October 16, 2025

By Email and Certified Mail - Return Receipt Requested

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Re: Notice of Intent to Sue over Violations of the Endangered Species Act in Authorization of the St. Cloud Mining Ash Meadows Mine Plan of Operations Modification

This letter serves as the Center for Biological Diversity (the "Center") and the Amargosa Conservancy's sixty-day notice of intent to sue the Bureau of Land Management ("BLM") over violations of the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531–1544. Specifically, in violation of Section 7(a)(2) of the ESA and its implementing regulations, the BLM has approved the Ash Meadows Mine Plan of Operations Modification ("the Project") without consulting with the U.S. Fish and Wildlife Service ("UFWS") over activities which may affect the Amargosa niterwort (*Nitrophila mohavensis*), the Ash Meadows gumplant (*Grindelia fraxino-pratensis*), and the spring-loving centaury (*Zeltnera namophila*) (collectively, the "Listed Plants").

The Center is a national nonprofit conservation organization with over 1.7 million members and supporters throughout the United States, including over 214,800 in California and more than 14,200 in Nevada. The Center's Great Basin program focuses on the protection of wildlife and

endangered species, the preservation of public lands, and the sustainability of groundwater resources. Because of this mission, the Center has longstanding interests in protecting groundwater-dependent species and ecosystems of the Amargosa River Basin.

The Amargosa Conservancy is a 501(c)3 California and Nevada non-profit organization, headquartered in Shoshone, California along the Amargosa River. For 21 years, the Conservancy has fought for the waters, wildlands, wildlife, and communities of the Amargosa River Basin. With over one thousand members and supporters from across southern California, southern Nevada, and beyond, the Conservancy advocates for water and biodiversity, conducts habitat monitoring and restoration, and engages local communities to advance conservation priorities. It has been the leader of the campaign to save Ash Meadows and Amargosa Valley from harmful mining.

On July 10, 2025, the BLM approved a Plan of Operations ("POO") modification for the St. Cloud Mining Ash Meadows Mine exploration project ("Project"), a proposal to drill 43 exploratory drill holes adjacent to an existing but dormant zeolite mining operation near Death Valley Junction, California. The Project site is located near the state line with Nevada, south of Stateline Road, approximately two miles south of Ash Meadows National Wildlife Refuge. The Project would include drilling up to 200 feet, with an expectation of encountering groundwater at around 100 feet. The Project would include heavy traffic into the site, including trucks, drill rigs, and heavy equipment.

In comments submitted on May 3, 2024, and in a subsequent appeal to the BLM California State Director on August 6, 2025, the Center and allies urged the BLM to undertake Section 7 consultation under the Endangered Species Act. The Project access road directly crosses critical habitat for the federally endangered Amargosa niterwort, with known occurrences within 0.5 miles of the access road. And the Project will be tapping into a groundwater aquifer shared by groundwater-dependent federally listed plants including the niterwort, and the Ash Meadows gumplant and the spring-loving centaury, which occur 1.25 miles north of the Project site at Grapevine Spring in Nevada.

BLM approved the Project without undertaking consultation with the USFWS although the best available science establishes that the project "may affect" species listed under the Endangered Species Act. This letter serves as notice that, unless BLM initiates formal consultation with the USFWS within sixty (60) days and suspends all project activities that may affect listed species or critical habitat during the interim, the Center and the Amargosa Conservancy plan to file a lawsuit in federal district court.

I. Requirements of the ESA

The Endangered Species Act is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[1] The ESA requires all federal agencies to "seek to conserve endangered species and threatened species and . . . utilize their authorities in furtherance of the purposes of" the ESA.[2] The ESA's purposes are to provide "a program for the conservation of . . . endangered species and threatened species" and "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."[3] Congress enacted the ESA "to halt and reverse the trend towards species extinction, whatever the cost."[4] Thus, the ESA requires federal agencies "to afford first priority to . . . saving endangered species."[5]

Section 7(a)(2) of the ESA requires each federal agency, "in consultation with and the assistance of" the USFWS, to "insure that any action" it "authoriz[es], fund[s], or carrie[s] out" "is not likely to jeopardize the continued existence of any endangered species . . . or result in the destruction or adverse modification of [designated critical] habitat."[6] This language imposes both substantive and procedural duties on all federal agencies. Procedurally, "[e]ach agency contemplating an action likely to affect a listed species must first confer with . . . the [USFWS] . . . before taking the action" to ensure that the proposed action will not jeopardize and endangered species or adversely modify critical habitat.[7] Substantively, an agency must avoid any action that jeopardizes an endangered species or adversely modifies critical habitat.[8]

"[T]he strict substantive provisions of the ESA justify more stringent enforcement of its procedural requirements, because the procedural requirements are designed to ensure compliance with the substantive provisions."[9] If an action is allowed to proceed without compliance with those procedural requirements, "there can be no assurance that a violation of the ESA's substantive

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[1] *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978).

[2] 16 U.S.C. § 1531(c)(1).

[3] *Id.* § 1531(b).

[4] *Tenn. Valley Auth*, 437 U.S. at 184.

