


**COLORADO**Division of Reclamation,
Mining and Safety

Department of Natural Resources

MINERALS PROGRAM INSPECTION REPORT**PHONE: (303) 866-3567**

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Lyons Pit	MINE/PROSPECTING ID#: M-1974-015	MINERAL: Sand and gravel	COUNTY: Boulder
INSPECTION TYPE: Monitoring	INSPECTOR(S): Amy Eschberger	INSP. DATE: March 22, 2017	INSP. TIME: 14:00
OPERATOR: Martin Marietta Materials, Inc.	OPERATOR REPRESENTATIVE: Julie Mikulas, Josh Kruchten	TYPE OF OPERATION: 112c - Construction Regular Operation	

REASON FOR INSPECTION: Normal I&E Program	BOND CALCULATION TYPE: None	BOND AMOUNT: \$1,684,500.00
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: None	JOINT INSP. AGENCY: None
WEATHER: Clear	INSPECTOR'S SIGNATURE: 	SIGNATURE DATE: April 26, 2017

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

INSPECTION TOPIC: Hydrologic Balance

PROBLEM: The Division has no evidence the operator has a valid well permit, substitute water supply plan, or approved water augmentation plan for the exposed groundwater at the site. This is a problem related to C.R.S. 34-32.5-116(4)(h) and Construction Materials Rule 3.1.6(1)(a) governing injury to existing water rights. Specifically, the slurry wall installed around Lake 4 (as approved in Technical Revision No. 1) has been breached in two locations, so that the lake is now connected to the alluvial groundwater system.

CORRECTIVE ACTIONS: By the corrective action due date, the operator shall demonstrate the operation is in compliance with the Office of the State Engineer (SEO), show evidence the operator is taking measures to bring the site into compliance with the SEO, or backfill the pit to at least two feet above the groundwater surface. For a slurry wall to be accepted by the Division as adequate mitigation of exposed groundwater, the Division must receive documentation from the SEO demonstrating the slurry wall meets the SEO's design criteria. This is typically provided after the operator has performed the required 90-day performance test on the liner. By the corrective action due date, the operator shall provide an estimated schedule for repairing the damaged portions of the slurry wall liner.

CORRECTIVE ACTION DUE DATE: June 25, 2017

INSPECTION TOPIC: Sediment Control

PROBLEM: Excessive erosion was observed on the affected land attributed mainly to regional flooding that occurred during September 2013. This is a problem at this time pursuant to Rule 3.1.6(3), which requires all

surfaces of the affected land, including spoil piles, to be stabilized and protected so as to effectively control erosion.

CORRECTIVE ACTIONS: By the corrective action due date, the operator shall provide photo documentation to the Division demonstrating the pond bank erosion has been repaired and the slopes graded to the approved 3H:1V gradient, and the site has been reconstructed and stabilized to prevent erosion damage. The operator shall also demonstrate by the corrective action due date that the current flood protection plan is adequate to protect the site from stream capture and associated flood damage in the future. This may include submitting a Technical Revision to revise the approved mining and reclamation plans to include an updated flood protection plan for the site.

CORRECTIVE ACTION DUE DATE: June 25, 2017

OBSERVATIONS

This inspection of the Lyons Pit (Permit No. M-1974-015) was conducted by Amy Eschberger of the Division of Reclamation, Mining and Safety (Division). The operator was represented by Julie Mikulas and Josh Kruchten during the inspection. The site is located approximately two miles southeast of Lyons, Colorado, adjacent to the St. Vrain Creek. The main access to the site is from the north off of CO-66. The affected land is owned by the operator, Martin Marietta Materials, Inc., and the County of Boulder. The approved post-mining land use for the site is a combination of developed water resource, wildlife habitat, and recreation.

This is a 112c operation permitted for 610 acres to mine sand and gravel (see enclosed Google Earth image of site showing approved permit area). The approved mining plan (as of Amendment No. 6, issued May 24, 2000) includes removing topsoil and overburden, installing dewatering trenches around the perimeter of the area to be mined, pumping and discharging the water to the St. Vrain Creek, excavating the material, feeding the material to a primary processing and conveyor system located at the mine face, then transporting the material by conveyor to the central processing plant to be sized, screened, washed, and stockpiled into a variety of finished products. The central processing plant is to remain at the same location throughout the mining operation. The finished product is to be transported to customers by rail or truck. A series of six concrete load out silos are present adjacent to the rail line in the central processing area.

The approved mining plan originally included three primary mining phases, starting at the far western edge of the site, and working east/southeast. The approved mining plan also included an area designated as Rockin' WP North which is comprised of a series of previously mined open water pits and the central processing plant. All of mining phase 1 and portions of mining phase 3 and Rockin' WP North were released from the permit area with the Division's approval of Acreage Reductions No. 1 and 2. Therefore, the current mining plan map (see enclosed mining plan map) includes only two primary mining phases (the original East Plant, phase 2 and Rockin' WP South, phase 3) and the previously mined Rockin' WP North which includes the central processing plant.

The approved reclamation plan for this site includes leaving a total of six open water lakes of various sizes and a larger slurry wall lined reservoir (see enclosed reclamation plan map). Lake shorelines will be graded to slopes of 3H:1V or flatter and revegetated. All disturbed land will be graded to slopes of 3H:1V or flatter, scarified, and revegetated in accordance with its post-mining land use. The reclaimed site will include a potential mixture of open space, parks, trails, and interpretive features. The site has been in temporary cessation since December 6, 2011. On February 27, 2012, the permit was transferred from Lafarge West, Inc. to the current operator, Martin Marietta Materials, Inc. On April 5, 2017, the operator sent the Division notice of recent activities occurring at the site, and their intention to resume mining within the year. Therefore, on April 7, 2017, the Division changed the permit status from temporary cessation to active through Revision No. CS-1.

