



WESTERN RESOURCE
ADVOCATES

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VIA Email and U.S. Mail

Re: Public Comments Relative to Public Notice SPK-2007-00121 – Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake

Dear Jason,

Thank you for the opportunity to provide the U.S Army Corps of Engineers (Army Corps or Corps) with comments relative to Public Notice SPK-2007-00121 – Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake (Mining Company Proposal). I make these comments on behalf of FRIENDS of Great Salt Lake, National Audubon Society, Wasatch Audubon Society, Great Salt Lake Audubon Society, Utah Waterfowl Association, Utah Airboat Association, Utah Rivers Council, League of Women Voters of Salt Lake, League of Women Voters of Utah, Utah Chapter of the Sierra Club, Western Wildlife Conservancy and Physicians for a Healthy Environment (collectively “FRIENDS”). We hope that you will gather the data necessary to carefully consider the following issues and concerns as you under take your statutory and regulatory obligations in reviewing the Mining Company Proposal.

I. Introduction

The local, national and international value of Great Salt Lake, its islands, and its wetlands cannot be overstated. Overall, 257 avian species use the Great Salt Lake ecosystem. Of these, 112 species are exclusively associated with the Lake’s varied wetland areas, while 117 species reportedly nest on the Lake’s periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the Lake each year.

Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands. For these migrants, the Lake provides a critical food supply, allowing them to restore depleted energy reserves and fuel up for the rest of their migrations, sometimes doubling their body weight before they leave. In recognition of its role in these international flights, Great Salt Lake is designated as **one of only eight** sites with a “hemispheric” designation – as opposed to regional or international designation – of the 40 Western Hemisphere Shorebird Reserve Network sites in the United States.

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The importance of Great Salt Lake to the birds of the Americas is borne out by the sheer numbers that depend on its resources, including:

- 60 to 80 percent of the world's population of Wilson's phalaropes;
- One of the two largest staging concentrations of eared grebes in North America;
- The world's largest breeding population of white-faced ibis and California gulls;
- Over half of the entire breeding population of snowy plovers west of the Rocky Mountains;
- More than three quarters of the entire western population of tundra swan;
- One of the three largest breeding colonies of American white pelicans; and
- One of the ten largest wintering populations of bald eagle in the lower 48 states.

Not surprisingly, hundreds of thousands of bird watchers comb the shores of Great Salt Lake to be rewarded by incredible views of feeding, flying and nesting birds that journey thousands of miles to gorge on the bounty of our nation's largest inland "sea." The Lake also attracts recreationists enjoying other water-based activities such as sailing, boating, rowing, floating, wading and kayaking. Others hike, ride horseback and mountain bike to enjoy scenery, solitude and wildlife. Great Salt Lake also supports a robust community of waterfowl enthusiasts who not only enjoy hunting but are working to preserve and protect Utah's waterfowl, its unique and rich habitat and its rich heritage.

The North Arm of Great Salt Lake is an area of particular significance to the Lake's ecosystem. Commenting specifically on the Mining Company expansion proposal, the Utah Division of Wildlife Resources (DWR) and the U.S. Fish and Wildlife Service (FWS) noted that the North Arm of Great Salt Lake becomes critical to migratory and other waterbirds during high water years. Exhibits 1 & 2, attached. This is because, during these times, the salinity in the North Arm best supports brine shrimp – an important food source for many of the Lake's birds. *See* DWR Comments at 2-3 (documenting the crucial importance of the North Arm to wildlife during the 1980s and early 1990s); July 19, 2007 Letter from Don Paul to Mr. Styler and Mr. Buehler at 2, Exhibit 3, attached ("During periods when the GSL elevation occurs between 4193' and 4206' above sea level (asl), there are several aquatic bird species that occur at the Lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at the GSL. At times these numbers of Wilson's Phalaropes and Eared Grebes

represent 50 to 70% of the population that occur in the world.”);¹ Great Salt Lake Mineral Leasing Plan at 33 (“[D]uring the high water years from 1983 to 1987, there were increase populations of brine shrimp in the north arm as salinity decreased [and] . . . eared grebes followed the brine shrimp into the north arm, abandoning sites along the Antelope Island causeway . . .”).

As recognized by the Utah Legislature, the North Arm is of significant importance as a refuge for one of the last remaining populations of the American white pelican, which breeds on Gunnison Island.² In addition, the North Arm offers outstanding recreational opportunities. This unique and remote area is enjoyed for its stark beauty, wildlife and bird life and stunning landscapes. That this area is more difficult to access and less frequented than the South Arm does not diminish its significant recreational and aesthetic value. Moreover, although navigation to and from this area is currently impeded by the causeway, there is no reason to believe that this obstruction is permanent³ and every reason to believe that the demand for access to this area will increase.

Likewise, Bear River Bay and the Willard Spur are of outstanding value for both recreation and wildlife habitat. Here there is a fishery that persists when the lake elevation is higher than 4,200 feet above sea level of vital importance to piscivorous birds. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake.

Recognizing these values, DWR has underscored the tremendous ecological importance of the lease parcels the applicant proposes to develop:

¹ Mr. Paul also states: “This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceed 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files). Exhibit 3 at 2.

² Utah Code Ann. § 23-21a-2 (“The legislature of the state of Utah recognizes that the number of breeding sites of the American white pelican has been reduced from in excess of 50 prior to 1932 to only seven major sites in 1976 as a result of the removal of water barriers around breeding sites, loss of food supply, and **human disturbance of nesting colonies**. The legislature of the state of Utah further recognizes that Gunnison Island in the Great Salt Lake, one of the seven remaining pelican rookeries in North America, produces over 20% of the world's population of the American white pelican, and is the only remaining major pelican rookery that does not have refuge status. It is hereby declared to be the policy of the state of Utah that areas that will support certain threatened life forms shall be preserved for their benefit and for the benefit and enjoyment of present and future generations of people.”) (emphasis added)

³ The causeway has stood only since 1959, when it replaced a trestle built in 1902.

These lands . . . are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes . . . because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural lake within the bay.

IMC Kalium/DWR Memo, August 28, 1998, Exhibit 4 at 3. Moreover, this area of the Lake receives high levels of recreational use, is appreciated for its scenic beauty by many, and is critical to navigation of the Lake. Bear River Bay and Willard Spur enjoy a high number of days of recreational use. Air boat operators and others access this area through a public access site and two guiding services also operate in the area. There are at least two private duck clubs that are located along the shore of this area.

In order to support the Mining Company's proposal, the Mining Company has submitted an application for the appropriation of 353,000 acre feet of consumptive water rights – an extraordinary volume of water from Great Salt Lake. This volume of water totals almost as much water as flows from the Jordan River into the Lake each year. The Great Salt Lake ecosystem and the recreational and navigational values it supports simply cannot absorb an appropriation of this magnitude, especially in light of the existing cumulative demands on this internationally significant waterbody.

II. The Mining Company Expansion Proposal

Mining Company currently operates about 47,000 acres of evaporative reservoirs in the northern part of Great Salt Lake; 25,000 acres of reservoirs in the North Arm and 22,000 acres of reservoirs in Bear River Bay. North Arm brine is transported to Bear River Bay via the 21-mile Behrens Trench, taking a week to make the journey.

In 2007, Mining Company proposed expanding their operations by 33,000 acres. The proposed expansion would have consisted of an 18,000-acre pond adjacent to Gunnison Island, a 7,000-acre pond in the southern end of Clyman Bay and an 8,000 pond in Bear River Bay. While the lease for the 8,000 acre Bear River Bay portion was purportedly already approved by the Division of Forestry, Fires and State Lands (Division) prior to the proposal, the necessary leases for the 25,000 acres of reservoirs in the North Arm were also approved by the Division in July, 2007. Subsequent to that approval, the Army Corps began the Environmental Impact Statement process associated with the 404 permit for the entire 33,000 acres.

