



July 20, 2017

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

**RE: Response to Second Adequacy Review Comments for Irwin/Thomas Mine
Permit No. M-2016-054 – Aggregate Industries – WCR, Inc.**

Dear Mr. Cunningham:

The following discussion and attachments are submitted on behalf of our client, Aggregate Industries – WCR, Inc., in response to the Adequacy Review comments prepared by the Division of Reclamation, Mining and Safety dated April 17, 2017 for the Irwin/Thomas Mine 112 Construction Materials Reclamation Permit application. The information and discussion below addresses each comment as it was presented by the Division:

Proof of posting responses to Adequacy Review No. 2 comments (response dated July 20, 2017) is attached.

6.4.4 Exhibit D – Mining Plan

1. Mining activities or other disturbances to potential wetland areas in MA3 and MA4 will not occur without a formal jurisdictional wetland delineation being completed and consultation/permitting has been performed with the Army Corps of Engineers.

6.4.7 Exhibit G – Water Information

2. Since the September 2013 flooding event, potential 100-year event flood flow depths and boundaries for St. Vrain Creek near the proposed permit boundary have been under analysis by the City of Longmont and Boulder County. Based on the best available information, flooding in MA1 appears to occur from backwater, low velocity overbank flooding downstream of Highway 119. For the primary reclamation scenario that involves a lined, below-grade reclaimed mining cell, 100-year event flood flows would enter the reclaimed mining cell in the northeast corner and continue to fill the cell until full. In the area where 100-year event flood flows would be expected to enter the reclaimed cell, slopes reclaimed with silty/clay soils and an established growth of reclamation grasses will be graded at a 4 percent slope or flatter to minimize potential erosion and headcutting. If steeper slopes are desired, additional analysis and more aggressive slope stabilization techniques and materials will be used.

It is a reasonable assumption that if a potential flood event discharges river flows into the reclaimed cell, the water captured in the cell would not be in priority (the river flows consist

of “free” water). However, if necessary, the property owner will return captured water back to the river consistent with State of Colorado regulations.

As discussed previously, potential 100-year flood flow events for St. Vrain Creek are currently being re-analyzed. The flood flow depths and boundaries are not yet fully determined and, therefore, the exact extent of area where slope protection for the reclaimed mining cell is not known at this time. Until new floodplain boundaries are determined and accepted by regulating agencies, the current FEMA floodplain boundaries will be used. During reclamation, updated St. Vrain Creek hydrology and hydraulics information along with updated site-specific topography, soils, and reclamation vegetation information will be used to re-analyze the reclaimed mine cell slope design and stability to minimize the potential from flood damage.

Because of the uncertainty with new, re-analyzed flood flow depths and boundaries, the applicant prefers to wait until new floodplain information is available before analyzing and committing to additional reclamation protections for mining areas MA2, MA3, and MA4. However, if these areas are mined, backfill and/or permanent augmentation will be available and lined, below-grade reclaimed mining cells will not be part of the reclamation plan. With the reclamation plan in these areas consisting of wetland ponds and/or backfill to pre-existing grade, potential flood effects, and, therefore, reclaimed mine cell protection, is not expected to be as extensive as for MA1.

3. In the event of flood waters damaging property during the active DRMS permit within the proposed permit boundary, or property outside the permit boundary caused exclusively by the operations within the active permit boundary, the applicant agrees to correct the damage in a timely manner.
4. Portions of the U.S. Geological Survey Quadrangle Map of Longmont, Colorado produced in 1968 clearly shows the historic drainage pond on the site (see attached).

6.4.12 Exhibit L – Reclamation Costs

5. The costs for slurry wall construction were obtained from bids associated with a 2016 slurry wall construction in Fort Collins, Colorado. The mining cell in Fort Collins is about the same depth (25 feet) as anticipated for the Irwin/Thomas Site MA1 mining cell. The bid sheet from two (2) different contractors is attached.
6. Dewatering costs have been added to the reclamation costs (see attached revised Exhibit L).

6.4.13 Exhibit M – Other Permits and Licenses

7. When obtained following completion of annexation, a copy of the approved City of Longmont Floodplain Development Permit will be provided to the Division in the form of a technical revision.