At the time of the inspection, the site was not active. A proper permit sign was posted at the gated entrance to the site off of CO-66 (**Photo 1**). Currently, disturbed land on site includes four excavated pits, a central processing plant, an equipment boneyard, and associated haul roads (see enclosed Google Earth image of site showing close-up of disturbed area). The processing plant is approximately 9.5 acres in size, and includes 6 concrete load out silos on the north end, a small shed, a conveyor, and various pieces of mining related equipment scattered around the perimeter of the area (**Photos 2-6**). The four excavated pits consist of three unlined lakes (Lakes 1-3) and a lined reservoir (Lake 4). The southern portion of the permit area located south of the South Branch has not yet been disturbed by the operation. The approved mining and reclamation plans indicate that 2-3 additional lakes will be created in the southern portion of the site. Lake 1 (unlined) is located just east of the processing plant, and north of St. Vrain Creek. This lake was reclaimed years ago. The shorelines have slopes of 3H:1V or flatter and are well vegetated (**Photos 7 and 8**). The only exception is a

section of the western shoreline where the operation has extended the pad for the processing plant, leaving slopes of approximately 1.5H:1V (**Photo 9**). For final reclamation, the western shoreline of this lake will need to be graded to 3H:1V or flatter and revegetated in accordance with the approved reclamation plan. Lake 1 appeared to have not been affected by the historic flooding that occurred in the region during September 2013, and its shorelines are stable at this time. The Division estimates the surface area of Lake 1 to be approximately 17 acres in size.

Lake 2 (unlined) is located to the west of Lake 1 and the processing plant, and south of St. Vrain Creek. According to the Division's last inspection report (from March 13, 2012), this lake was reclaimed with shorelines graded to 3H:1V or flatter and had well established vegetation. However, during the extensive flooding that took place in the region in September 2013, the St. Vrain Creek cut through the berm that separated the pit from the creek (**Photo 10**; also see enclosed Google Earth images of site showing close-up of disturbed area before and after September 2013 flooding). The creek deposited a large volume of sediment on the pit floor, and scoured the adjacent lake shorelines. Erosion caused by flood flow expanded the pit by approximately two acres at its northwestern edge. The Division estimates approximately 11 acres of the northwestern portion of the pit is filled with sediment from the flood. Currently, sections of the northern and western shorelines of Lake 2 have slope gradients of near vertical (**Photos 11 and 12**). The alluvial fan deposited on the pit floor (**Photo 13**) has displaced exposed groundwater in the lake, reducing its surface area to approximately 13 acres. The northeastern and southeastern shorelines of Lake 2 not affected by flooding appear to be stable at this time with slope gradients of 3H:1V or flatter and established vegetation (**Photos 14 and 15**).

The Division observed Lake 3 (unlined), which is located between Lakes 2 and 4, south of St Vrain Creek. Prior to the September 2013 flooding, this lake had approximately 10.8 acres of exposed groundwater. Additionally, according to the Division's last inspection report (from March 13, 2012), the shorelines of this lake were graded to 3H:1V or flatter and the slopes had established vegetation. However, during the September 2013 flooding, this lake was filled in with sediment deposited by the South Branch, a ditch that flows southeast across the middle of the permit area. During flooding, land adjacent to the ditch was carved out by flood flow. The ditch entered Lake 3, then flowed downgradient cutting through the berm and slurry wall liner separating Lake 3 from Lake 4 (damaging a section approximately 300 feet in length). The flood waters also cut through the berm and slurry wall liner along the southeastern edge of Lake 4 (damaging a section approximately 100 feet in length) before exiting the permit area. At that point, the flood waters flowed through two off-site lakes that were previously part of a permitted mine site called the Miller Pit (M-1982-034) which was released in 2015. The offsite lakes are now managed by the County of Boulder.

Much of the Lake 3 shorelines were scoured by the flooding, leaving slope gradients of near vertical. The pit was dry during the inspection, with grasses, forbs, and some weeds volunteering across the rocky pit floor (**Photos 16-22**). The operator expressed a desire to mine the rock deposited on the pit floor by the flood. The Division would not object to this activity as it would be consistent with the approved mining plan. However, it should be noted that the approved reclamation plan on file has this pit being backfilled and potentially turned into a public park. This plan could be revised at any time through the submittal of a Technical Revision.

The Division observed the boneyard located between Lakes 2, 3, and 4, south of the St. Vrain Creek. This area is flat and grassy with storage of various pieces of mining related equipment and a small rock stockpile (**Photos 23-24**). Much of the boneyard area is not being utilized at this time.

The Division observed Lake 4 (**Photo 25**), which had been fully enclosed by a slurry wall liner prior to the September 2013 flooding. According to the permit file, the slurry wall was installed in 1995 by Geo-Con, Inc. while the permit was held by Western Paving Construction Company. The permit file includes a letter from the Office of the State Engineer (SEO), dated July 19, 1996, confirming the reservoir was constructed in a manner

such that it could store water in accordance with Case No. 88CW074. However, now that the slurry wall has been breached in two locations (**Photos 26 and 27**), Lake 4 is no longer considered to be isolated from the alluvial groundwater system. Ms. Mikulas informed the Division the County of Boulder is currently taking bids to repair the damaged liner. The September 2013 flooding created an alluvial fan in the western portion of Lake 4, filling almost half the pit with sediment (**Photo 28**). The Division estimates the surface area of water held in Lake 4 to be approximately 15 acres at this time. This water is currently hydrologically connected to the off-site lake located east of the permit boundary (**Photo 29**). Portions of the northern and southern shorelines of Lake 4 appear to be graded to 3H:1V or flatter with established vegetation (**Photos 30 and 31**). However, much of the western shoreline (**Photo 32**) and the portion of the eastern shoreline where the berm and slurry wall were breached (as mentioned above) were scoured by the flood waters.