[5] *Id*.

[6] 16 U.S.C. § 1536(a)(2).

[7] *Pyramid Lake Paiute Tribe of Indians v. United States Dep't of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990) (citing 16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.01(b), 402.12).

[8] *See Thomas v. Peterson*, 753 F.2d 754, 763 (9th Cir. 1985); *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 262 (9th Cir. 1984); *Sierra Club v. Marsh*, 816 F.2d 1376, 1385 (9th Cir. 1987); *Pyramid Lake Paiute Tribe*, 898 F.2d at 1414.

[9] *Thomas*, 753 F.2d at 764.

provisions will not result."[10]

An agency has a duty to consult under Section 7 of the ESA for any discretionary agency action that "may affect" a listed species or designated critical habitat.[11] The BLM may avoid the consultation requirement only if it properly and lawfully determines that its action will have "no effect" on a listed species or critical habitat.[12] The ESA's requirement to consult applies "to all actions in which there is discretionary Federal involvement or control."[13] Agency actions requiring consultation are broadly defined by regulation to mean "all activities or programs of any kind" and include "actions directly or indirectly causing modifications to the land, water, or air."[14]

During consultation, the ESA requires the agencies to use the best "scientific and commercial data available,"[15] to "evaluate[] the effects of the proposed action on the survival of [the] species and any potential destruction or adverse modification of critical habitat."[16] An agency cannot ignore available scientific information.[17] An agency's failure to consider the best available science constitutes a clear violation of the ESA.[18]

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[10] *Id*.

[11] *Turtle Island Restoration Network v. Nat'l Marine Fisheries Serv.*, 340 F.3d 969, 974 (9th Cir. 2003) (citing 16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.14, 402.01(b)).

[12] *Sw. Ctr. for Biological Diversity v. U.S. Forest Serv.*, 100 F.3d 1443, 1447-48 (9th Cir. 1996).

[13] 50 C.F.R. § 402.03.

[14] *Id.* § 402.02.

[15] 16 U.S.C. § 1536(a)(2).

[16] *See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 924 (9th Cir. 2008) (citing 16 U.S.C. § 1536(b)).

[17] *See Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988) ("FWS cannot ignore available biological information … which may indicate potential conflicts between development and the preservation of protected species. . . . To hold otherwise would eviscerate Congress' intent to 'give the benefit of the doubt to the species.'") (citations omitted); *Kern Cnty. Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th Cir. 2006) ("The best available data requirement . . . prohibits an agency from disregarding available scientific evidence that is in some way better than the evidence it relies on." (alterations and internal quotation marks omitted)).

[18] *See, e.g.*, *NRDC v. Kempthorne*, 506 F. Supp. 2d 322, 361-62 (E.D. Cal. 2007) (citing ESA's clear mandate that agencies "carefully examine the available scientific data" and "give the 'benefit of [any] doubt' to the species."); *League of Wilderness Defs. -Blue Mts. Biodiversity Project v. Allen*, 615 F.3d 1122, 1145 (9th Cir. 2010) (Because the agency failed to use the best available science, no deference is owed to the agency, as "[ba]sic flaws in reasoning and faulty science warrant no such deference") (citations omitted); *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 807 F.3d 1031, 1048 (9th Cir. 2015) ("An agency complies with the best available science standard so long as it does not ignore available studies, even if it disagrees with or discredits them.").

ESA regulations define "effects" of an action as "all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action" and that "may occur later in time" or "outside the immediate area involved in the action."[19] A consequence is "caused by the proposed action" if it would not occur "but for" the proposed action and it is reasonably certain to occur.[20] Thus, an agency must consult on every agency action that triggers the Section 7 requirement, except when a proposed action will have "no effect" on a listed species or critical habitat.

For federal actions, the consultation process commences with the action agency requesting from the USFWS a determination of whether any listed or proposed species "may be present" in the area of the proposed action.[21] If any listed or proposed species may be present, the action agency must prepare a biological assessment to determine whether the listed species may be affected by the proposed action.[22] In a biological assessment, the action agency describes the proposed action and evaluates its potential effects on listed species and their designated critical habitats.[23]

If the action agency concludes in a biological assessment that the action is not likely to adversely affect the listed species or adversely modify its critical habitat, and the USFWS concurs with that conclusion, consultation is complete.[24] If, however, the action agency does not reach that conclusion, or the USFWS declines to concur in a "not likely to adversely affect" determination, then the action agency and USFWS must engage in "formal consultation."[25] Formal consultation results in the USFWS issuing a biological opinion to determine whether the action will jeopardize the species or result in destruction or adverse modification of critical habitat.[26] The biological opinion must set forth a summary of the information on which the opinion is based, a detailed discussion of the effects of the proposed agency action on listed species, and an opinion as to whether the action, taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.[27]

The USFWS must make a jeopardy determination when it is reasonable to expect, "directly or indirectly," that the action would appreciably reduce "the likelihood of both the survival and

[19] 50 C.F.R. § 402.02.

[20] *Id.*

[21] 16 U.S.C. § 1536(c)(1).

