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BEFORE THE STATE OF NEVADA
STATE ENVIRONMENTAL COMMISSION

In the Matter of:

APPEAL OF
GROUNDWATER POLLUTION
CONTROL PERMIT NO. NEV2020104

NDEP'S RESPONSE BRIEF

The Nevada Division of Environmental Protection ("NDEP"), by and through legal counsel, hereby files its Response to Great Basin Resource Watch's ("GBRW") Appeal of Water Pollution Control Permit No. NEV2020104 (the "Permit"). This Response is based on the attached Memorandum of Points and Authorities and all pleadings on file, the exhibits attached hereto, as well as all testimony and oral argument the State Environmental Commission ("SEC") will hear on this matter.

MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

NDEP's decision to approve Lithium Nevada Corporation's ("LNC") Permit application for the Thacker Pass mining project is well supported by the administrative record and will not result in any degradation to the waters of the State. At issue in this case is whether the design and permitting of the clay tailings filter stack ("CTFS")[1] and its seepage[2] collection and storage system are protective of waters of the State. To prevail

[1] The clay tailings are the material that remains after ore processing and the filter stack is the facility where the tailing will be stacked and ultimately reclaimed after mine closure.

[2] Seepage is the moisture within tailings material after filtration which may eventually squeeze out of the material and drain to an appropriately designed and sized containment structure (the "reclaim pond").

on appeal, GBRW must show that NDEP's decision to issue the Permit for these parts of the mine was arbitrary, capricious, or an abuse of discretion. *See* NAC 445B.890(2)(f). In other words, GBRW must show that that there is no evidence in the record that a reasonable person could find adequate to support NDEP's decision to issue the Permit for the CTFS and its seepage collection and storage system. *Elizondo v. Hood Mach., Inc.*, 129 Nev. 780, 784 (2013).

GBRW has not and cannot clear this high bar. NDEP's decision is supported by multiple credible and reliable reports which demonstrate the CTFS and its seepage collection and storage system are designed for zero discharge to the environment. Specifically, these reports show that the CTFS is structurally sound and that the CTFS seepage collection and storage system are conservatively designed. GBRW stakes its entire case on a new report (the "Emerman Report") submitted to NDEP for the first time as an attachment to GBRW's opening brief. While dense and complex, the Emerman Report can best be summarized as attempting to generate concerns about catastrophic failures of the CTFS and its seepage collection and storage system based on faulty assumptions about the moisture content of the CTFS, which is the primary driving factor for his seepage rate calculations. Notably, Emerman's calculations for expected seepage flow rates at or around optimal moisture content are well within the design capacity of the seepage collection and storage system.

Another major problem with the Emerman Report and GBRW's appeal in general is that they completely fail to consider the active management plan NDEP established under the Permit. The Permit requires LNC to regularly report a litany of items, including the moisture content and compaction rate of tailings placed in the CTFS and the flow rate of any seepage generated by the CTFS. The collected data will either confirm that the systems are performing as designed or will support a decision by NDEP to require LNC to evaluate and propose modifications to its operation and/or design as necessary. Importantly, given the slow speeds at which seepage will move through the CTFS, it is reasonable to conclude that any increases in seepage flow rates will occur gradually and provide NDEP and LNC time to evaluate and address changing field conditions. NDEP cannot, however, require LNC to design its facilities under the unreasonable assumptions made in the Emerman Report.

Ultimately, NDEP's decision to issue the Permit is supported by the administrative record and well-reasoned judgment. GBRW's belated report does not in any way alter NDEP's analysis and, in some cases, confirms it. For these reasons, the SEC should affirm NDEP's decision to grant the Permit.

II. STANDARD OF REVIEW

The SEC must decide this appeal based on the relevant and applicable standards of review described in NAC 445B.890. In this case, GBRW asserts that NDEP's decision to grant the Permit was affected by (1) error of law; (2) clearly erroneous based on the reliable, probative and substantial evidence in the administrative record; and (3) arbitrary or capricious or characterized by an abuse of discretion. NAC 445B.890(2)(d–f). The SEC, as the reviewing body, must not substitute its judgment for that of the agency. Instead, courts recognize that NDEP, as the regulatory agency, is in the best position to review evidence and make reasoned and supported decisions on permit applications. *See State Indus. Ins. Sys. v. Christensen*, 106 Nev. 85, 87, 787 P.2d 408, 409 (1990).