Subsequent to approval of the required leases by the Division but prior to approval by the Corps of Engineers, Mining Company expanded that proposal to 91,000 acres – of which 80,000 acres fall within the confines of the Lake. The new proposal is in place of, rather than supplementing, the 2007 proposal. Of the 91,000 acres 83,000 acres would be located in the North Arm and 8,000 acres would be added to the northeast portion of Mining Company's current Bear River Bay facilities.

To support this expansion, Mining Company has also applied for 336,360 additional acre feet of water rights taken from the North Arm and 16,640 acre feet of water taken from Bear River Bay. Currently, Mining Company holds 156,000 acre feet of consumptive water rights within the Lake as well as 67,000 acre feet of water rights in Bear River Bay.

Because the railroad causeway substantially reduces the interchange between the South and the North Arms, the withdrawals of water from the North Arm proposed by Mining Company will have a disproportionate impact on that portion of the Lake. This is especially true at lower Lake levels, when the effectiveness of the causeway breach is minimized. Adding to the impact is the purported lack of recurring maintenance of the two culverts by the railroad. As a result, and absent the effects of the proposed evaporation reservoirs, the withdrawal of this water from the North Arm will have an enormous and uneven effect on that portion of the Lake because of the North Arm's hydrologic isolation from the rest of the Lake.

In addition, the majority of the proposed 91,000 acres of new evaporation reservoirs will fall outside the natural boundary of the Lake at normal water levels. In other words, both because the reservoirs are close to the shore, and because Mining Company proposes to withdraw a huge amount of water from the main body of the Lake to sequester in these reservoirs, two impacts will occur: 1) the Lake will shrink below natural levels; and, 2) the sequestered water will be spread out over tens of thousands of acres. For these reasons, the reservoir water will be largely, if not completely, above the main body of the lake. As a result, the company's proposal artificially expands the surface area of the Lake and, thus, will result in an increase in the natural rate of evaporation. The combined impact of the detrimental and disproportionate impact of this withdrawal on the North Arm because of its hydrologic isolation and the increased rate of evaporation as a result of the evaporation reservoirs will clearly result in an unreasonable effect on the natural environment of the Lake.

III. Legal Framework

A. The Clean Water Act

Section 404 of the Clean Water Act, 33 U.S.C. § 1344, prohibits the filling or dredging of waters of the United States without first receiving a § 404(b) permit from the Army Corps. 33 U.S.C. § 1344(a), (d). A permit may not be issued if (i) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences, (ii) the discharge will result in significant degradation, (iii) the discharge does not include all appropriate and practicable measures to minimize potential harm, **or** (iv) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Army Corps guidelines for permit issuance. 40 C.F.R. § 230.12(a)(3)(i-iv).

For non-water dependent projects, such as this one, it is presumed that a practicable alternative exists and the burden to clearly demonstrate otherwise is on the applicant. *Id.*

§ 230.10(a)(3); *Resource Inv's, Inc. v. United States Army Corps of Eng'rs*, 151 F.3d 1162, 1167 (9th Cir.1998). “Practicable” is defined at 40 C.F.R. § 230.10(a)(2) as “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” The presumption for a non-water dependent project that a practicable alternative exists requires that an applicant make a persuasive showing concerning the lack of alternatives. *Sylvester v. United States Army Corps of Eng'rs*, 882 F.2d 407, 409 (9th Cir.1989) (internal citation omitted). Finally, a permit may not be issued “unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.” 40 C.F.R. § 230.10(d).

Further, Army Corps regulations require that the Mining Company include a statement in its § 404 application that describes how impacts to waters of the United States are to be avoided or minimized. 33 C.F.R. § 325.1(d)(7). In this context, the application must include either a statement showing how anticipated impacts are to be compensated for or why such compensation should not be required. *Id.* However, nothing in the scoping material provided to the public indicates that Mining Company’s application includes this material. Therefore, to the extent that the Mining Company’s application was not in compliance with § 325.1, the Corps was obligated within 15 days of receipt of the application to request this information from the Mining Company and was further required to withhold public notice until these deficiencies were corrected. 33 C.F.R. § 325.2(a) & (b).

Additionally, we request that the Corps fully address, and provide a detailed explanation of, the Mining Company’s proposal to mitigate each of the impacts listed below. It is insufficient for the Corps to merely mention that mitigation measures will be enacted, or to label the impact insignificant. To the degree that the Mining Company’s Proposal results in impacts that cannot be mitigated, the Corps may not allow this Proposal to proceed.

B. NEPA

The National Environmental Policy Act (NEPA) requires federal agencies to prepare an Environmental Impact Statement (EIS) prior to taking major federal action. 42 U.S.C. §§ 4321-4370d. In the present instance, the Army Corps’ issuance of a § 404 permit for the Mining Company Proposal must be considered a major federal action. The purpose of NEPA is to require agencies to consider environmentally significant aspects of a proposed action, and, in so doing, inform the public of the environmental concerns and considerations that affected the agency’s decisionmaking process. In conducting the EIS, the Corps must create an administrative record that demonstrates that it followed NEPA procedures. As part of these procedures, the Corps is required to take a “hard look” at the environmental consequences of the Mining Company Proposal.

NEPA also requires a complete analysis of the purpose and need for the proposed project, 40 C.F.R. § 1502.13, along with a full and fair analysis of all reasonable project alternatives. 42 U.S.C. § 4332(2)(C)(iii), (E); 40 C.F.R. § 1502.1. In fact, the regulations implementing NEPA refer to the comparison of alternatives as the “heart of the environmental impact statement.” 40

C.F.R. § 1502.14. Agencies must “rigorously explore and objectively evaluate all reasonable alternatives,” then “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits,” and explain why other alternatives were eliminated from detailed consideration. *Id.*

With regard to the Mining Company Proposal, the Army Corps should incorporate the analyses of the proposed 2007 expansion with the proposed 2009 expansion and produce one EIS. Although the scoping notice for the 2009 revised project shows that Mining Company may have made some changes to the 2007 proposed project (e.g., decrease the previously proposed 8,000 acre pond on the west shore of the lake along the north side of the railroad causeway to 6,000 acres), the 2007 proposed expansion has not been abandoned and remains effective.

An EIS must provide detailed explanation and “rigorous analysis” of “all reasonable alternatives” and comparative analysis of the environmental impacts of all alternatives considered. 40 C.F.R. § 1502.14. The Corps must not dismiss alternatives, without the required rigorous analysis, by simply saying that it “dismissed them due to economic, technical, logistical, and purpose and need criteria.” The Corps must evaluate all reasonable alternatives, determine their viability, and place that information in the record. The final decision to grant or deny the permit should be informed by the record produced through such scientific analyses.

C. NHPA

Congress enacted the National Historic Preservation Act (NHPA) in 1966 because it found that “historic properties significant to the Nation’s heritage [were] being lost or substantially altered, often inadvertently, with increasing frequency[.]” 16 U.S.C. § 470(b)(3); *see National Mining Association v. Slater*, 167 F.Supp.2d 265, 271 (D.D.C. 2001) (*reversed on other grounds*; *see also National Mining Association v. Fowler*, 324 F.3d 752 (D.C.Cir. 2003)). As discussed below, the shores of Great Salt Lake are rich in prehistoric archeological sites. To serve the public interest in “the preservation of this irreplaceable heritage,” Congress declared as the goal of the Act, the maintenance and enrichment of this “vital legacy” for future generations of Americans. 16 U.S.C. § 470(b)(4); *see Southern Utah Wilderness Alliance v. Norton*, 326 F.Supp.2d 102, 108 (D.D.C. 2004).

