with a diversity of species and plant types -grasses, woody plants, and broadleaf forbs- which will fully serve the nutritional needs of wildlife. Strict adherence to the Natural Resources Conservation Service's recommendations is advised.

Impact Avoidance, Minimization, and Mitigation Recommendations:

- Avoid construction/extraction activities between November 1 and April 30 in order to minimize displacement of wintering bighorn sheep, mule deer, elk and pronghorn from the project area. For the exploratory phase of the project, CPW recommends all work be completed outside the winter season.

- If adherence to the winter range timing limitation or density recommendations is not possible, as is the case with large scale mining, CPW recommends compensatory mitigation in the form of off-site habitat enhancements or protections to mitigate the direct habitat loss and the functional habitat loss for big game species displaced from the project area. CPW is happy to assist in the identification of potential treatment areas and enhancement options or to discuss other potential opportunities such as, but not limited to; conservation easements or increased public access.

Table of Contents

- CPW appreciates the opprotunity to review the 13 wildlife crossings planned for the conveyor belt corridor. CPW recommends one additional wildlife crossing, located between the last planned wildlife crossing and the Northwest corner of the mine. Per discussions with Holcim, there is a possibility to construct a wildlife overpass at this location. CPW is happy to have further conversations on the design of the wildlife crossings.

- CPW recommends designing the conveyor belt corridor fence to allow for small animal crossings. This includes the addition of a 6 inch gap on the bottom of the fence and the use of culverts where appropriate on the landscape.

- CPW recommends that if the property boundary of the mine is going to be fenced, that wildlife friendly fencing is used. The CPW document "Fencing with Wildlife in Mind" is available at our website. CPW appreciates discussions with Holcim about either not fencing the property or using an alternative wildlife friendly fence (such as 3 strands of wire instead of the standard 4 strands).

- Due to the use by foraging raptors within the project area and the potential for raptor nest sites within the project boundary, CPW recommends preconstruction surveys for raptor nest sites prior to surface disturbance or vegetation removal. If a nest is located during the survey CPW recommends adherence to the recommendations in the Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors for best management practices to minimize impacts to nesting raptors.

- Due to the potenial presence of prairie dog colonies within the project site CPW recommends the adherence to CPW's Burrowing Owl survey protocol if development occurs during the spring or summer months (Feb 1 to Oct 31). If nesting burrowing owls are present, no human encroachment or surface disturbance should occur within a 200-meter buffer of nesting burrows from March 15 to August 15. If burrowing owls occupy the site, CPW recommends that earthmoving and other disturbance activities be delayed until late fall after they have migrated.

- This area includes several drainages with proximity to the Arkansas River to the north of the project location. CPW recommends utilization of best management practices and construction controls for sediment control. Avoiding any increased sedimentation in nearby drainages, including intermittent creeks would be important to avoid impacts to nearby aquatic habitat.

CPW also appreciates conversations with Holcim on allowing hunting access until the start of construction. The local CPW staff is looking forward to future conversations as this project progresses to collaborate on potential conservation efforts and the possibility of continued hunting access.

Again, Colorado Parks and Wildlife appreciates the early communication and collaboration to minimize this project's overall impacts on wildlife. Please feel free to contact, Land Use

Table of Contents

Coordinator, Cassidy English, should you have any questions or require additional information at 719-828-4877, or via email at cassidy.english@state.co.us.

Sincerely,

Sean Shepherd

Sean Shepherd
Area 13 Wildlife Manager

CC: Mike Brown, Area 11 Wildlife Manager
Cassidy English, SE Region Land Use Coordinator
Zach Holder, DWM Area 13
Gretchen Holschuh,DWM Area 11

Table of Contents

Exhibit 2.5-2 Vegetation Information

CO DRMS 112 Permit Exhibit J: Vegetation Information (Rule 6.4.10) Section 2.10

Table 2.10-1 was prepared from the NRCS soil survey database. The vegetation listed is expected and typical vegetation for the soil type. Also provided is the average annual production of vegetation in pounds per acre.

The vegetation survey was conducted from August 8-10, 2023, within the various soil type areas found within the Mining Permit and Affected Area Boundary. Sample locations were chosen to include at least one transect within each soil type located within the Mining Permit and Affected Area Boundary. At each location, a 100-ft transect was measured and marked with pin flags. The overall percentage covered within the area was visually estimated. The five most dominant plants within one foot of the transect were identified and any other notable species in the vicinity were also recorded.

For a majority of the transects, tumbleweed and blue grama were the most abundant plant species observed. Differences in abundance and diversity of plant species appears to be driven by the amount of available water, with the driest areas having more tree cholla, prickly pear and yucca while areas closer to water sources were dominated by sedges, a variety of grasses and invasive saltcedars. The areas closer to drainage areas generally have more trees, shrubs and flowering plants as opposed to areas dominated by tumbleweed and cacti. The entire area is subject to cattle grazing with no area except for one transect atop a hill absent of cattle tracks and manure. Plants present are well adapted to the presence of cattle. Based on CODEX report, no rare plants were observed.

Fremont Weed Control Officer Brittany Pierce visited the Fremont County parcels on September 28, 2020. The Integrated Weed Management Plan is provided in Appendix 4.10. Noxious weed Species observed during the vegetation field survey that are on the Colorado Department of Agriculture's Noxious Weeds list (https://ag.colorado.gov/conservation/noxious-weeds/species-id) included saltcedar (List B), Russian olive (List B) and common mullein (List C). List B includes species for which the continued spread in Colorado should be halted. List C includes species for which local agencies have authority to decide management strategies for elimination. There were no List A species observed, which include species that have newly arrived and/or are less common in Colorado but still need to be eradicated. Saltcedar was abundant within and in the vicinity of Transects 10 and 11, which were located along Red Creek. This area is also where Russian olive was observed and was in an area uphill of but in a tributary drainage of Red Creek. Common mullein was only observed in one location, Transect 5, in an area near to the middle of Parcel 3 of the Mining Permit and Affected Area Boundary.

Table of Contents

Table 2.10-1 Soils and Vegetation Data

Map Unit Symbol	Map Unit Name	Vegetation	Average annual production of air-dry vegetation in pounds per acre
3	Aquic Ustifluvents	western wheatgrass, inland saltgrass, alkali sacaton, sand dropseed, little bluestem, sedges, big bluestem, willows and scattered areas of cottonwood	1500
48	Kim loam	short grasses, of which blue grama predominates.	800
52	Kim-Cascajo complex	Kim soil vegetation and sideoats grama, blue grama, little bluestem, needleandthread and Indian ricegrass.	750
66 MvC	Manvel	blue grama, galleta, western wheatgrass, cactus, and needlegrass.	800
83 PmE	Penrose-Minnequa complex	blue grama, western wheatgrass, winterfat, blue grama, pricklypear, broom snakeweed and red threeawn.	800
84 PrF	Penrose-Midway-Rock outcrop complex	sideoats grama, blue grama, Scribner needlegrass, Indian ricegrass and stands of oneseed juniper or Rocky Mountain juniper	60
92	Riverwash	blue grama, wester wheatgrass, needleandthread and prairie junegrass	1200
129	Wilid silt loam aka Wiley silt loam	blue grama, galleta, sand dropseed, and western wheatgrass.	800
LM	Las Animas fine sandy loam	willow, cottonwood, and a variety of water tolerant grasses.	Unavailable
WM	Minnequa-Wilid silt loams	blue grama, western wheatgrass, winterfat, galleta, sand dropseed,	800

Table of Contents

CUP Exhibit 2.6-1

Exhibit G: Water Information (Rule 6.4.7)

CO DRMS 112 Permit Exhibit G: Water Information (Rule 6.4.7)

Section 2.7

2.7.1 Existing Conditions

The RCQ lies within the Great Plains physiographic region of Colorado and consists of Cretaceous Seaway Sedimentary rocks (Barkmann 2021). The Cretaceous sedimentary rocks of the region were deposited from an inland sea that divided the North American continent into two landmasses approximately 100 million years ago. The shifting coastal seashore line resulted in the varying marine environment responsible for the deposition with shallow water deposition represented by the sandstone units and deep water deposits represented by limestone and shales (Pinel, 1977).

The topography at the Site is generally flat with some local relief along surface water drainages with shale, limestone, and sandstone outcrops. The overall gradient slopes downward to the northeast towards Red Creek and the Arkansas River. Within the Red Creek drainage, sequences of erosion and deposition resulted in multiple alluvial stream terraces covered to varying degree in vegetation.

The Water Quality Control Division classification for Red Creek is COARUA14a based on the information obtained from the Colorado Department of Public Health and Environment Clean Water GIS website (https://cdphe.colorado.gov/clean-water-gis-maps). Below are the 5 CCR 1002-32 water quality standards for COARUA14a (Table 2.7.1-1).

CODE OF COLORADO REGULATIONS
Water Quality Control Commission ***5 CCR 1002-32***

REGULATION #32 STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS
Upper Arkansas River Basin

14a. Mainstem of Big Red Creek, Little Red Creek, and Hardscrabble Creek from their sources to their confluence with the Arkansas River.

COARUA14A	Classifications
Designation	Agriculture
Reviewable	Aq Life Warm 2
	Recreation E
Qualifiers:	
Fish Ingestion Standards Apply	
Other:	
*Uranium(acute) = See 32.5(3) for details.	
*Uranium(chronic) = See 32.5(3) for details.	

Physical and Biological	DM	MWAT
Temperature °C	WS-II	WS-II
	acute	**chronic**
D.O. (mg/L)	---	6.0
D.O. (spawning)	---	7.0
pH	6.5 - 9.0	---
chlorophyll a (mg/m^2)	---	TVS
E. Coli (per 100 mL)	---	126

Inorganic (mg/L)	acute	chronic
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	---
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	100	---
Nitrite	---	0.5
Phosphorus	---	TVS
Sulfate	---	---
Sulfide	---	0.002

Metals (ug/L)	acute	chronic
Arsenic	340	---
Arsenic(T)	---	7.6
Cadmium	TVS	TVS
Chromium III	TVS	TVS
Chromium III(T)	---	100
Chromium VI	TVS	TVS
Copper	TVS	TVS
Iron(T)	---	1000
Lead	TVS	TVS
Manganese	TVS	TVS
Mercury(T)	---	0.01
Molybdenum(T)	---	150
Nickel	TVS	TVS
Selenium	TVS	TVS
Silver	TVS	TVS
Uranium	varies*	varies*
Zinc	TVS	TVS

Table 2.7.1-1: Regulation 32 Water Quality Standards for COARUA14a

Table of Contents

Within the Red Creek drainage are seeps and springs flowing from fractures within the rock outcrop. Minimal water flow was observed in alluvial sediments above the seep location indicating minor flow within Red Creek independent of the identified seeps.

The surface water flow disappears into the creek sediments and Red Creek is dry at the boundary of the Site. Drainages south and east of Red Creek show signs of intermittent to no surface water flow. Upland areas on the site are grasslands with gentle slopes, few outcrops, and sparse shrubs and trees compared to the Red Creek drainage.

Another feature on the Site is the Minnequa canal, owned by Rocky Mountain Steel Mills. The canal flows across the RCQ property along the northeast corner, diverting water from the Arkansas River at Florence for irrigation purposes and municipal/domestic use. The canal is fully fenced and is siphoned under Red Creek, just north of the Site property boundary.

2.7.2 U.S. Army Corp of Engineers

Holcim engaged BC to begin the preliminary jurisdictional determination (PJD) for the Red Creek Quarry parcel in Fall 2019. BC personnel conducted a field reconnaissance at the Site on May 28, 2019 to observe and document conditions of the property, specifically related to the surface water drainages on the Site. The location of the sites visited are shown in Figure 2.7.2-1. A second field visit was conducted on October 1, 2019, with Joshua Carpenter, regulatory staff with the United States Army Corps of Engineers (USACE), Albuquerque District, Pueblo Regulatory office to review the site conditions and discuss potential jurisdictional resources. Based on these two field visits, BC submitted a preliminary jurisdictional determination (PJD) request to the USACE; on May 21, 2020, the USACE issued the initial PJD letter stating they concurred with the BC assessment. The USACE-approved PJD provided Holcim with the information necessary to start planning for mining operations and the disturbance footprint given the locations of jurisdictional resources.

Based on the need for better defining the limits of ephemeral tributaries to Red Creek on the site, a second field reconnaissance was conducted by BC on December 3, 2020. Initially, the first limits between upland non-jurisdictional drainages and ephemeral tributaries were delineated using the dirt road that runs east-west across the property as the basis for the distinction between jurisdictional and non-jurisdictional resources. As such, a second, initial PJD form was submitted to U.S. Army Corps of Engineers (USACE) on January 8, 2021, with the revised stream field review. The revised USACE PJD approval from the USACE was received on November 10, 2022.

A desktop evaluation of the aquatic resources along the MTAC began in September of 2023 for a PJD associated with this footprint. The corridor evaluation identified drainages within the MTAC that could be jurisdictional based on the observations made with aerial photos, topographic maps, and other readily available desktop data. The MTAC PJD form will be submitted to the USACE upon application completion.

Table of Contents

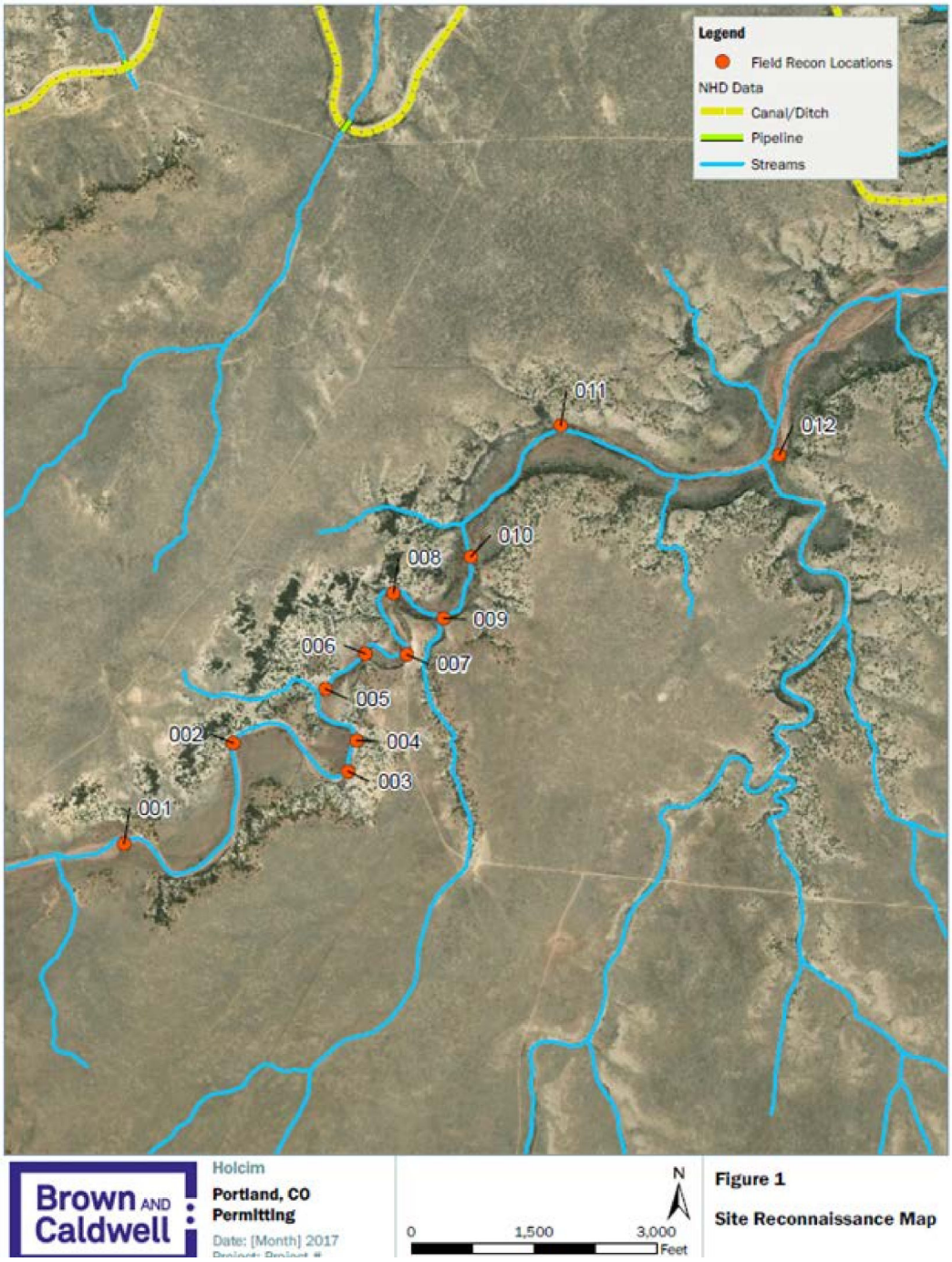


Figure 2.7.2-1: 2019 Site Reconnaissance Map

2.7.3 Site Investigations and Characterization

Five groundwater monitoring wells were installed both to the north and south of Red Creek in November 2021. The objective of the well locations was to assess the groundwater elevations near the surface water seeps observed in the Red Creek drainage. The wells were located upstream and downstream of the seep and within approximately 400 feet of the Red Creek canyon edge. Wells were spaced to ensure the data collected from each well was spatially distributed in order to characterize the hydrologic

Table of Contents

properties of the water bearing units (Figure 2.7.3-1). Wells 2N and 2S were completed in two different lithologies (Fort Hayes Limestone and Codell sandstone) and are in close proximity to each other in order to monitor the hydrologic conditions in both formations.