[22] *Id.*; 50 C.F.R. § 402.12.

[23] 16 U.S.C. § 1536(c)(1); 50 C.F.R. §§ 402.02 (defining "biological assessment"), 402.12.

[24] 50 C.F.R. §§ 402.12, 402.14(b).

[25] *Id.* § 402.14.

[26] *Id.*

[27] 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.14(g)(4), (h)(1)-(3).

recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[28] Adverse modification is defined as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species."[29] If the USFWS determines that an action will jeopardize the species or adversely modify critical habitat, the agency will propose reasonable and prudent alternative actions intended to avoid such results.[30]

As explained below, because the Project "may affect" ESA-listed species, the BLM must consult with the USFWS to ensure the Project will not jeopardize these species' continued existence or adversely modify their critical habitats. The BLM may not authorize any operations that would constitute a "irreversible and irretrievable commitment of resources" until such consultation is complete.[31]

II. BLM's Approval of the Project

On April 4, 2024, the BLM released an environmental assessment for a proposed POO modification for St. Cloud Mining's Ash Meadows Mine. The BLM solicited public comment, opening up a 30-day period in which the public could participate. The Center for Biological Diversity, Amargosa Conservancy, Friends of the Amargosa Basin, Basin and Range Watch, Western Watersheds Project, Earthworks, National Parks Conservation Association, Conservation Lands Foundation, CalWild, and Sierra Club Toiyabe Chapter submitted timely comments on May 3, 2024. In that comment letter, we urged the BLM to undertake consultation with the USFWS before approving the project.[32]

On July 10, 2025, the BLM released a final environmental assessment, finding of no significant impact and a decision record approving the Project. The documentation for the Project contained no evidence of consultation with the USFWS regarding impacts to the Listed Plants. The release of the final Project authorization opened a 30 day period for filing an appeal for state director review. On August 6, 2025, the Center for Biological Diversity, Amargosa Conservancy, Friends of the Amargosa Basin, and Sierra Club Toiyabe Chapter filed an appeal for state director review. The appeal specifically noted that BLM failed to consult with USFWS regarding potential impacts from the Project on the Listed Plants.[33] The BLM State Director denied the appeal without any justification on August 25, 2025.

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[28] 50 C.F.R. § 402.02.

[29] *Id.*

[30] 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.14(g)(5).

[31] *See* 16 U.S.C. § 1536(d).

[32] Ash Meadows Mine POO Amendment Environmental Assessment coalition comments, pp. 49-50.

[33] Request for State Director Review, p. 18.

Since the BLM failed to consult with the USFWS regarding impacts of the Project to the Listed Plants, despite clear evidence that the Project may affect the Listed Plants, we are now sending this notice. This letter marks the third time we have urged the BLM to consult with USFWS regarding impacts of the Project on the Listed Plants.

III. The Listed Plants

This notice concerns three plants listed under the Endangered Species Act (the "Listed Plants"): the Amargosa niterwort (*Nitrophila mohavensis*), which is listed as endangered; the Ash Meadows gumplant (*Grindelia fraxino-pratensis*), which is listed as threatened; and the spring-loving centaury (*Zeltnera namophila*), which is listed as threatened. All three plants are also listed as "fully protected species declared to be threatened with extinction," by the Nevada Division of Forestry.[34] The Amargosa niterwort is additionally listed as endangered under the California Endangered Species Act.[35]

The Amargosa niterwort (*Nitrophila mohavensis*) is a rare plant endemic to the Amargosa River Basin, occurring in the Ash Meadows-Carson Slough area in Nevada and California, and in areas near the town of Tecopa. It occurs on lands managed by BLM Nevada, BLM California, Ash Meadows (NWR), and the California Department of Fish and Wildlife. It is federally listed as endangered, and 1,040 acres of critical habitat were designated in the Lower Carson Slough area across the state line from Ash Meadows in California.[36] It is a diminutive halophytic perennial forb with succulent clusters of vegetative growth from underground rhizomes, growing as high as 10 centimeters tall. It grows in encrusted salt flats with significant surface moisture. The access road to the Project crosses Amargosa niterwort critical habitat, and comes within 0.5 miles of the plants.

The Ash Meadows gumplant (*Grindelia fraxino-pratensis*) is a rare plant endemic to the Ash Meadows area, occurring in Ash Meadows NWR and surrounding public lands managed by BLM Nevada and BLM California. It is federally listed as threatened, and 1,968 acres of critical habitat were designated in the Ash Meadows area in Nevada and California.[37] It is an erect perennial forb in the sunflower family, growing as tall as two feet or more in seasonally inundated to mesic alkali wetlands sustained by groundwater and spring discharge. The Project site is approximately 1.25 miles from a population of Ash Meadows gumplant at Grapevine Spring on BLM land in Nevada.

[34] NRS 527.270; NAC 527.010.

[35] California Fish and Game Code 1904.

[36] 50 FR 20777, May 20, 1985.