NHPA accomplishes its purposes by “requir[ing] each federal agency to take responsibility for the impact that its activities may have upon historic resources. . . .” *City of Grapevine v. Dep’t of Transp.*, 17 F.3d 1502, 1508 (D.C.Cir. 1994). Specifically, pursuant to section 106 of the Act, a federal agency “shall, prior to the approval of . . . any license . . . take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.” NHPA, § 106, U.S.C. § 470f. An undertaking is any “project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a federal permit, license or approval” 36 C.F.R. § 800.16(y). Section 106 also requires that the agency afford the Advisory Council on Historic Preservation (Advisory Council) “a reasonable opportunity to comment” on the undertaking. *Id.*

The Advisory Council has promulgated regulations setting forth how federal agencies must comply with section 106. *See*, 36 C.F.R. § 800. First, an agency official “shall make a reasonable and good faith effort” to identify historic properties⁴ that may be affected by the undertaking, and evaluate whether these properties are eligible for the National Register. 36 C.F.R. § 800.4(b) & (c); *see* 36 C.F.R. § 60.4 (criteria for assessing eligibility). The agency will next assess the possible effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(d), 800.5(a), and determine whether any effects will be adverse. 36 C.F.R. § 800.5. “An adverse effect is found when an undertaking **may** alter, directly or indirectly, **any** of the characteristics of a historic property that qualify the property for inclusion in the National Register.” 36 C.F.R. § 800.5(a)(1) (emphasis added).⁵ If the agency finds potential adverse effects, it must seek ways to avoid or mitigate those adverse effects. 36 C.F.R. § 800.6. If the agency is unable to resolve the adverse effects of the undertaking, it must obtain comments by the Advisory Council and consider these in any decision to approve the undertaking. 36 C.F.R. § 800.7.

Importantly, at each step, section 106 requires consultation and communication among agency officials, the relevant State Historic Preservation Officer (SHPO), affected tribes and other interested persons, including the public.⁶ *See* C.F.R. § 800.2; *see also City of Alexandria*, 198 F.3d at 124; *SUWA v. Norton*, 326 F.Supp.2d. at 108.⁷ The purpose of this consultation is to involve agency official and others interested parties together in the identification of “historic properties potentially affected by the undertaking, [the] assess[ment of] its effects and [the] seek[ing of] ways to avoid, minimize or mitigate any adverse effects on historic properties.” 36 C.F.R. § 800.1(a); *see also SUWA v. Norton*, 326 F.Supp.2d. at 108.

Finally, section 106 requires the agency to document its compliance with the process sufficiently “to enable any reviewing parties to understand” the basis of agency “determination,

⁴ Historic properties are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior.” 36 C.F.R. § 800.16(1)(1).

⁵ “Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.” 36 C.F.R. § 800.5(a)(1).

⁶ As the regulations make clear “[t]he views of the public are essential to informed Federal decision-making in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effect on historic properties” 36 C.F.R. § 800.2(d)(1). In addition, “[t]he agency official must . . . provide the public with information about an undertaking and its effect on historic properties and seek public comment and input.” 36 C.F.R. § 800.2(d)(2).

⁷ The Advisory Council regulations require consultation at every step of the section 106 process, including, for example, the scope of identification efforts, § 800.4(a)(3), the identification of historic properties, § 800.4(b); the evaluation whether a property is eligible for listing, § 800.4(c), a finding of non historic properties effected, § 800.4(d), 800.5(c), the application of the criteria of adverse effect, § 800.5(a)(1), and the resolution of adverse effects. § 800.6(a).

finding, or agreement” under the regulations. § 800.11(a); *see also, e.g.* § 800.11(d) (documentation requirements for finding of no historic properties affected); § 800.11(e) (documentation requirements for finding or no adverse effect or adverse effect).

D. Rivers and Harbors Act

Pursuant to 33 C.F.R. § 322.3, the Corps is required to issue a permit under section 10 of the Rivers and Harbors Act of 1899 for this project. Work or structures in or affecting navigable waters of the United States require permits issued by the Department of the Army unless exempt by regulation, if the work or structures impact the navigable capacity of the waterbody. *Id.* Because the Mining Company’s proposal does not qualify for exemption, the Corps must complete a section 10 permit prior to allowing the project to proceed. 33 C.F.R. § 322.4.

E. Army Corps General Regulatory Policies

Pursuant to 33 C.F.R. § 320.4, the Corps must consider the cumulative impacts of the proposed activity and its intended use on the public interest. For activities involving § 404 permits, such as the Mining Company Proposal, the Corps may not issue the discharge permit unless the discharge complies with the Environmental Protection Agency’s (EPA) § 404(b)(1) guidelines. 33 C.F.R. § 320.4(a)(1).

In reviewing the 2007 Mining Company Proposal, the EPA had several concerns of note. *See* Letter from Larry Svoboda to Jason Gipson (Dec. 21, 2008), Exhibit 5, attached. First, the EPA noted that the agency’s initial review of the project scoping comments led EPA “to a **strong presumption** against the discharge of fill material into special aquatic sites identified within the project area.” *Id.* at 2 (emphasis added). As the EPA stated, the applicant must “**quantitatively demonstrate** that an alternative, practical source for their product (potassium sulfate) does not exist in the market place.” *Id.* (emphasis added). As outlined below, the Corps’ improper narrowing of the available alternatives by dismissing any offsite land-based options for Mining Company’s Proposal directly flies in the face of EPA’s recommendations.

Second, EPA states that its preliminary analysis of the Proposal’s impacts “suggests that the project as proposed will cause **significant degradation** of aquatic resources of the Great Salt Lake.” *Id.* (emphasis added). To alleviate such impacts, the EPA suggests a number of mitigation procedures that the Corps should consider. Among those suggestions is consideration of an in-kind rehabilitation that would possibly restore and protect large wetland parcels in proximity to the project. *Id.* at 3. Alternatively, the EPA suggests a phasing proposal for the possible expansion tied to the success of the effectiveness of the mitigation program. *Id.*

Importantly, until the Corps has ascertained that the applicant has avoided and minimized impacts to the maximum extent possible, and until it is satisfied that no other on-site or off-site alternatives exist to minimize impacts, an analysis of any compensatory mitigation is premature. As the Corps’ analysis of the Proposal relates to mitigation, the agency must evaluate the effect of the project on the public interest on its own merits prior to determining if compensatory mitigation is appropriate.

Third, in its letter, EPA focused on the need to analyze the cumulative impacts of the Proposal and agrees with the Utah RDCC that this analysis should take into account the impacts of the past 40 years of mineral extraction activity. *Id.* at 4. Additionally, the agency notes that the analysis should also analyze the effects of future urbanization on Bear River Bay by using Farmington Bay as a model for comparison. *Id.* Finally, the agency suggests that the cumulative analysis should take into account possible increased nutrient loading into Bear River Bay, along with the possibility of the Bear River Dam as well as oil and gas development in Gunnison Bay. *Id.* at 4-5.

IV. General Comments

A. Purpose and Alternatives

As presented by the Corps during the June 2009 public information meetings and in its public notice documentation, the stated purpose of the Mining Company Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This is particularly true here where the applicant seeks strictly private gain by filling an enormous area of a water of the United States held in trust for the citizens of Utah. The purpose of the project should be rewritten more broadly so that less damaging practicable alternatives – such as continuing to acquire potassium offsite – are viable and considered in depth.