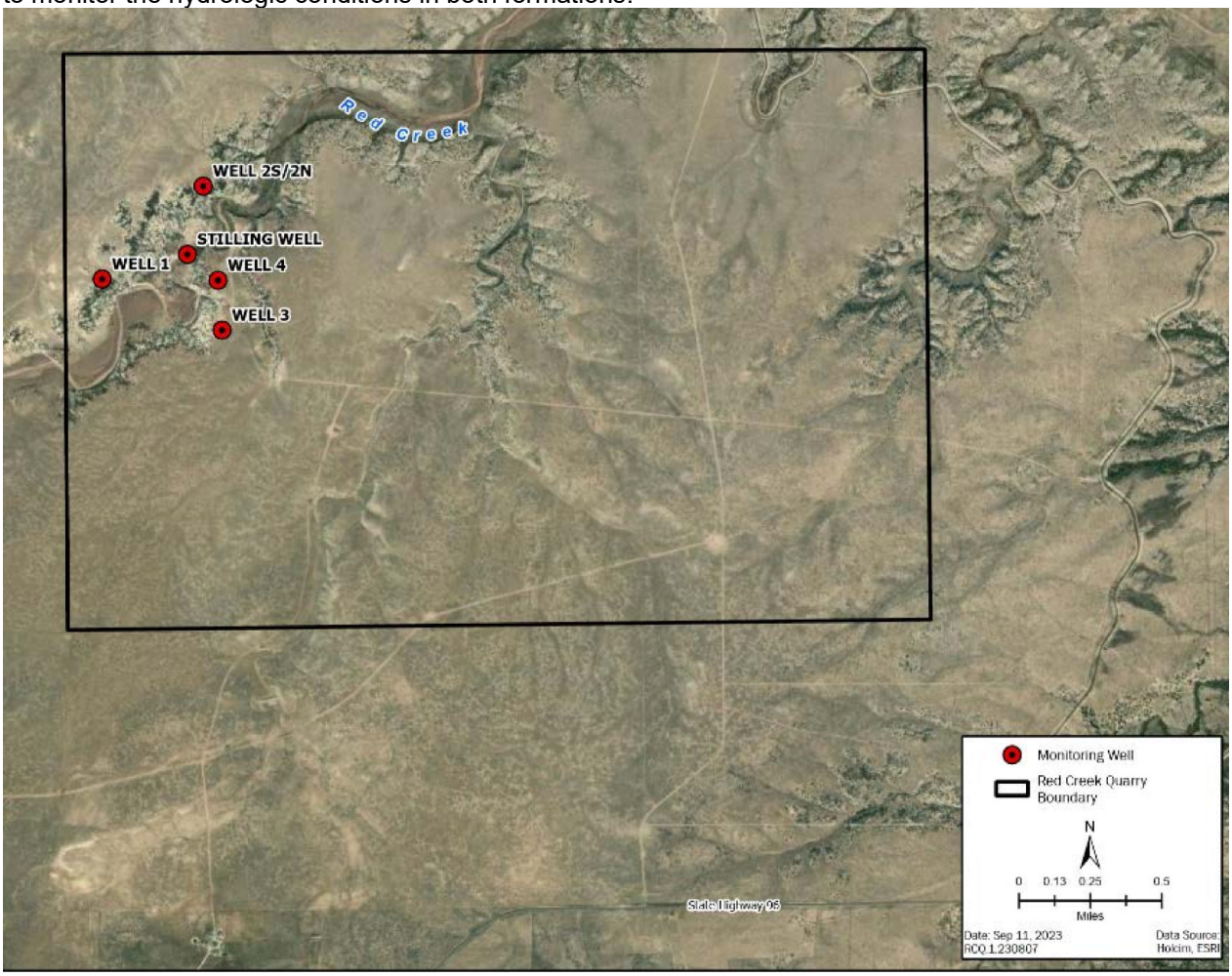


Figure 2.7.3-1: Groundwater Well Location Map

A stilling well was installed along the north side of Red Creek to measure water levels within the saturated alluvium of the creek bed as a proxy measurement of the creek water elevation (Figure 2.7.3-1). The stilling well was drilled using an auger to advance a hole to approximately five feet below ground surface. A five-foot polyvinylchloride (PVC) slotted screen with an end capped was placed into the hole then sand was backfilled in the wellbore up to the surface.

Transducers were installed after development operations in Well 1, Well 2N, Well 2S, Well 3, Well 4, and the Stilling Well to continuously monitor the groundwater levels. Immediately prior to transducer installation, a depth-to water measurement was collected to establish a value between transducer measurement and elevation. Coordinate and elevation data were collected by Holcim for each well casing and adjacent ground surface using survey equipment.

A surface water flow monitoring station consisting of a ramp flume designed to measure flow between 0.1 to 3.5 cubic feet per second (cfs) was installed in August 2022. The location of the flume was selected based on a visual reconnaissance of the stream and the proximity to the surface water seeps.

The Sampling and Analysis Plan (SAP) was implemented during the baseline monitoring and sampling activities. This SAP is designed to collect data to assess potential water resource impacts from mining

Table of Contents

operations conducted at the RCQ. Constituent loading to surface water and groundwater could occur during mining operations from stormwater runoff or groundwater seepage into mine pits. The SAP establishes methods that will obtain accurate and defensible data by following site-specific and standard operating procedures (SOP). The SAP will be implemented for all water monitoring and sampling activities during the life of RCQ.

In conjunction with the SAP, the Quality Assurance Project Plan (QAPP) was developed and implemented during the baseline investigation. The QAPP describes quality assurance/quality control (QA/QC) procedures that will be followed during implementation of the surface water and groundwater data collection. QA is a management function and refers to the systematic planning of procedures, methods, and standards to ensure that data generated by the testing program are suitable for their intended use. QC is process-oriented and focuses on error identification and verification that data meet the established standards. The standards contained in the QAPP will be used for verification and validation of data generated by field personnel and laboratory subcontractors. The QAPP is intended to serve as a guide to field personnel and laboratory subcontractors for QC activities during the monitoring and reporting phases of this project. Specific details for sampling and analyses are provided in the RCQ Baseline Monitoring SAP and SOPs.

2.7.3.1 Groundwater and Surface Water Baseline Study

In a pre-application meeting, DRMS stated five quarterly monitoring events would be required to compile the necessary data to establish baseline water quality. Brown and Caldwell conducted a multi-year baseline investigation to document and characterize the hydrologic system at the RQC quarry site to evaluate if the proposed mining operations will result in the interception of groundwater, and to determine what if any, hydrologic connection may exist between groundwater and the Red Creek perennial surface water.

Field activities conducted as part of this investigation included installation of five groundwater monitoring wells, installation of pressure transducers to collect water level data, and the collection of groundwater samples for laboratory analysis. Additional field activities included the installation of a ramp flume and stilling well transducer, visual observation and documentation of surface flow locations, and the collection of surface water samples for laboratory analysis. Groundwater modeling was conducted in support of mine permitting activities to evaluate potential groundwater impacts from planned mining operations at the RCQ. The groundwater modeling report is provided under separate cover.

The results of the five quarterly surface and groundwater monitoring events identified several naturally occurring analytes present at concentrations above regulated water quality standards, including selenium, uranium, radon, and sulfate. Several groundwater and surface water studies conducted by others also found elevated concentrations of these analytes within the same lithological units and similar surface water bodies in Colorado.

Water quality data suggests the source of the surface water within the perennial section of Red Creek is groundwater based on the similarities of major ion and metal concentrations. Surface water concentrations of major ions tend to fall within the ranges observed in samples collected from the groundwater wells. Variations in the water composition of the surface water samples indicate the influence of creek bed sediments, evaporation, precipitation, and multiple groundwater seeps or springs contribute to the water quality and flow in Red Creek.

The baseline study will be extended for four additional calendar quarters in 2024. Due to groundwater and surface water constituent exceedances identified during the five-quarter baseline study, the study will continue in the 2024 calendar year. This will provide additional data that will assist in determining seasonal or weather event related impacts to water quality. Monitoring will recommence in March of 2024 with the analytical suite reduced to exclude constituents that were below detection levels and/or did not

Table of Contents

have a water quality standard (Table 2.7.3.1-1). The resulting addendum to the Baseline Study will be submitted to the Division within 60 days of the last day of Q4 2024.

2.7.3.2 Groundwater Modeling

Groundwater flow modeling (Modflow) was performed on Red Creek to estimate the potential rates of groundwater entering the RCQ. In addition, the model was used to estimate potential mining impacts to Red Creek. The site conceptual model was built on available data in the area and information obtained from the existing Holcim mine plan Leapfrog model. The site-specific Leapfrog geologic model includes the base Codell Sandstone, overlying Fort Hayes Limestone, and additional overlying sediments. The contact between the Codell and Fort Hayes dips toward the north across the site. Groundwater occurs primarily within the Codell Sandstone and within the lower portion of the Fort Hayes limestone in localized areas. Sediments overlying the Fort Hayes are generally unsaturated.

Based on conservatively high potential impacts to the Codell, it was determined that the rate of groundwater entering the quarry may increase from Mine Plan Block 0-10 through Mine Plan Block 20-30. Following Mine Plan Block 20-30 the pit floor elevations are above the interpolated water table and are therefore dry. The evaluation of mining impacts to Red Creek suggested no significant influence on the creek.

The model results discussed represent a simplistic assessment for mining influence on groundwater in RCQ. To improve and extend model predictions beyond Mine Plan Block 20-30, additional groundwater monitor wells will be installed throughout the site as mining progresses into Year 20-30 block.

2.7.4 Potential Mining Impacts to Water Quality and Quantity

Based on groundwater modeling, mining will not impact water quantity in Red Creek. To be protective of water quality, Holcim will implement a surface and groundwater monitoring plan.

2.7.4.1 Monitoring Plan

Surface and groundwater monitoring will continue on a semi-annual basis between the end of the baseline study and commencement of mine development in Section 24. The analytical suite will be the reduced suite approved by the Division for the 2024 sampling events. Sampling and monitoring will occur during the second calendar quarter (April thru June) and fourth calendar quarter (October thru December) each year. Reporting will occur no more than 30 days after the end of the sampling quarter. The second calendar quarter report will be submitted by August 1 of each year. The fourth calendar quarter report will be submitted by February 1st of the following year.

Surface and groundwater monitoring will recommence on a quarterly basis two calendar quarters prior to mine development in Section 24. The analytical suite will include analytes listed in Tables 2.7.4.1-1 and 2.7.4.1-2 below. Monitoring reports will be submitted to the Division within 30 days of the last day of the monitoring quarter. Any changes to the monitoring program will be submitted to the Division as a request for a Technical Revision.

Groundwater locations will include Well 1 that lies north of Red Creek, and Wells 3 and 4 that lie south of Red Creek. Two wells will be monitored south of Red Creek because the groundwater shows natural variation in water quality as observed during the baseline water quality program. Surface water will be sampled at the seep and at SW RC2. SW RC2 is the furthest east location thus it is the most downgradient surface water location. Groundwater level data will be collected using the installed pressure transducers during the interim monitoring program. Red Creek flow data will be collected at the flume using the installed pressure transducer. Transducer data will be downloaded and reviewed quarterly.

The following analytical suite for surface and groundwater samples is proposed based on the results of the Baseline Study (Tables 2.7.4.1-1 and 2.7.4.1-2). The analyte lists are the same for surface and

Table of Contents

groundwater to be able to evaluate the connection between the water quality for both types of water. After three years of monitoring, Holcim will submit a Technical Revision requesting a reduction of the analytical suite for those constituents with concentrations that are consistently below instrument detection limits or below regulatory standards.

In the event of a water quality exceedance, Holcim will notify the appropriate regulatory agency and implement an Adaptive Management Plan (AMP) strategy. An AMP strategy allows for the inclusion of knowledge gained and adaptation of mitigation measures as mining operations evolve. The basic AMP process includes the following steps:

1. Identify source of exceedance and operational uncertainties;
2. Quantify impacts;
3. Evaluate strategies and mitigation implementation; and
4. Monitor the performance.

Table of Contents

Table 2.7.4.1-1 Surface Water Analyte Lists

Surface Water Samples				
Analyte	Fraction	Method	Method Detection Limit (mg/l)	WQCC Surface Water Regulation 32 (µg/L)
Inorganic				
Nitrate	Dissolved	E300.0	0.006	100,000
Nitrite	Dissolved	E300.0	0.003	500
Phosphorus	Dissolved	E365.1	0.008	110
Sulfate	Dissolved	E300.0	0.4	-
Sulfide	Dissolved	SM4500-S2	0.35	2
Metals and Metalloids				
Aluminum	Dissolved	200.8	0.02	-
Antimony	Dissolved	200.8	0.0001	-
Arsenic	Total and Dissolved	200.8	0.0005	340
Barium	Dissolved	200.7	0.002	-
Beryllium	Dissolved	200.7	0.0013	-
Boron	Dissolved	200.7	0.0074	-
Cadmium	Dissolved	200.8	0.00005	2.03
Chromium	Dissolved	200.8	0.0005	-
Chromium III	Total and Dissolved	SM3500-CR B	0.009	231
Chromium VI	Dissolved	SM3500-CR B	0.009	11
Cobalt	Dissolved	200.7	0.0023	-
Copper	Dissolved	200.7	0.0023	29.3
Iron	Dissolved	200.7	0.0031	-
Lead	Dissolved	200.8	0.00013	10.9
Manganese	Dissolved	200.8	0.0004	2,618
Mercury	Total	245.1		-
Molybdenum	Total	200.8	0.00025	-
Nickel	Dissolved	200.8	0.001	168
Selenium	Dissolved	200.8	0.0003	4.6
Silver	Dissolved	200.8	0.000025	3.5
Thallium	Dissolved	200.8	0.00005	-
Uranium	Dissolved	200.8	0.00005	6,915
Vanadium	Dissolved	200.7	0.0007	428
Zinc	Dissolved	200.8	0.0025	-
Radiological				
Gross Alpha Particle Activity	Total			-
Other				
Oil and grease	Total	E1664A	3	-
TDS	Total	SM2540C	5	-
TSS	Total	SM2450D	2.5	-

Table of Contents

Table 2.7.4.1-2 Groundwater Analyte Lists

Groundwater Samples				
Analyte	Fraction	Method	Method Detection Limit (mg/l)	WQCC Groundwater Regulation 41 (µg/L)
Inorganic				
Nitrate	Dissolved	E300.0	0.006	10
Nitrite	Dissolved	E300.0	0.003	1
Phosphorus	Dissolved	E365.1	0.008	-
Sulfate	Dissolved	E300.0	0.4	250
Sulfide	Dissolved	SM4500-S2	0.35	-
Metals and Metalloids				
Aluminum	Dissolved	200.8	0.02	5,000
Antimony	Dissolved	200.8	0.0001	6
Arsenic	Dissolved	200.8	0.0005	10
Barium	Dissolved	200.7	0.002	2,000
Beryllium	Dissolved	200.7	0.0013	4
Boron	Dissolved	200.7	0.0074	750
Cadmium	Dissolved	200.8	0.00005	5
Chromium	Dissolved	200.8	0.0005	100
Chromium +3	Dissolved	SM3500-CR B	0.009	-
Chromium +6	Dissolved	SM3500-CR B	0.009	-
Cobalt	Dissolved	200.7	0.0023	50
Copper	Dissolved	200.7	0.0023	200
Iron	Dissolved	200.7	0.0031	300
Lead	Dissolved	200.8	0.00013	-
Manganese	Dissolved	200.8	0.0004	50
Mercury	Dissolved	245.1		2
Molybdenum	Dissolved	200.8	0.00025	210
Nickel	Dissolved	200.8	0.001	100
Selenium	Dissolved	200.8	0.0003	20
Silver	Dissolved	200.8	0.000025	50
Thallium	Dissolved	200.8	0.00005	2
Uranium	Dissolved	200.8	0.00005	16.8
Vanadium	Dissolved	200.7	0.0007	100
Zinc	Dissolved	200.8	0.0025	2,000
Radiological				
Gross Alpha Particle Activity	Total	E900.0	-	15
Other				
Oil and grease	Total	E1664A	3	-
TDS	Total	SM2540C	5	-
TSS	Total	SM2450D	2.5	-

Table of Contents

2.7.4.2 Points of Compliance

Two wells that will be used as Points of Compliance (POC) will be constructed along the banks of Red Creek and within the north permit boundary. Point of Compliance Well #1 (POC-1) will be constructed prior to commencement of mine development in Section 24. Point of Compliance Well #2 (POC-2) will be constructed one year prior to acitivity in Mine Block Years 20 – 30. Figure 2.7.4.2-1 shows the location of the wells to be downgradient from mining activity and in an area within the permit boundary that will not be disturbed during the life of the mine. Mine development is not anticipated for up to 18 months. Holcim commits to submitting a Technical Revision regarding construction of POC-1 within 90 days of any disturbance within Section 24