In other words, the SEC must grant NDEP's decision deference. On questions of law, "an administrative agency charged with the duty of administering an act is impliedly clothed with the power to construe the relevant laws and set necessary precedent to administrative action, and the construction placed on a statute by the agency charged with the duty of administering it is entitled to deference." *Nev. Pub. Emps. Ret. Bd. v. Smith*, 129 Nev. 618, 624 (2013). "On questions of fact, an administrative agency's decision is given deference; therefore, a reviewing court must confine its inquiry to determining whether the record provides substantial evidence supporting the administrative agency's decision." *State Indus. Ins. Sys. v. Bokelman*, 113 Nev. 1116, 1119, 946 P.2d 179, 181 (1997). "An agency's'conclusions of law which are closely related to the agency's view of the facts are entitled to deference." *Id.* This standard is met so long as a reasonable person could reach the same decision as the agency with the evidence in front it. *See White Pine Cty. Sch. Dist. v. Benavidez*, No. 70908, 2017 WL 4217042, at *1 (Nev. App. Sept. 15, 2017) ("substantial evidence is evidence which a reasonable mind would accept as adequate to support a conclusion"). For these reasons, the SEC should uphold NDEP's decision to issue the Permit if it finds evidence in the administrative record reasonably adequate to support the decision.

III. STATEMENT OF FACTS

A. Project and Permitting Summary

The Thacker Pass Lithium Mine Project (the "Project") is a proposed lithium mine located approximately 20 miles northwest of Orovada, Nevada, in Humboldt County. *See* the Thacker Pass Project Fact Sheet attached as Exhibit 1 at NDEP 1. The facility will be located exclusively on public land administered by the United States Bureau of Land Management. *Id.* Lithium is a key material in rechargeable batteries found in electric vehicles.

The Project will consist of, among other things, an open pit lithium mine, two waste rock storage facilities and associated stormwater sediment and runoff ponds, coarse gangue stockpile and stormwater sediment and runoff pond, sulfuric acid plant, processing plant, and particularly relevant to GBRW's appeal, the CTFS. *Id.*

LNC submitted its application for a water pollution control permit on April 2, 2020. *See* the Permit attached as Exhibit 2 at NDEP 19. NDEP held a robust public comment period regarding the application. *See* Public Comments and Responses attached as Exhibit 3 at NDEP 39–196. During this period, NDEP received written comments and verbal comments offered during a public hearing on December 1, 2021. *Id.* Although GBRW engaged in the public comment period, it did not submit the Emerman Report which it now brings forward in this appeal. For this reason, the report is not part of the administrative record before the SEC for review. *See* NAC 445B.8914(5).

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On February 25, 2022, NDEP issued its Notice of Decision approving the Permit. *See* the Notice of Decision attached as Exhibit 4 at NDEP 197. The Permit became effective on March 12, 2022. *See* the Permit attached as Exhibit 2 at NDEP 19. GBRW filed this appeal on March 22, 2022, and its opening brief on April 20, 2022. Based on its appeal statement and the substance of its brief, GBRW appeal is limited to whether the design of the CTFS and its integrated seepage collection and storage system is protective of waters of the State.

B. Compaction Required for CTFS Stability

The Project will extract lithium from an ore body located in the soil and rock above the water table. *See* the Project Fact Sheet attached as Exhibit 1 at NDEP 4. The lithium extraction process will produce tailings comprised of acid leach filter cake (clay material), neutralization filter cake, magnesium sulfate cake, and sodium/potassium sulfate salts (collectively, "clay tailings"). *Id.* at NDEP 10. After processing, the tailings will be transported to one of two zones in the CTFS: the structural zone[3] or the non-structural zone[4]. *Id.* at NDEP 12. The CTFS will be constructed in six separate similarly sized sections, referred to as cells. *Id.*

Clay tailings in the structural zone must be compacted[5] to 95% of Modified Maximum Dry Density ("MMDD"), which is typical for embankment design.[6] *See* CTFS Full Design Report attached as Exhibit 5 at NDEP 220. 95% of MMDD means that the clay tailings must be compacted to a density that is 95% of the maximum dry density compaction achieved in laboratory analyses. LNC used a standardized and internationally accepted process described in American Society for Testing and Materials

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[3] The "structural zone" consists of clay tailings located on the exterior of the CTFS that serve as structural support for the CTFS.