6.4.14 Exhibit N – Source of Legal Right to Enter

8. Initial information provided to the Division that a City of Longmont Special Use Permit was being obtained for the project was not accurate. The project will be constructed in the City of Longmont under a PUD Development Plan. When obtained following completion of annexation, a copy of the approved City of Longmont PUD Development Plan will be provided to the Division in the form of a technical revision.

6.4.19 Exhibit S – Permanent Man-Made Structures

9. With the mining cell top of bank setback a minimum of 50 feet or two (2) times the adjacent cell depth from permanent man-made structures, the applicant believes that we have complied with the provisions of Rule 6.4.19. However, the applicant has been discussing the proposed mining and reclamation operation with owners of adjacent man-made structures, including all adjacent utility owners. Communications between man-made structure owners within 200 feet of the proposed mining boundary are ongoing and structure agreements have been offered. If structure agreements are obtained, copies will be provided to the Division. If agreements cannot be obtained, the applicant will perform slope stability analyses to verify safe setback distances to man-made structures.

The applicant will try to obtain structure agreements prior to relying on slope stability analyses. Until structure agreements are obtained and/or slope stability analyses are performed and provided to the Division, the applicant agrees that when mining approaches to within six (6) times the mining cell depth (approximately 150 feet) of a man-made structure not owned by the applicant, the applicant will mine at a 3H:1V slope so that the top of the mining slope is at least three (3) times the mining cell depth from the man-made structure.

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

Sincerely,

Blue Earth Solutions, LLC



William Schenderlein, P.E.

Project Manager

Enclosures

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



Letter of Transmittal

DATE: July 21, 2017



TO: Boulder County Clerk and Recorder
1750 33rd Street
Boulder, Colorado 80302

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

WE TRANSMIT:

- ☒ Attached
☐ Information Below

THE FOLLOWING:

- ☐ Originals
☒ Copy of Letter
☐ Applications
☐ Specifications
☐ Other

FOR YOUR:

- ☒ Use
☐ Approval
☐ Information
☐ Review & Comment

Remarks:

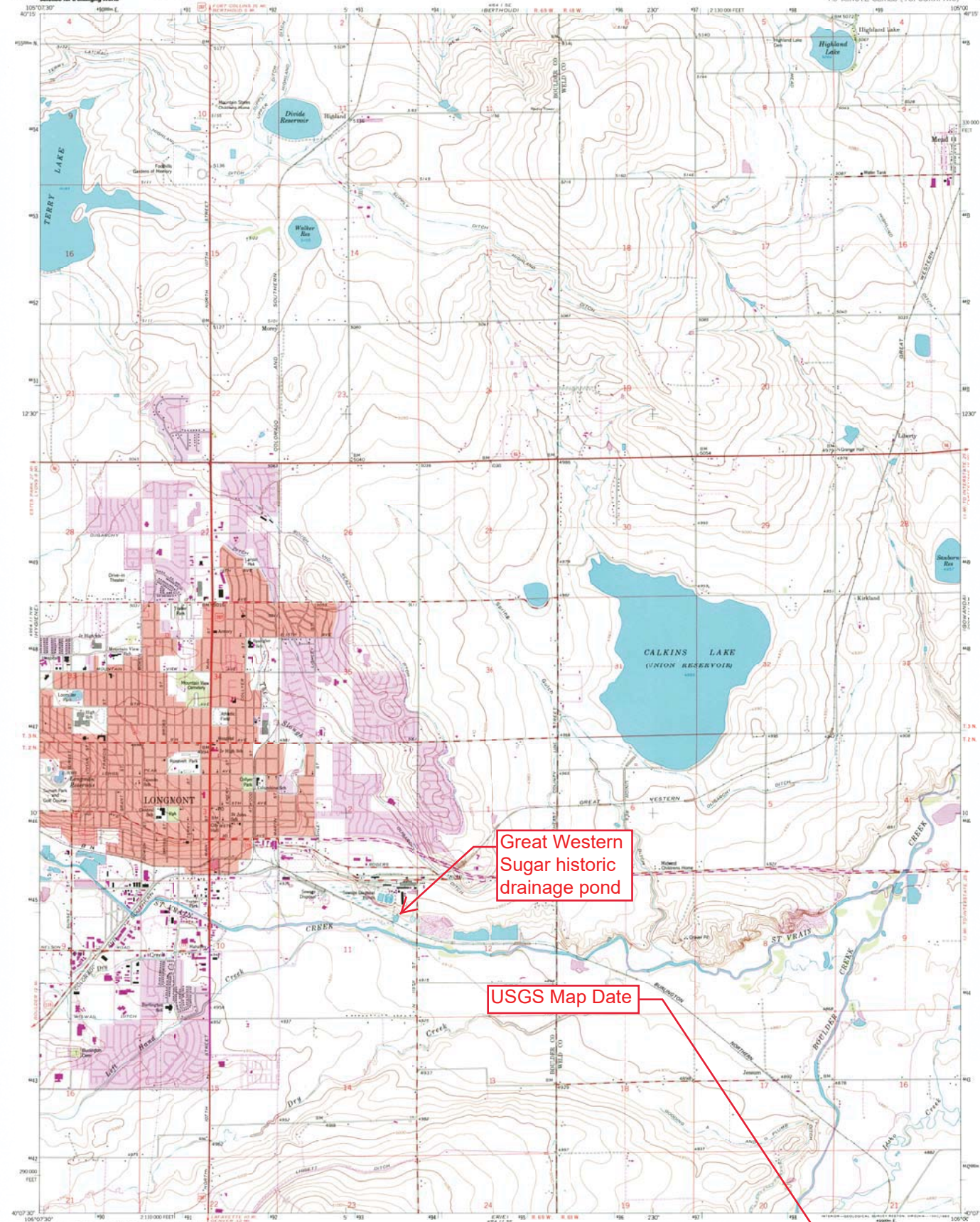
Submission of this material satisfies requirements of the Mine Land Reclamation Board Regular 112 Operation Reclamation Permit Application. The enclosed application material must remain for public review at least sixty (60) days after a decision on said application has been made the Office of Mined Land Reclamation (Rule 1.6.2 (2)). Confidential materials were purposely excluded.