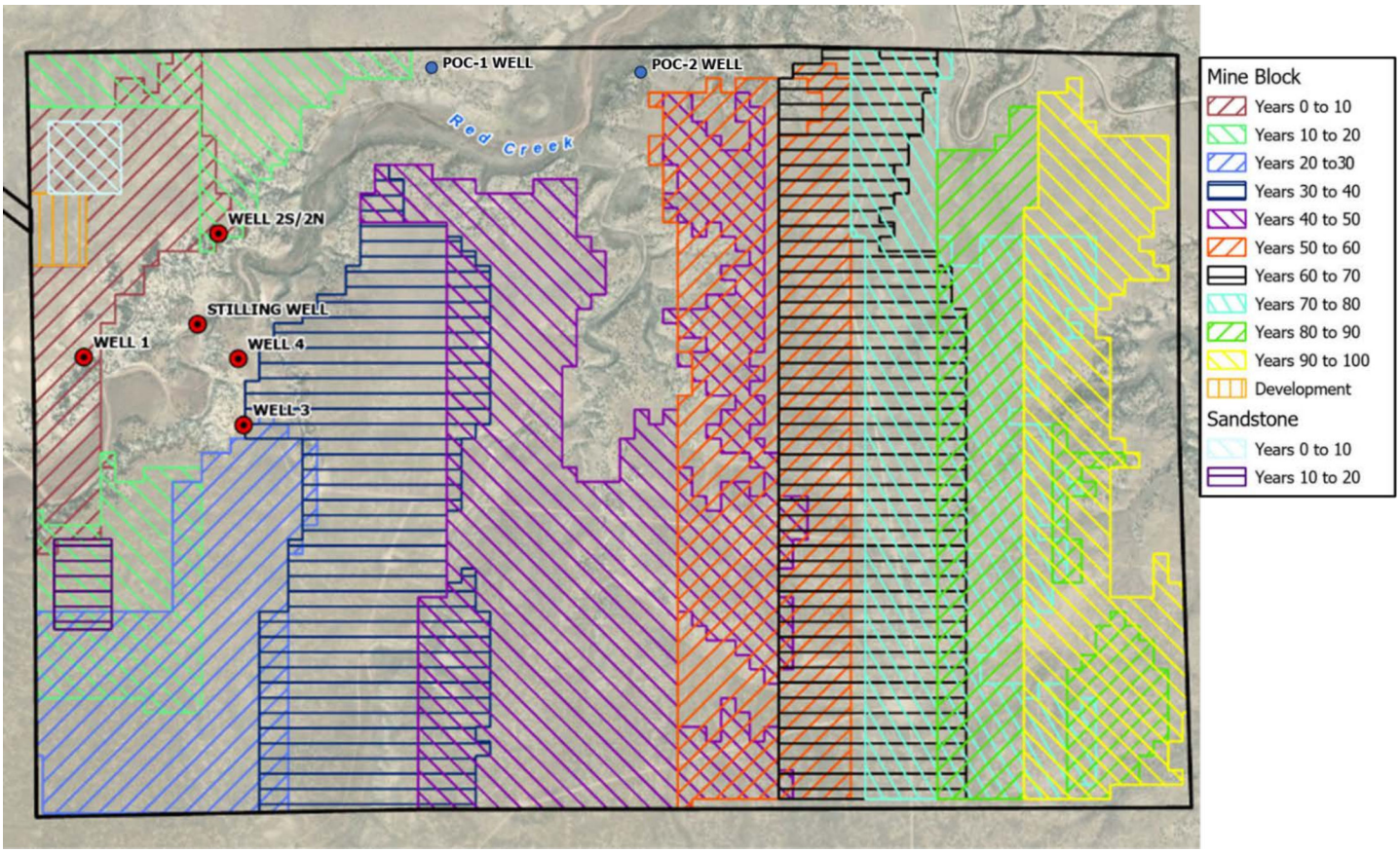


Figure 2.7.4.2-1: Approximate location of the future POC well

Table of Contents

CUP Exhibit 2.9-1

Red Creek Project Blasting Plan

Revised pursuant to preliminary adequacy review November 20, 2023

Table of Contents

Red Creek Project
Blasting Plan
Portland Plant, Holcim US

Table of Contents

Table of Contents

Table of Contents

List of Figures

List of Tables

Table of Contents

1. Introduction

This blasting plan describe the procedures and conditions that Holcim US Inc. - Red Creek Project will use for blasting limestone and overburden material. The limestone will be used at the Portland Cement Plant for the production of cement.

Blasting activities will follow the general guidance and specifications in this plan.

2. Situation and objectives

The objectives of this report are:

- To present the Blasting Plan for the Red Creek Project.
- This plan provides guidelines and general conditions for all blasting activities that may occur at the Red Creek Project site.

3. Blast Schedule Notification

3.1 Name, address & phone number of Operator

Hamza Mekhfi, Plant Manager

Holcim US - Portland Plant

3500 State Hwy 120 Florence, CO 81226

719-288-1443, Fax 719-784-3470

3.2 Identify where blasting will occur

Red Creek Quarry is comprised of six USGS Sections with a surface area total of approximately 3,851.05 acres. The geologic layers include, Fort Hays and Translime limestone with Golden Shale and Smokey Hill overburden/waste rock.

For the report, the design blast was 50 holes, but it could be more or less in the daily work. The area is

0.109 acres

Table of Contents

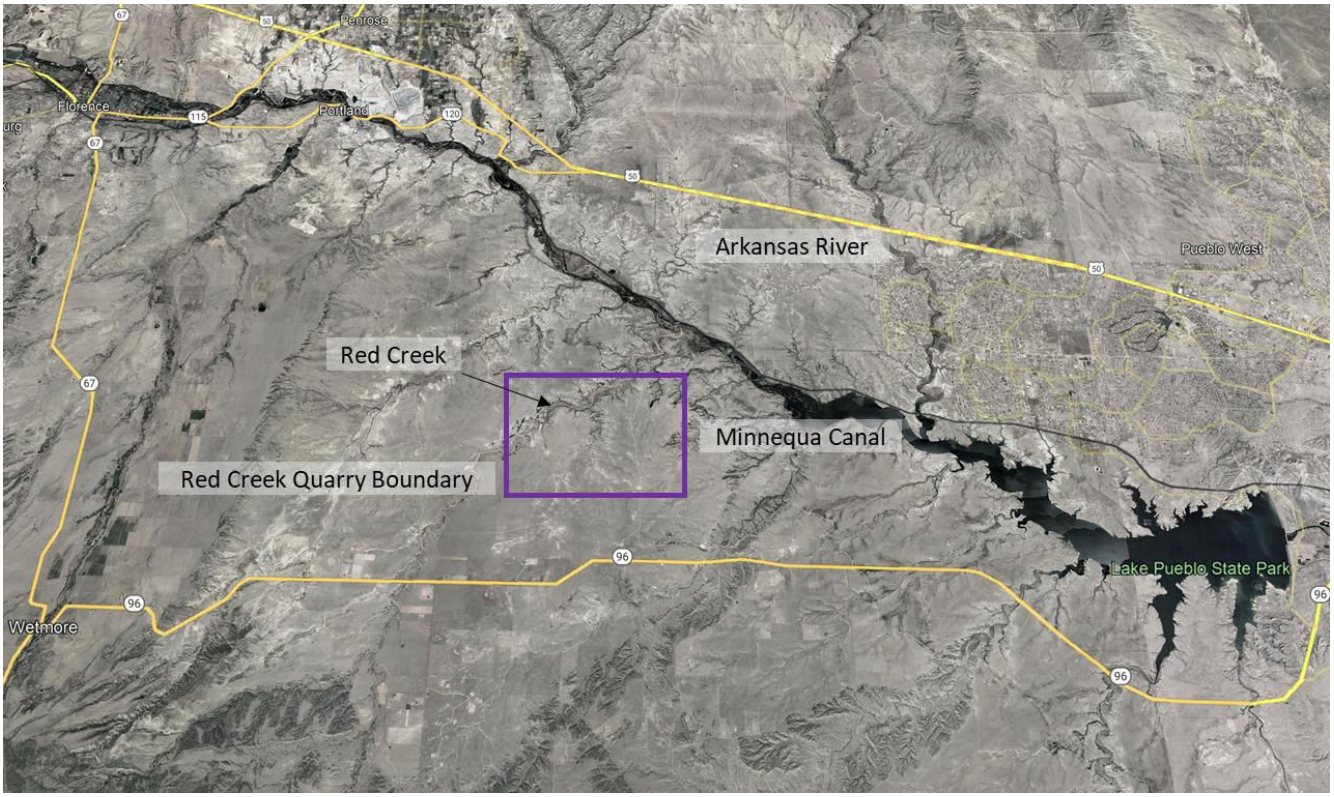


Figure 1. Location of the mining permit project.

3.3 Day(s) and time(s) of blasting

The Cement Plant operates 24/7 - 365 days per year. In order to meet production needs of the plant the Quarry will need to operate 5 to 7 days/week with blasting operations carried out 5 days/week. Monday to Friday.

3.4 Methods used to control access

The access has been control by:

- The quarry area will have a fence or a berm established between the property boundary and the Quarry crest..
- Access to the Quarry is selective on the entrance, the visitors and contractor must comply with Holcim Safety Standards which include - MSHA, Safety Site Specific Induction, H&S Standards, PPE, etc.)
- Applying the Standard Recommended Practices for Drilling and Blasting operations (Holcim)

3.5 Outline warning signals (e.g., sirens, horns, etc.)

- The Quarry must install safety signs for blasting operations along the perimeter of the quarry site.
- Signs, cones, or barricades shall be placed at the entrance to the Blast Site to prevent unauthorized entry.
- An audible blast siren warning shall be given just prior to each blast.
- Safety signs will be placed around the blasting area.
- Signs at the entrance of the Quarry will establish Designated Entry and Hold Points for Quarry.
- Signs at the entrance of the Quarry will indicate the date and time of the blast.

Table of Contents

3.6 Schedule distribution (who is notified: e.g., workers, residents, local governments, etc.).

- The Quarry crew is notified of blasting operations at the start of the morning shift and the status is posted on the Entrance Safety sign.
- Regarding any neighbors, the mining area does not have any neighbors within one-half mile of the blasting area, see the Figure 2.

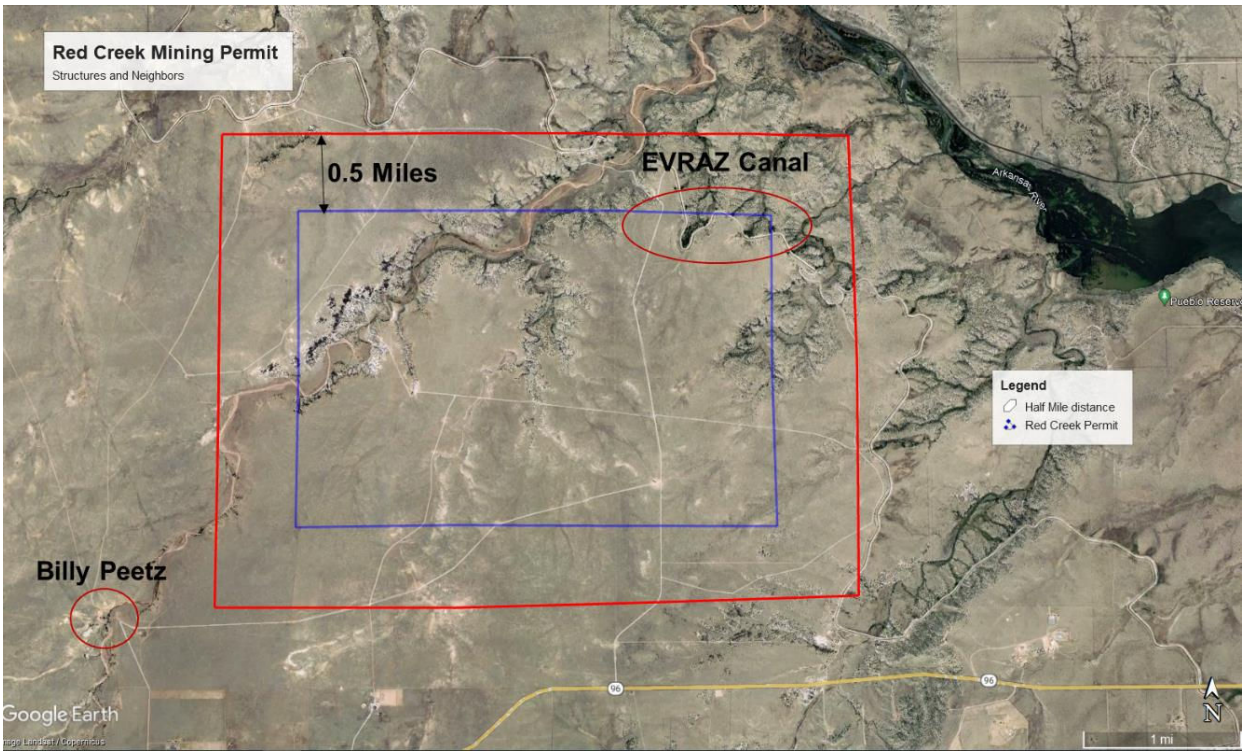


Figure 2. Structures and neighbors one half mile distance from the mining permit.

4. Pre-Blast Surveys – where agreed to and approved by structure owners

4.1 Generally for structures within one half mile of the blast area.

The only structure within the permit area is the Minnequa Canal (EVRAZ Company) in the NE of the area. The Canal is outside the permit boundary by more than 200 ft. Canal owners will be notified when blasting is proposed within on-half mile of the canal.

4.2 Establish a pre-blasting record of existing structure(s) condition

The mining plan shows that the Quarry will be in the NE area (EVRAZ canal) by year 60. Holcim will track and record activities in to the vicinity of the Minnequa Canal structure as the mining face approaches to the canal

4.3 Identify structures or contents sensitive to blasting.

Minnequa Canal

Table of Contents

5. Blast Plan

5.1 Limits on ground vibration

The maximum ground vibration shall be established in accordance with the maximum peak-particle-velocity limit by the scaled-distance equation and the blasting-level chart. A seismographic record shall be provided for each blast.

- Maximum peak-particle velocity.

The maximum ground vibration shall not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area.

Distance (D) from blasting site, in feet	Maximum allowable peak particle velocity (V max) for ground vibration, inches/second[1]	Scaled-distance factor to be applied without seismic monitoring[2]
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

Table 1. Scaled distance factor (Source from Office of Surface Mining Reclamation and Enforcement)

[1]Ground vibration shall be measured as particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.
[2]Applicable to the scaled-distance equation

Scaled-distance equation

The scaled-distance equation,
$W = (D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period without seismic monitoring; where
W= the maximum weight of explosives, in pounds;
D= the distance, in feet, from the blasting site to the nearest protected structure
Ds = the scaled-distance factor

- Blasting-level chart.

Holcim may use the ground-vibration limits in Figure 3 to determine the maximum allowable ground vibration.

Table of Contents

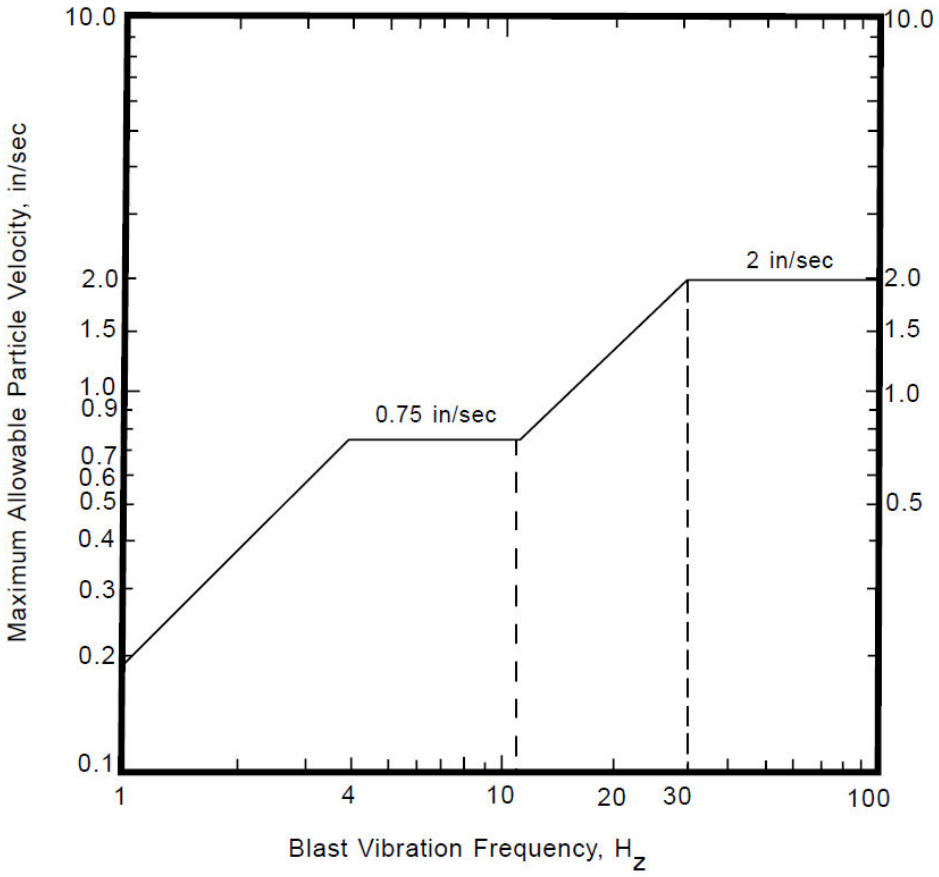


Figure 3. Alternative blasting level criteria. (Source Modified from figure B-1. Bureau of Mines R18507)

5.2 Limits on airblast

Air overpressure shall not exceed the maximum limit of 136 decibel (0.124 Kpa) at the location of any building or structures within one half mile of the blast area.