[4] The "non-structural zone" consists of clay tailings and perhaps other materials such as salts, located on the interior of the CTFS that do not serve as structural support for the CTFS.

[5] Compaction is the process by which LNC or its contractor will drive over the tailings in the CTFS with heavy duty equipment, such as a vibrating smooth drum roller or tamping foot roller, to make the clay tailings the required density. This process is necessary because it gives structural stability to tailings.

[6] United States Department of the Interior, "Reclamation: Managing Water in the West" (available at https://www.usbr.gov/tsc/techreferences/designstandards-datacollectionguides/finalds-pdfs/DS13-10.pdf), pp. 10–44.

("ASTM") D1557, to develop compaction and moisture content standards for clay tailings. *See* Earthwork Technical Specifications attached as Exhibit 6 at NDEP 263. Based on this analysis, LNC determined that 95% compaction could be achieved in the clay tailings with a dry basis moisture content of 46% + or – 6%. *Id.* In other words, at least 95% MMDD could be achieved at a moisture content that is anywhere from 40% on the dry end to 52% on the wet end with 46% representing moisture content required for maximum compaction. The structural zone material will have a slope of 4 horizontal to a maximum 1 vertical on the outside. *See* CTFS Full Design Report attached as Exhibit 5 at NDEP 220. This means that for every 4 horizontal feet the maximum rise of the slope cannot exceed 1 vertical foot.

Material in the non-structural zone is not necessary for the structural integrity of the CTFS and thus is not required to meet the same compaction standards. Instead, this material must achieve at least 85% compaction. *See* Earthwork Technical Specifications attached as Exhibit 6 at NDEP 264. Naturally, by reducing the compaction rate by 10%, the range of acceptable moisture content increased. In this zone, the clay tailings must have moisture content of 46% + or – 12%. *Id.* Again, 46% dry basis moisture content represented the moisture content required for maximum compaction and dry basis moisture contents of 34% on the dry end and 58% on the wet end represented the moisture content required for at least 85% compaction.

The permeability of the clay tailings in each zone will be different. Permeability is the speed at which water will move through the tailings materials. In the non-structural zone, permeability is expected to be approximately 0.000001 centimeters per second (1.035 feet per year), and in the structural zone is expected to be approximately 0.0000001 centimeters per second (0.1035 feet per year), or an order of magnitude slower than the non-structural zone. *See* the Project Fact Sheet attached as Exhibit 1 at NDEP 12. Excess water that cannot pass from the non-structural zone to the structural zone due to the slower speed at which water moves in the structural zone will be directed

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to the seepage collection system by a chimney drain installed in this area of the CTFS. *Id.* at NDEP 12–13.

The CTFS design accounts for potential seismic hazards. *Id.* at NDEP 14. The CTFS design incorporated conservative seismic design standards. A slope stability analysis for a maximum design event, or the maximum level of ground motion for the CTFS design, calculated slope movement in the range of 17 to 32 inches, which would be within CTFS containment. *See* the CTFS Full Design Report attached as Exhibit 5 at NDEP 235. In addition, near-surface faults and active faults are not documented within the project site, so ground rupture is not expected within the Project, including CTFS footprint. In addition, liquefaction[7] is not a concern due to the depth to groundwater, which is in the range of approximately 60 to 97 feet below ground surface, and the dense condition of the rock and soil that covers the ore deposit, which would prevent groundwater from moving to the surface during a seismic event. *Id.* at NDEP 210.