Due to the historic flooding that took place in September 2013, the State of Colorado Office of the Governor issued a total of nine Executive Orders between September 13, 2013 and June 20, 2014 to address the many challenges faced by those affected by the flooding. The second Executive Order, issued on September 19, 2013, authorized several State departments (including the Department of Natural Resources), to suspend the provisions of any regulatory statute prescribing the procedures for conduct of state business, or the order, rules, or regulations of any state agency. Therefore, the Division gave operators of mine sites affected by the flooding some time to assess the damage, repair the damage, and work to protect the site from future flood events. It has now been 3-1/2 years since the flooding occurred, and 2 years, 10 months since the last Executive Order was issued pertaining to the flooding. Therefore, the Division believes that operators have had a reasonable amount of time to repair any flood damage that occurred on their mine site, and to develop or strengthen their flood protection plan.

The Division is citing two problems in this report (see pages 1 and 2) which are associated with damage caused by the September 2013 flooding. One problem is cited for the breached slurry wall around Lake 4. As mentioned above, this lake is no longer considered a sealed reservoir. The operator will need to demonstrate that the site is in compliance with the SEO with regard to exposed groundwater on site, or that the operator is taking measures to bring the site into compliance with the SEO. Once the liner has been repaired, tested, and approved by the SEO, the operator will need to submit to the Division the 90-day performance test final report and the SEO's approval letter. By the corrective action due date, the operator shall provide to the Division an estimated schedule for repairing the damaged portions of the slurry wall.

The other problem cited in this report is for the excessive erosion observed on site, particularly along portions of Lakes 2, 3, and 4 shorelines. The Division realizes the lake shorelines had been reclaimed, but were damaged by the September 2013 flooding. However, the Division believes the operator has had a reasonable amount of time to repair this damage. Rule 3.1.6(3) requires all surfaces of the affected land to be stabilized and protected so as to effectively control erosion. The operator will need to repair and stabilize the lake shorelines, grading them to the approved 3H:1V or flatter slope gradient. By the corrective action due date, the operator shall provide photo documentation to the Division verifying this work has been completed. The operator will also need to demonstrate that the current flood protection plan is adequate to protect the site from stream capture and associated flood damage in the future. This may include submitting a Technical Revision to revise the approved mining and reclamation plans to include an updated flood protection plan for the site. The Division recommends the operator consult with Boulder County and Urban Drainage and Flood Control District in developing an adequate flood protection plan for the mine site.

During the inspection, the Division walked northwest up the South Branch, and observed the damage caused to this ditch by the September 2013 flooding (**Photos 33-36**). The flood waters had significantly widened the ditch, leaving washouts with steep banks approximately 4-5 feet in height and depositing a fairly large amount of rocky sediment. The ditch had some minor flow during the inspection. The Division discussed with Ms.

Mikulas and Mr. Kruchten what reclamation responsibility the operator has for the flood damage that occurred west of the disturbed area, but within the approved permit area. The Division informed them that if the land had not been disturbed by the operation prior to the flooding and would not be disturbed by the operation in the future, the operator would not be required to repair the flood damage. However, if any portion of the approved permit area is disturbed by the operation (e.g., haul roads, stockpiling, mining, equipment storage), such land must be reclaimed to its approved post-mining land use. Additionally, if the flood damaged land within the approved permit area in any way reduces the effectiveness of the operator's flood protection and/or stormwater management plans for the site, the damage may need to be repaired and the land stabilized, regardless of whether it was disturbed by the operation.

This concluded the inspection.

Summary of Corrective Actions Due By June 23, 2017:

- Demonstrate compliance with SEO regarding exposed groundwater, or show evidence operator is taking measures to bring the site into compliance with the SEO, or backfill Lake 4 pit to at least 2 feet above groundwater surface.
- Provide estimated schedule for repairing damaged portions of slurry wall liner around Lake 4.
- Provide photo documentation that demonstrates the pond bank erosion has been repaired and the slopes graded to the approved 3H:1V or flatter slope gradient.
- Demonstrate the current flood protection plan is adequate to protect the site from stream capture and associated flood damage in the future. This may include submitting a Technical Revision to revise the approved mining and reclamation plans to include an updated flood protection plan.

PHOTOGRAPHS



Photo 1. View of permit sign posted at main site entrance off of CO-66.



Photo 2. View looking north, showing six concrete load out silos present in central processing area.



Photo 3. View looking east across central processing area.



Photo 4. View looking southeast across central processing area.



Photo 5. View looking south across central processing area.



Photo 6. View looking west across central processing area.



Photo 7. View looking northeast across Lake 1 from western shoreline. Lake shorelines are graded to 3H:1V or flatter with established vegetation.



Photo 8. View looking southeast across Lake 1 from western shoreline. Lake shorelines are graded to 3H:1V or flatter with established vegetation.



Photo 9. View of portion of western shoreline of Lake 1, showing slopes of approximately 1.5H:1V.



Photo 10. View of northwestern bank of Lake 2 where St Vrain Creek entered the pit during September 2013 flooding. Boulder County has repaired some of the flood damage in this area.



