



REALtime Aquifer Services

November 1, 2019

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Mr. Elliott Russell  
Colorado Division of Reclamation, Mining and Safety  
1313 Sherman Street, Room 215  
Denver, Colorado 80203

Subject: Status Update for Corrective Action, Taken and Planned at the Gillette Sand & Gravel Inc. Site  
File No.: M-1992-009

Dear Mr. Russell:

On behalf of Mr. Chris Pyles, owner and operator of the Gillette Sand and Gravel Mine, Inc. (the Site), Realtime Aquifer Services (RAS, Inc.) has prepared this Status Update summarizing work performed to correct deficiencies cited in the Colorado Division of Reclamation, Mining and Safety's (the Division's) October 9, 2019 Cease and Desist Order and other documentation associated with an October 3, 2019, release from the mine.

### Background

On October 9, 2019, the Colorado Division of Reclamation, Mining and Safety (the Division) issued a Cease and Desist Order directing that all mining, prospecting, milling, exploration and other mining operations be suspended. Since receipt of the Cease and Desist Order, Mr. Pyles has fully complied with this order and, with the permission of the Division, has initiated cleanup, improvements and amendments to his permit to limit the likelihood of recurrences of conditions leading to the citations.

Specific topics cited by the division are provided in italics below, followed by corrective actions that have been planned or undertaken by Mr. Pyles.

- 1. Inspection Topic: Hydrologic Balance, Off-site Damage, and Availability Of Records with possible violations as follows: Wash water from the process ponds was released into Beaver Creek and sediment fines from the process ponds have been piled outside of the approved permit boundary. This is a possible violation of C.R.S. 34-32.5-116(4)(h) for failure to minimize disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality of quantity ("sic") of water in surface and groundwater systems both during and after the mining operation and during reclamation and C.R.S. 34-32.5-116(4)(i) for failure to protect areas outside of the affected land from slides or damages occurring during the mining operation and reclamation. This is also a possible violation of C.R.S. 34-32.5-121 for failure to notify the Division of a failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property and C.R.S. 34-32.5-124 for failure to follow the conditions of an order, permit or regulation.*



### Response

To address this topic, the containment area described in the Division's October 10 Inspection Report has been improved by reinforcement and significant enlargement of the west berm of the sediment retention pond that had overtopped. A high-water alarm device, or equivalent, will be installed to minimize the likelihood of overtopping.

Sediment that had been released beyond the western permit boundary was graded back onto the Site and the off-permit area was regraded to approximate pre-release conditions. The operator is in the process of preparing a Permit Amendment to expand the operational area of the mine to include the area immediately downgradient of the sediment retention pond impoundment. This additional area will facilitate construction of more robust sediment containment and control measures.

In addition to the actions described above, the operator will perform an evaluation of the capacity of the pond with respect to the requirements of the existing wash plant and anticipated process requirements. The pond is part of a closed-loop process; there is no natural or un-metered inflow and no designed outlet. Inadequacies that may exist in the pond design or construction (freeboard, berm slope, materials), will be upgraded to comply with applicable regulations. These features will be incorporated into the appropriate section(s) of the site Permit Amendment.

To assist with the assessment of pond capacity and other design feature improvements, the site was surveyed in early October 2019, and monuments have been placed to mark the new proposed permit boundary in the northwest portion of the site, and other key site features.

To document the release, on October 22, 2019, a completed Five Day Reporting Form was provided to the Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division, to describe the release and mitigation measures performed to date.

To mitigate the likelihood of a future release, the operator will develop an operational inspection checklist. The checklist will use empirical data to estimate the rate of sediment generation and a schedule will be developed for sediment removal (the sediment will be stockpiled for use in the reclamation process). To protect the shallow groundwater system beneath the pond(s), an operational process will be established to maintain a minimum two-foot buffer of fine materials in the bottom of the process or stormwater retention pond(s).

The checklist will also include inspections of the conditions of the ponds and associated equipment and conveyances. The inspections will be performed on a weekly basis, or within 24 hours of a storm event. Inspection documents will be maintained at the mine site for at least one year. If any part of the process is found to be deficient, it will be addressed immediately and changes will be noted in a log to be maintained at the mine.

2. *Inspection Topic: Hydrologic Balance; Compliance Problem #1: Groundwater has been exposed in the Northern Pit. The Division has no evidence that 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 34-32.5-116(4)(h) of the Colorado Revised Statutes and 3.1.6(1)(a) of the Construction Materials Rules and Regulations governing injury to existing water rights.*

#### Response

The occurrence of groundwater in the operating area of the mine is a result of the unpredictable nature of groundwater flow in the fractured, weathered bedrock system. Upwelling of artesian, shallow groundwater is often a slow and insidious process. The observed occurrence of groundwater in this part of the mine was not anticipated.

To address this topic, the operator has backfilled the area in question with approximately two feet of fine sediment from the sediment retention pond. This will effectively isolate the shallow groundwater system from the surface. The area is scheduled to be covered with topsoil and seeded this fall (weather permitting), to complete reclamation in this part of the permit area.

In the future, if upwelling groundwater is observed in the mine, the operator will cease extraction and isolate the groundwater by backfilling with fine material to avoid disturbance to the shallow groundwater system.

3. *Inspection Topic: Sediment Control Compliance Problem #2: The drainage from the Southern Pit reports to a culvert under the private access road and into the Wetlands Area. This is a problem pursuant to C.R.S. 34-32.5-116(4)(h) and C.R.S. 34-32.5-116(4)(j).*

#### Response

To address this topic, excavation of a sediment retention pond and formal improvements to the discharge structure in the southeast roadbase area has been completed to prevent sediment release from this part of the Site. The present system consists of a two-stage sediment retention pond with a straw-bale outlet structure to limit sediment release. The pond and outlet are defined by concrete blocks. If necessary, the pond and structure will be evaluated in terms of stormwater engineering requirements.

#### Summary

Mr. Pyles has been actively working with the Division to mitigate the impacts of the release event and has put controls in place to limit the likelihood of future releases. Over the winter, Mr. Pyles will evaluate the mine water management process and implement upgrades as necessary to maintain compliance. He is preparing a Permit Amendment to expand the area downgradient of the mine to limit potential off-permit releases. The amendment will include necessary process and stormwater pond specifications. Formal inspection procedures will be implemented as part of the mine operation.

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In the interest of maintaining compliance and improving mine operations, we welcome your feedback and are ready to discuss any of the concerns and/or resolutions described above.

Should you have any questions or concerns, please contact me at 303-808-6133 or at [bren.shine@q.com](mailto:bren.shine@q.com).

Regards,

Realtime Aquifer Services



Brendan Shine, P.E.

Senior Geological Engineer