C. Achieving Optimal Dry Basis Moisture Content

As discussed above, the dry basis moisture content of tailings is important to the process of compaction and impacts the amount of seepage that is expected to be generated by the CTFS. LNC conducted a pilot study to test different methods of drying the clay tailings. *See* the Filterability of LNC Neutralized Clay Slurry v2 attached as Exhibit 7 at NDEP 277. According to the study, LNC used a filter press to squeeze moisture out of the clay tailings. *Id.* at NDEP 278. This process typically provided compressed clay tailings that consisted of approximately 62% solids and 38% wet moisture content[8]. *Id.* at NDEP 281. The 38% wet moisture content converts to a dry basis moisture content of approximately 61.3%. After squeezing the moisture out through the filtration process, LNC then demonstrated that the filter cakes could be further dried for four days at 22°C to achieve a dry moisture content that is approximately 37%, which is slightly drier than

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[7] Liquefaction is the process of seemingly solid materials acting non-solid due to vibration or saturation, typically from an earthquake.

[8] To convert from wet basis moisture content to dry basis moisture content, which is the standard for compaction, divide the wet basis moisture content (in this case, 0.38) by 1 – the wet basis moisture content (1–0.38) and multiply by 100.

the moisture content required to achieve 95% compaction.[9] *Id.* at NDEP 284. In sum, the study demonstrated that LNC could achieve at or near optimal moisture content for clay tailings compaction through filtration and air drying.

D. Design of Tailings Base and Seepage Collection and Storage System

After moisture is removed from the clay tailings with the filter press, they will be transported via two separate conveyors to the CTFS. *See* the Project Fact Sheet at NDEP 10. As discussed above, the clay tailings will then be placed, dried, and compacted to achieve structural stability. The CTFS is designed for zero discharge to the environment. *See* the Permit, Exhibit 2 at NDEP 20, § I(A)(3) ("The Permittee shall . . . not release or discharge any process or non-process contaminants from the fluid management system").

The base of the CTFS will consist of an 80-mil high density polyethylene ("HDPE") liner[10] which will be placed on a 6-inch bed of fine grained materials conditioned and compacted to provide a smooth surface to ensure the structural integrity of the liner. *Id.* at NDEP 21, § I(C).

The CTFS will be graded to direct seepage, or clay tailings moisture and/or precipitation infiltration that cannot be stored in the tailings, to a collection system. The collection system will consist of a primary 12-inch diameter perforated corrugated pipes placed in the topographic low point of each CTFS cell. *See* the CTFS Full Design Report attached as Exhibit 5 at NDEP 222. Secondary 4-inch diameter perforated corrugated pipes will be installed in a herringbone pattern off the primary pipe. *Id.* The pipes will be covered by 24 inches of overliner, or a high permeability mixture of sand and gravel, that will promote lateral drainage around and over the pipes. *Id.* Any seepage collected in these pipes will flow by virtue of gravity to the reclaim pond. *Id.* The reclaim pond will

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[9] After four days of drying at room temperature 40% of the moisture content of the filtered sample evaporated. The conversion to dry moisture content ((1–.4)*38/62)*100.

[10] HDPE is a dense highly durable plastic.

have two liners, 60-mil HDPE on bottom and 80-mil HDPE on top, separated by 200-mil geo net (thick synthetic mesh netting)[11]. *Id.* at NDEP 223.

The pond will have a storage capacity of 53.95 million gallons. *Id.* at NDEP 239. The reclaim pond will have 22.98 million gallons reserved for storage of seepage from the CTFS, 22.72 million gallons reserved for storage of stormwater runoff from the surface of the CTFS due to a 100-year, 24-hour storm event, and 8.26 million gallons of unreserved additional storage, which represents 3 feet of freeboard, or 3 vertical feet from maximum operational and stormwater storage capacity to the crest of the pond. *Id.* The water in the reclaim pond will either be pumped to the processing plant for reuse in the processing of Lithium or will evaporate. *Id.* at NDEP 223.

The estimated maximum seepage rate from the CTFS is 74 gallons per minute ("gpm"). *See* the Newfields Seepage Calculation attached as Exhibit 8 at NDEP 290. The calculated flow rate is considered conservative for two primary reasons. First, the flow rate is based on 10 years of accumulated solution storage in the CTFS at a moisture content that is 3.1% (49.1% moisture content rather than the optimal 46%) wetter than optimal dry moisture content for compaction. *Id.* Second, the calculated flow rate is based on the expected permeability of the non-structural zone which is 10 times greater than the structural zone. *Id.* Notwithstanding, the current pond design will have a capacity to store approximately 74 gpm for 215 days or 150 gpm for 107 days. Essentially, the pond has sufficient capacity to handle seepage flow rates that are well in excess of the estimated maximum seepage flow rate.