Photo 11. View of northwestern shoreline of Lake 2 damaged by September 2013 flooding. Bank slopes are steeper than approved 3H:1V gradient.



Photo 12. View of northeastern shoreline of Lake 2 (at left) damaged by September 2013 flooding.



Photo 13. View of sediment deposited in Lake 2 by September 2013 flooding.



Photo 14. View of southwestern shoreline of Lake 2 graded to 3H:1V or flatter, stable with vegetative cover.



Photo 15. View of southern shoreline of Lake 2 graded to 3H:1V or flatter, stable with vegetative cover.



Photo 16. View of sediment deposited in Lake 3 by September 2013 flooding.

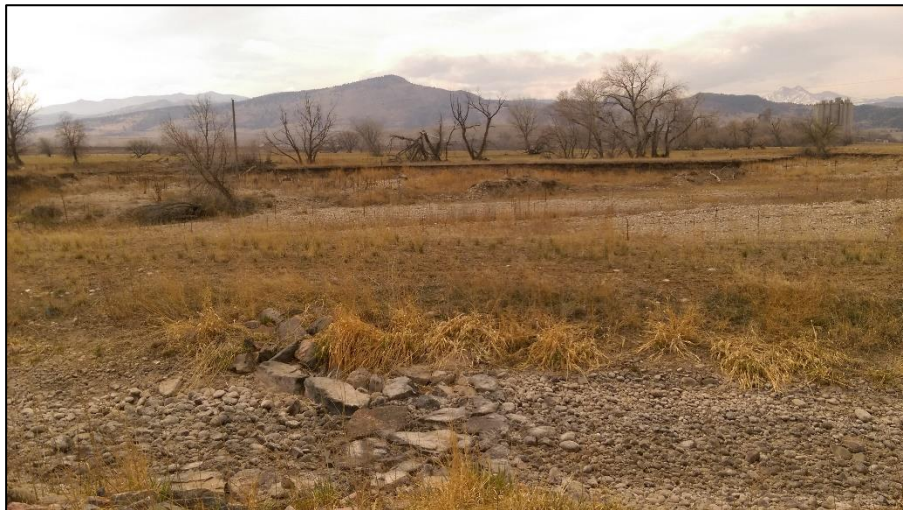


Photo 17. View of sediment deposited in Lake 3 by September 2013 flooding.



Photo 18. View of sediment deposited in Lake 3 by September 2013 flooding.



Photo 19. View of sediment deposited in Lake 3 by September 2013 flooding.

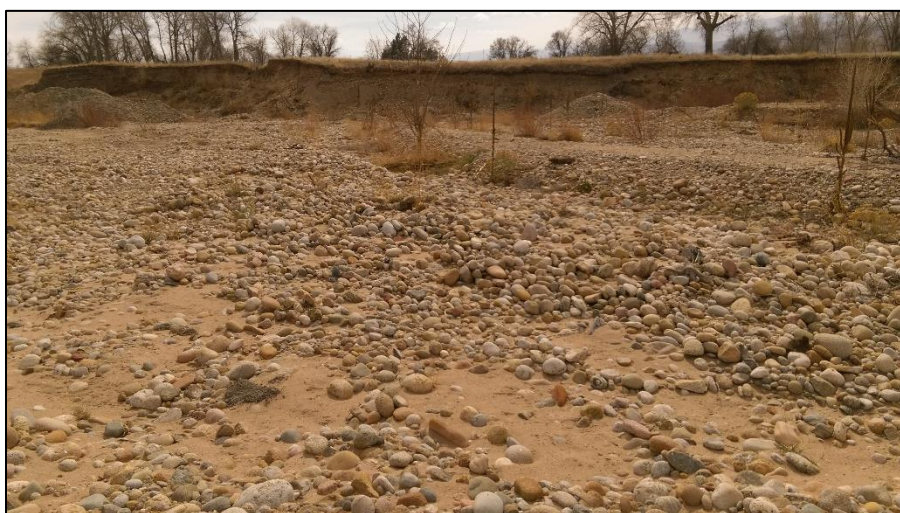


Photo 20. View of sediment deposited in Lake 3 by September 2013 flooding.



Photo 21. View of sediment deposited in Lake 3 by September 2013 flooding.



Photo 22. View of sediment deposited in Lake 3 by September 2013 flooding.



Photo 23. View of equipment boneyard located between Lakes 2, 3, and 4, south of St. Vrain Creek.



Photo 24. View of equipment boneyard located between Lakes 2, 3, and 4, south of St. Vrain Creek.



Photo 25. View looking west across Lake 4 from eastern shoreline.



Photo 26. View of southeastern breached portion of berm and slurry wall liner around Lake 4. Lake 4 (at right) now connected to offsite lake (at left).



Photo 27. View looking southeast, downgradient from Lake 4 slurry wall breach, showing channel connecting Lake 4 to offsite lake.



Photo 28. View looking east across Lake 4, showing sediment filling in northwestern portion of lake and western shoreline (in foreground) damaged by flooding.



Photo 29. View looking west from eastern shoreline of offsite lake, showing breach in berm/slurry wall liner (circled) that had separated Lake 4 from the offsite lake.



Photo 30. View of southern shoreline of Lake 4 graded to 3H:1V or flatter, stable with vegetative cover.



Photo 31. View of southern shoreline of Lake 4 graded to 3H:1V or flatter, stable with vegetative cover.



Photo 32. View of western shoreline of Lake 4 damaged by September 2013 flooding.



Photo 33. View of flood damage located west of disturbed area but within approved permit area.



