COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

February 23, 2018

Stephanie Fancher-English
Loveland Ready-Mix Concrete, Inc.
P.O. Box 299
Loveland, Colorado 80539

RE: Knox Pit, DRMS Permit Application No. M-2017-036
Adequacy Review No. 4

Dear Mrs. Fancher-English:

The Colorado Division of Reclamation, Mining and Safety (DRMS or Division) has reviewed Loveland Ready-Mix Concrete, Inc's (LRM) adequacy review response letter and attached material that was received by the Division on February 15, 2018. Below is a list of adequacy review items that were identified in the Division's third adequacy review letter. If an item has been resolved, the items has been removed from the list. If additional information is needed for an item, the Division notes the response(s) provided by your consultants Telesto Solutions, Inc. (Telesto) and provides a response with follow-up questions. All of the items identified by the Division will need to be addressed to the Division's satisfaction prior to the recommendation date for the application.

The date for consideration of the application has been extended and the application will be considered before the Mined Land Reclamation Board (Board) during the March 21 and 22, 2018 Board hearing. A Pre-hearing Conference is scheduled to occur on March 8, 2018 from 10:00 am to 2:00 pm at the Larimer County Commissioners office at 200 West Oak, Suite 2200, Fort Collins Colorado 80521 in the Carter Lake/Boyd Lake Hearing Room. The Division will issue its recommendation to the Board for approval, approval with conditions or denial of the application by March 2, 2018.

Rule 6.4.7 Exhibit G – Water Information

39. Section 7.3.2 of the application claims that "ground water quality is not anticipated to be an issue." Exhibit G cites a groundwater study (Telesto, 2017b) that was not submitted with the application. Has LRM analyzed the baseline groundwater quality? If so, please provide this data. Please provide a prediction of the probably hydrologic impacts to the groundwater quality from excavating the alluvial material and exposing the Pierre Shale.
    a. **Telesto Response:** The statement that "ground water quality is not anticipated to be an issue" comes from three fundamental pieces information:
        i. Nearly every gravel pit on the Poudre River has exposed the Pierre Shale and there are not wide-spread water quality issues associated these activities
        ii. Constituent mobility requires two principal components:

1. Source chemistry
2. Water movement
3. LRM commits to monitoring and managing its water to limit the potential for water quality issues

While the Pierre Shale is documented to have source constituents available, it is also well documented that it is highly impermeable. On site, the Pierre Shale drilled dry, meaning there is no water present. Thus, the only mechanism to move source constituents from the Pierre into contact water is through molecular diffusion, which is a slow process.

Recently, LRM collected samples of the Pierre Shale at the contact with the alluvium and subjected the samples to the synthetic precipitation leach procedure (SPLP) testing. One of 5 samples resulted in detectable selenium. Three groundwater quality samples were taken from monitoring wells MW-06, MW-13, and MW-02. MW-06 showed detectable levels of selenium below the drinking water standard. The sample from MW-06 contained sedimentation (i.e., the well has not completely developed), thus it is most likely that the detected selenium was part of the solid matrix. LRM will sample MW-06 again and filter the sample to corroborate this supposition. These data corroborate the potential for the Pierre Shale to contain selenium, and on the whole, show that ground water quality is not significantly impacted by the Pierre Shale. LRM's water management activities keep the groundwater system outside of the mining area in tact with respect to water contacting the Pierre Shale. Inside the mining area, no water that is in direct contact with the shale is proposed to leave the site. Thus, no water quality issues are anticipated. Regardless, LRM commits to monitoring its water quality in the water management pond and respond accordingly should discharges be an issue.

b. **DRMS Response:** The groundwater quality data provided and proposed groundwater quality monitoring program are insufficient. The applicant will need to submit a groundwater quality monitoring plan and data sufficient to demonstrate that the site will be in compliance with CDPHE Water Quality Control Commission (WQCC) Regulation 41 - Basic Standards for Groundwater during the life of the mine and during reclamation. In accordance with Rule 3.1.7(7)(b), the submitted plan should be revised to include at least:
    i. Proposed groundwater sampling locations and frequency, including up-gradient background location(s) and points of compliance. Quarterly water quality sampling would be sufficient. Please include sampling of the water in the water management pond during operations as it will directly recharge groundwater in the vicinity.
    ii. Please include a description of the method of monitoring well completion.
    iii. Sampling protocol(s) and analytical methods/detection levels, and quality control and quality assurance methods.

iv. Appropriate analyte list. At a minimum the full Reg. 41 Table 1 Inorganic Analytes list should be collected for establishing background levels and used for regular monitoring parameters. Asbestos may be eliminated, however, TDS, pH, and iron should be included.
v. Please commit to submitting the results of water monitoring sampling during the mining operation and reclamation to the Division with the annual report each year.
vi. Please specifically state the formation, aquifers or strata to be sampled.
vii. Baseline Water Quality Data. Please provide baseline water quality data to document the pre-mining water quality based on the analyte list noted above. The applicant will need to collect at a minimum five quarters of water quality data prior to exposing groundwater and/or initiating dewatering operations. The Division may consider conditionally approving the application with a commitment from the Applicant that they will collect and submit the baseline water quality data prior to exposing groundwater and/or initiating dewatering operations.

c. Telesto Response: The attached Groundwater Sampling and Analysis Plan (Attachment 3) addresses the comments above.