A more refined seepage analysis was later completed using Hydrus 1D, a water flow modeling program. *See* the Piteau Technical Memorandum attached as Exhibit 9 at NDEP 293. This analysis assumed that the tailings were stacked at optimal moisture content, or 46%. *Id.* at NDEP 297. At this moisture content, the model results indicated that seepage from the tailings material is not anticipated and infiltration into the stacked

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[11] The purpose of the netting is to convey any leakage through the top liner to a collection pond, where captured solution will ultimately be returned to the processing plant for reuse or evaporated.

tailings would travel approximately 20 meters in 1,000 years. *Id.* at 299. NDEP is requiring LNC to conduct further modeling sensitivity analysis to determine if seepage results change for higher moisture contents in the CTFS. *See* the Permit attached as Exhibit 2 at NDEP 21, § I(B)(8). The additional analysis will further verify the model and assist during active management of the facility to predict future seepage rates.

E. CTFS and Seepage Collection System Compliance Monitoring

LNC is required to "comply with all terms and conditions of [the Permit] and all applicable statutes and regulations." *Id.* at NDEP 19. The Permit does not allow for any discharge to the waters of the State. *Id.* at 20, § I(A)(3) ("the Permittee shall . . . not release or discharge any process or non-process contaminants from the fluid management system"). Of relevance here, the Permit requires LNC to conduct extensive sampling, testing, and analysis to assure the CTFS and seepage collection system and reclaim pond are protective of waters of the State. *See Id.* at NDEP 21–24, § I(D). In particular, LNC must: conduct moisture content and nuclear density tests on compacted structural and non-structural tailing placed in the CTFS, once per lift, day of placement, or 5,000 cubic yards, whichever is greater. *Id.* at NDEP 23, § I(D)(7); *see also* the Earthwork Technical Specifications attached as Exhibit 6 at NDEP 275. The data from these tests will be compiled for individual months and reported to NDEP quarterly. *See* the Permit attached as Exhibit 2 at NDEP 23, § I(D)(7).

The Permit also requires LNC to revise its CTFS stability analysis annually based on collected field data. *Id.* at NDEP 31, § I(N)(2). NDEP is also requiring LNC to measure and report quarterly the flow rate, if any, from the CTFS to the pond. *Id.* at NDEP 22, § I(D)(6). Finally, NDEP will conduct on-site inspections of the facility quarterly to verify compliance with the Permit as well as relevant and applicable Nevada statutes and regulations.

F. CTFS and Collection and Storage System Permanent Closure

LNC submitted a Tentative Plan for Permanent Closure of the mine, which includes a plan for closure of the CTFS. *See* the Tentative Plan for Permanent Closure attached as Exhibit 10 at NDEP 323. Under the Plan, LNC will recontour the facility to mimic natural topography, but LNC does not intend to regrade the CTFS during closure and reclamation of the facility. *Id.* at NDEP 324. Instead, the CTFS will be capped with a clay material and a layer of cover soil at thicknesses that will be determined based on test plots constructed during mine operation. *Id.* at NDEP 325. The cover soil will promote vegetation to reduce infiltration of meteoric water to the closed CTFS. *Id.* Over time, CTFS seepage flow will diminish along with the need for reclaim pond storage capacity. *Id.* Under the current plan, LNC will convert the reclaim pond to an evapotranspiration ("ET") cell, which will consume seepage flow by evaporation and by evapotranspiration, plant consumption. *Id.* LNC has committed to establish a long-term trust, if needed, to support operation and maintenance of the seepage collection and storage system, including the proposed ET-Cell until it is permanently closed. *Id.*