5.3 Methods used to control adverse effects of blasting

For the adverse control effects of blasting, we propose the recommendations from ISEE, International Society of Explosives Engineers:

Flyrock Control Issues	
Issue	**Comment**
Explosive Column Length	Column length should never been longer than design to such and extend that estimated maximum flyrock projections can exceed ½ to 2/3 of the distance to sensitive receivers.
Explosives Loaded density	Loaded density should not be significantly higher than design-through incorrect gassing of emulsion product, errors in the size high density base charges, reduction in size of air decks, or the use of larger diameter cartridge products than was proposed in the design (where an air deck is specified, but the hole is full of water, then calculations of effective density should ignore the air/ware/deck)
Stemming columns	Stemming columns must be continues, and bridging of the stemming columns must avoid - best achieved through the use of uncontaminated, well-graded aggregate material, and loaded so as to avoid bridging
Protocols for exception reporting	Errors will happen, and adjustments to procedures can be made providing that the error is reported and tools are available to provide reliable estimates of worst-case outcomes.

Table 2. Flyrock control issues.

Table of Contents

Factors Within The Blaster-In-Charge's Control that influence Ground Vibrations			
Factor	**Influence On Ground Vibration**		
	Significant	**Moderate**	**Insignificant**
Charge-weight/delay	X		
Delay Interval	X		
Burden and Spacing		X	
Stemming amount			X
Stemming type			X
Charge length and diameter			X
Borehole accuracy		X	
Direction of initiation		X	
Charge-weight per blast			X
Charge depth			X
Exposed detonating cord			X
Charge confinement	X		

Table 3. Factors within the blaster-in-charge's control that influence ground vibrations.

Factors Outside The Blaster-In-Charge's Control That Influence Vibrations			
Factor	**Significant**	**Moderate**	**Insignificant**
Surface terrain (topography)			X
Type of rock		X	
Depth to grade or ore (overburden)	X		
Weather conditions			X

Table 4. Factors outside the blaster-in-charge's control that influence vibrations.

Procedures to reduce Ground Vibrations Regarding Blast Design Factors	
Design Factor	**Procedure**
Reduce charge-weight/delay	Reduce the charge-weight/delay in a manner consistent with acceptable fragmentation and square root scaling. Consider using smaller boreholes or explosive deck in a new blast design.
Explosives selection	Select explosives based on their physical properties, performance characteristics and sensitivities. Be aware of any limitations and precautions recommended by product manufacturers for sensitivities that may cause sympathetic detonations between boreholes or between chargers within a single borehole.
Initiation system selection	Select initiation systems for more accurate and precise firing times. Electronic initiation systems are used in critical vibration environmental locations.
Delay timing strategies and intervals	Change or modify the direction of initiation, especially for pre-split lines.
	Maximize internal relief by using one to two free faces to blast, by either increasing or decreasing delay times while maintaining desired muckpile shape and degree of fragmentation.
	Use signature waveform analysis to determine timing intervals for destructive interference.
Blast Designs	Adjust blast designs to accommodate smaller charges while maintaining the same powder (energy) factor. This includes, hole diameter and depth, spacing, burden, explosive type, and possible use of separate decks in each hole.

Table 5. Procedures to Procedures to reduce Ground Vibrations Regarding Blast Design Factors.

Table of Contents

Procedure To Reduce Ground Vibrations Regarding Blast Implementation Factors	
Field Factor	**Procedure**
Drilling Accuracy	Ensure good control over drilling so that the planned burden and spacing are those actually achieved by the driller. Good drilling control with also help to reduce the subgrade drilling, and may make it possible to reduce the total charge/borehole.
Loading Accuracy	Review the drill logs. Properly load boreholes according to the information provided on the drill log. Borehole irregularities that may cause overloading include fracture zones, rubble zones, voids and caverns.
Confinement	Eliminate buffer blasting and make sure that the toe is cleared of broken rock.
Quality Control	Review the quality control procedures to ensure that the blast plan is properly implemented.

Table 6. Procedure to reduce ground vibrations regarding blast implementation factors

Factors Within The Blaster-In-Charge's Control that influence Air Overpressure			
Factor	**Influence On Air Overpressure**		
	Significant	**Moderate**	**Insignificant**
Charge-weight/delay	X		
Delay Interval		X	
Burden and Spacing	X		
Stemming amount	X		
Stemming type	X		
Charge length and diameter			X
Borehole accuracy	X		
Direction of initiation	X		
Charge-weight per blast			X
Charge depth	X		
Exposed detonating cord	X		
Charge confinement	X		

Table 7. Factors within the blaster-in-charge's control that influence air overpressure

Factors Beyond The Blaster-In-Charge's Control That Influence Air Overpressure			
Factor	**Significant**	**Moderate**	**Insignificant**
Surface terrain (topography)		X	
Type of rock			X
Depth to grade or ore (overburden)		X	
Weather conditions	X		

Table 7. Factors beyond the blaster-in-charge's control that influence air overpressure.

Procedures Regarding Blast Design Factors To Reduce Air Overpressure	
Design Factor	**Procedure**
Charge-weight/delay	Determine charge weight per delay consistent with the distance to nearby protected structures according to cube root scaling and the type of blasting. Consider using smaller boreholes or explosive decks in a new blast design.
Delay Interval and direction of initiation	Delay time between adjacent boreholes should exceed 1 millisecond for each 0.304 meter (1 foot) to avoid reinforcement of overpressure energy in the direction of initiation.
Burden and spacing	Adjust blast pattern layout commensurate to borehole diameter to achieve the powder factor appropriate to the rock type. This includes burden and spacing, hole depth, explosive type, and the uses separate decks in each hole. Large charges close to and open face may cause rapid face displacements and generate and elevated air pressure rate.

Table 8. Procedures regarding blast design factors to reduce air overpressure.

Table of Contents

Procedures Regarding Blast Implementation Factors To Reduce Air Overpressure	
Factor	**Procedure**
Drilling Accuracy	Ensure good control over drilling so that the planned and spacing are those actually achieved by the driller. Good drilling control will also help to reduce the subgrade drilling, and may make it possible to reduce the total charge per hole.
Preblast Inspection	• Review the drill logs for the borehole conditions and drilling accuracy. The drill penetration rate will identify clay-filled seams, highly fractured zones or other zones of weakness. • Check the free faces for excessive fracturing from back break and the presence of mud seams or voids. Load the front row or boreholes according to maintain sufficient burdens to minimize the potential generation of gas release or excessive throw. • Ensure that design burdens are maintained for the entire length of the borehole. Check each borehole for incline and drift prior to loading.
Loading	• Load boreholes properly according to the information provided on the drill log. Borehole irregularities that may cause overloading include fracture zones, rubble zones, voids and caverns. • Deck through all fracture zones and voids to avoid overloading boreholes.
Stemming	• Use sufficient stemming commensurate with the burden to eliminate blowouts at the hole collar and generation of a stemming release pulse. The stemming length should be at least 0.7 times the burden. • Use competent stemming material appropriate for the drill hole diameter. Stemming material with good size and angularity promotes high-friction sidewall forces that will withstand detonation pressures and will resist ejection. Fine stemming (dust) or light weight stemming materials do not bind or lock well are more likely to be eject.
Expose detonation cord	Cover exposed detonation cord trunk lines when blasting near structures and consider using non-detonation cord initiation systems.
Weather Condition	• Schedule blasting to avoid adverse conditions. Use the internet or contact or contact local airports to get up-to date information. • To avoid the temperature inversions that may be present on windless mornings, schedule blasting in the afternoon when inversions are least like to persist. • When wind directions are unfavorable, if convenient, delay blasting until the wind direction is away from structures or the wind velocities decrease.
Quality Control	Review the quality control procedures to ensure that the blast plan is properly implemented.

Table 9. Procedures regarding blast implementation factors to Reduce air overpressure.

5.4 Description of monitoring systems to be used and where to be set up

Ground Vibrations and Air Over Pressure.

For monitoring Ground Vibrations and Air Overpressure, the Quarry will utilize seismographs:
“Blasting seismographs are equipped to monitor ground vibration and air over pressure.

Fly Rock and Blasting Evaluation

Holcim will film all the blasts with the objective/purpose of identifying potential flyrock and to evaluate the blasting events.

5.5 Blasting protocol/procedure

In the Appendix 1 is the SOP for blasting in the Bear Creek Quarry will to the Red Creek Quarry.

Table of Contents

5.6 Anticipated typical blast design

For the blast design, Holcim will use the current blast design in Bear Creek Quarry, the Geology of Red Creek, and the Red Creek Geotechnical Assessment.

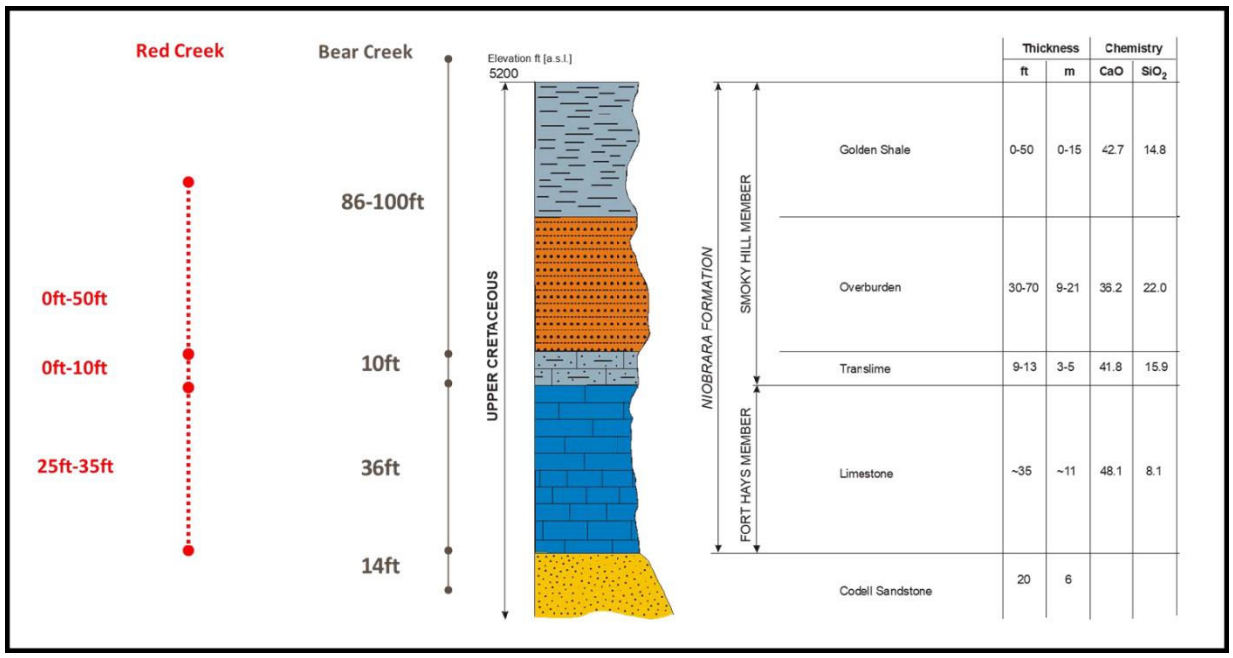


Figure 4. Stratigraphic Column

5.6.1 Blast purpose

Limestone (Fort Hays, Translime) fragmentation is expected a less than four feet in size, and overburden (Smokey Hill and Golden Shale) less than five feet in size. See figure 4

5.6.2 Number, spacing, diameter and depth of holes

For the standard blast design for Limestone and overburden, the results are:

Fort Hays and Translime:
Number of holes: 50
Burden: 16 ft.
Spacing: 19.7 ft.
Diameter: 5.5 inches
Depth of the holes: 48.2 ft.

Smokey Hill and Golden Shale
Number of holes: 50
Burden: 16 ft.
Spacing: 20.1 ft.
Diameter: 5.5 inches
Depth of the holes: 48.9 ft.

See Appendix 2. Fort Hays & Translime Bench and Smoky Hill & Golden Shale Bench blast Design.

Table of Contents

5.6.3 Type and amount of stemming material

The material used for stemming is a screening rock; the amount per hole is 0.085 tons by 11.2 ft. of the hole and the size of the stemming Dh/20, approx. 0.2750 inch.

5.6.4 Blasting agent and amount per hole

The explosive agent used is Bulk ANFO and a Blended ANFO + Slurry. The use of ANFO or Blend is dictated by the presence of wet holes. The amount of blasting agent used per hole is estimated at 305 lb (Fort Hays and Translime), and 334 lb (Smokey Hill and Golden Shale)

5.6.5 Type of delay detonator and delay periods expected

The quarry operation will utilize an Electronic detonating System; currently, the Bear Creek Quarry uses an electronic detonating system. The planned delay per hole is 8 and 16 milliseconds per hole.

5.6.6 Location(s) of blast monitoring.

The only structure in the area is the Minnequa Canal (EVRAZ Company) in the NE of the mining area and outside of the permit boundary. Holcim will monitor the canal when mining is within 0.5 mile of the Canal.

6. Commit to Generating and Filing a Blast Report

The red Creek Quarry must complete a blasting report for each shot. The report must be retained for at least 3 years and be available for inspection by the DRMS on demand.
The record shall contain the following data:

a. Location date and time of blast;
b. Name, signature and license number of blaster-in-charge;
c. Identification, direction and distance in feet from the nearest blast hole to the nearest potentially affected structure, such as any dwelling, school, church, or community or institutional building either:
i. not located in the permit area; or
ii. Not owned nor leased by the person who conducts the mining operations.
d. Weather conditions, including temperature, wind direction, and approximate velocity
e. Type of material blasted
f. Sketches of the blast pattern including number of holes, burden spacing, and delay pattern. Sketches shall also show decking, if holes are decked to achieve different delay times within a hole
g. Diameter and depth of holes
h. Types of explosives used
i. Total weight of explosives used per hole and maximum weight of explosives used per 8-millisecond period
j. Initiation system
k. Type and length of stemming
l. Mats or other protections used
m. Type of delay detonator and delay periods used
n. Number of persons in the blasting crew
o. Seismographic records where required including:
i. Type of instrument sensitivity and the calibration signal of the gain setting or certification of annual calibration

Table of Contents

ii. Exact location of instrument, the blast date and time, and the instrument distance from the blast
iii. Name of the person and firm taking the reading
iv. Name of the person and firm analyzing the seismographic record
v. The vibration level recorded

7. Blasting best practices

After detonation, shock waves and gas pressure cause dynamic stresses around a blast hole with seismic waves propagating away from it, and produces elastic deformation in the rock mass. Some adverse effects from blast are ground vibration, air pressure (airblast), dust, fumes, and flyrocks.

Geological conditions, quantity of explosives detonated at any given time, charge confinement, blasting design, and delay intervals will influence blasting vibrations, and ground movement. Portland Plant had implemented a ground vibration monitoring system at Bear Creek Quarry (BCQ), with several near field (200-250ft) and far field (father than 350ft) seismographs, it allows Quarry personal to assess compliance with regulations, prevent damage to structures, quarry walls, final walls stability, and identify any critical information to protect nearby structures, also minimize liability claims.

BCQ criteria to analyze ground motion are peak particle velocity (PPV – inches/sec) and dominant frequency (Hz), they are widely accepted measurements for potentially damaging to structures and control walls stability in the quarries. Red Creek Quarry (RCQ) will follow, and will improve best practices from BCQ. Monitoring will be a key piece to define and adjust drilling, blasting, blast design parameters with rock mass properties on it.

At Red Creek Quarry (RCQ) Smokey Hill Member, Fort Hays Member, and Codell sandstone can be considered as hard and blocky rock mass; most of materials can be classified as rock Type 3 “fair” rock strength (25Mpa- 50Mpa). Design configuration allows 36ft bench high, 20ft berm width, 75° slope angle, and 52° overall slope at final 150ft high wall. “SRK, Red Creek Geotechnical Assessment Report”.

There are several controlled blasting techniques to improve the stability of the final slope face, and minimize damage. It is possible combine them as geologic conditions, mass rock properties, and drilling-blasting settings allows desired results. Next list:

- Line drilling
- Trim blasting
- Buffer blasting
- Smooth wall blasting
- Air decking
- Presplitting

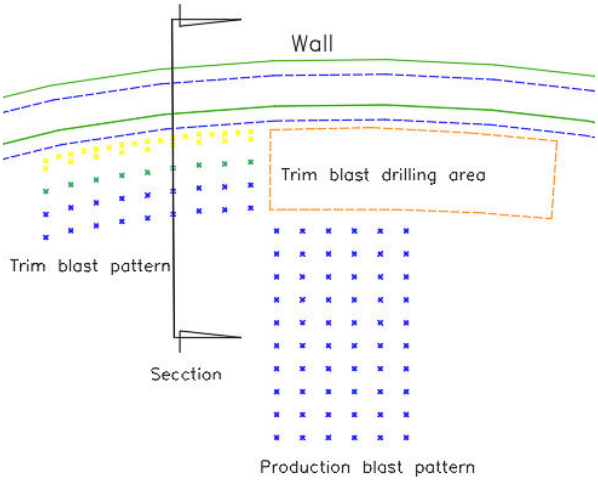
RCQ will evaluate Trim blast and Modified production blast (combination of more favorable techniques at RCQ). Both methods goal is to reduce damage to Red Creek canyon and final quarry walls. Developing RCQ will require drilling, blasting, loading, and hauling of almost 3Mio t of limestone and waste to temporary stockpiles. It will open up an area to establish Quarry offices, shop, secondary crusher and starting point for convey system. Thus, monitoring system will collect and assess any concern related to

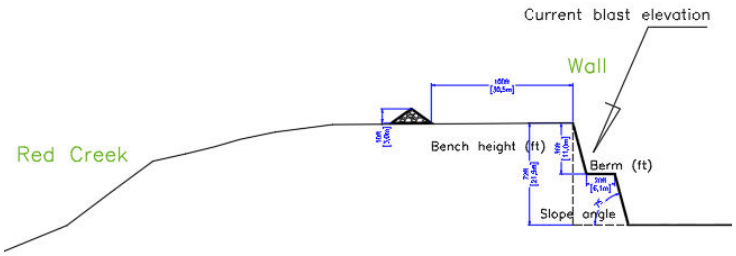
Table of Contents

minimize ground vibration at future RCQ facilities (offices, quarry shop, secondary crusher, convey system), track rock mass properties, emplace near field and far field seismograph locations. Define blasting criteria (PPV, Frequency ranges) for production blast, trim blast, and modified production blast. To identify better technique for production and critical areas such as close to Red Creek Canyon.