Photo 34. View of flood damage located west of disturbed area but within approved permit area. Note ditch carrying some water during inspection.

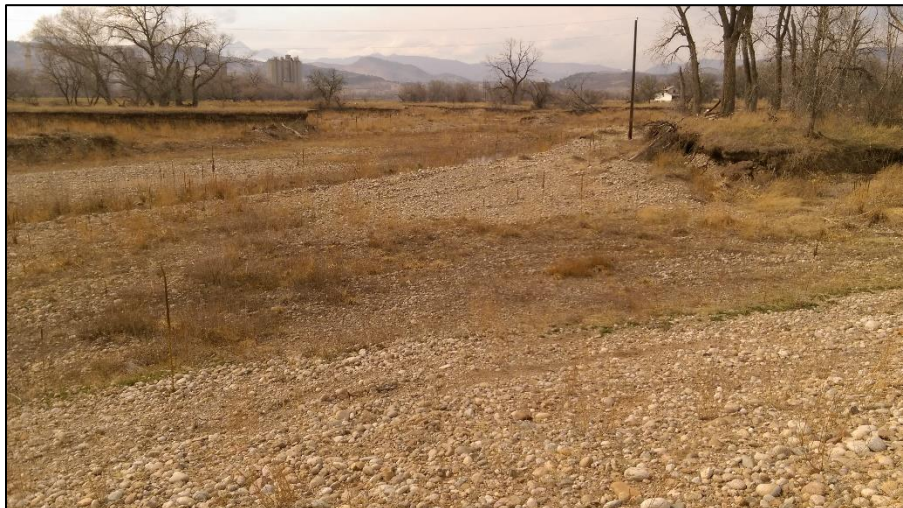


Photo 35. View looking northwest across washout created by September 2013 flooding, west of disturbed area, but within approved permit area.



Photo 36. View looking south across washout created by September 2013 flooding, west of disturbed area, but within approved permit area.

GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS----- <u>Y</u>	(FN) FINANCIAL WARRANTY----- <u>N</u>	(RD) ROADS----- <u>Y</u>
(HB) HYDROLOGIC BALANCE----- <u>PB</u>	(BG) BACKFILL & GRADING----- <u>Y</u>	(EX) EXPLOSIVES----- <u>NA</u>
(PW) PROCESSING WASTE/TAILING---- <u>Y</u>	(SF) PROCESSING FACILITIES----- <u>Y</u>	(TS) TOPSOIL----- <u>N</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>Y</u>	(FW) FISH & WILDLIFE----- <u>N</u>	(RV) REVEGETATION---- <u>Y</u>
(SM) SIGNS AND MARKERS----- <u>Y</u>	(SP) STORM WATER MGT PLAN---- <u>N</u>	(CI) COMPLETE INSP---- <u>Y</u>
(ES) OVERBURDEN/DEV. WASTE----- <u>Y</u>	(SC) EROSION/SEDIMENTATION--- <u>PB</u>	(RS) RECL PLAN/COMP-- <u>Y</u>
(AT) ACID OR TOXIC MATERIALS----- <u>NA</u>	(OD) OFF-SITE DAMAGE----- <u>N</u>	(ST) STIPULATIONS----- <u>NA</u>

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

Inspection Contact Address

Julie Mikulas
Martin Marietta Materials, Inc.
1800 N. Taft Hill Road
Fort Collins, CO 80521

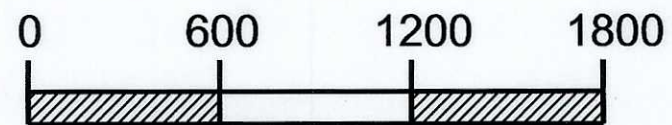
Enclosure(s): Google Earth image of site showing approved permit area
Approved mining plan map
Approved reclamation plan map
Google Earth image of site showing close-up of disturbed area
Google Earth images of site showing close-up of disturbed area before (10/7/2012) and
after (10/6/2013) September 2013 flooding

CC: Wally Erickson, DRMS

M-1974-015 / Lyons Pit / Martin Marietta Materials, Inc.

Red Outline = 610 acres = Approved permit area
(Image data from 10/09/2015)