Illustrative of this unreasonable narrowing is the decision by the Corps to publish a list of Alternatives Considered but Dismissed from Detailed Analysis at the scoping stage of the environmental review process. *See* June 2009 Information Packet, Public Information Meeting on the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake at 21. Among the alternatives improperly dismissed are several land-based, offsite reservoirs areas located outside the confines of the Great Salt Lake. In the Information Packet, the Corps perfunctorily dismissed these alternatives due to “technical criterion” or “logistical criterion.”

The Corps must consider the less damaging alternative of locating the requested evaporation reservoirs outside of the waters of the United States – above the bed of Great Salt Lake. Likely the most appropriate location for such reservoirs would be on the west side of the Lake, including in and around the Newfoundland Evaporation Basin. Examination of alternatives that construct evaporation reservoirs some distance from the shores of the Lake must be considered and the Corps may not prematurely dismiss these alternatives at the scoping stage. Such conclusions at this point in the environmental review process, before even beginning a detailed analysis of the project, without explanation, is improper. For instance, why specifically is an alternative not technically or logistically feasible? If the Mining Company indicates to the Corps that the project would be too expensive, the Corps must justify its decision to support the Mining Company’s position by revealing to the public exactly how much more expensive each alternative is.

In any case, because the Mining Company Proposal is a non-water dependent project,⁸ the presumption is that a practicable alternative exists. This presumption holds unless clearly demonstrated otherwise. Indeed, the Army Corps may not issue a § 404 permit unless the agency has independently verified all relevant information and provided detailed, clear and convincing information **proving** that an alternative with less adverse impact is impracticable. Here, such analysis underscores the need to restate the purpose of the project and undertake rigorous exploration of practicable alternatives.

While the number of alternatives that the Corps considered is much too narrow, the project description enunciated by the Corps in the Public Notice for this project – potassium sulfate extraction/mining – is much too broad. Such a general statement is of little use in evaluating the impacts of Mining Company’s proposal because it does not clearly define the purpose behind the proposal. This is important because the stated purpose is critical in determining whether Mining Company’s proposal is water dependent. Because the project description serves as a basis for the alternatives analysis, the Corps should have more clearly defined the purpose of its proposal. In other words, the more accurately the Corps defines the purpose of the project, the more accurately the Corps will be able to assess whether a land-based alternative meets that purpose.

Due to the possible substantial, detrimental impact of Mining Company’s Proposal to the public interest, the Corps must accurately assess the need for this expansion. Further, the Corps must analyze the extent of the need and, hence, the extent of the impact. This especially applies to the amount of water Mining Company claims it requires for the expansion. Pursuant to 33 C.F.R. § 320.4(a) & (m), the Corps must consider the water supply and conservation associated with this proposal as that relates to the public interest.

B. Great Salt Lake’s Hydrology

The Corps must also thoroughly analyze the impact of thousands of cubic yards of fill on the Lake’s hydrology, flow, and navigational access. Under the 2007 proposal, 540,000 cubic yards of fill would be discharged into the Bear River Bay to create dikes and 900,000 cubic yards of fill will be discharged into open water in the vicinity of Clyman Bay to create additional dikes. The 2009 proposed expansion would add millions of cubic yards more of fill to the Lake in order

⁸ The Mining Company Proposal is not water dependent. The relevant regulations state that where a project “does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose,” it is not water-dependent. 40 C.F.R. § 230.10(a)(3). Plainly, mineral salts extraction need not occur within the water or a special aquatic site – it can occur on dry land. While access to Great Salt Lake may be necessary to extract minerals from Great Salt Lake water, that a pipe or pump may be located in the lake to gain access to the water does not mean that 80,000 acres of evaporation ponds must be located on the bed of the lake. Moreover, as Mining Company currently gets its potassium from mines on dry land, there is nothing about obtaining this mineral that requires access to or siting in special aquatic sites, much less Great Salt Lake.

to create the dikes needed to accommodate the new solar evaporation reservoirs. The Corps should also examine at what elevation the Mining Company would initially put in their dikes and to what level they would plan to raise the dikes if the lake elevation rose. The Corps must analyze the impact of putting such a large amount of fill on the Lake's hydrology, flow, and navigational access. The Corps should analyze the impact of invading the Lake with such a large quantity of foreign matter on water quality and hence, on aquatic life.

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on the Lake's hydrology, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. Already the Utah State Engineer has approved water withdrawals from Great Salt Lake on an enormous scale. In addition, pending water appropriations seek to appropriate huge volumes of water from the Lake. Indeed, Mining Company itself currently has the authority to take 230 cfs, or 156,000 acre feet, from the Lake each year. The proposal to draw down the Lake by an additional 353,000 acre feet cannot be sustained. The plan will have significant adverse effects on the Lake and will seek to divert water from an already fully appropriated waterbody.

According to the Division of Forestry, Fires and State Lands, there are currently 11 perfected water rights to divert water directly from the lake totaling 362,306 acre feet a year. Great Salt Lake Comprehensive Management Plan Resource Document (Resource Document) at 13.⁹ This use is consumptive. *Id.* The State Engineer has approved applications to appropriate an additional 444,562 acre feet of water per year from the Lake, also for consumptive use. *Id.* Finally, pending before the State Engineer are applications for 657,565 acre feet, largely if not completely for consumptive use, above and beyond Mining Company's current application for 353,000 acre feet of water. *Id.* Thus, appropriators are now entitled to consume a total of 806,868 acre feet of water from the lake each year – only slightly less than enters the Lake each year from **both** the Jordan and Weber rivers. *Id.* at 10.

When the amount of water requested in pending applications is considered, the total water demands on the Lake reaches 1,464,433 acre feet a year – more water than flows from the Bear River into Great Salt Lake each year. In this context, Mining Company requests an additional 353,000 acre feet. This pending application would raise demands on Great Salt Lake water to 1,817,433 acre feet per year – 76% of the water that enters the Lake each year from all sources. If the Mining Company application is approved, appropriators would be entitled to siphon off 1.2 million acre feet of water from the Lake each year.

Given that this expansion would likely force Lake levels to drop to their lowest recorded levels, the Corps must carefully analyze what impact the drop in Lake levels will have on:

- Sustainability of the Lake as a water of the United States;

⁹ Available at <http://www.ffsl.utah.gov/SovLands/gsl.php> ("Resource Guide")

- Air quality, since some parts of the Lake may turn into dust;
- Quality of adjacent surface waters;
- Water quality;
- Archaeological sites in the vicinity of the Lake;
- Quality of surrounding human environment;
- Navigability;
- Quality of recreation activities;
- Melting of the mountain snowpacks;
- Attainment of NAAQS in Salt Lake, Box Elder, Cache, Davis, and Weber Counties.

The Great Salt Lake, through a process called “lake effect,” increases the precipitation along the Wasatch Front and contributes to Utah’s “Greatest Snow on Earth” at various ski resorts in the surrounding areas. The lake effect derives from added moisture to the atmosphere resulting from evaporation from the Lake’s surface, and atmospheric instability, which is caused by the contrast in temperature between the lake water and the air. What impact will the Mining Company’s artificially-assisted evaporative processes (through the placement of lake water in special reservoirs) have on the Lake’s hydrologic cycle?

More specifically, the Corps must analyze the individual and cumulative impact of the “lake effect.” Namely, will the increased evaporation adversely affect the Lake’s hydrologic cycle and interfere with natural processes of evaporation that are critical to and responsible for creating the snow that fuels Utah’s winter tourism industry? Additionally, what impact would such interference with the “lake effect” have on Utah’s water supply?