- Irwin/Thomas Mine – Aggregate Industries – WCR, Inc. One (1) copy of DRMS Construction Materials Regular 112 Operation Reclamation Permit Application Response to Adequacy Review Comments dated April 17, 2017.

Signed: _____

A handwritten signature in black ink, appearing to read "Will Schenderlein", written over a horizontal line.

USGS Map with Great Western
Sugar Historic Drainage Pond



Great Western
Sugar historic
drainage pond

USGS Map Date

RECEIVED
MAR 31 1999
USGS NHD
HISTORICAL MAP ARCHIVES

0-607-12300-1

LONGMONT, COLO.
840075-W10500/75
1968
PHOTOREVISED 1979
DMA 404-11 NC-SERIES V88

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1948–1949 and planimetric surveys 1950. Revised from aerial photographs taken 1966. Field checked 1968.

To place on the predicted North American Datum 1983
move the projection lines 5 meters north and
47 meters east as shown by dashed corner ticks

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25280, DENVER, COLORADO 80225
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled from aerial photographs taken 1978 and other source data. This information not field checked. Map edited 1979.

Purple tint indicates extension of urban areas.

ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved

U.S. Route State

LONGMONT, COLO.
#0075-W10900/75
1968
PHOTOREVISED 1979
DMA 964 II NC-SERIES V88

Bid Sheet for Slurry Wall Construction

1000000

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

Revised Exhibit L

Reclamation Costs

REVISED EXHIBIT L

Reclamation Costs

In order to calculate maximum potential reclamation liability to the State, we have selected a point in time where reclamation costs could be at a maximum. It is assumed that the time of maximum mining disturbance will be at the end of Phase I. During this scenario, mining is almost complete in Cell 6 and reclamation has included backfilling and grading side slopes in Cells 1 through 5 and most of Cell 6 with overburden material stripped from the active mining areas. Since additional backfilling with off-site material and groundwater pond and wetland development was expected to occur, no topsoil or seeding has occurred on the backfilled side slopes. However, if off-site backfill material is not available and water rights for permanent augmentation have not been secured, a soil-bentonite slurry wall will be constructed around MA1 to separate alluvial groundwater from the below-grade mining cells. No disturbance has occurred in MA2, MA3, or MA4.

The active mining area includes Mining Cell 6. In front of the active mining face, an area approximately 100 feet wide by 500 feet long will have been pre-stripped in anticipation of mining (1 acre). The pre-stripped area receives topsoil placement, final grading, and seeding for revegetation. The active mining highwall is approximately 500 feet long and adjacent 500-foot long cell walls have not yet been backfilled. Both the mining highwall and adjacent cell walls (1,500 linear feet total) are backfilled and rough graded to 3H:1V slopes (assume move 1-foot of material over entire grading area) in preparation for topsoil placement, final grading, and seeding for revegetation.