[37] *Id.*

The spring-loving centaury (*Zeltnera namophila*) is a rare plant which was listed under the Endangered Species Act as endemic to the Amargosa River Basin.[38] It occurs in Ash Meadows NWR and on surrounding public lands managed by BLM Nevada and BLM California. It is federally listed as threatened, and 1,840 acres of critical habitat were designated in the Ash Meadows area in Nevada.[39] It is an upright glabrous annual forb growing as much as 18 inches tall in seasonally inundated to mesic alkali wetlands sustained by groundwater and spring discharge. The Project site is approximately 1.25 miles from a population of spring-loving centaury at Grapevine Spring on BLM land in Nevada.

All three of the Listed Plants were protected under the Endangered Species Act in 1985. Reasons given for the listing included the following:

> Much of Ash Meadows has been disturbed by past development and much of the habitat occupied by endemic plants and animals has been eliminated. An extensive marsh in Carson Slough was destroyed when it was mined for peat in the early 1960's; roads were built through plant habitats; many thousands of acres were cleared and plowed for crop production; and aquatic environments were eliminated or severely altered by ground water pumping, water diversion, and/or impoundment.[40]

The listing rule noted that such activities were incompatible with the conservation of the Listed Plants: "The endemic plant species are dependent upon the unique hydrological characteristics of the basin and nearly all require undisturbed soils for sustenance and propagation."[41] And yet, "Areas immediately adjacent to springs and their outflows were homesteaded and became private land when Nevada was granted statehood…" upon which "land was probably tilled, springs diverted and crops produced for local consumption." "This ranching altered most springs with heavy machinery, cleared extensive areas of riparian and marsh vegetation, decreased spring discharge by pumping surface and ground waters, and diverted water into earthen and concrete-lined ditches, and impounded waters."[42]

Destruction from mining was a contributing factor to the listing of the Listed plants as well: "Large-scale disturbance began in the early 1960's when approximately 2,000 acres of upper

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[38] Current taxonomic research may have uncovered additional populations of this plant outside of the Amargosa River Basin.

[39] *Id.*

[40] 50 FR 20778

[41] *Id.*

[42] USFWS 1990. "Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada." 130 pp., pp. 27-29.

Carson Slough was mined for peat. This removed approximately six feet of substrate and eliminated on of the largest marshes in southern Nevada."[43] This resulted in marked population declines for the Listed Plants and other species: "comparisons of early and recent collection records show that habitats of the spring-loving centaury, Ash Meadows gumplant, Ash Meadows Amargosa pupfish, Ash Meadows speckled dace, and Ash Meadows vole were eliminated by this mining."[44] The BLM identified zeolite and potassium mining claims in the Ash Meadows vicinity as a potential threat to Ash Meadows species in the listing rule.[45]

Hydrologic alteration also affected the Listed Plants: "Impoundments now inundate several hundred acres of habitats believed to support the spring-loving centaury, Ash Meadows ivesia, Ash Meadows gumplant, and Tecopa bird's beak. Many roads were built through areas now designated as critical habitat for plant species."[46] "Large herds of wild horses altered spring morphology and impacted endemic plant . . . populations."[47] In sum, "[b]ecause of all past activities, small populations of species endemic to Ash Meadows presently occupy a small portion of their historic habitat."[48]

Mining is specifically cited as a threat to the Amargosa niterwort in the listing rule. "Threats to this species in its extremely restricted habitat include off-road vehicle activity, nearby mining activity, and ground water depletion drying its habitat . . . Its extremely localized distribution makes it vulnerable to extinction by single events such as mining, off-road vehicle activity, or ground water depletion."[49] Further pertinent to the question at hand in this notice, the listing rule states, "Small-scale mining activities . . . on BLM land are activities that may require Section 7 consultation."[50]

In a 2020 5-year review of the niterwort's status, the Service determined that threats to the plant remained such that it still qualified as an endangered species.[51] The 2020 review cites a 2008 review, stating that the threats depicted therein still remain. The 2008 review cited mining as on ongoing threat: "Active mineral claims could cause direct loss of habitat, as well as indirect

[43] *Id.,* p. 28.

[44] *Id.*, p. 29.

[45] 50 FR 20777.

[46] USFWS 1990. "Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada," p. 29.

[47] *Id.*, p. 30, internal citations omitted.

[48] *Id.*

[49] 50 FR 20784

[50] *Id.*

[51] USFWS 2020, Amargosa niterwort (*Nitrophila mohavensis*) Five Year Review. 11 pp., p. 7.

impacts to the species by diverting or draining water away from habitat during mining activities."[52] "Surface mining continues to directly and indirectly threaten the Lower Carson Slough population in California. Presently there are 46 active mining operations and claims located in and around the Lower Carson Slough, covering roughly 25 percent of designated critical habitat."[53] In summary, the USFWS found that, "[g]iven the importance of the Lower Carson Slough and Crystal Reservoir populations and the threat posed by mineral claims on roughly 25 percent of the critical habitat, we conclude the magnitude of this threat is high."