The proposed project would result in about 80,000 acres of permanent adverse impacts to waters of the United States. The Corps must assess not just the impact of Mining Company’s new consumptive activities—those associated with the proposed project—but also assess the individual, cumulative, and indirect impacts of the Mining Company’s planned project-related consumptive activities, Mining Company’s existing consumptive activities, as well as those of other industrial operators, and other reasonably foreseeable activities, on the Lake’s hydrologic environment.

The Corps must analyze the impact of the various activities that will result from the planned project on the GSL’s hydrology:

- Improvements to the Behrens Trench—excavating the trench wider and deeper or laying pipes in the existing trench;
- Purchasing and transporting SOP from the U.S. Magnesium ponds;
- Increasing SOP production by constructing an SOP processing plant within the U.S. Magnesium pond area;
- Other activities to support the new expansion.

C. Water Quality

The Corps should evaluate the effect of existing and proposed additional discharges of bitterns and other waste materials on sediment quality in Bear River Bay and on the South Arm. According to the Utah DWR, in order to accomplish a proper analysis of these discharges, the Corps should have at least one full year of data measuring the possible effects. Letter from W. Clay Perschon to GSL Minerals Study Team (Nov. 19, 1997) at 2, Exhibit 6 attached. Additionally, rather than simply focusing on the area between the Mining Company bridge and the railroad causeway bridge, or points south, DWR recommends a series of points to the north of where the discharges occur in order to ascertain the impact of the discharges throughout Bear River Bay. *Id.* at 4. The reason for this recommendation is because of the changing conditions and the wind tides that push salt water into the Bay. *Id.* at 1. Further, if there are other discharge points associated with the Mining Company Proposal outside of where the Company currently discharges their bitterns, those areas must also be evaluated for potential impacts.

The Corps should sample sediments in and near the vicinity of the discharges for mercury, methyl mercury, selenium, and other potential contaminants to the water. The Corps should evaluate the potential uptake, bioaccumulation, and biomagnifications of the above-mentioned metals and other contaminants in macroinvertebrates and in birds and other species.

The Corps should evaluate the effect of dry evaporation reservoirs as an area source of surface and ground water contamination.

The Corps should evaluate the effect of the introduction of extremely large amounts of fill (more than a million cubic yards, to create and maintain additional dikes) on water quality. In addition, the Corps should evaluate the potential for the fill, used to create and maintain the dikes, to introduce into the Lake, chemicals, biological agents, and other contaminants detrimental to the health of birds and other species.

Since water of high quality is necessary to keep the Lake's wetlands functioning properly and the processes working to ensure an ample safe food supply for the millions of birds that depend on it, the Corps must analyze the impact of the Mining Company's proposed expansion on the supply of the high quality water needed to keep the wetlands functioning properly and in a sustainable manner.

Further, since clean water is necessary to protect human recreation in and around the Lake, the Corps must analyze the impact of the proposed expansion on the continued availability of recreation opportunities on the Lake.

The Corps must consider the following factors in addressing the cumulative and individual impacts of the proposed project on water quality:

- Utah's narrative water quality standard;
- The achievement and protection of all designated beneficial uses of Great Salt Lake;
- Significant mercury and selenium contamination of the lake and the potential of the project to exacerbate this contamination;
- Expert concerns raised by FWS and DWR;
- Reduction in open water in Bear River Bay and the resulting concentration of nutrients from sewage and irrigation sources;
- Interruption of water flows caused by diking;
- Impacts of fill material directly and indirectly;
- Impacts of changes to substrate;
- Impacts of evaporation of huge quantities of water;
- Effects of pond flushing, including in the Bear River Bay area where the introduction of more salt would change salinity, and possibly change the size and length of the salt tongue and alter other ecosystem values, thereby impacting fisheries and other wildlife, as well as other aquatic species;
- The use of existing and proposed pump stations, fuels, trucks and other vehicles, gravity flow trenches, causeways and other infrastructure;
- Potential catastrophic pollution of lake waters by an earth-quake-induced oil and gas spill or other contamination;
- Cumulative impact of drought, including drought induced by global warming;
- Cumulative impact of reasonably foreseeable population and development increases and increased water demand, run off and nutrient discharges;

- Cumulative impact of all other current and proposed mineral salts extraction and other extractive industries; and,
- Cumulative loss of wetlands and other ecosystem components that help to maintain or improve water quality.

The Corps must also quantify, qualify and fully understand the impacts to water quality stemming from existing mineral salts extraction activity and analyze these impacts cumulatively, including water use, concentration of pollutants in evaporation reservoirs, and the flushing of evaporation reservoirs. The Corps must know the volume and quality of all water being used for all existing operations affecting the lake, as well as for the proposed expansion and consider the impacts of this water use on non-impounded areas of the Lake. Construction of the dikes will disturb lake bed sediments and stir up contaminants. In addition, the use of motors, motorized vehicles and other equipment as a result of the development could adversely impact water quality.

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company planned project on water quality, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. The Corps must analyze thoroughly the impact of low Lake levels, due to the Mining Company's consumptive use of the waters of the Lake, on water quality and improved predator access (including people) to the Lake's wildlife resources, especially those on Gunnison Island. The Corps should evaluate the effects of eliminating such a large percentage of the shoreline habitat on the western side of Gunnison Bay on snowy plovers and other species, including the actual or potential loss or degradation of freshwater springs in those areas.

D. Significant Degradation of Lake Ecosystem

The Mining Company's proposal for expansion, if granted, would result in significant loss of more than 80,000 surface acres of waters of the United States, as well as a huge volume of water. This project will have significant adverse effects on wildlife, special aquatic sites, life stages of aquatic life, wildlife habitat ecosystem diversity, productivity and stability, recreation, aesthetics, cultural resources, and other values critical to the people of Utah and the United States. Both individually and cumulatively, this project would result in the loss of too many acres of the waters of the United States and thereby jeopardizes the health of the Lake's remaining ecosystem and the survivability of the organisms and wildlife that depend on this ecosystem. Such a loss cannot reasonably be mitigated, especially given the types of special aquatic sites at issue and the poor track record of mitigation efforts around the Lake. Hence, the Corps must, at the minimum, consider individually and cumulatively, the impacts of the Mining Company's proposed and existing projects on all the values detailed in § 230.10(c).

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on ecosystem degradation, the Corps must base its

analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake.

E. Navigation, Public Recreation, and the Public Interest

The Corps must consider the following likely impacts from the planned project, on navigation, public recreation, the public interest and aesthetics:

- The discharge of dredge or fill material will further limit navigation of and public access to the shoreline, as well as previously open waters of Great Salt Lake. This will in turn limit the ability of the public to recreate freely on the Lake and will concentrate the public's use in a smaller nonviable area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- The 8,000 acre expansion proposal will, at times, cut off water flows and access to and from Bear River Bay. This will severely limit the ability of the public to recreate freely on the Lake and will concentrate public use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- To the extent that discharge of dredge or fill material will adversely affect water birds and wildlife, as well as scenic values, public recreation that depends upon these values will be adversely impacted;
- Impacts to navigation and public access will be exacerbated by low water as Lake volume decreases and the shoreline shrinks;
- Diking will further impede navigation and access from one part of the bay to the other – access which is already significantly impaired by existing diking and conversion of a relatively intact ecosystem into evaporation reservoirs;
- Transforming the west side of the Lake into a more significant industrial zone will further result in a loss of quiet, solitude, scenic beauty and unparalleled remoteness. Similar impacts will be felt on the less remote, but more heavily used Bear River Bay and Willard Spur area of the Lake; and
- The proposed project will modify the natural setting and sounds of Great Salt Lake, making it an industrialized site. Thus, the impact of the proposed expansion on the aquatic beauty and aesthetics of Great Salt Lake is extensive. Cumulatively, this impact is even more significant, as a significant portion of the Lake is currently developed.