Stockpiles for visual screening have been constructed along the west and south side of MA1. The stockpiles contain approximately 35,000 cubic yards (yds) of overburden and topsoil material and cover an area of about 5.5 acres. From stripping the active mining area, an additional 47,000 yds of overburden and topsoil are available in other stockpiles on-site. Haul distances to use the stockpiled topsoil for on-site reclamation ranges from less than 100 feet to over 1,500 feet, but averages only about 300 feet.

Miscellaneous disturbed areas at the point of maximum disturbance will include the scale house and staging area (5 acres), internal haul roads and the main site access road (3 acres), and stockpile areas (5.5 acres). These areas will be tilled in preparation for topsoil placement, final grading, and seeding for revegetation. It is estimated that the combined area of these disturbances will be approximately 13.5 acres.

If available, a minimum of 12 inches of topsoil or growth medium will be placed on all disturbed areas following backfilling, scarifying, and/or rough grading. Enough topsoil should be stockpiled on-site for reclamation. Final grading of the topsoil/growth medium is assumed to move 0.5 feet of material over the entire grading area and will prepare the surface for seeding. In this scenario, only the Upland Grass Seed – Soil Stabilization mix will be used. After initial seeding and the first season's growth, it is estimated that approximately 20 percent of the seeded area will need to be re-seeded.

Each aspect is listed in the following table with associated disturbed area. Please refer to Exhibit D, Pre-Mining/Mining Plan, for a listing of disturbed areas that total 49 acres. This estimate will follow the same order as the listing in Exhibit D. Since all structures used in the mining operation are portable, it is assumed that removal of the structures do not have associated costs.

Aspect	Reclamation Operation	Quantity	Units	Unit Cost (\$)	Cost (\$)
Active Mining Area					
A	1 Replace topsoil on prepared area ahead of mining (500' x 100' x 0.5')	930	CY	\$1.05	\$977
	2 Backfill active mining face and side slopes to 3H:1V (1,500 feet)	33,350	CY	\$3.5	\$116,725
	3 Rough grade all areas in Aspect A (65' x 1,500' x 1')	3,610	CY	\$0.50	\$1,805
	4 Replace topsoil on backfilled mining cell area (65' x 1,500' x 0.5')	1,810	CY	\$1.05	\$1,901
	5 Final grade all areas in Aspect A (65' x 1,500' x 0.5')+(500' x 100' x 0.5')	2,730	CY	\$0.50	\$1,365
Slurry Wall					
B	1 Slurry Wall (11,500' x 25')	287,500	SqFt	\$5.50	\$1,581,250
	2 Cell dewatering (assume three months)	3	/month	\$15,000	\$45,000
	3 Replace topsoil on backfilled mining cell areas (96 acres x 0.5')	77,440	CY	\$1.05	\$81,312
	4 Final grade all areas in Aspect B (96 acres x 0.5')	77,440	CY	\$0.50	\$38,720
Miscellaneous Disturbed Areas					
C	1 Replace topsoil on internal haul roads and main site entrance (3 acres x 0.5')	2,420	CY	\$1.05	\$2,541
	2 Replace topsoil on scale house and staging area (5 acres x 0.5')	4,030	CY	\$1.05	\$4,232
	3 Replace topsoil on stockpile area (5.5 acres x 0.5')	4,440	CY	\$1.05	\$4,662
	4 Scarify areas in Aspect B1 and B2	8	Acre	\$500	\$4,000
	5 Final grade all area in Aspect C (13.5 acres x 0.5')	10,890	CY	\$0.50	\$5,445
Final Reclamation					
Disturbed Acreage	1 Seed all areas in Aspects A, B, and C	113.0	Ac	\$675	\$76,275
	2 Re-seed 20% of all areas in Aspects A, B, and C	22.6	Ac	\$675	\$15,255
Total Reclamation Costs					\$1,981,464
Contractor Mobilization/Demobilization Costs (8%)				0.08	\$158,517
Overhead (18.5%)				0.185	\$366,571
Administration (5%)				0.05	\$99,073
Total Proposed Financial Warrenty					\$2,605,625
Disturbed Acreage					113.0
Financial Warrenty per Acre					\$23,059