In the 1985 listing rule, the USFWS found that the Ash Meadows gumplant faces numerous threats. According the USFWS, the gumplant is:

> extremely vulnerable to decreases in spring discharge that would effectively reduce the available amount of perched ground water and dry its habitat. It is found in areas where mining claims for clays are located, and in proposed corridors for road construction. Its populations are reduced by the trampling and grazing of wild and freeroaming horses. Habitat presently occupied by the species has been dramatically reduced, from that known historically, by water diversion into pipes and concrete ditches, agricultural development, and ground water depletion.[54]

In a 2008 status review, USFWS found that, "Surface mining remains a threat to the Ash Meadows gumplant."[55]

The 1985 listing rule also describes threats to the spring-loving centaury:

> Remaining populations are smaller and less numerous than those known historically, because of riparian habitat elimination attributed to ground water depletion, water diversion, spring alteration, peat mining in Carson Slough during the early 1960's, and land development for agriculture and municipal facilities. Threats to its continued existence include ground water depletion causing decreases in spring discharge, road construction through riparian areas, and trampling and overgrazing by wild and free-roaming horses.[56]

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[52] USFWS 2008, Amargosa niterwort (*Nitrophila mohavensis*) Five Year Review. 26 pp., p. 14.

[53] *Id.*, p. 15.

[54] 50 FR 20781.

[55] USFWS 2008a, Ash Meadows gumplant (*Grindelia fraxino-pratensis*) Five Year Review. 22 p., p. 19.

[56] 50 FR 20781.

In a 2009 5-year review for the spring-loving centaury, USFWS noted: "New mineral claims and subsequent mining could cause direct loss of spring-loving centaury habitat, as well as indirect impacts by diverting or draining water away from occupied habitat."[57]

The Project is located within the Amargosa North Area of Critical Environmental Concern (ACEC), which was designated through the Desert Renewable Energy and Conservation Plan's Resource Management Plan Amendment. The area was recognized for its "national significant values," including that it "serv[es] as a magnet for a diversity of plant and wildlife species, including many special status species."[58] The RMP amendment further notes that, "Carson Slough is habitat for the federally endangered Amarogsa niterwort (*Nitrophila mohavensis*) and the federally threatened Ash Meadows gumplant (*Grindelia fraxino-pratensis*)." Under the "relevance and importance criteria" in the ACEC evaluation it states, "[t]he unit contains designated critical habitat for the Amargosa niterwort, gum plant, and encompasses many populations of BLM sensitive plants."

IV. Potential for Hydrologic Impacts to Grapevine Spring and Lower Carson Slough

A. Hydrological and Biological Setting

The Amargosa River Basin is one of the most unique hydrologic provinces in North America. At the southwestern terminus of the Great Basin carbonate rock aquifer system, the springs that define the river are formed from a series of interconnected carbonate aquifers which discharge at the surface at faults.[59] Groundwater flow in the basin trends from north and east to south and west, generally, with recharge from surface and groundwater sources coming from the Spring Mountains in southern Nevada and mountains to the north and east into central Nevada.[60]

The Amargosa River Basin spans two states, Nevada and California. While it is nominally centered around the Amargosa River, the regional groundwater flow system is considerably more extensive than the Amargosa River topographic watershed. This is because precipitation (snowmelt and

[57] USFWS 2009. Spring-loving Centaury (*Zeltnera namophila*) Five Year Review. 32 pp., p. 13.

[58] Desert Renewable Energy and Conservation Plan Land Use Plan Amendment and Record of Decision. Kingston-Amargosa Subregion. https://eplanning.blm.gov/public_projects/lup/66459/133476/163150/Kingston_Amargosa_Subregion_AppB.pdf

[59] Zdon A. 2020. 2020 Amargosa State of the Basin Report. Prepared for the Amargosa Conservancy, Shoshone, CA. 197 pp. Page 3.

[60] Zdon 2020, p. 4; Halford KJ & Jackson TR. 2020. Groundwater characterization and effects of pumping in the Death Valley regional groundwater flow system, Nevada and California, with special reference to Devils Hole. U.S. Geological Survey Professional Paper 1863. 178 pp. Page 37.

rainfall) occurring in other mountains of southern and central Nevada flows underground and ultimately recharges the carbonate aquifer underlying the Amargosa River Basin.[61]

Extreme heat coupled with discontinuous but relatively stable sources of water have led to the Amargosa River Basin becoming an epicenter of biodiversity, with dozens of endemic species up and down the watershed. Ash Meadows National Wildlife Refuge is one locus of this biodiversity, with 26 species endemic to the Refuge and another dozen or so which are endemic to the watershed. The Refuge has a mixture of spring habitats, riparian habitats, mesquite bosque and cottonwood-willow gallery forests, open meadow-wetlands, and upland habitats. The springs in the Refuge collectively discharge approximately 17,000 acre-feet per year of water to support those habitats.[62]

Just downstream from Ash Meadows is Lower Carson Slough on the California/Nevada state line. Lower Carson Slough is a seasonally inundated alkali flat. Lower Carson Slough has the stronghold population of the Amargosa niterwort,[63] as well as populations of the Ash Meadows gumplant and the spring-loving centaury.[64]

Positioned to the east of Lower Carson Slough, on the north slope of the Resting Spring Range and just on the Nevada side of the border is Grapevine Spring. Grapevine Spring is perched along a small escarpment and extends approximately one half mile east to west, discharging surface water and supporting a small riparian ecosystem including wetlands and mesquite. The Ash Meadows gumplant and the spring-loving centaury have both been documented at Grapevine Spring.