d. Division Response: The Division has reviewed the Groundwater Sampling and Analysis Plan included in Attachment 3 of the adequacy review response. Please address the following items:

i. Regarding water quality sampling, please add MW-13 to the groundwater quality sampling plan.
ii. Upon further review of Regulation 41, regarding the Interim Narrative Standards, please add the following analytes to the analyte list and the sampling matrix as appropriate (units are mg/L):
    1. Aluminum 5.00
    2. Boron 0.75
    3. Cobalt 0.05
    4. Copper 0.20
    5. Lithium 2.50
    6. Manganese 0.05
    7. Vanadium 0.10
    8. Zinc 2.00
iii. What is the source of the benchmark values for calcium, magnesium, potassium, and sodium listed on the sampling matrix.
iv. The "reporting limit" column in the sampling matrix table should be titled "standard" or "benchmark". The sampling matrix table should include a column that provides the method detection level (MDL) or method reporting level (MRL) for each analyte/ method.

v. LRM indicates on Page 6 of Attachment 3 that they may request to the Division to begin mining/dewatering operations after collecting three quarters of water quality sampling if the data indicates no reportable differences to analyte detection levels are found. LRM must submit a technical revision and receive approval from the Division to revise the baseline water quality sampling plan to sample less than five quarters. Please acknowledge.

vi. LRM indicates on Page 7 of Attachment 3, regarding continued water quality sampling during active mining that they may desire to reduce the frequency in groundwater quality monitoring after three years of mining if the data collected shows that no significant change to background water quality has occurred. Similar to the item above, LRM will need to submit a technical revision and receive approval from the Division to modify the frequency of ground water quality monitoring. Please acknowledge.

vii. LRM's Groundwater Study model shows the potential for groundwater mounding to the west of the site during the mining operations and after reclamation. Section 7.1.3 of the Groundwater Study indicate that if monitoring results show, in areas that the model predicts are a potential for mounding and flooding of neighbor's property occurs, LRM will take action to assess the mounding issue and may initiate mitigation measures. Given the natural highwater table of the area and the location of adjacent residences with crawl spaces, LRM cannot wait until off-site flooding occurs to take mitigation measures to address groundwater mounding. Please commit to initiating immediate mitigation measures should the two foot trigger level be breached. Also, please commit to notifying the Division within 24 hours if a trigger level for either drawdown or mounding is observed.

Rule 6.4.12 Exhibit L – Reclamation Costs

46. Telesto supplied a detailed reclamation cost estimate for each phase of the mining operation. The Division has reviewed the cost estimate and utilized the information to complete a cost estimate for the first phase of the operation. The Division's estimate is attached for review. Given the applicants commitment to not affect the next phase of the mining operation until an evaluation of the bond is completed and approved by the Division, the Division will only initially require a financial warranty to be held to cover the cost for the first phase of the operation. Some of the differences between the applicant's estimate and the Division's estimate is discussed below.

    The Division used the same format to estimate the cost to install the perimeter drain for the Phase 1 area that Telesto used. However, using the RSMeans 2018 Site Work and Landscape cost data the Division's unit costs were higher than the cost proposed by the applicant. Also, the cost for the drain sand would cost the Division more than what was proposed by the applicant.

At the point when the mine is at the end of the Phase 1 timeframe, the total affected land including the water management pond, processing area (not including the building area to remain after the site is reclaimed) and the Phase 1 mining area was estimated to be 47.08 acres in size. Given this, the Division will hold a cost to spread three feet of overburden and soil (growth media) over the affected land acreage. Also, the Division will hold enough money to revegetate this amount of affected land.

The pumping cost included with the estimate only included the cost for the electricity to run the pump. This cost does not include all the factors that contribute to costs the Division would incur to pump down the pit. Please see the Division's estimate for details.

Please let the Division know if you have any addition questions or if you concur with the estimate for the Phase 1 area. Also please address the following issue:

a. Based on the Appendix 6 document, the source of material used to construct the clay liner is overburden material and fines. Please demonstrate that this material when compacted will be adequate to act as the proposed impermeable clay liner. If not, please provide a plan and a cost to obtain the required clay liner material.
b. **Telesto Response:** LRM concurs with the cost estimate for the Phase 1 area. LRM is in the process of conducting compaction and permeability tests with the fine material from the Knox Pit site. The results are expected on February 16 and will be provided to your office on February 20, 2018.
c. DRMS Response: To date the Division has not received this information. This item remains outstanding.

6.4.19 Exhibit S – Permanent Man-made Structures

1. On February 22 and 23, 2018 the Division received a comment (attached) from an adjacent landowner Jayme Tilley. Mrs. Tilley indicated several additional structures are located on her property that are not addressed in the application. Please address the following:
    a. Please attempt to obtain a revised structure damage re-imbursement agreement for any structures owned by Mrs. Tilley that were not originally accounted for. Please attempt to obtain any additional structure damage reimbursement agreements if necessary for the other structures Mrs. Tilley identified as appropriate.
    b. Please make any revisions/updates to the Geotechnical Stability exhibit if necessary, or if you believe the current exhibit demonstrates these additional structures will be protected, please describe this.
    c. Please revise Exhibit C, Sheet 1 as appropriate.
2. Please provide copies of any structure damage reimbursement agreements that LRM has been able to obtain so far.

This concludes the Division's review of the adequacy review response letter. The Division will issue a recommendation to the Board by March 2, 2018. The adequacy review items listed above must be addressed to the Division's satisfaction prior to the Division's recommendation date. If you need additional time to address these items please request an extension of the decision date in accordance with Rule 1.4.1(9). If you have any questions feel free to contact me at (303) 866-3567, extension 8120.

Sincerely,

Jared Ebert
Environmental Protection Specialist III

Enclosure: *1.) Tilley comment, February 22 and 23, 2018, via E-mail.*

EC w/enclosures: William Katz, Telesto Solutions, Inc. wkatz@telesto-inc.com
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