IV. LEGAL ANALYSIS

A. The CTFS Design and Permit are Protective of the Waters of the State

NAC 445A.424 provides that a facility may not degrade groundwaters of the State to the extent that the quality is lowered below a state or federal regulation prescribing standards for drinking water or natural background conditions, whichever is less. The requirements for an application for a water pollution control mining permit are established in NAC 445A.397. Those regulations require the applicant to submit reports detailing, amongst other things: (1) engineering plans for the process components used for beneficiation (NAC 445A.397(1)(a)); (2) the general specifications and calculations for the process components (NAC 445A.397(1)(b)); (3) methods for the control of storm flow runoff (NAC 445A.397(1)(e)); (4) a description of the liner material and installation procedures for all leach pads, ponds and ditches, including a description of the subbase preparation; and (5) details of leak detection and site-monitoring systems. *See* NAC 445A.397. This information is required to be of sufficient detail to allow NDEP to make a factual determination that "the design of process components is sufficient to protect the waters of the State from degradation" and "that the monitoring system is adequate to determine if the process components are operating so as to protect the waters of the State from degradation." *See* NAC 445A.397(3).

In this case, the information submitted by LNC was sufficient to allow NDEP to make a factual determination that the waters of the State are protected from degradation.

1. LNC provided multiple technical reports that demonstrate the CTFS and seepage collection and storage system design is protective of waters of the State

First, the CTFS is structurally sound. The CTFS will consist of two zones, a structural and non-structural zone. The structural zone will be graded at a slope of 4 horizontal to 1 vertical and compacted to 95% maximum dry density, which is typical for embankment structures like the CTFS. *See* the CTFS Full Design Report attached as Exhibit 5 at NDEP 218. The structural zone will generally surround and provide support for the non-structural zone which will be compacted to at least 85% maximum dry density. *See* the Project Fact Sheet attached as Exhibit 1 at NDEP 5. The CTFS design accounts for potential seismic activity and at maximum design event will only allow 17 to 32 inches of slope movement, which is within the design footprint of the CTFS. *Id.* at NDEP 14. In total, the administrative record supports a finding that the design of the CTFS is structurally sound.

Second, the CTFS base and its seepage collection and storage system are designed for zero discharge to the environment. The CTFS design and the Permit require LNC to line the base of the CTFS with an 80-mil HDPE double-sided textured liner. *See* the Permit attached as Exhibit 2 at NDEP 21, § I(C)(1). The liner will be placed on a layer of smooth compacted material to ensure that it maintains its integrity and overlain with collection pipes and a 24-inch thick layer of overliner that will protect the piping system and the liner. *See* the Project Fact Sheet attached as Exhibit 1 at NDEP 11. Because the base design is effectively impermeable, it will redirect seepage to the collection system and not allow penetration of any contaminants to the soil beneath the CTFS. *Id.* The CTFS will use grading and natural topography to direct seepage, or clay tailings moisture and/or precipitation infiltration that cannot be stored in the tailings, to a collection system consisting of 12-inch primary and 4-inch secondary pipes, which will be placed in each CTFS cell to capture any and all seepage from the CTFS. *Id.* The seepage collected by the system will be discharged to a double HDPE lined reclaim pond which will have operational storage capacity well in excess of 74 gallons per minute, which is a conservative estimate of the maximum seepage rate for the CTFS. *Id.*

The estimated flow rate to the reclaim pond is based on a conservative calculation conducted as part of the CTFS design. The calculation is considered conservative for two reasons. First, the calculation assumes that the CTFS is constructed for 10 years with continuous accumulation or storage of moisture and no loss by virtue of seepage. *See* the Newfields Seepage Calculation attached as Exhibit 8 at NDEP 290. Naturally, if seepage from the CTFS were to occur, it would do so gradually over time, which, as a result, would reduce the storage in the CTFS and in turn the estimated flow rate. The calculation further assumes the average moisture content in the tailings is 49.1% for the entire CTFS which is 3.1% wetter than optimal moisture content, which also increases the storage within the CTFS and the calculated flow rate. *Id.* Finally, the entire CTFS is assumed to have the estimated permeability in the non-structural zone which is an order of magnitude greater than the structural zone. *Id.* The effective, or combined, permeability of the CTFS would be somewhere between the permeability of the structural and non-structural zones, which would substantially reduce the calculated flow rate. The conservative nature of this calculation only further demonstrates that the seepage collections system and reclaim pond storage capacity offer sufficient capacity to manage any range of potential seepage from the CTFS.