As reference, the following is an explanation of both techniques. Blast size, number of holes per row, blast design, burden – spacing, blast fragmentation will be refine during the Developing stage.

- Trim blasting, Compare with a production blast are smaller in number of holes and tonnage, the fully relieved face allows material to move away, and prevent blast energy from damaging the final wall. Graph show blast patterns, production blast with a free face perpendicular to Red Creek Canyon, after it is blast and clean expose a free face for trim blast to minimize vibrations directed into the wall.

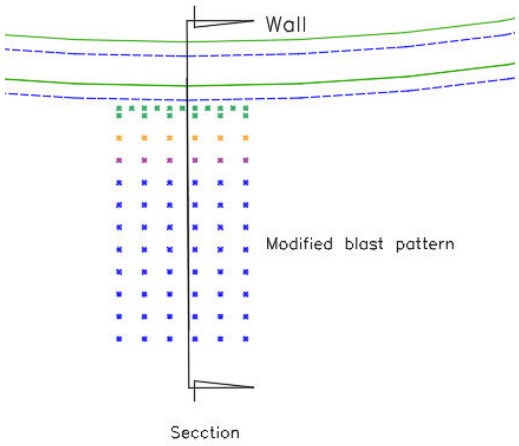


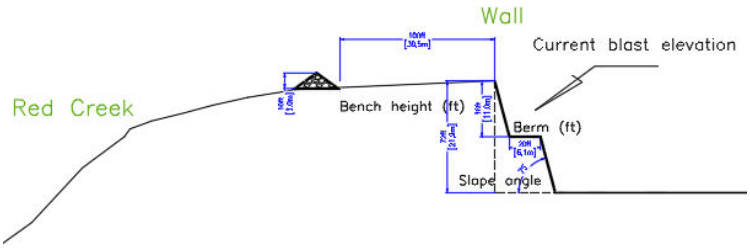


Section, showing final slope design and Red Creek. Crest final quarry wall to berm 100ft

- Modified production blast pattern. It could combines pre splitting, air decking, reduced charge weights near the final quarry wall by thirty to sixty percent, holes in colors close to the wall could be loaded with less explosives. Thus, this blast pattern reduces the overall energy of the blast and minimize impacts over the final quarry wall.

Table of Contents





Section, showing final slope design and Red Creek. Crest final quarry wall to berm 100ft

RCQ will follow State, Federal, and international regulations, guidelines to improve its internal procedures.

Prepared by: **Oscar Mancera**
Quarry Manager, Portland Plant

Reviewed by: **Michael B. Toelle**
Manager Raw Materials and Quarries
Holcim US - Manufacturing Support Organization

Table of Contents

Appendix 1

SOP for blasting

Table of Contents

HOLCIM	**Originating Department:** QUARRY	**Classification:** Work Instruction/SOP	**E**	**Q**	**H&S**
			Y	Y	Y
Date Issued: 8/1/22	**Revision Date**: 03/8/2023	**Control Number:** PD.	**HAC Number:**		
Prepared By: Jeffrey Hauser **Title:** Quarry Supervisor	**Approved By:** Oscar Mancera **Title**: Quarry Manager	Page 1			
Distribution: PD.16\200 Quarry					
Subject: Drill And Blasting SOP					

Quarry Drilling and Blasting Procedures

PURPOSE:

The purpose of these Standard Operating Procedures is to describe policies and procedures that will reduce the potential of accidents while enhancing the productivity, cost effectiveness of the drilling, and blasting at Holcim.

Definitions:

Blast Area: The area of a blast within the influence of the loading operations for a given shot. This area will be determined by the Blaster-in-Charge at the start of each blasting shift.

Safety Zone: Area established by lead blaster that keeps personnel and equipment out of harms way during the initiation of the shot.

Holcim Responsibilities:

- Define what bench and location is to be laid out according to quarry manager/supervisor.

Table of Contents

- Drill Pattern with available equipment.
- Communicate any safety concerns to contractor during drilling and blasting operations.
- Communicate the needs of company to contractor along with estimated blast schedule.
- Provide personnel when available for road blocks.
- Assist in misfires.

Drilling:

- Quarry manager/supervisor will communicate what location needs to be laid out for a drill pattern.
- Work place exam will be conducted at beginning of each shift.
- Make sure pattern area is suitable for layout i.e. (prep floor, move berms).
- Receive pattern sheet from contractor once laid out.
- Operate drill to produce bore hole for blast to appropriate depth and size of hole.
- If on Full Face/limestone bench collect cutting samples for lab analyses.
- Remove drill from pattern once finished and place completed drill pattern sheet in appropriate drop box for contractor.

Blasting:

- Once pattern is finished the quarry manager/supervisor will inform contractor pattern is ready to be loaded and blasted.

Table of Contents

- During the planned day of a blast, the quarry manager/supervisor will confirm at the beginning of the shift that the blast pattern will be loaded and shot at approx. 12:30 or lunchtime.
- If the contractor is unable to detonate the blast at 12:30 another agreed time will be put into place.
- Approximately one hour before detonation of a blast, the quarry manager/supervisor will ask what road blocks will be needed and at what time to determine the safety zone.
- Once agreed on what road blocks will be needed the quarry manager/supervisor will assign personnel to road blocks
- Quarry personnel will communicate to the contractor that they have agreed on the road blocks in place and they are blocked off.
- Road block personnel will inform contractor when and what equipment leaves the area.
- Quarry personnel will follow and answer Lead Blasters commands.
- Once the contactor lead blaster calls for all clear after the blast, then the quarry operators may leave road block assignments and quarry activity may resume.

Misfires:

- In case of a misfire or other site hazard the all clear signal is not to be sounded
- If a misfire is encountered, a minimum wait period of 15 minutes will be enforced for NONEL initiation systems and 30 minutes for electronic initiation systems prior to investigating the misfire
- The blast security area will be maintained with warning signs posted and adjusted for the hazard.

Table of Contents

- Any misfire or hazardous condition must be reported to Quarry Management prior to any work occurring. This includes connecting the misfire and re-initiation attempts
- Complete the misfire checklist.

Misfires can be handled in one of three ways:

1. Re-priming or reconnecting surface lines and re-shooting unfired holes
   This can only be done if:
   A. Proper burden is present in the front of unfired holes or
   B. Sufficient material can be placed in front of free face to replace robbed burden
   C. The blast safety zone can be extended to a size capable of containing any increase in rock throw as a result of robbed burden

2. Removing the primer elements from un-shot holes
   This requires the removal of stemming material by:
   - The use of air pressure only on electronic and nonel detonators (as long as an anti-static line is used)
   - Mechanically removing overburden and stemming to access the explosive column
   - Flushing the stemming material with water

Table of Contents

- Once the stemming is removed the product can be flushed with water pressure to the point the primers can be safely removed
- Care must be taken not to pull to hard on primer down lines
- Recovered caps or boosters must be returned to magazines in an approved vehicle or used on site in a safe manner
- When mucking operations commence on materials from unfired holes, special precautions should be taken during mucking. A blaster will be present until all material associated with unfired holes has been removed.
- All unfired detonators and other explosive products will be inspected for safety and returned to the magazine in an approved vehicle.

Table of Contents

Appendix 2
Fort Hays & Translime bench and Smoky Hill & Golden Shale bench blast Design

BLAST DESIGN
Fort Hays & Translime Bench

Rows	Kr
One or Two holes	1
Third and subsequent rows ie- buffer blasts	0.9

Bedding Orientation	Kd
Bedding steeply deeping into cut	1.18
Bedding steeply deeping into face	0.95
Other cases of depositation	1

Geologic Structure	Ks
Heavily cracked. Frecuent weak joins,weakly cement layers.	1.3
Thin well-cemented layers with tigth joins	1.1
Massive intact rock	0.95

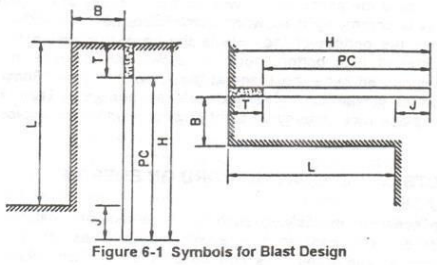


Figure 6-1 Symbols for Blast Design

where:

B = Burden
T = Stemming
J = Subdrilling
L = Bench height
H = Blasthole depth
PC = Powder column length

CHARGE CALCULATIONS

							0.3048
Type of rock	Fort Hays +Translime						
Rock Strength (weak=1, Strong =13)	10						
Bench Heigth	L		14.0	m	46	ft	
Bench width	A		100.0	m	328.1	ft	
Diameter of Explosive	De		140	mm	5.50	inch	
Bootom charge	Spartan 400G Booster 40/Cs		400	g	0.99	lb	
Weight of column charge	Lb		12.26	Kg/m	8.24	lb/ft	
Relastive bulk strength (ANFO=100)	Stv		100		100		
Specific Gravity of the Rock	SGr		2.28	t/m^3	0.065	t/ft^3	
Correction for number of rows	Kr		1		1		
Correction for bedding orientation	Kd		0.95	t/m^3	1.18		
Correction for Geologic Structure	Ks		1.3		1.3		
Density rock stemming			1.63		0.046	t/ft^3	
Max Burden (Anfo)	B	$0,008xDex(Stv/SGr)^{1/3}$	3.9	m	12.9	ft	
Geologic correction factors	B"	B*Kr*Kd*Ks	**4.9**		**16.0**		
Stemming	T	0,7*B"	3.4		11.2		
Subdrilling	J	0.3xB"	0.0	m	0.0	ft	
Stiffness ratio		L/B"	**2.9**		**2.9**		
Blasthole depth	H	1.05x(L+J)	14.7	m	48.2	ft	
Spacing	S	(L+7xB)/8	**6.0**		**19.7**		
No of holes per row	No	A/S	16.6		16.6		
Heigth of bottom charge	hb	1.3xB"	5.1	m	16.8	ft	
Bottom charge	Qb	hbxLb	62.8	Kg	138.5	Lb	
Booster	Ip		0.80	Kg	0.45	Lb	
Heigth of column charge	hp	H-(hb+T)	6.17	m	20.24	ft	
Column charge	Qp	hpxLp	75.65	Kg	166.77	Lb	
Total Charge weight per hole	Qt	Qb+Qp+Ip	139.28	Kg	305.74	Lb	
Powder Factor	q	QtxNo/(B"xLxA)	0.340	Kg/m^3	0.021	Lb/ft^3	
			0.149	Kg /t	**0.327**	Lb/t	
Specific perforation	b	NoxH/(B"xLxA)	0.036	m/m^3	0.003	ft/ft^3	
			0.016	m/t	0.052	ft/t	
Specific consume stemming			0.00009	t stemming/t			

Table of Contents

BLAST DESIGN

Smoky Hill & Golden Shale
Bench

Rows	Kr
One or Two holes	1
Third and subsequent rows ie- buffer blasts	0.9

Bedding Orientation	Kd
Bedding steeply deeping into cut	1.18
Bedding steeply deeping into face	0.95
Other cases of depositation	1

Geologic Structure	Ks
Heavily cracked. Frecuent weak joins,weakly cement layers.	1.3
Thin well-cemented layers with tigth joins	1.1
Massive intact rock	0.95

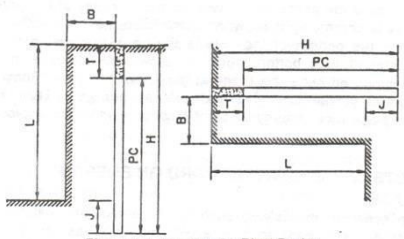


Figure 6-1 Symbols for Blast Design

where:

B = Burden
T = Stemming
J = Subdrilling
L = Bench height
H = Blasthole depth
PC = Powder column length

CHARGE CALCULATIONS

						0.3048
Type of rock	**Smoky Hill + Golden Shale**					
Rock Strength (weak=1, Strong =13)	**7**					
Bench Heigth	**L**		15.0	m	49	ft
Bench width	**A**		100.0	m	984	ft
Diameter of Explosive	**De**		140	mm	5.50	inch
Bootom charge	**Spartan 400G Booster 40/Cs**		400	g	0.99	lb
Weight of column charge	**Lb**		12.26	Kg/m	8.24	lb/ft
Relative bulk strength (ANFO=100)	**Stv**		100		100	
Specific Gravity of the Rock	**SGr**		2.28	t/m^3	0.065	t/ft^3
Correction for number of rows	**Kr**		1		1	
Correction for bedding orientation	**Kd**		0.95	t/m^3	1.18	
Correction for Geologic Structure	**Ks**		1.3		1.3	
Density rock stemming			1.63		0.046	t/ft^3
Max Burden (Anfo)	**B**	**0,008xDex(Stv/SGr)$^{1/3}$**	3.9	m	12.9	ft
Geologic correction factors	**B"**	**B*Kr*Kd*Ks**	**4.9**		**16.0**	
Stemming	**T**	**0,7*B"**	3.4		11.2	
Subdrilling	**J**	**0.3xB"**	0.0	m	0.0	ft
Stiffness ratio		**L/B"**	**3.1**		**3.1**	
Blasthole depth	**H**	**1.05x(L+J)**	15.8	m	51.7	ft
Spacing	**S**	**(L+7xB)/8**	**6.1**		**20.1**	
No of holes per row	**No**	**A/S**	16.3		48.9	
Heigth of bottom charge	**hb**	**1.3xB"**	5.1	m	16.8	ft
Bottom charge	**Qb**	**hbxLb**	62.8	Kg	138.5	Lb
Booster	**Ip**		0.80	Kg	0.45	Lb
Heigth of column charge	**hp**	**H-(hb+T)**	7.22	m	23.68	ft
Column charge	**Qp**	**hpxLp**	88.52	Kg	195.16	Lb
Total Charge weight per hole	**Qt**	**Qb+Qp+Ip**	152.15	Kg	334.12	Lb
Powder Factor	**q**	**QtxNo/(B"xLxA)**	0.340	Kg/m^3	0.021	Lb/ft^3
			0.149	Kg /t	**0.327**	Lb/t
Specific perforation	**b**	**NoxH/(B"xLxA)**	0.035	m/m^3	0.003	ft/ft^3
			0.015	m/t	0.051	ft/t
Specific consume stemming			0.00008	t stemming/t		

Table of Contents

CUP Exhibit 3.1 Current Deed of Record

EASEMENT AGREEMENT

THIS EASEMENT AGREEMENT (this "Agreement"), is made and entered into as of this 29th day of September, 2011, by and between **Ranch Land, LLC**, a Colorado limited liability company ("Grantor"), and **HOLCIM (US) INC.**, a Delaware corporation ("Grantee").

W I T N E S S E T H:

WHEREAS, Grantor is the owner of that certain real property located in the County of Fremont and the County of Pueblo, Colorado, as shown on Exhibit A attached hereto and made a part hereof ("Grantor's Property"); and

WHEREAS, Grantee is the owner of that certain real property located in the County of Fremont and the County of Pueblo, Colorado, as shown on Exhibit B attached hereto and made a part hereof ("Grantee's Property" and Parcels, 1, 2 and 3 shown on Exhibit B are referred to herein as "Parcel 1," "Parcel 2" and "Parcel 3" respectively); and

WHEREAS, Grantee desires to use certain roads located on Grantor's Property for access to Grantee's Property which roads and access points are shown on Exhibit C attached hereto and made a part hereof (the "Access Easement Areas"); and

WHEREAS, Grantor has agreed to grant to Grantee access easements on the terms and conditions set forth herein.

NOW, THEREFORE, for and in consideration of One Dollar ($1.00) and for other good and valuable considerations, the receipt and adequacy of which are hereby acknowledged, Grantor and Grantee do hereby agree as follows:

1. **Grant of Easement**. Grantor hereby grants, bargains, sells and conveys to Grantee and its permitted successor and assigns, the right, privilege and perpetual non-exclusive easement to enter upon the Access Easement Areas (the "Easement") for the purpose of accessing Grantee's Property.

2. **Use of Access Easement Area.**

(a) **Generally**. Grantor retains all other rights related to Grantor's Property and may use it for any purpose, it being understood that Grantee's activities upon and use of the Access Easement Areas: (i) shall not unreasonably interfere with Grantor's operations or use of Grantor's Property and (ii) shall comply with all applicable laws, rules, regulations, ordinances, codes and permits of any governmental authority (whether now existing or hereafter issued, enacted or arising).