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on navigation, public recreation, and the public

interest, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. The Corps should evaluate the effects of the withdrawal of the additional 353,000 acre-feet of water from the Lake needed to support this project, in addition to the 156,000 acre-feet of water that the currently has rights for, on the Lake's: (1) recreational value to the public; (2) aesthetic value to the public; (3) general economic value to Box Elder, Cache, Weber, and Davies Counties, and State of Utah, in particular, and to the United States, in general.

F. Aquatic Environment

With regard to the aquatic environment, the Corps must consider the significant cumulative adverse impacts that the proposed project will have on special aquatic sites and ecosystem values under 40 C.F.R. § 230.10(d). To that end, the Corps must make factual findings that quantify and qualify the short and long-term effects of the planned project on “the physical, chemical, and biological components of the aquatic environment.” 40 C.F.R. § 230.11.

The Corps must also determine the cumulative effects of past, present and future discharges of dredged or fill material. As indicated by the relevant regulations, “the cumulative effect of numerous such piecemeal changes can result in major impairment of the water resources and interfere with the productivity and quality of existing aquatic ecosystems.” 40 C.F.R. § 230.11(g)(1). For that reason, the Corps must determine the secondary effect on the aquatic ecosystem that will result from the Mining Company's Proposal.

For instance, the discharge of dredged or fill material will further concentrate human usage in non-developed areas, thereby impacting wildlife habitat in these areas. Gunnison Island, located close to the 25,000 acre expansion proposal, hosts one of the largest breeding colonies for American white pelicans in North America. Gunnison Island is now the only nesting location for American White Pelicans in Utah. Currently, Great Salt Lake Mineral dikes come within approximately four and one half miles of Gunnison Island. The expansion proposal would place dikes as close as within two and one half miles of the island.

Dike construction and maintenance will bring an added anthropogenic influence to the Bay including a dike additional miles closer to the island. These dikes will provide a road access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison Island during low Lake periods. It is necessary to understand what steps are required to ensure that the American white pelicans will continue to nest at Gunnison Island – yet no analysis has been undertaken. For example, particularly at lower Lake levels, predators could take advantage of this diking to access breeding sites such as Gunnison Island.

Dikes would also increase potential human disturbances such as noise, lighting, and land vibrations. In 1963 during a low Lake event, you could wade to the island from the west side according to DWR reports of human disturbance before the island was protected. During this human intrusion into the colony, many young pelicans were killed. With the close proximity to Gunnison Island, a concentration pond dike may become a roost site for flightless fledgling

pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespass. A buffer around Gunnison Island designed to protect this area from boats and airplanes and is not sufficient to safeguard the birds from disturbances brought on by permanent structures.

The proposed expansion has the potential to impact adversely other bird life. There has been no analysis of the impact of development on the eared grebe and other birds that depend upon the North Arm during periods of flood, estimated by the Division to be approximately 10% of the time. In high precipitation years, as fresh water decreases salinity in the North and South Arms, brine shrimp production in the North Arm will exceed that in the South Arm, and birds such as the eared grebe, Wilson's phalaropes and red-necked phalaropes will necessarily rely on the ecosystem of the North Arm. The same may also be true for waterfowl. By the same token, diking and conversion to evaporation ponds will be in place for several decades. Within that time frame, the causeway could be breached or actions taken to better circulate the Lake's waters. Again, the North Arm could become even more important to birds such as the eared grebe. As the proposed 91,000 acre expansion would also dike off about miles of shoreline on the western side of Gunnison Bay, it may adversely impact birds such as the snowy plover. The potential impacts to bird life and other flora and fauna in this area should be fully explored.

The Corps must analyze the extent to which the planned Mining Company project will impact the substrate of Lake, its wetlands and mudflats and the degree to which changes in substrate will result in the loss of the environmental characteristics and values described in 40 C.F.R. § 230.20(b).

The Corps must evaluate the "extent and persistence" of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem. More specifically, the Corps must determine the negative impacts of the planned project on water "clarity, color, and odor," as well as a reduction in or elimination of the "suitability" of Lake waters for aquatic organisms, recreation and aesthetics. 40 C.F.R. §230.22.

The Corps must analyze the impact of the planned project on "[l]ocation, structure, and dynamics of aquatic communities; shoreline and substrate erosion and deposition rates; the deposition of suspended particulates; the rate and extent of mixing of dissolved and suspended components of the water body; and water stratification." 40 C.F.R. § 230.23(b).

The Corps must analyze the impact of the proposed project on changes in salinity patterns, erosion or sedimentation rates, water temperature extremes, and nutrient and dissolved oxygen balance of the aquatic ecosystem. 40 C.F.R. § 230.24(b);

The Corps must analyze the impact of the proposed project, specifically diking, on salinity gradients, 40 C.F.R. § 230.25, and Corps must thoroughly investigate all likely impacts of the proposed Mining Company project on physical and chemical characteristics of the Lake.

The Corps must thoroughly investigate all likely impacts of the proposed Mining Company project on biological characteristics of the aquatic ecosystem, and must specifically address:

- Threatened and endangered species. § 230.30;
- Aquatic organisms in the food web. § 230.31; and,
- Other wildlife. § 230.32.

One specific area of concern is the vast amounts of Potassium that will be removed from the Lake. For that reason, the Corps must analyze what long-term impacts the removal of Potassium could have on Lake algae. Algae is already extensively used by brine shrimp and impacts to that organism would affect both the Lake's brine shrimp industry as well as the birds that are heavily dependent on brine shrimp.

Because the proposed project would result in about 80,000 acres of permanent adverse impacts to waters of the United States, the Corps must assess not just the impact of Mining Company's new consumptive activities—those associated with the proposed project—but also the individual, cumulative, and indirect impacts of the Mining Company's planned project-related consumptive activities, Mining Company's existing consumptive activities, as well as those of other industrial operators, and other reasonably foreseeable activities, on the Lake's aquatic community.

The Corps must analyze the impact of the various activities that will result from the planned project on the Lake's aquatic community, including:

- Improvements to the Behrens Trench—excavating the trench wider and deeper or laying pipes in the existing trench;
- Purchasing and transporting SOP from the U.S. Magnesium ponds;
- Increasing SOP production by constructing an SOP processing plant within the U.S. Magnesium pond area;
- Other activities to support the new expansion.

The Mining Company Proposal is intended to turn more than a substantial quantity of surface acres of relatively intact ecosystem of the Lake into essentially sterile evaporation reservoirs. According to the Corps, "The proposed project would result in approximately 80,000 acres of permanent adverse impacts to waters [of the United States]." Public Notice at 3. This change will be permanent for the foreseeable future and impacts from the evaporation reservoirs may endure forever. Moreover, as many of these reservoirs will concentrate salts for up to three years, the waters in the reservoirs will change over time, becoming more and more inhospitable

to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part of Great Salt Lake on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds.

Mineral salts extraction changes the chemistry of the waters of Great Salt Lake, at the very least, on a local level. These changes – including the effects of increased concentrations of some minerals and decreased concentrations of others – and the impacts these changes may have on the biota of the Lake have never been analyzed. Changes to water chemistry, both due to current mineral extraction and due to the impacts of increased extraction should be addressed, particularly as these changes impact algae, brine shrimp and water birds. In addition, more salts are extracted from the Lake every year than are added by river inflows; therefore, the long-term extraction of minerals – which is likely to change the chemistry and ultimately the characters of the Lake – should be evaluated.