Groundwater flow in carbonate rocks can be very complex. Where solution channels or fractures develop primarily in one direction, permeabilities are highly oriented in specific directions. Therefore, the groundwater movement may not be predictable simply by drawing flow lines

[61] Planert M & Williams JS. 1995. Ground Water Atlas of the United States: Segment 1, California, Nevada. U.S. Geological Survey Report 730B. 28pp. Page B10; Halford & Jackson 2020, p. 18.

[62] Mayer T, Stachan S, Prososki J, Pilson S. 2014. Ash Meadows National Wildlife Refuge Water Resource Inventory and Assessment. U.S. Fish and Wildlife Service. 47 pp.

[63] Fraga NS, Miller AL, De Groot SJ, Lee C, Lund CL, and Moore-O'Leary K. 2021. Status of the Amargosa niterwort (Amaranthaceae) in California and Nevada. California Fish and Wildlife Special CESA Issue:78-95. doi.org/10.51492/cfwj.cesasi.4.

[64] Fraga NS, Jesus M, Sale B, Perez A, Soto A. 2022. Recovery actions and conservation strategies for three federally listed plant species in the Amargosa River Basin, Inyo County, California: Amargosa niterwort (Nitrophila mohavensis; Amaranthaceae), Ash Meadows gumplant (Grindelia fraxinipratensis; Asteraceae), and spring loving centaury (Zeltnera namophila; Gentianaceae). Report prepared for California Department of Fish and Wildlife- Desert Inland Region 6. 58 pp.

perpendicular to regional groundwater surface contours.[65] Although the carbonate rock aquifer likely transmits large volumes of groundwater in the region, permeability is limited to areas of fracturing which proportionally makes up a small portion of the carbonate rock volume.[66] Therefore, despite the potential for wells to obtain large yields from the carbonate rocks, that success is dependent on intersecting those fractured zones.

Groundwater that flows to Ash Meadows and surfaces as springs and wetlands is sourced from a large area to the north and east, which reaches what's called the Gravity Fault in Amargosa Valley, bringing the water to the surface.[67] There is close hydrologic connectivity between the Ash Meadows groundwater basin and the Alkali Flat-Furnace Creek Ranch groundwater basin to the west of the Gravity Fault, with carbonate water surfacing and transmitting through the basin-fill.[68] There is also likely water contributed to the Ash Meadows groundwater basin from Pahrump Valley via Stewart Valley, though the exact amount is disputed.[69]

Groundwater which surfaces in Shoshone and Tecopa along what's now the Amargosa Wild and Scenic River has traditionally been conceived as deriving entirely from Mount Charleston and Pahrump Valley, with very little "downstream" flow along the trace of the Amargosa River from Ash Meadows.[70] However, there are data to suggest that this conceptualization of the flow system is incomplete.

Physical, geochemical, and water balance evidence has been used to infer that there is substantial flow down the trace of the Amargosa River from Ash Meadows southward to Shoshone and Tecopa.[71] In one case, monitoring wells drilled on the River south of Eagle Mountain and north of Shoshone found 35°C water 110 feet below the ground surface.[72] Isotopic tracer data found direct groundwater connections between Shoshone/Tecopa and Ash Meadows, also implying a southward flowpath and helping to explain the presence of the hot, shallow water north of

[65] Zdon 2020, p. 22.

[66] *Id.*

[67] Halford & Jackson 2020, p. 18.

[68] Halford & Jackson 2020, p. 17.

[69] Zdon 2020, p. 17.

[70] Halford & Jackson 2020, p. 17.

[71] Zdon A. 2014. 2014 State of the Basin Report, Amargosa River Basin. 90 pp.; Zdon, A., Davisson, M. L., & Love, A. H. (2015). Testing the Established Hydrogeologic Model of Source Water to the Amargosa River Basin, Inyo and San Bernardino Counties, California. *Environmental Forensics*, *16*(4), 344–355; Zdon A. 2020. 2020 Amargosa State of the Basin Report. 197 pp.; Zdon A & McNab W. 2022. Applications of Death Valley 3 Groundwater Model for Understanding Area Flow System Components, County of Inyo – Yucca Mountain.

[72] Zdon 2014, Table 2-1, well ARHS-1.

Shoshone.[73] This water, in turn, was partially composed of water sourced on Mount Charleston, which likely makes a 90 degree turn flowing toward Ash Meadows and then southward toward Eagle Mountain and Shoshone. This flowpath would likely go directly beneath the Project site (**Figure 1)**.

[73] Zdon et al. 2015, p. 354.