(b) **Specific Restrictions**. Grantee shall use the Access Easement Areas only for ingress and egress purposes related to the mining of raw materials, the general maintenance and care of Grantee's Property, and other purposes reasonably incidental thereto. Grantee shall maintain the roads in the Access Easement Areas and repair any damage caused by its use of roads in the

Table of Contents

Access Easement Areas; provided that Grantee's maintenance obligation shall be proportional to its use of such roads. Additionally, Grantee shall use only the access road designated as "Heavy Access" on Exhibit C for heavy equipment; any upgrades to, or widening of, such road required by Grantee shall be made by Grantee at its sole cost and expense. Grantee will re-grade and seed (with native vegetation) any portion of the Access Easement Areas disturbed in connection with the widening or upgrading of such road.

3. **Easement Runs with the Land.** The Easement granted in this Agreement shall run with the land and shall be binding upon Grantor and Grantor's successors and assigns.

4. **Indemnification; Insurance.** Grantee shall indemnify and hold harmless Grantor from and against any and all claims, demands, actions, penalties, fines, losses, costs, assessments or other liabilities (collectively, "Losses") arising out of or resulting from Grantee's access to or use of the Access Easement Area, or arising out of or resulting from Grantee's breach of this Agreement, in each case, whether occurring on the Access Easement Area or elsewhere. Grantee shall maintain commercial general liability insurance in an aggregate amount of not less than Two Million Dollars ($2,000,000) and may satisfy this requirement by obtaining the appropriate endorsement to any master policy of liability insurance that Grantee may maintain. Grantor shall be named as an additional insured under this policy and shall be entitled to 30 days' prior written notice if Grantee cancels such coverage. Grantee shall also maintain the statutorily required limits of worker's compensation and employer liability insurance coverage. Grantee shall provide to Grantor a certificate of insurance evidencing the foregoing insurance coverages before any entry on the Access Easement Area by Grantee.

5. **Enforcement.** Should it become necessary for either party to this Agreement to bring suit to enforce any provision hereof or to enforce its rights upon a breach of any of the covenants or obligations contained herein by the other party, the prevailing party in such action, shall be entitled to recover from the non-prevailing party, in addition to any damages or other relief granted as a result of such litigation, all costs and expenses of such litigation and reasonable attorneys' fees (including court costs and costs of appeal). In addition to the rights and remedies provided herein, none of which is exclusive, each party shall have any other right or remedy allowed at law or in equity, by statute or otherwise, including without limitation, the right to enjoin any breach or threatened breach by the other party of any covenant, agreement, term or condition of this Agreement and the right of specific performance.

6. **Notices.** All notices given hereunder shall be in writing and shall be sent by personal delivery, by recognized overnight courier service, or by U.S. Mail, certified mail return receipt requested, to the following addresses: (a) if to the Grantor at 3925 Hill Circle, Colorado Springs, Colorado 80904, and (b) if to the Grantee at 6211 Ann Arbor Road, P.O. Box 122, Dundee, Michigan 48131, Attention: Legal Department. Either Grantor or Grantee may change its address for notice by notifying the other party of such change of address in a manner provided in this paragraph.

7. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Colorado without regard to conflict of law provisions.

8. **General Provisions.** Grantor and Grantee hereby represent and warrant to one another that each has the right, power, authority and ability to execute this Agreement and to perform all of the obligations imposed on it hereunder. Grantor specifically makes no representation as to the suitability of the Access Easement Area for its intended purposes;

Table of Contents

Grantee accepts the Access Easement Areas "AS-IS" without any representations of Grantor. This Agreement may only be modified or amended upon the mutual consent of the parties hereto. The headings in this Agreement are for convenience only and do not constitute a part of this Agreement and should not be used in construing this Agreement. This Agreement constitutes the entire Agreement between the parties with respect to the subject matter thereof and all prior understandings and agreements, oral or written, concerning the same subject matter, are hereby merged into this Agreement and extinguished hereby. The invalidity or unenforceability of any particular provision of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respects as if such invalid or unenforceable provisions were omitted. This Agreement may be executed in counterparts, and all counterparts so executed shall constitute one agreement binding on each party hereto, notwithstanding that all parties are not signatory to the same counterpart.

[Signature Page Follows.]

Table of Contents

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

GRANTOR:

RANCH LAND, LLC

By: _____
Name: William H. Peetz
Title: Manager

GRANTEE:

HOLCIM (US) INC.

By: _____
Name: Jeffrey Ouhl
Title: Senior Vice President, Manufacturing

Table of Contents

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

GRANTOR:

RANCH LAND, LLC

By:_____
Name: William H. Peetz
Title: Manager

GRANTEE:

HOLCIM (US) INC.

By:_____
Name: Jeffrey Ouhl
Title: Senior Vice President, Manufacturing

Table of Contents

State of COLORADO)

County of EL PASO)

On this 28TH day of September, 2011, before me personally appeared William H. Peetz to me personally known, who, being by me duly sworn, did say that he is the manager of RANCH LAND, LLC, a Colorado limited liability company, and that said instrument was signed on behalf of said company by authority of its manager; and said manager acknowledged said instrument to be the free act and deed of said company.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid, the day and year first above written.

ERIN JENSEN
Notary Public
State of Colorado

Notary Public.

My term expires 2/3/15

State of _____)

County of _____)

On this ____ day of September, 2011, before me personally appeared Jeffrey Ouhl to me personally known, who, being by me duly sworn, did say that he is the Senior Vice President, Manufacturing of HOLCIM (US) INC., a Delaware corporation, and that said instrument was signed on behalf of said corporation by authority of its Board of Directors; and said officer acknowledged said instrument to be the free act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid, the day and year first above written.

Notary Public

My term expires

Table of Contents

State of _____)

County of _____)

On this ____ day of September, 2011, before me personally appeared William H. Peetz to me personally known, who, being by me duly sworn, did say that he is the manager of RANCH LAND, LLC, a Colorado limited liability company, and that said instrument was signed on behalf of said company by authority of its manager; and said manager acknowledged said instrument to be the free act and deed of said company.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid, the day and year first above written.

_____

Notary Public.

My term expires

State of Missouri)

County of Ste. Genevieve

On this 27th day of September, 2011, before me personally appeared Jeffrey Ouhl to me personally known, who, being by me duly sworn, did say that he is the Senior Vice President, Manufacturing of HOLCIM (US) INC., a Delaware corporation, and that said instrument was signed on behalf of said corporation by authority of its Board of Directors; and said officer acknowledged said instrument to be the free act and deed of said corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid, the day and year first above written.

LISA M SCHWENT
Notary Public - Notary Seal
State of Missouri
Commissioned for Ste. Genevieve County
My Commission Expires: January 01, 2013
Commission Number: 09407756

Lisa M. Schwent

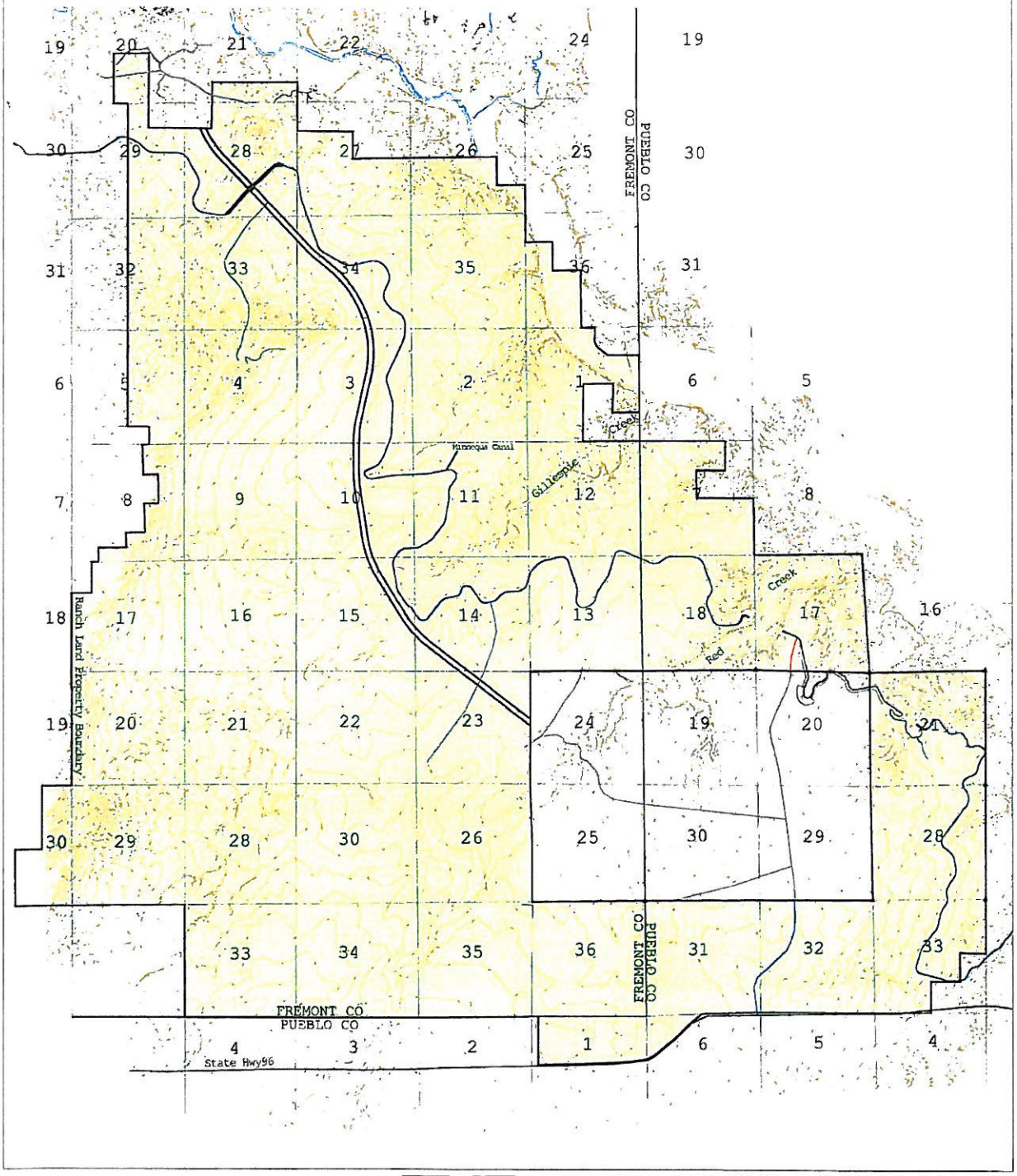
Notary Public

My term expires January 01, 2013

Table of Contents

EXHIBIT A
Grantor's Property

Table of Contents



Ranch Land LLC Property

Holcim

ISSUE	EXHIBIT A	DRAWN JRL
9/20/2011	Ranch Land, LLC Property Map	CHECKED
		SCALE Not To Scale
	STATE PLANE COORDINATES CO_C CENTRAL ZONE, NAD83 NAVD88, GEOID 96	

Table of Contents

EXHIBIT B
Grantee's Property

Parcel 1:

A parcel of land located within the Southeast one-quarter of Section 20, the Southwest one-quarter of Section 21, the Northwest one-quarter of the Northwest one-quarter of Section 28 and the Northeast one-quarter of Section 29, all within T19S, R68W of the 6th P.M., County of Fremont, State of Colorado and being more particularly described in metes and bounds as follows:

Beginning at a point in the Northwest one-quarter of the Southeast one-quarter of Section 20, T19S, R68W of the 6th P.M., from which point the Southwest corner of said Section 20 bears S56°56'25"W, a distance of 4345.43 feet, said point also being on the South line of that 5 acre parcel described at Reception No. 717745, Fremont County records;

thence along the South line of said 5 acre parcel, N89°09'51" E, a distance of 311.28 feet, to a point at the Southeast corner of said 5 acre parcel;

thence along the East line of said parcel, N00°41'38"W, a distance of 332.20 feet, to a point on the North line of the Southeast one-quarter of Section 20;

thence along said North line, N89°09'19"E, a distance of 1354.43 feet, to a point at the Northeast corner of the Southeast one-quarter of said Section 20;

thence N89°31'25"E, along the North line of the Southwest one-quarter of Section 21, a distance of 1320.78 feet, to a point at the Northeast corner of the Northwest one-quarter of the Southwest one-quarter of Section 21;

thence along the East line of said Northwest one-quarter of the Southwest one-quarter of Section 21, S00°03'45"E, a distance of 1327.17 feet to a point at the Southeast corner of said Northwest one-quarter of the Southwest one-quarter of Section 21;

thence departing said line, S00°50'44"W, a distance of 2506.27 feet to a point within the Northwest one quarter of the Northwest one-quarter of Section 28, from which point the Northwest corner of Section 28 bears N47°47'59"W, a distance of 1730.92 feet;

thence N89°41'57"W, a distance of 2964.86 feet, to a point within the Northeast one-quarter of Section 29;

thence N00°18'03"E, a distance of 3450.02 feet to the Point of Beginning of this description.

Said parcel contains 258.28 acres, more or less.

Table of Contents

Parcel 2:

A strip of land located within Section 28, the Northeast one-quarter of the Northeast one-quarter of Section 33, Section 34, T19S, R68W of the 6th P.M. and Section 3, Section 10, the Southwest one-quarter of Section 14, the East one-half of Section 15 and the North one-half of Section 23, T20S, R68W of the 6th P.M., County of Fremont, State of Colorado and being more or less particularly described as lying 125.00 feet on each side of the following described centerline.

Beginning at point within said Section 28 from which the Northwest corner of Section 28 bears N36°48'18"W, a distance of 1449.43 feet;

thence S27°05'30"E, a distance of 113.81 feet to a point at the beginning of a curve to the left , said curve having a radius of 5682.00 feet, a central angle of 16°50'42" and a chord bearing of S 35°30'51"E; thence along said curve, Southeasterly an arc distance of 1670.52 feet;

thence S 43°56'12"E, a distance of 5704.94 feet to a point at the beginning of a curve to the left, said curve having a radius of 3875.50 feet; a central angle of 07°22'29" and a chord bearing of S 47°37"27"E; thence along said curve, Southeasterly an arc distance of 498.84 feet;

thence S 51°18'41"E, a distance of 850.39 feet to a point at the beginning of a curve to the right, said curve having a radius of 5017.00 feet; a central angle of 61°48'57" and a chord bearing of S20°24'13"E;

thence along said curve Southeasterly an arc distance of 5412.78 feet to a point at the beginning of a curve to the right, said curve having a radius of 12013.00 feet, a central angle of 02°55'07" and a chord bearing of S 11°57'49"W; thence along said curve Southwesterly an arc distance of 611.94 feet;

thence S 13°25'22"W, a distance of 1182.22 feet to a point at the beginning of a curve to the left, said curve having a radius of 7160.00 feet; a central angle of 13°07'12" and a chord bearing of S06°51'46"W; thence along said curve Southerly an arc distance of 1639.55 feet;

thence S 00°18'10"W, a distance of 1167.38 feet, to a point at the beginning of a curve to the left, said curve having a radius of 4943.00 feet; a central angle of 08°58'53" and a chord bearing of S 04°11'16"E; thence along said curve Southerly an arc distance of 774.84 feet;

thence S 08°40'43"E, a distance of 2273.99 feet to a point at the beginning of a curve to the left, said curve having a radius of 5030.00 feet; a central angle of 23°12'03" and a chord bearing of S20°16'44"E; thence along said curve Southeasterly an arc distance of 2036.81 feet;

thence S 31°52'46"E, a distance of 2080.29 feet to a point at the beginning of a curve to the left, said curve having a radius of 5100.00 feet; a central angle of 20°42'32" and a chord bearing of S 42°14'02"E; thence along said curve Southeasterly an arc distance of 1843.33 feet;

thence S 52°35'18"E, a distance of 5789.81 feet to a point on the East line of the Northeast one-quarter of Section 23, T20S, R68W, 6th P.M., from which point the Northeast corner of said Section 23 bears N00°05'49"W, a distance 2341.06 feet, said point being the Point of Terminus of this description.

Said parcel contains 193.13 acres, more or less.

Table of Contents

Parcel 3:

Section 19, Section 20, Section 29, and Section 30, T20S, R67W of the 6th P.M., County of Pueblo, State of Colorado, together with Section 24 and Section 25, T20S, R68W of the 6th P.M., County of Fremont, State of Colorado.
Said parcel contains 3851.05 acres, more or less.