The expansion proposal will greatly increase the ongoing shift of minerals between Gunnison Bay and Bear River Bay, and also possibly Gilbert Bay. A full understanding of these possible shifts in minerals and their impacts to the various bays should be developed, including whether the movement of water and minerals could concentrate mercury or selenium in the receiving waters or in the waters from which the minerals and water are being removed. These effects should be quantified and analyzed.

The Army Corps should consider the impacts of global climate change in its evaluation of this project. In addition to ordinary drought events, long-term climate change is expected to result in smaller snowpacks in the Wasatch Mountains and reduce flows of fresh water to the lake, potentially lowering water levels even below the historic minimum.

The proposed expansion would result in the diking and conversion of a total 30,000 acres of Bear River Bay into essentially sterile evaporation ponds. Diking and conversion impacts water quality because it will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. Indeed, the 8,000 acre expansion proposal appears to essentially cut off water flows and access to and from Bear River Bay, particularly when water levels are low, as they currently are. Similarly, flows between Bear River Bay and Willard Spur, which are critical to ecosystem function, will also be disrupted. In addition, as the Division of Wildlife Resources made plain, this area is important at low water levels because it creates a natural lake within the bay. IMC Kalium/DWR Memo, August 28, 1998 at 3. The effects of this expanded development on water quality, together with the effects of current development, will be significant. Specifically, circulation of fresh water, so critical to the Great Salt Lake ecosystem, will be impeded, especially during low water years. Since the open water of Willard Spur is an extremely valuable area for water birds the potential adverse impacts are certain and must be fully explored, based on flow patterns during low as well as high water years.

“Suspended particulates in the aquatic ecosystem consist of fine-grained mineral particles . . . and organic particles.” 40 C.F.R. § 230.21. The discharge of dredged or fill material can result in elevated levels of suspended particulates, at the expense of ecosystem health. 40 C.F.R.

§ 230.21(b). Therefore, in analyzing the Mining Company Proposal, the Army Corps must evaluate the “extent and persistence” of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem – including the increase in suspended particulates that:

- Will exist in the evaporation ponds;
- Results from the introduction of fill material;
- Is caused by flushing of ponds;
- Is of a consequence of pumping;
- Stems from obstruction of flows; and,
- Otherwise is caused by the planned project.

The Corps must also consider both the past and the future cumulative impacts of the proposed project. These impacts include the past half-century of mineral extraction activity in both the North Arm and Bear River Bay as well as potential future impacts related to urbanization in the counties adjacent to Bear River Bay. Additionally, the Corps should consider possible future impacts on Bear River Bay relative to the Bear River. Such impacts include future nutrient loading in the Bay from the River, as well as the construction of the Bear River Dam.

G. Cultural Resources

The area of the Lake on which the Mining Company proposes to expand its operations is covered with rich archaeological sites. Specifically, the area north of the existing Mining Company reservoirs contains archaeological sites on which eleven human burials were recovered in 2001. This area has yielded remains dating back to the Late Prehistoric period (post-A.D. 1300). The age of the recovered remains is directly related to the living tribes of northern Utah—specifically the Northwestern Band of the Shoshone Nation. Given that any ground disturbance in the areas bordering the existing Mining Company reservoirs in Bear River Bay will likely encounter abundant cultural resources significant for their scientific value and significant to the heritage and religious values of living Native American peoples, the Corps must make a concerted effort to seek input from the State’s Native American peoples in order to make certain that the EIS includes adequate analysis of the impact of the proposed projects on cultural resources. So that the Terms of Reference (TORs) for the EIS include and adequately cover issues important and relevant to Native Americans and their cultural resources, their full and effective participation in the scoping process is critical.

The Corps must also analyze the impact of the proposed GSLM expansion on cultural resources, especially on the east side of the Lake, considered one of the richest archaeological landscapes in Utah. The Corps should note that increased access to the archaeological areas of Clyman Bay caused by the proposed expansion, may increase human use and significantly and adversely impact cultural resources.

The Corps should evaluate the effects of eliminating such a significant percentage of the shoreline, especially on the eastside of the Lake, on cultural resources. The areas immediately east and northeast of the existing Mining Company reservoirs are rich in cultural artifacts and may suffer unnecessary exposure to human exploitation as a result of shoreline loss

H. Extreme vs. Average Conditions

Because the surface area, volume and salinity of Great Salt Lake vary considerably, these variable conditions have significant impact on wildlife and recreation. Because of these variations, wildlife, including birds, and wildlife habitat are more vulnerable to, and their viability and health more influenced by, extreme rather than by average conditions. Therefore, the Army Corps must base its analysis of the GSL Minerals Proposal **not** on average conditions, regardless of the averaging period, but on some measure of extreme conditions.

For example, predator access is increased in low water years, the importance of the North Arm to eared grebes is increased in high water years and impediments to water flows and recreation are increased in low water years. Therefore, the only way that the Army Corps can access the impacts of the planned project is to consider its impacts in high water and in low water years. At a minimum, the Army Corps must undertake all its analysis and decisionmaking relative to the proposed project based on **each** of water levels representing the following elevations: 4211.85 feet (representing two historic periods of high water), 4191.3 feet (representing two historic periods of low water), and the mean average elevation of 4202 feet above sea level.¹⁰

I. Air Quality

The Corps must evaluate whether the air quality around the proposed project areas will likely be adversely impacted with the approval of the application. These air quality impacts will be present both during construction and on an ongoing basis due to the drawdown of the Lake levels that result from this expansion. During the course of constructing this project, large volumes of sediment will be moved around the shore of the lake with significant impacts on air quality, including areas that are not currently in compliance with the National Ambient Air Quality Standards (NAAQS) for fine particulate matter and ground level ozone. The Corps should evaluate the effect of dry evaporation reservoirs as an area source of air pollutants, and the potential effect of those emissions on attainment of NAAQS in Salt Lake, Davis, Weber, Box Elder, and Cache Counties. The Corps should also evaluate whether expanded operations will

¹⁰ See: <http://ut.water.usgs.gov/gsllevgraphs/GSL.WSAlt.Aug07.pdf>.

increase other sources of air pollution at or associated with the facility, and whether that would affect the region's ability to attain and maintain the NAAQS.

The Corps must evaluate the likelihood that dust from the exposed lakebed would have negative health impacts to humans and wildlife. The Utah Division of Air Quality conducted a 2 year study in 2005 and 2006 of wind-blown dust particles from the exposed Great Salt Lake shoreline. After six consecutive years of drought left nearly 70,000 acres of exposed shoreline, Dr. Dianne Nielson, Executive Director of UDEQ, stated "there is a lot of chemistry in the lake that we don't have a good handle on."¹¹

The issue of blowing dust from a dry saline lakebed was the subject of a 2008 article in *High Country News* about the Salton Sea, in which impacts to humans, wildlife, and agriculture were considered if the Salton Sea was allowed to dry up without treatment.¹² In addition to the significant loss of wetlands along the Pacific Flyway used by millions of birds, a study conducted by the Pacific Institute concluded that if the Salton Sea were allowed to dry without treatment, it would generate 17 tons of unhealthy dust a day and that winds pebbled with salty sand would sicken asthmatics, children and the elderly.

A further study of like conditions noted that increased exposure of the lakebed of the Aral Sea, due to depletion of its tributaries, has caused major dust events that have had a significant, negative impact on agriculture, domestic animals and humans.¹³ Given these studies and the acknowledgement that the dust from the lakebed contains a toxic mix of pollutants, it is imperative that an analysis be performed on the effects of a further, artificial drawdown of the lake level in the North Arm. This is especially important given the fact that Weber County as a non-compliance area for air quality.