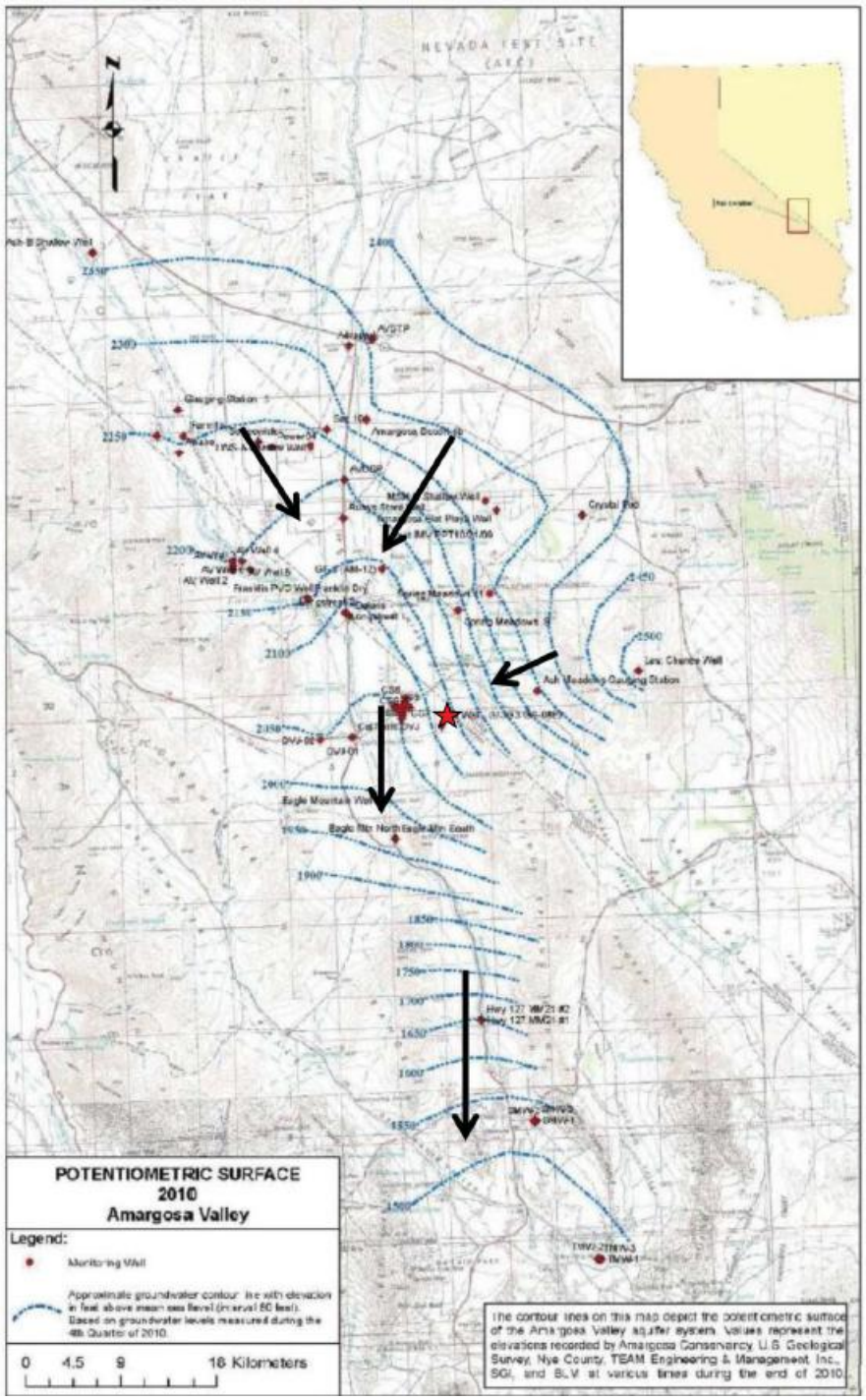

***Figure 1**: Generalized groundwater flowpath conceptualization for the Middle Amargosa Basin, adapted from Zdon et al. 2015, Figure 5. The Project site is depicted with a red star.*

Finally, simple water budget calculations find the current conceptualization of flow patterns in the area as incomplete. The California side of the Pahrump to Death Valley South Groundwater Basin is discharging far more water than it is conceptualized as receiving in interbasin flow from the Nevada of the basin. This could only be accounted for by flow coming southward from Ash

Meadows.[74] The deficit is on the order of 2,550 acre-feet per year. Further analysis has shown that DV3 (Halford and Jackson 2020) fails to account for these southward flows and paints an incomplete picture of how perturbations to the groundwater system may affect downstream and downgradient resources.[75]

Past mineral exploration operations in the Amargosa Basin have induced significant changes in groundwater and surface water flow due to encountering artesian pressure.[76] For instance, in 1967 an exploratory drill hole near Tecopa, California encountered pressurized groundwater at a depth of 360 feet, creating an artesian spring that continues to flow today. Several attempts to plug the well failed, and the new artesian flow diverted water from several naturally occurring springs, substantially reducing discharge. The site is now known as Borehole Spring.