Table of Contents

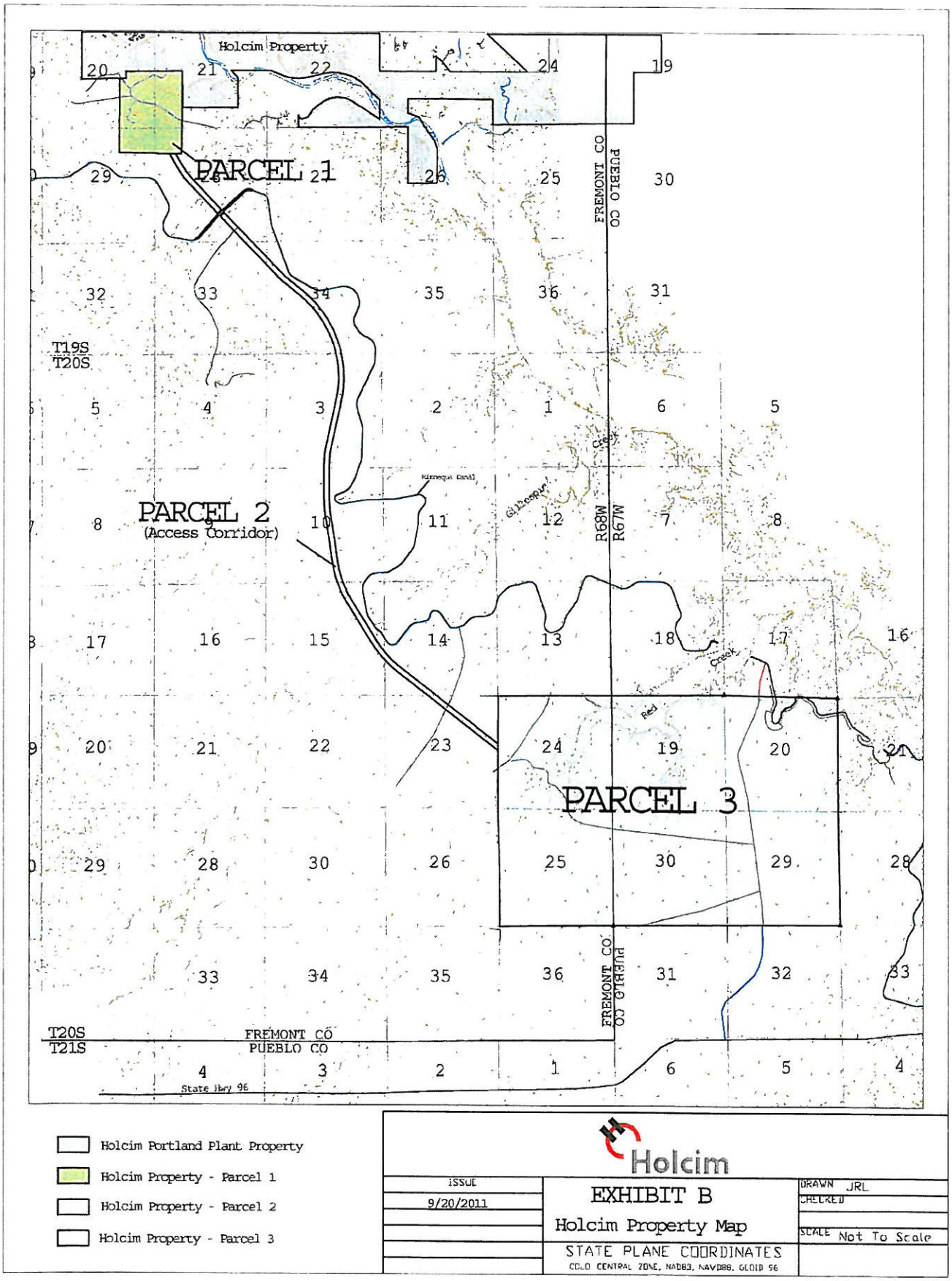
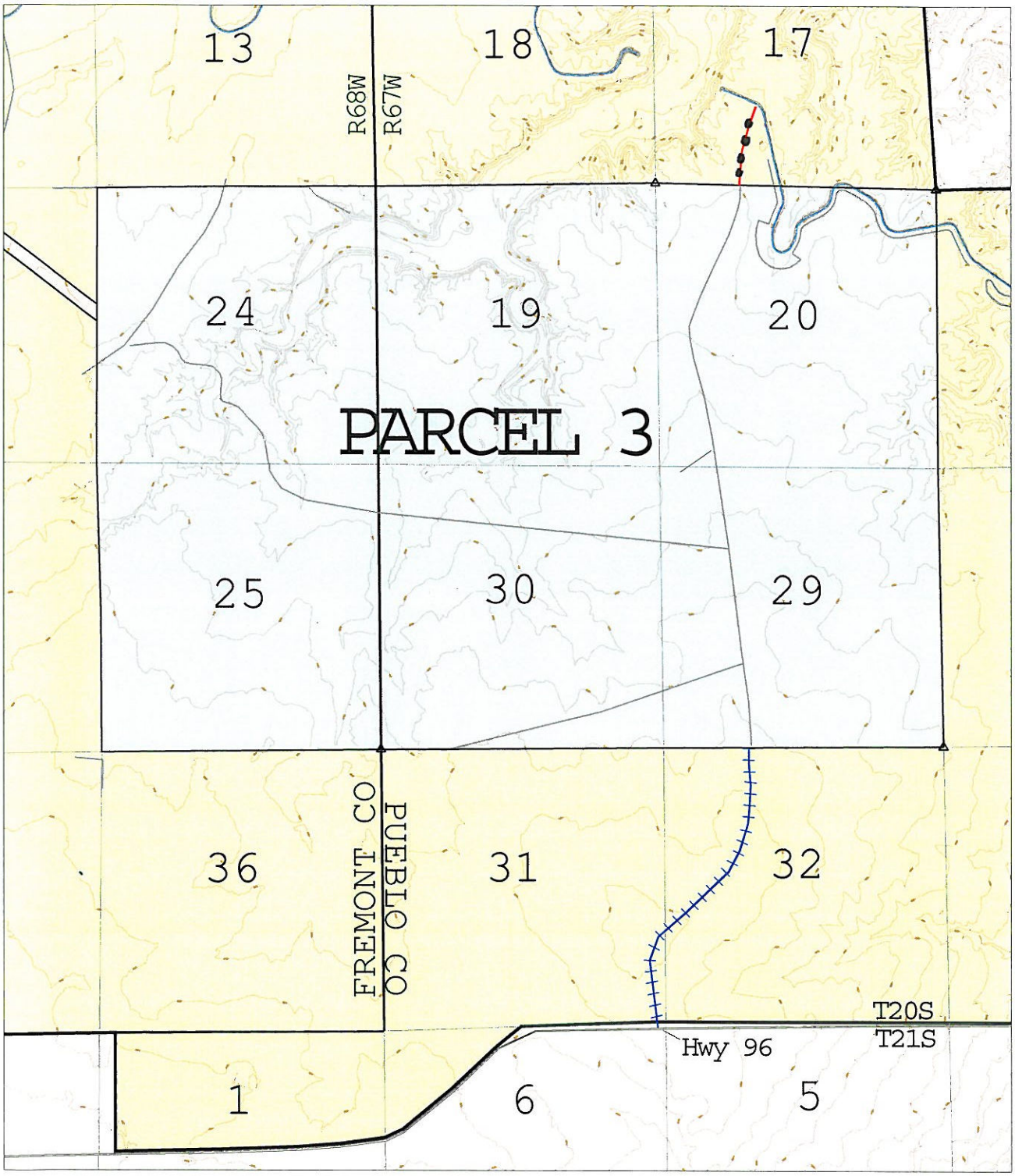


Table of Contents

EXHIBIT C
Access Easement Areas

Table of Contents



Holcim Property - Parcel 2

Holcim Property - Parcel 3

Ranch Land LLC Property

Holcim Access Road

Holcim Access Road
Heavy Equipment Access

ISSUE
8/17/2011

Holcim

Exhibit C
Holcim Access Roads

DRAWN JRL
CHECKED
SCALE Not To Scale

Table of Contents

CUP Exhibit 3.3 CO Division of Water Resources Information Form

FREMONT COUNTY'S
COLORADO DIVISION OF WATER RESOURCES
INFORMATION FORM FOR
SPECIAL USE, ZONING, AND OTHER LAND USE ACTIONS

The Fremont County Department of Planning & Zoning (Department) is required to submit proposed land use actions to the State Engineer's Office (SEO) at the Colorado Division of Water Resources (DWR). The SEO is responsible for providing an opinion regarding material injury likely to occur to decreed water rights by virtue of diversion of water necessary or proposed to be used to supply the proposed land use action.

This DWR Information Form must be filled out completely and accurately to ensure that the submittal to the DWR regarding this proposed land use action includes the necessary information required by that agency. The DWR has 21 days to respond to County submittals. Incomplete submittals will be returned to the County for additional information and then must be resubmitted to the DWR.

Please note that the DWR timeframe for review may not coincide with the County deadlines or meetings, and if the DWR requires additional information, further delays may occur.

Attachments can be made to this application to provide expanded narrative for any application item including supportive documentation or evidence for provided application item answers. Please indicate at the application item that there is an attachment and label it as an exhibit with the application item number, a period and the number of the attachment for that item (*as an example, the first attached document providing evidence in support of the answer given at application item number 8 would be marked* - Exhibit DWR-8.1, *the fifth attached document supporting the narrative provided for application item 8 would be marked* - Exhibit DWR-8.5). Exhibit numbers should be placed in the lower right hand area of the exhibit.

1. Name of proposed project: Red Creek Quarry formerly Ranch Land Rock Pit #1 CUP 02-3
2. Provide a map of proposed improvements with an identified location that includes a quarter-quarter, section, township, range and principle meridian (PLSS).
3. Legal description of subject property: Sections 24 and 25 T20S, R68W in Fremont County west of the 6th P.M.

   _____
4. What is the size of the existing parcel? 1500 ☒ Acres --- ☐ Square feet
5. What are the proposed uses of the subject property?
   - ☐ Residential Only
   - ☒ Commercial
   - ☐ Commercial and Residential
6. What are the current uses of water on this parcel?
   a. Are there any established uses that require water? ☐ Yes --- ☒ No

Table of Contents

b. Number of existing homes: 0
If one or more, date this use was established: _____

c. Home lawn / garden irrigation: ☐ Yes --- ☒ No

If yes, amount: _____ ☐ Acres --- ☐ Square feet

Date this use was established: _____

d. Livestock watering: ☒ Yes --- ☐ No

If yes, commercial or non-commercial livestock? *(Circle one)*

If yes, date this use was established: Historic Clevenger Ranch

e. Other uses: _____

Dates established: _____

7. What will be the proposed uses of water for this parcel?

a. Number of proposed homes (including the home above if it will remain): 0

b. Lawn / garden watering, amount: 0 ☐ Acres --- ☐ Square feet

c. Livestock watering: ☐ Yes --- ☒ No

If yes, commercial or non-commercial livestock? *(Circle one)*

d. Number of Employees per day: 27 Number of days open per year: 365

e. Number of Customers per day: 0 Number of days open per year: 0

f. Bed / Breakfast Customers per day: 0 Number of days open per year: 0

g. Describe other water needs: _____

Water will be used for dust suppression on quarry roads and sanitation water for employees.

8. Source of water for the uses described above: *(If more than one source is utilized for parcel, describe which sources will supply which proposed uses)* _____

Holcim will submit for a commercial well permit upon approval of the CUP modification.

a. Is Municipal water available to parcel: ☐ Yes --- ☒ No

b. Is water available to parcel from an independent water district? ☐ Yes --- ☒ No

Table of Contents

c. Are the uses described above proposed to be provided water by a municipality?

☐ Yes -- ☒ No

Name of provider: _____

d. Is water hauled: ☐ Yes --- ☒ No

e. Is there an existing permitted well?: ☐ Yes --- ☒ No

If yes, permit number: _____

f. Is there a Substitute Water Supply Plan? *(Substitute water supply plans provide water users a mechanism to replace out-of-priority depletions on an interim basis.)*

☐ Yes --- ☐ No **Please refer to Exhibit 8-1 DRMS Exhibit G Water**

If yes, name of plan: **Information Section 2.7.5 Mine Water Source and Uses**

g. Is there an unregistered well? ☐ Yes --- ☒ No

h. Is there a Surface Spring? ☐ Yes --- ☒ No

If yes, Court Adjudication Number and Spring Name: **Case No. 16CW3102**

9. What is the Waste Water Method?

☐ Municipal
☐ Septic with Leach Field
☒ Closed Vault, Waste Water hauled to: _____

By signing this form, the Applicant, or the agent / representative acting with due authorization on behalf of the Applicant, hereby certifies that all information contained in the form and any attachments to the form, is true and correct to the best of Applicant's knowledge and belief.

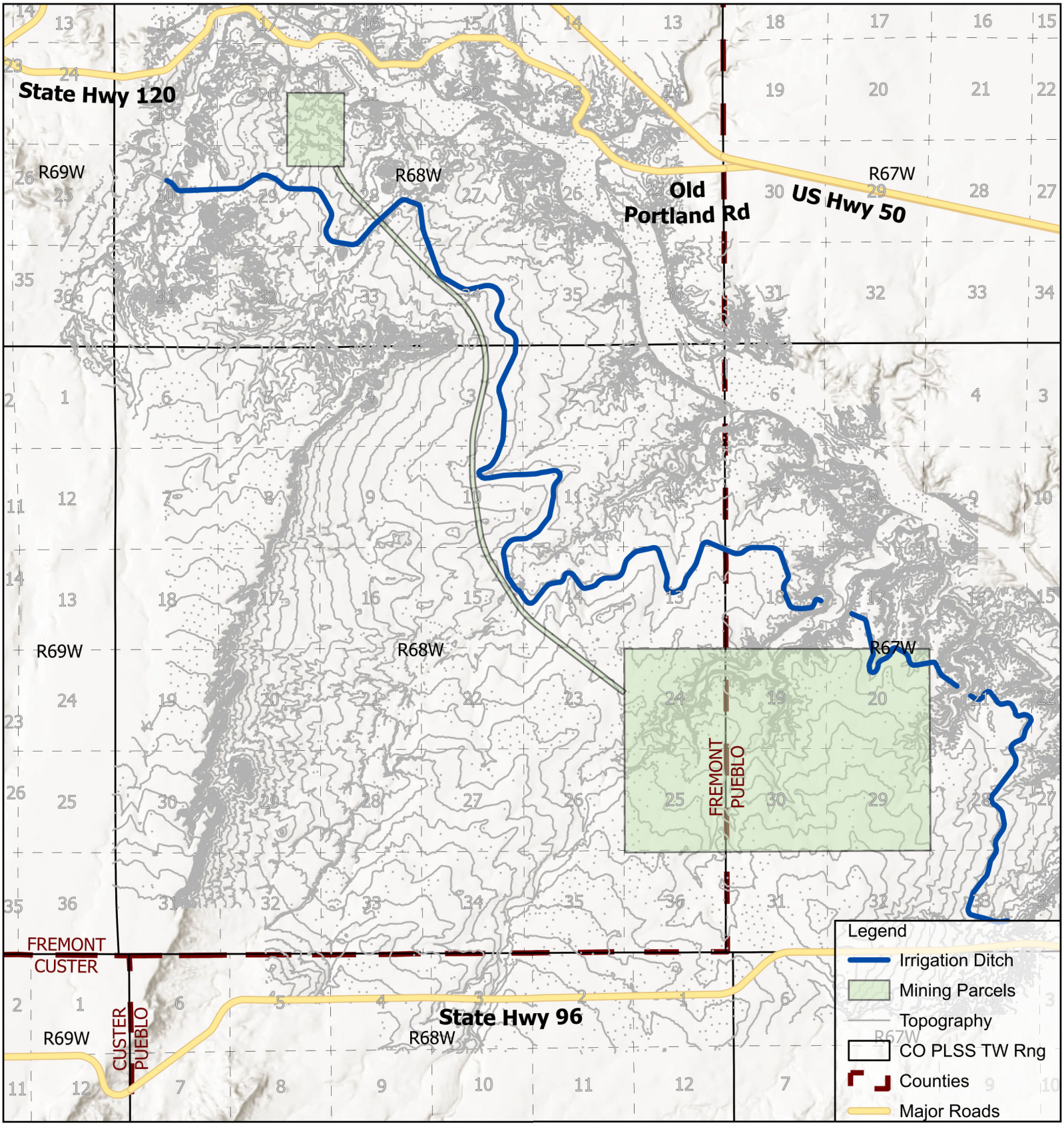
Fremont County hereby advises Applicant that if any material information contained herein is determined to be misleading, inaccurate or false, the Board of Commissioners may take any and all reasonable and appropriate steps to declare actions of the Department regarding the Application to be null and void.

Signing this form is a declaration by the Applicant to conform to all plans, drawings, and commitments submitted with or contained within this form, provided that the same is in conformance with the Fremont County Zoning Resolution.

Hamza Mekhfi _____ March 28, 2024
Applicant Printed Name Signature Date

Hamza Mekhfi _____ March 28, 2024
Property Owner Printed Name Signature Date
(If different from applicant)

Table of Contents



HOLCIM

Exhibit C1 - Pre-Mining Map

Overview map showing land to be utilized by the new Red Creek Quarry mine and relevant boundaries to the surrounding area.

Esri, NASA, NGA, USGS
Spatial Reference
Name: NAD 1983 UTM Zone 13N
GCS: GCS North American 1983

7/13/2023

User: SBecker

N

0 0.5 1
Miles

Table of Contents

CO DWR Exhibit 8-1

2.7 Exhibit G: Water Information (Rule 6.4.7)

2.7.5 Mine Water Source and Uses

Water will be needed at the RCQ Mine Site for both dust suppression and sanitary purposes. Holcim has anticipated the need for two groundwater wells to provide the supply for these uses. Well siting will occur in 2024 and applications for well permits will be submitted to the Division of Water Resources once the well locations have been selected. It is anticipated that these wells will be installed in 2025. The replacement supplies for potential depletions in 2025 will continue to be a long-term lease of fully consumable water from Pueblo Board of Water Works (PBWW), which is currently being used to cover depletions at the BCQ, pursuant to the Holcim augmentation plan decreed in Case No. 16CW3102. Terms of the water lease provide for up to 175 acre-feet per year of replacement water to cover depletions from both the Holcim Bear Creek Quarry and the Holcim Wetlands SWSP/16CW3102 Decree on an annual basis. The lease also provides Holcim the option to renew through December 2039. The request for Substitute Water Supply Plan is provided in its entirety in Appendix 4.7. An approval from Division of Water Resources (DWR) will be obtained prior to exposing groundwater.