LNC also submitted analysis for seepage flow rate using the modeling program, Hydrus 1D. The intent of the modeling analysis was to confirm that the CTFS would not produce seepage if tailings were stacked at optimal dry moisture content. This modeling analysis assumed as much and, as expected, the results confirmed that seepage from the tailings material was not anticipated. *See* the Piteau Technical Memorandum attached as Exhibit 9 at NDEP 299. NDEP is requiring LNC to conduct further modeling sensitivity analysis to determine if seepage results change for higher moisture contents in the CTFS. *See* the Permit attached as Exhibit 2 at NDEP 21, § I(B)(8). The additional analysis will further verify that the model may be used, if appropriate, as an active management tool to predict future seepage.

The Tentative Plan for Permanent Closure of the mine includes a plan for closure of the CTFS. *See* the Tentative Plan for Permanent Closure attached as Exhibit 10 at NDEP 324. Due to the design of the facility, closure may not require disturbance of regrading to the CTFS. The CTFS will be capped and covered to prevent or minimize infiltration to the CTFS, and the reclaim pond will eventually be converted to a self-sustaining ET-cell which uses atmospheric evaporation and evapotranspiration, plant consumption, to manage seepage. *Id.* at NDEP 325. While not required now, LNC has still committed to establish a surety in the form of a long-term trust, if needed, to provide back-up financial support for operation and maintenance of the collection system and reclaim pond/ET-Cell until permanent closure. *Id.*

In total, the design of the CTFS, the collection system, and the reclaim pond are protective of waters of the State. Therefore, there is substantial evidence in the administrative record to approve LNC's design.

2. Monitoring and reporting requirements provide another layer of protection that no degradation to waters of the State will occur

NAC 445A.442 states that NDEP "shall determine the extent and complexity to which the holder of a Permit must monitor individual process components for the release of contaminants after reviewing site and process controlled design conditions." This is a very important part of the permitting process because field data is the only means by

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which NDEP and LNC can assess and evaluate whether the CTFS and its seepage collection and storage system are performing as designed.

Under the Permit, LNC is required to:

a. Test moisture content and conduct nuclear density tests on compacted structural and non-structural tailings placed in the CTFS. The tests must be complete once per lift, day of placement, or 5,000 cubic yards, whichever is greater. *See* the Earthwork Technical Specifications attached as Exhibit 6 at NDEP 275. The data from these tests will be compiled for individual months and reported to NDEP quarterly. *See* the Permit attached as Exhibit 2 at NDEP 23, § I(D)(7).

b. Revise its CTFS stability analysis annually based on collected field data. *Id.* at NDEP 31, § I(N)(2).

c. Measure and report the flow rate, if any, from the CTFS to the pond. *Id.* at NDEP 22, § I(D)(6).

Given the frequency of monitoring and reporting requirements for the CTFS under the Permit, the frequency of on-site inspections, as well as the very slow speed at which solution will seep through the CTFS, NDEP will have ample time to direct LNC to develop and implement an operational and/or design plan to reduce or manage additional seepage from the CTFS. *See* the Permit Fact Sheet attached as Exhibit 1 at NDEP 11 ("If greater flow than anticipated is observed during operations, the Permittee will be required to increase the storage capacity and update the draindown model and associated closure plan, if necessary").

B. NDEP Cannot Require LNC to Design the CTFS, Collection System, and Reclaim Pond Based on Unreasonable Concerns

1. Tailings are not required to be neutralized

GBRW's Opening Brief contends that NDEP acted in an arbitrary or capricious manner by approving a Permit that did not require neutralization of tailings. To the contrary, no statute or regulation requires *neutralization*, instead they prohibit degradation of waters and require *stabilization*. *See* NAC 445A.431 ("the tailings must be ***stabilized*** during the final closure of a facility so as to ***inhibit the migration of any contaminant that has the potential to degrade waters of the State***."). *See also* NAC 445A.424 ("a facility may not degrade groundwaters of the State to the extent that the quality is lowered below a state or federal regulation prescribing standards for drinking water or natural background conditions, whichever is less."). As discussed above, the current CTFS, collection system, and reclaim pond design offer robust protection to waters of the State and continuing monitoring of key elements of the design will either confirm that the CTFS is operating as designed or will provide sufficient advance warning to NDEP that LNC must adjust its operations and/or its design to meet zero discharge and stabilization regulatory requirements. Accordingly, the law and the administrative record do not support GBRW's assertion that the CTFS must be neutralized to protect waters of the State.