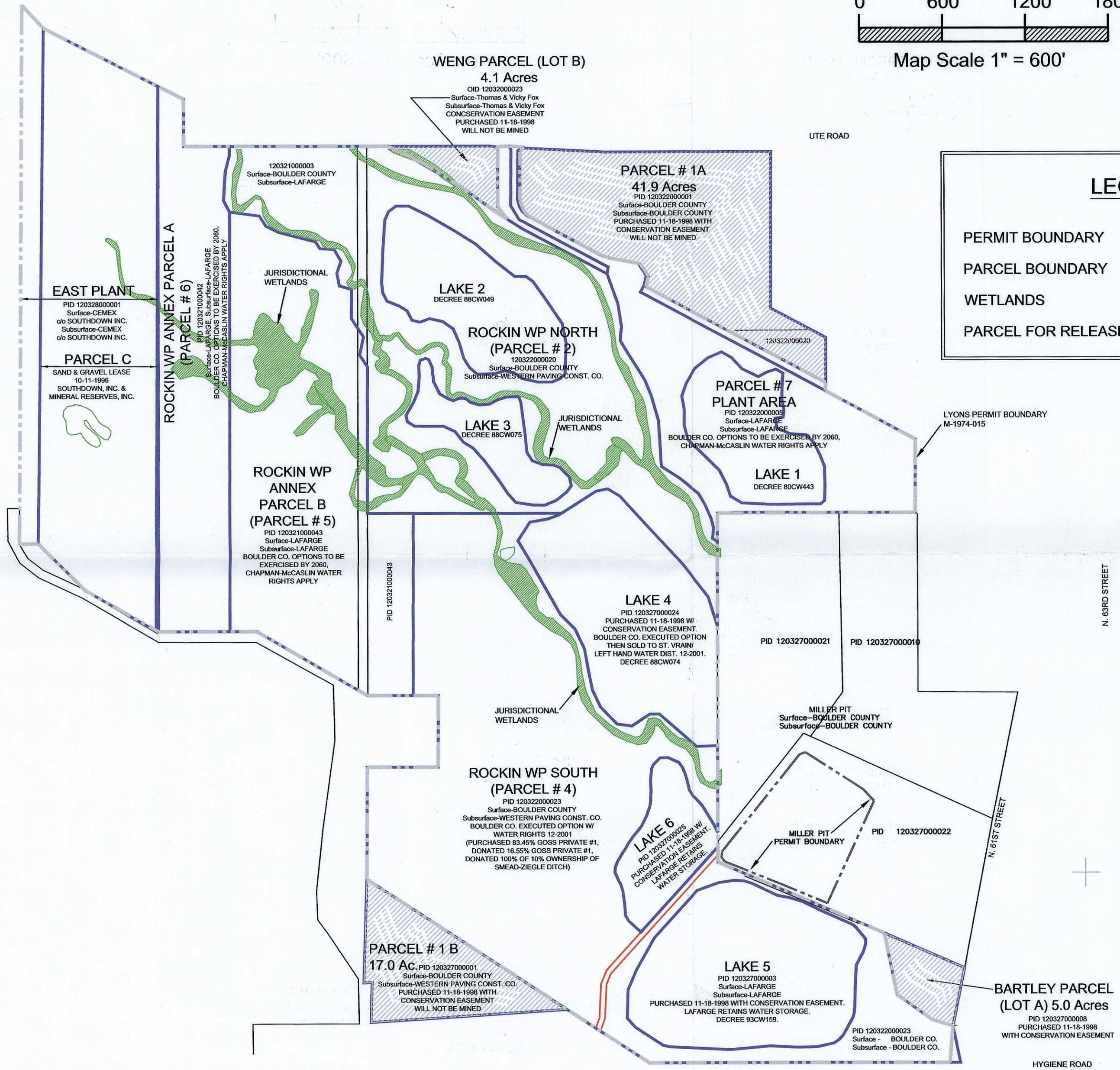




Map Scale 1" = 600'

LEGEND


- PERMIT BOUNDARY 
- PARCEL BOUNDARY 
- WETLANDS 
- PARCEL FOR RELEASE 



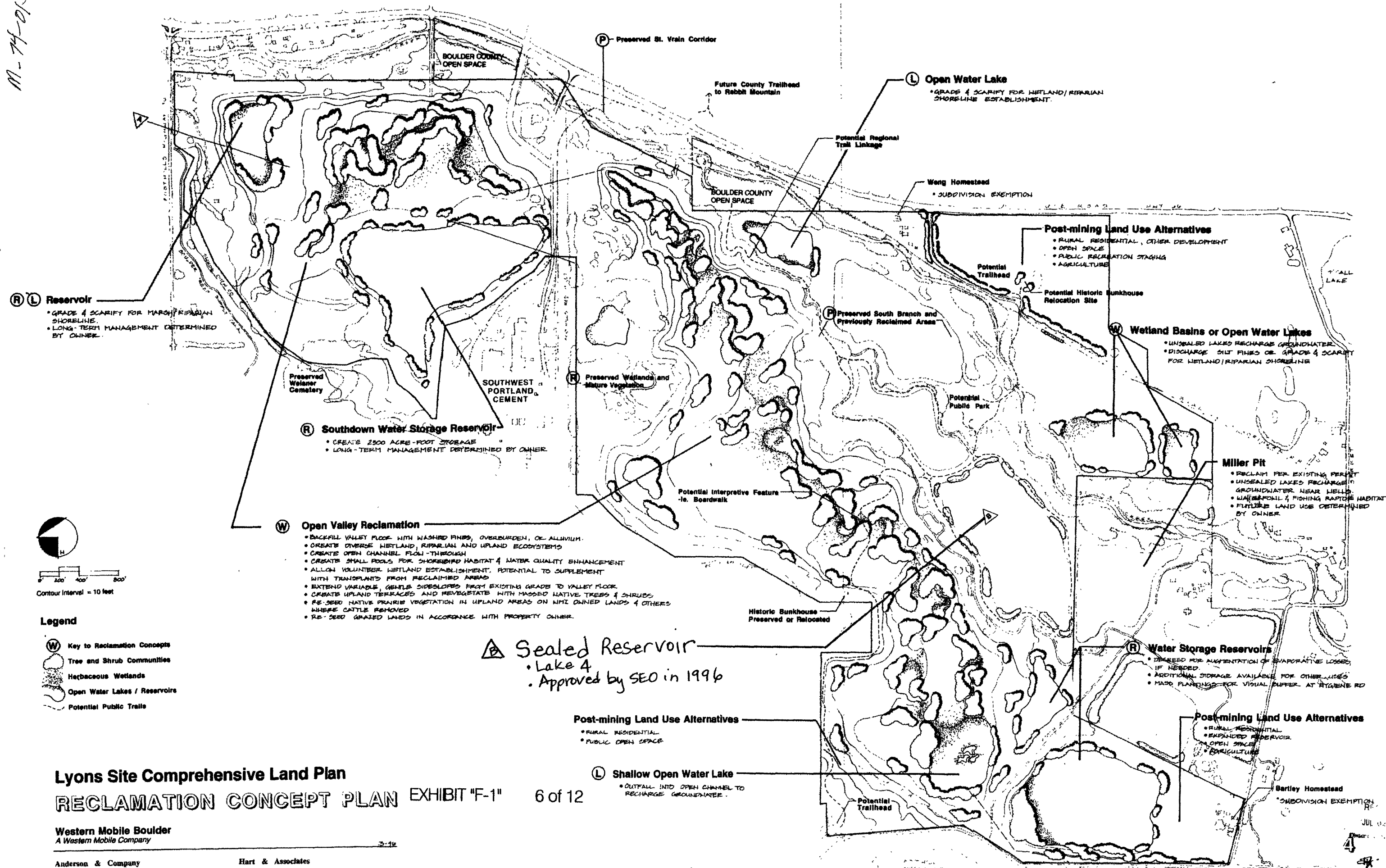
SITE AREA	=	678 ACRES
WENG PARCEL	=	4.1 ACRES
BARTLEY PARCEL	=	5.0 ACRES
PARCEL 1A	=	41.9 ACRES
PARCEL 1B	=	17.0 ACRES
REDUCTION AREA	=	68.0 ACRES
REVISED SITE AREA	=	610 ACRES