2.7.5.1 Dust Suppression

Water needed for dust suppression is dependent on the amount of product mined and the mining operations. Holcim will be utilizing a more efficient mining process that reduces equipment impacts and dust. Dust suppression systems will also be installed on the conveyor system that transports mined product to the cement plant. Dust suppression projections for the BCQ estimated a maximum use of 70 acre-feet per year. However, the RCQ would likely only need 60% of that amount, or approximately 40 acre-feet per year once mining begins.

Dust suppression needs during construction are difficult to estimate. Therefore, water pumped from the wells for this use will be measured and reported, but are not expected to exceed 20 acre-feet per year. Dust suppression uses will be considered 100% consumptive.

2.7.5.2 Sanitary Needs

Typical water use at the BCQ and Cement Plant for domestic needs (bathrooms, kitchen) are on the order of 30 acre-feet per year for 25staff. The RCQ site will have approximately 25 staff, and so these uses are estimated to be only 1 to 2 acre-feet per year (based on typical per capita usage). These uses are 10% consumptive, with the remaining water returning to the groundwater system through a septic vault system.

Table of Contents

(rated at 1200 tph) located in the vicinity of the shop and office building. The final product conveyed to the cement plant will be approximately 4.5-inch minus. Conveyor belts leaving RCQ will be equipped with a gamma-metrics cross belt analyzer system to provide real-time chemical analysis of the material transported to the plant.

2.4.4 Blasting Operations

Blasting will occur daily, Monday thru Friday, to yield limestone volumes that provide sufficient quantities of overburden and produce limestone quantities to support plant production. Blasting will conform with Bureau of Alcohol Tobacco, Firearms and Explosives regulations and monitored for seismic control as described in the Blasting Plan (CUP Exhibit 2.9-1). Blasting is performed by a blasting contractor, licensed in CO. At distances of 5,000 feet or greater, the peak particle acceleration will not exceed 1.00 in/sec^2. The nearest structure is the Minnequa Canal located within 500 feet of the permit boundary but more than two miles from Sections 24 and 25 in Fremont County. At this distance, ground vibration will not exceed 1.00 in/sec^2 thus having no negative impacts to existing structures.

2.4.5 Existing Structures

Existing structures within the affected area boundary include ranch fences, cattle watering infrastructure and electricity transmission lines. Ranch fences will be removed that are within the affected area. The cattle watering infrastructure, water pipe and troughs, will be dismantled and removed from the affected area. The water supply line to the cattle troughs will be capped at the permit boundary. Holcim will maintain a 25-foot radius setback from electricity transmission lines on the native ground elevation. In the quarry, the top mine bench will be setback 25 feet from the base of the pole with setback in the quarry floor up to 165 feet due to 1H:1V bench slope.

Table of Contents

CUP Exhibit 3.6 Drainage Plan

Brown AND Caldwell

1527 Cole Boulevard, Suite 300
Lakewood, CO 80401

T: 303.239.5400

Technical Memorandum

Prepared for: Holcim US, Inc.

Project Title: Red Creek Quarry Permitting

Project No.: 160041

Technical Memorandum

Subject: Red Creek Quarry and Materials Transport and Access Corridor Drainage Plan

Date: May 10, 2024

To: Michael Toelle, Raw Materials and Quarries Manager, Holcim US, Inc.

From: Kelly Donahue, Brown and Caldwell

Copy to: Dan Victoria, Director, Fremont County Department of Planning and Zoning

Julio Villon, Project Manager, Holcim US, Inc.

Prepared by: _____
Adam Gutta, P.E., Senior Associate Engineer

Reviewed by: _____
Mary Jay Martens, P.E., Principal Engineer

Table of Contents

Table of Contents

List of Tables

Section 1: Introduction

Brown and Caldwell developed this drainage plan on behalf of Holcim US, Inc. (Holcim) to support the Red Creek Quarry (RCQ) permitting project for the RCQ and Material Transport and Access Corridor (MTAC) sites (herein referred to as Site). This drainage plan is intended to support a conditional use permit application submitted to Fremont County. It includes calculations of peak flow rates of stormwater runoff around proposed RCQ infrastructure within Fremont County and at waterway crossings along the MTAC. It also presents culvert geometry and sizing to safely convey runoff across the MTAC.

This drainage plan includes preliminary design for the structures described herein. It assumes that Fremont County takes jurisdiction and will review design of the ephemeral crossings (i.e., drainage channels that are normally dry except during precipitation events). The design of several structures will be developed as part of a United State Army Corp of Engineer (USACE) Nationwide Permit Application. A copy of the USACE Nationwide Permit Application will be made available to Fremont County.

The scope of this drainage plan includes:

- Identifying existing and proposed hydrologic and hydraulic conditions within RCQ and along the MTAC.
- Calculating peak flow rates in the northwest corner of the RCQ around proposed infrastructure.
- Calculating peak flow rates at waterway crossings identified along the MTAC.
- Calculating culvert geometry and sizing to safely convey runoff across the MTAC.
- Designing a typical culvert out protection rip rap basin and apron.
- Summarizing findings and conclusions.

Section 2: Project Overview and Site Description

The RCQ will be a new limestone quarry that provides material to the Portland cement plant site located at 3500 State Hwy 120, east of Florence, CO. RCQ is located on Holcim property on the USGS Hobson and Florence SE Quadrangles, Colorado. The quarry property comprises approximately 3,851 acres in total, located in both Fremont County and Pueblo County. The 250-foot (ft)-wide MTAC, encompassing approximately 222 acres in Fremont County, connects RCQ to the Portland plant site. Approximately 1,722 acres are in Fremont County and subject of the conditional use application. The Site boundary is depicted on Exhibit 3.17 maps, and topography for the Site is depicted on Figures 1.

The topography at RCQ and along the MTAC is generally flat with some local relief along surface water drainages with shale, limestone, and sandstone outcrops. The topography of the region upgradient (upstream) of the RCQ and MTAC has a gentle slope to the north and east and a steep sloped ridge west and south of the MTAC. The overall gradient slopes downward to the northeast toward Red Creek and the Arkansas River. Within the Red Creek drainage, sequences of erosion and deposition resulted in multiple alluvial stream terraces covered in varying degrees of vegetation.

Existing structures within RCQ and along the MTAC include barbed wire fences, electrical distribution lines, ranch roads, and the Minnequa Canal and associated cattle watering conveyance systems that deliver water to cattle troughs. The MTAC runs northwest along a similar alignment of the Minnequa Canal and crosses it at one location.

Fremont County zoning in the area is Agricultural Forestry. This zone district is described in the Fremont County Zoning Resolution as a “Non-urban area established primarily for the purpose of efficiently using land to conserve forest resources, protect the natural environment and preserve uninhabited areas, and to allow

for farming and ranching activities." Mining is permitted as a Conditional Use in Section 4.1 pg. 4-4.1.8 (Fremont County, Department of Planning and Zoning 2020).

Activities associated with the mining project include surface mining, material sizing, material conveyance from the quarry to the cement plant, and reclamation. The mine plan considers both Fremont County and Pueblo County parcels, developing the mine in 10-year mine blocks for an expected life of mine of 100 years. Mine infrastructure will be located in the northeast corner of Section 24 in Fremont County for the life of the mine. Mining will commence in the northwest corner of RCQ and progress south and east over the course of approximately 100 years. The MTAC from the plant to RCQ and the Hwy 96 access to RCQ will be developed first. Once safe access is available for contractors, vendors, and employees, development of the mine infrastructure, including fencing and RCQ mine buildings and utilities, will begin. The MTAC will include an access road for employees and vendors and the planned overland conveyor system. The corridor will extend from the plant to RCQ, or approximately 6.7 miles. The gravel access road will be approximately 40 ft wide to allow safe passage of both employees and equipment in both directions.

Section 3: Hydrologic Evaluation

3.1 Basin Hydrology

The RCQ and MTAC are within the Arkansas River basin; a high-altitude, semi-arid hydrologic basin of approximately 5,200 square miles that extends from Leadville to Pueblo, CO (USGS, 1984). The Arkansas River basin is the headwaters of the Arkansas River and the source of much of the surface water used in southeastern Colorado. The Site is located within the Upper Arkansas subbasin, Hydrologic Unit Code 11020002.

RCQ and the MTAC are generally in areas of minimum flood hazard, with three exceptions, based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel of the surrounding area. The exceptions are Red Creek within RCQ, Ritchie Gulch (Crossing 2B and 2C), and Willow Spring Creek. The locations of Ritchie Gulch and Willow Spring are identified on Exhibit 3.17-maps and Figure 2. The FEMA FIRM panels of RCQ and the MTAC are included as Attachment C.

There are no USGS flow monitoring stations along any of the surface water drainages within the project-proposed mining boundaries nor along the MTAC. Red Creek flows northeast through the RCQ and into the Arkansas River approximately 2 miles northeast of the Site. Within the Red Creek drainage are seeps and springs flowing from fractures within the rock outcrop. Minimal water flow was observed in alluvial sediments above the seep location, which indicates minor flow within Red Creek independent of the identified seeps.

The surface water flow disappears into the creek sediments, and Red Creek is dry at the Site's boundary. Drainages south and east of Red Creek show signs of intermittent to no surface water flow. Upland areas on the Site are grasslands with gentle slopes, few outcrops, and sparse shrubs and trees compared to the Red Creek drainage.

The existing streams crossing the MTAC are a mix of channels with sustained surface water and ephemeral streams and gulches that are normally dry unless conveying stormwater runoff.

3.1 Hydrologic Analysis

This section summarizes the methods and assumptions used to estimate peak flows to be used in the hydraulic culvert sizing analysis.

Mining infrastructure is proposed to be constructed in the northwest corner of RCQ property, adjacent to and partially overlapping an existing stormwater channel. This channel is included for analysis and is proposed to be diverted around the infrastructure and rejoined with the natural channel near the northern property line. The Red Creek channel will not be altered by mining operations nor contribute flow to the reclaimed pits.

Surface water in the vicinity of the MTAC flows into Arkansas River tributaries, which cross the MTAC at several locations. Waterway crossings considered for analysis in this drainage plan are shown on Figure 2. These were selected based on the available topography information and USGS maps of streams and drainages. Stormwater runoff that collects along the MTAC from surface flows or smaller drainages, including stormwater flowing in rills from shallow concentrated flows, will be intercepted by and re-directed along the edge of the MTAC access road in a shallow channel and directed into the next downstream culvert.

Based on field observations and a review of the Site topography, it was determined that several of the waterway crossings include multiple distinct flow channels. Where this is the case, the contributing drainage areas are separated into sub-areas (e.g., 2A, 2B, and 2C). Grading and drainage improvements (e.g., construction of rip rap-lined flow channels) will be conducted to direct stormwater flows into the culverts.

3.1.1 Precipitation

Design precipitation depths were taken from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Sever website based on the NOAA Atlas 14, Volume 8 Version 2.0, Location: Penrose, Colorado, USA. The point precipitation frequency estimate from NOAA is included in Attachment A.

Precipitation depths to be analyzed were selected based on the Colorado Department of Transportation (CDOT) design guidance and the Fremont County Department of Planning and Zoning Subdivision Regulations. The 25-year, 24-hour storm was selected for design of MTAC crossings based on the CDOT hydrology design guidance for drainage features crossing a rural two-lane road. The 100-year, 6-hour Soil Conservation Service (SCS) storm was selected for design around quarry facilities based on the Fremont County Department of Planning and Zoning Subdivision Regulations to convey runoff from this storm type without damage to permanent facilities and structures. Although RCQ and the MTAC are not subdivisions, conveying runoff from the 100-year, 6-hour SCS storm was included in the analysis to understand the potential for overtopping the MTAC access road.

The precipitation depths from NOAA Atlas 25-year, 24-hour and 100-year, 6-hour SCS Type II storm events—hereafter referred to as the 25-year and 100-year design storms, respectively—were selected for hydrologic analysis. The 25-year and 100-year design storm precipitation depths for the area are 3.01 and 3.49 inches, respectively, at the time of this drainage plan.

3.1.2 Drainage Areas, Time of Concentration, Soil Groups

One location was selected for analysis within the RCQ boundary where an existing channel will be diverted around proposed infrastructure. Along the MTAC, 23 locations were selected for analysis at waterway crossing locations. The locations are depicted on Figure 2.

The contribution drainage areas for each location were delineated using the USGS web application StreamStats in conjunction with topography of the surrounding area provided by Holcim. Surface topography of the RCQ infrastructure and the MTAC is included on Figure 1 and Exhibit 3.17 maps.

The time of concentration for each drainage area was generated by StreamStats. These values were used to analyze existing conditions. This project does not alter the time of concentration of the upstream contribution drainage areas (e.g., through conversion of permeable into impermeable surfaces).

The hydrologic soil groups (HSG) within RCQ and the MTAC property are included on Exhibit 3.17Y maps. The HSGs of the upstream drainage areas were generated by StreamStats. Curve Numbers associated with

brush in fair condition were selected based on fieldwork observations made by Brown and Caldwell; 56 for HSG A and B, 70 for HSG C, and 77 for HSG D.

The StreamStats reports for each drainage area—including the location, time of concentration, and HSGs and composite Curve Number—are provided in Attachment B and summarized in Table 1.

Table 1. Summary of Drainage Area Hydrology Inputs

Location Identifier	Area (acres)	Time of Concentration (minutes)	Composite Curve Number
RQC NW Corner	55	128	71
Crossing 1	230	145	69
Crossing 2A	831	60	68
Crossing 2B	10,340	383	68
Crossing 2C	345	185	65
Crossing 3	128	114	66
Crossing 4	33	63	67
Crossing 5	237	115	69
Crossing 6A	29	59	71
Crossing 6B	1,164	189	67
Crossing 6C	35	94	70
Crossing 7	749	153	66
Crossing 8	160	76	68
Crossing 9	96	56	67
Crossing 10	27	53	66
Crossing 11	26	30	62
Crossing 12	23	38	59
Crossing 13	134	50	62
Crossing 14	218	66	64
Crossing 15	141	118	56
Crossing 16	2,560	275	63
Crossing 17	24	45	67
Crossing 18	134	93	64
Crossing 19	826	98	70

3.1.3 Peak Flow Rates

The peak flow rates for the design storms were calculated using the hydrologic modeling software, HydroCAD. The HydroCAD model report is provided in Attachment C. Peak flows are summarized in Table 2.

Table 2. Summary of Peak Flow Rates

25-year 24-hour Storm (cfs)							
RQC NW Corner	Crossing 1	Crossing 2A	Crossing 2B	Crossing 2C	Crossing 3	Crossing 4	Crossing 5
10.5	35.0	218.1	715.8	30.4	17.4	7.7	42.5
Crossing 6A	Crossing 6B	Crossing 6C	Crossing 7	Crossing 8	Crossing 9	Crossing 10	Crossing 11
10.2	123.9	7.8	91.0	35.6	24.0	6.3	5.2
Crossing 12	Crossing 13	Crossing 14	Crossing 15	Crossing 16	Crossing 17	Crossing 18	Crossing 19
2.5	20.2	35.3	196.7	143.1	6.9	17.2	196.4
100-year 24-hour Storm (cfs)							
RQC NW Corner	Crossing 1	Crossing 2A	Crossing 2B	Crossing 2C	Crossing 3	Crossing 4	Crossing 5
22.2	81.0	539.7	1,620.0	78.2	44.9	19.4	100.0
Crossing 6A	Crossing 6B	Crossing 6C	Crossing 7	Crossing 8	Crossing 9	Crossing 10	Crossing 11
22.7	298.8	17.9	222.8	86.5	61.0	16.6	16.5
Crossing 12	Crossing 13	Crossing 14	Crossing 15	Crossing 16	Crossing 17	Crossing 18	Crossing 19
10.4	64.3	100.4	437.0	383.6	17.9	48.0	436.4

cfs = cubic feet per second

Section 4: Hydraulic Design Considerations

This section discusses the upstream drainage conditions and current stormwater management practices, as well as the design of structures, including a diversion channel, culvert, and rip rap, to safely convey peak flow from the design storms.

4.1 Upstream Drainage Conditions and Stormwater Management

Upstream drainage conditions include natural infiltration and overland flow from predominantly open land into tributaries of the Arkansas River. Existing structures near the RCQ and along the MTAC include earthen stock pond embankments, a sand borrow pit, access roads (dirt roads), the Minnequa Canal, stream siphons under the Minnequa Canal, and access road bridges over the Minnequa Canal.

Stormwater run-off from the upstream drainage areas described in Section 3 will be managed as described herein to prevent damage to the RCQ, the MTAC, and upstream and downstream structures and features. Stormwater management will include construction of a diversion channel in the northwest corner of RCQ to divert flow around the proposed infrastructure in that area, and construction of culverts at strategic locations to convey flow across the MTAC. The design of the diversion channel, culverts, and rip rap outlet protection are included in this plan. The corresponding earthwork and restoration required to construct the stormwater management features (e.g., surface grading, subgrade preparation, etc.) is not included in this plan.