Finally, USGS studies have shown high levels of contaminants in the sediment of the lake. See *Reconstructing Historical Changes in the Environmental Health of Watershed by Using Sediment Cores from Lakes and Reservoirs in Salt Lake Valley, Utah* (December 2000). As water levels are reduced and lake bed exposed and dried, contaminants that were once contained under water will become airborne and adversely impact the air quality.

¹¹ Utah Division of Environmental Quality, *Air Study Give Insight of Dust from Great Salt Lake*, DEQ Newsletter (May 2006), available at:

<http://www.deq.utah.gov/Newsletter/2006/May/AirStudy.htm> (please note: if the reader experiences difficulty obtaining this document, FRIENDS will provide either a hard or an electronic copy of this article).

¹² See *Terry Greene Sterling*, *The People of the Sea: California's Salton Sea could dry up and die, or be fixed and developed. Either way, its renegades, recluses, ruffians and retirees will lose*, *HIGH COUNTRY NEWS*, March 3, 2008. Exhibit 7, attached.

¹³ See Philip Micklin, *The Aral Sea Disaster*, *Annual Review of Earth Planet Science* 35:47-72 (2007) (finding that the population downwind from dust/salt storms of the dry lakebed have been negatively impacted). Exhibit 8, attached.

J. Seismic Concerns

Five submerged segments of the Great Salt Lake fault system have generated magnitude 6.8 - 7.2 earthquakes in the past and will do so in the future. At least four of these, the Rozelle, Promontory, Fremont, and Carrington segments, directly threaten the proposed industrial expansion to the northwest arm of the lake. Ground-shaking accelerations as great as 1.0 g and tsunami waves as high as three to four meters generated by sublacustrine fault ruptures could cause catastrophic oil and gas spills into the lake from pumping facilities, pipelines, and supply trucks supporting both proposed and existing evaporation ponds. Such spills could reasonably be expected to destroy bird, brine shrimp, and brine fly habitats lake-wide in a single event. No consideration of this potential disaster scenario has been addressed to date.

K. Conservation Pool

The Corps should consider whether a Conservation Pool should be implemented in recognition of the effects of Mining Company's Proposal on Lake levels, as those levels relate to navigation, the public interest and the Public Trust Doctrine.

L. Wildlife

The Corps must analyze how impacts to the Lake's ecosystem including changes in Lake elevations due to water usage for the evaporation ponds, will affect the Lake's wildlife, especially birds. The Corps must also analyze how impacts to other key ecosystems, besides the Lake, will affect most of the Lake's wildlife, especially the birds. Finally, the Corps should evaluate the loss of submerged aquatic vegetation as a source of food and as habitat for resident and migratory birds.

M. General

The following general comments are offered for consideration:

- The Corps must take a species-specific approach to habitat availability and loss.
- The Corps must base its analysis on current maps—those that depict all existing dike structures throughout the Lake—of the Lake.
- The Corps must base its analysis on up-to-date information of the existing condition of the Lake.
- The Corps' cumulative analysis must be based a pre-determined geographical area.
- The Corps must determine why the Mining Company's stated purpose is so narrowly and unreasonably defined. Why can't Mining Company seek to maintain its economic

viability and market share through means other than using existing GSL resources? Why can't Mining Company use traditional business approaches to economic viability, such as technological innovation?

- The Corps must determine how the royalty monies paid by companies exploiting the Lake's resources is utilized by the State of Utah. Is any of the money allocated to the regular maintenance of the Lake's geology? If there is a statutory mandate, is the State of Utah meeting its obligations under that mandate?
- The Corps must determine whether the State of Utah has developed and adopted a regular program for auditing the Lake's resources and designing systems for sustainable management of those resources.
- The Corps should determine the impact of invasive *phragmites australis* on the Lake's hydrology, flow and navigational access? This determination should include:
 - What is the water consumption of phragmites?
 - What impact does phragmite expansion have on the Lake's ecosystem?
 - What is the most effective way to rid the Lake of phragmites?
- The Corps should thoroughly address the following:
 - Why is deepening of existing reservoirs not a viable alternative to expansion?
 - Why is the Corps not considering all associated permits? For example, why are associated air quality permits not being considered?
 - What water quality permits does the Mining Company currently have?
 - What happens to the flushing of waste material if the lake-bed is dry?
- Analysis of Lake levels and resulting impacts must consider the potential effects of climate change Lake levels, especially if the combined effect of climate change and additional evaporation will further reduce Lake levels.
- The analysis should address the cumulative habitat loss from the proposed, existing, and reasonably foreseeable future lake development, including the cumulative impacts of all diking and other changes to the Lake's hydrology, flow, and navigational access.
- The Corps should evaluate the habitat and other effects of completely surrounding Dolphin Island with solar evaporation reservoirs.
- In evaluating the feasibility of the Mining Company proposal for expansion, an important question must be asked: Whose *sustainability* should matter? That of the Great Salt Lake or that of the Great Salt Lake Minerals Corporation? In evaluating

the proposal, the appropriate foundation for analysis is the sustainability of the waters of the United States (a public resource) and not that of the Mining Company (a private company).

- While Mining Company is pushing “job creation” as an important reason for why it should be granted the permit to expand, it is important to recognize that the more appropriate measure of the value of business/industrial activities that involve external costs (e.g., pollution) is *net economic impact*, not job creation. Hence, what is the net economic impact of the proposed expansion on the State of Utah? Will the expansion result in the people of Utah subsidizing (through increased pollution—water, air and land, and overexploitation (i.e., non-sustainable exploitation) of their environmental resources) global consumers of potassium sulfate?
- What is the economic value of the Mining Company’s existing operations, as well as the potential value of its proposed expansion, on the economy of Utah?
- The Corps’ analysis must include a thorough and independent consideration of all less damaging practicable alternatives to the proposed project, including those that do not involve discharge into the waters of the United States and do not involve special aquatic sites.
- The Corps’ analysis must consider the possibility that the Mining Company will not remain economically viable either because of the lack of Lake water, the diminution of the limited amount of potassium in Lake waters below a viable threshold, or unaccounted for changes in the economic structure of the company. Because such an event could occur, the Corps’ environmental analysis must account for such a possibility as part of its analysis and must put forth a contingency that addresses how reclamation of the evaporation reservoirs and other aspects of Mining Company’s operations would occur.

V. Conclusion

Thank you for your full consideration of the critical points we raise in these comments. Please do not hesitate to contact me with any questions or concerns regarding the issues we raise herein. Moreover, if you have any difficulty gaining access to any of the materials we cite, please let me know and I will provide them for you. Also, we will send you, via U.S. Mail, a hard copy of these comments with all Exhibits.

Because FRIENDS’ comments related to Utah’s Department of Water Quality’s water quality certification of Mining Company’s Proposal under § 401 of the Clean Water Act supplements the scoping comments presented here, Friends’ includes those comments, attached as Exhibit 9, by reference.

Thank you for all you do to protect the waters of the United States and the aquatic communities, recreation and aesthetic values that depend upon them. Please keep us informed as to any further opportunity for public participation relative to the Mining Company Proposal and please send or email us all relevant documents and other materials. We also request that public hearings be held at every opportunity while you consider the planned project and that we receive notice of these hearings.

Yours,

A handwritten signature in black ink, appearing to read "Rob Dubuc". The signature is fluid and cursive, with a large initial "R" and "D".

Rob Dubuc

ATTORNEY FOR FRIENDS