RECEIVED
NOV 14 2011
Division of Reclamation,
Mining and Safety



 LAFARGE AGGREGATES & CONCRETE 10170 CHURCH RANCH WAY, SUITE 200 - WESTMINSTER, COLORADO 80021 303.657.4000			
PROJECT: LYONS			
TITLE: AREA REDUCTION			
DRAWN BY: BDE	DATE: 11/09/2011	SCALE: 1" = 600'	
FILE PATH: ACAD\GL410DWG			SHEET NO: 1 OF 1

M-74-015



Lyons Site Comprehensive Land Plan

RECLAMATION CONCEPT PLAN EXHIBIT "F-1"

Western Mobile Boulder
A Western Mobile Company

Anderson & Company

eco plan ning 420 sunset street
longmont, colorado 80501
(303) 776-4636
(303) 545-2910

Hart & Associates

P.O. Box 1303
Boulder, Colorado 80306
(303) 444-6602

REVISED 5-29-12 show sealed reservoir - jmm

Note - This reclamation plan is conceptual in nature. It is anticipated that field adjustments will be made as necessary and as opportunities arise.

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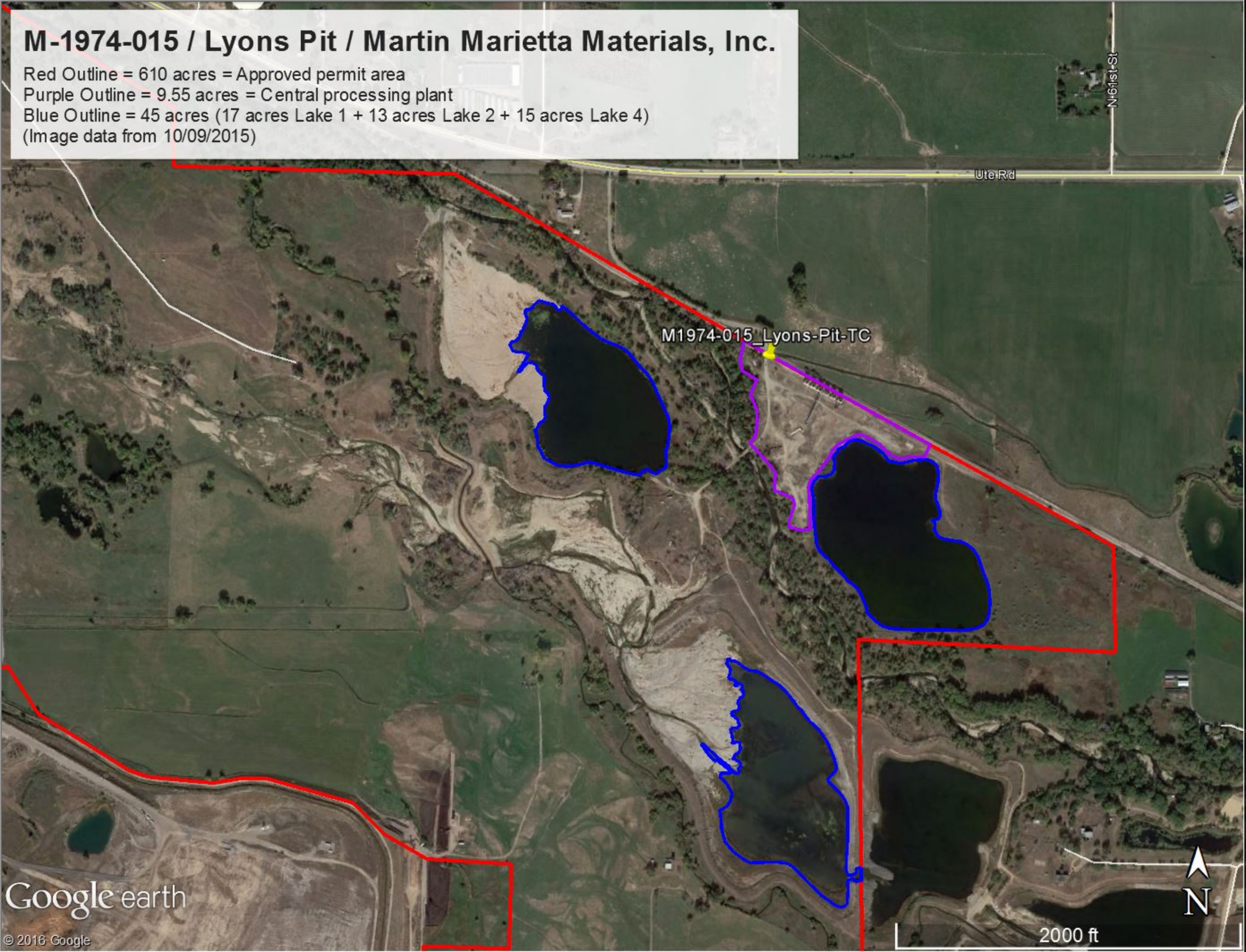
M-1974-015 / Lyons Pit / Martin Marietta Materials, Inc.