2. There is no rational basis to assume tailings will be stacked and compacted at the highest permissible moisture contents

Moisture content is a critical component to ensuring that the CTFS functions as designed. The moisture content is crucial to the process of compaction and impacts the amount of seepage that is expected flow from the CTFS. The tailings placed and compacted within the structural zone must have a moisture content between 40% and 52% (optimal moisture content of 46%). Tailings placed within the nonstructural zone must have a moisture content of 34% to 58% (optimal moisture content of 46%). Naturally, higher moisture content in the CTFS will yield a potentially higher seepage rate. Inexplicably, the Emerman Report calculates potential seepage flow rates based on stacking and compacting all clay tailings above an average of 55% moisture, which would not meet compaction design specifications, and ignores that added drying will occur when the clay tailings are placed on the CTFS due to the dry climate in the area of the mine. Emerman concludes that depending on moisture content of the tailings, including potential moisture content that is well in excess of reasonable for the CTFS, seepage could be in the range of tens of gallons per minute to thousands of gallons per minute. *See* Emerman Report, attached to GBRW's Opening Brief as Exhibit 4 at 68. Noticeably, the Emerman Report acknowledges but ultimately glosses over the part of his analysis which confirms that estimated seepage rates for moisture content at or around optimal for compaction are well within design limits for the seepage collection system and the reclaim pond. *Id.* at 49–52, 68.

LNC has already demonstrated that it is capable of achieving optimal moisture content. LNC conducted a pilot study titled "Filterability of LNC Neutralized Clay Slurry v2" to demonstrate that it could achieve at or around optimal dry moisture content in the clay tailings for 95% and 85% compaction in the structural and non-structural zones of the CTFS. The study reported that LNC achieved approximately 61% dry moisture content through the process of filtration. LNC also demonstrated that the filter cakes could be further dried at room temperature for several days to achieve a moisture content that is approximately 37% dry moisture, which is drier than acceptable for 95% compaction in the structural zone. In sum, the study demonstrated that optimal moisture content for the clay tailings could be achieved with a combination of filtration and drying. Given the results of this pilot study, there would be no reason for NDEP to assume that LNC would not be able to achieve results at or close to the optimal moisture content of 46% in the field.

Further, as discussed above, the Permit terms protect from the irrational assumptions drawn by the Emerman Report, and it would defy logic and reason for LNC to stack all tailings at the highest permissible moisture content because it could cause LNC to expend resources to lower daily seepage flow or build additional storage capacity to assure zero discharge to the environment. It would also require LNC to expend more resources and time to permanently close the facility due to potential added flow from the CTFS.

This issue strikes at the heart of the problems with GBRW's appeal and the Emerman Report—they both entirely ignore the reasoned process put in place under the

Permit that will require continued reporting and monitoring. NDEP will see the moisture content of the tailings going into the CTFS, it will receive reports as to the amount of seepage that is occurring, if any, and it can take action as necessary based on those results. Given the extremely slow speeds at which seepage will travel through the CTFS, increases in seepage flow rates will occur gradually and NDEP will have time to evaluate and react to changing conditions. However, NDEP cannot reasonably require LNC to design its facilities under the unreasonable assumptions made in the Emerman Report when the pilot studies have demonstrated LNC is capable of achieving at or around optimal moisture content (46%) for clay tailings and low or no seepage rate from the CTFS.

V. CONCLUSION

For these reasons, the Permit here was issued in compliance with all applicable statutes and regulations. GBRW cannot meet its high burden of demonstrating that NDEP's issuance of the Permit was an error of law, clearly erroneous, or issued in an arbitrary or capricious manner. As such, NDEP requests that the SEC affirm its issuance of Water Pollution Control Permit No. NEV2020104.

DATED this 20th day of May, 2022.

AARON D. FORD
Attorney General

By: *\/s/ Daniel P. Nubel*
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CERTIFICATE OF SERVICE

I hereby certify that I am an employee of the State of Nevada, Office of the Attorney General, and on this 20th day of May, 2022, I served a copy of the foregoing, NDEP'S RESPONSE BRIEF, via email, to:

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