Red Outline = 610 acres = Approved permit area

Purple Outline = 9.55 acres = Central processing plant

Blue Outline = 45 acres (17 acres Lake 1 + 13 acres Lake 2 + 15 acres Lake 4)

(Image data from 10/09/2015)



M1974-015_Lyons-Pit-TC

Google earth

© 2016 Google

2000 ft

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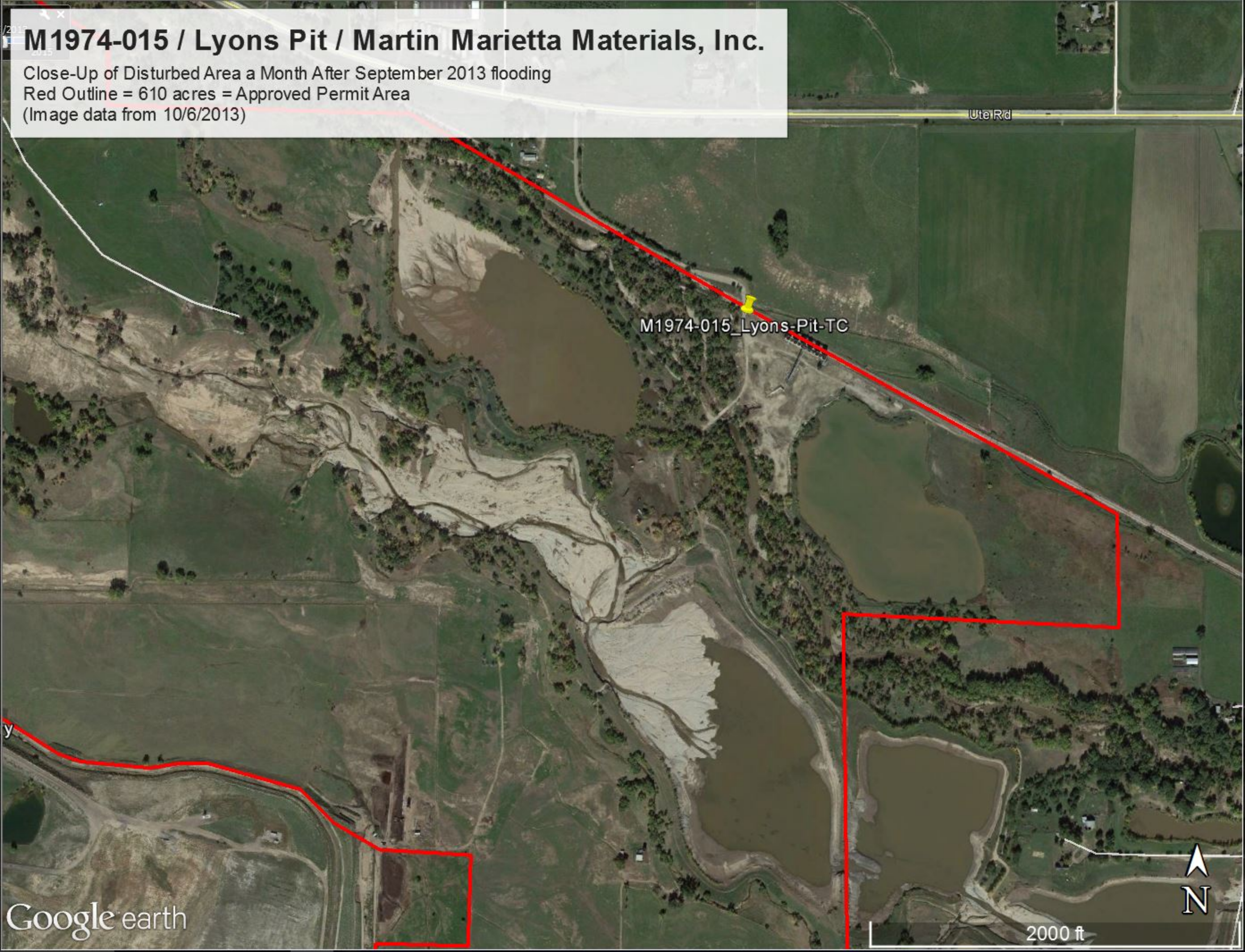
M1974-015 / Lyons Pit / Martin Marietta Materials, Inc.

Close-Up of Disturbed Area Before September 2013 flooding
Red Outline = 610 acres = Approved Permit Area
(Image data from 10/7/2012)



M1974-015 / Lyons Pit / Martin Marietta Materials, Inc.

Close-Up of Disturbed Area a Month After September 2013 flooding
Red Outline = 610 acres = Approved Permit Area
(Image data from 10/6/2013)



M1974-015_Lyons-Pit-TC

Ute Rd