B. Project Site Observations and Data

Grapevine Spring and the Project site are situated on the northern edge of the Resting Spring Range, a long mostly carbonate mountain chain which extends southward over 30 miles to its southern terminus at Resting Springs in Tecopa, California. More specifically, Grapevine Spring and the Project site are on the west side of an isolated unnamed hill (Hunch Benchmark, 2,829') comprised of tuffaceous and other young Tertiary sedimentary rocks (**Figure 2)**.[77]

[74] Zdon 2020, p. 29.

[75] Zdon & McNab 2022, p. 4-5.

[76] Zdon A. 2023. Proposed Ash Meadows Lithium Exploration. 12 pp.

[77] Crafford AEJ. 2008. Geologic Map of Nevada. USGS Data Series 249. https://pubs.usgs.gov/ds/2007/249/

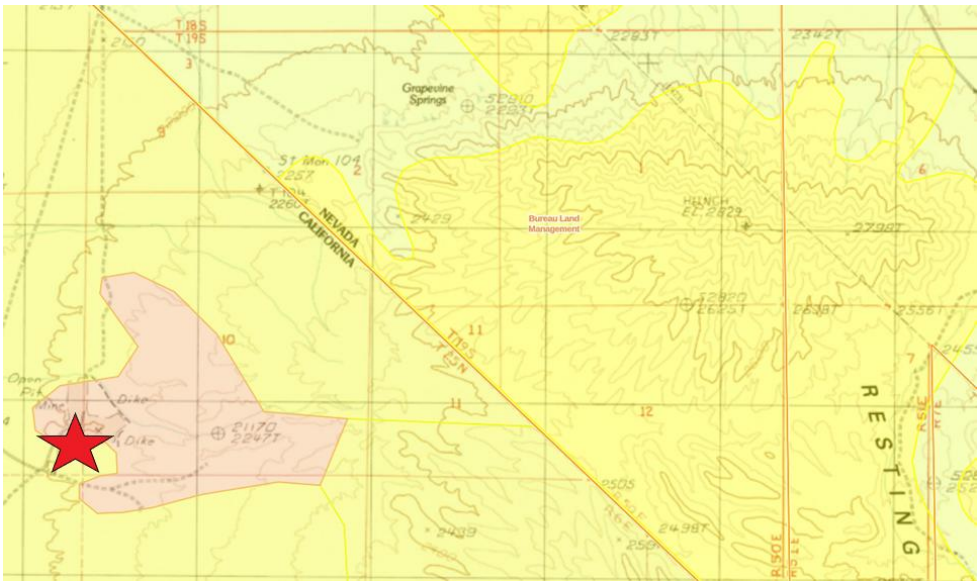

***Figure 2**: Geologic map of Project Area. Dark yellow is tuffaceous and other Young Tertiary sedimentary rocks; light yellow is mixed alluvium; brown at the project site is Tertiary nonmarine rocks - the formation being targeted by the Project. The Project site is depicted with a red star.*

The Project site elevation is roughly 2,200 feet, and is surrounded on three sides by surface expressions of groundwater (**Figure 3**).[78] Approximately 1.25 miles to the northeast from the project site, Grapevine Spring has surface discharge of groundwater along an escarpment at roughly 2,280 feet.[79] 5 miles to the north-northeast of the project site, springs in Ash Meadows National Wildlife Refuge are somewhat lower than Grapevine – for instance, Big Spring is at 2,242 feet.[80] 2 miles to the northwest of the project site, there is surface discharge of groundwater and an extensive area of evapotranspiration at Lower Carson Slough, at roughly 2,040 feet.[81] This area forms the critical habitat for the endangered Amargosa niterwort. There is an artesian well on Lower Carson Slough, called the Hog Farm Well,[82] which flows at less than 5 gallons per minute and is at an elevation of 2,017 feet.[83] Hog Farm Well is approximately 3 miles southwest of, and 200 feet below, the Project site. There is a flowing well at 36.30926, -116.36805 at 2033', which harbors spring-loving centaury. There is a flowing spring at 36.28327, -116.36878 at 2022' which produces substantial surface water including a pond. And finally there is a spring at 36.29021, -116.36878 at 2032' which is now dry due to being piped into a now-dry pond.

[78] EA App'x J - Biological Evaluation at 11.

[79] U.S.G.S. Bole Spring 7.5" Quadrangle Map.

[80] *Id.*

[81] *Id.*

[82] Referred to on the U.S.G.S. Death Valley Junction 7.5" quadrangle as "Hog Ranch."

[83] Zdon 2020, Table 1.

Table 1: Surface expression of groundwater near the Project site

Water Source	Lat/Long	Elevation	Miles from Project	Orientation
Big Spring	36.37458, -116.27432	2242	5	NNE
Grapevine Spring	36.33010, -116.30861	2280	1.25	NE
New wetland	36.31187, -116.31367	2310	0.5	E
Mine berm	36.31514, -116.32589	2200	0	-
Carson Slough	36.32836, -116.36536	2040	2	NW
Hog Farm Well	36.28748, -116.37850	2017	3.25	WSW
Flowing spring	36.28327, -116.36878	2022	3	SW
Dry spring	36.29021, -116.36878	2032	2.75	SW
Flowing well	36.30926, -116.36805	2033	2	W

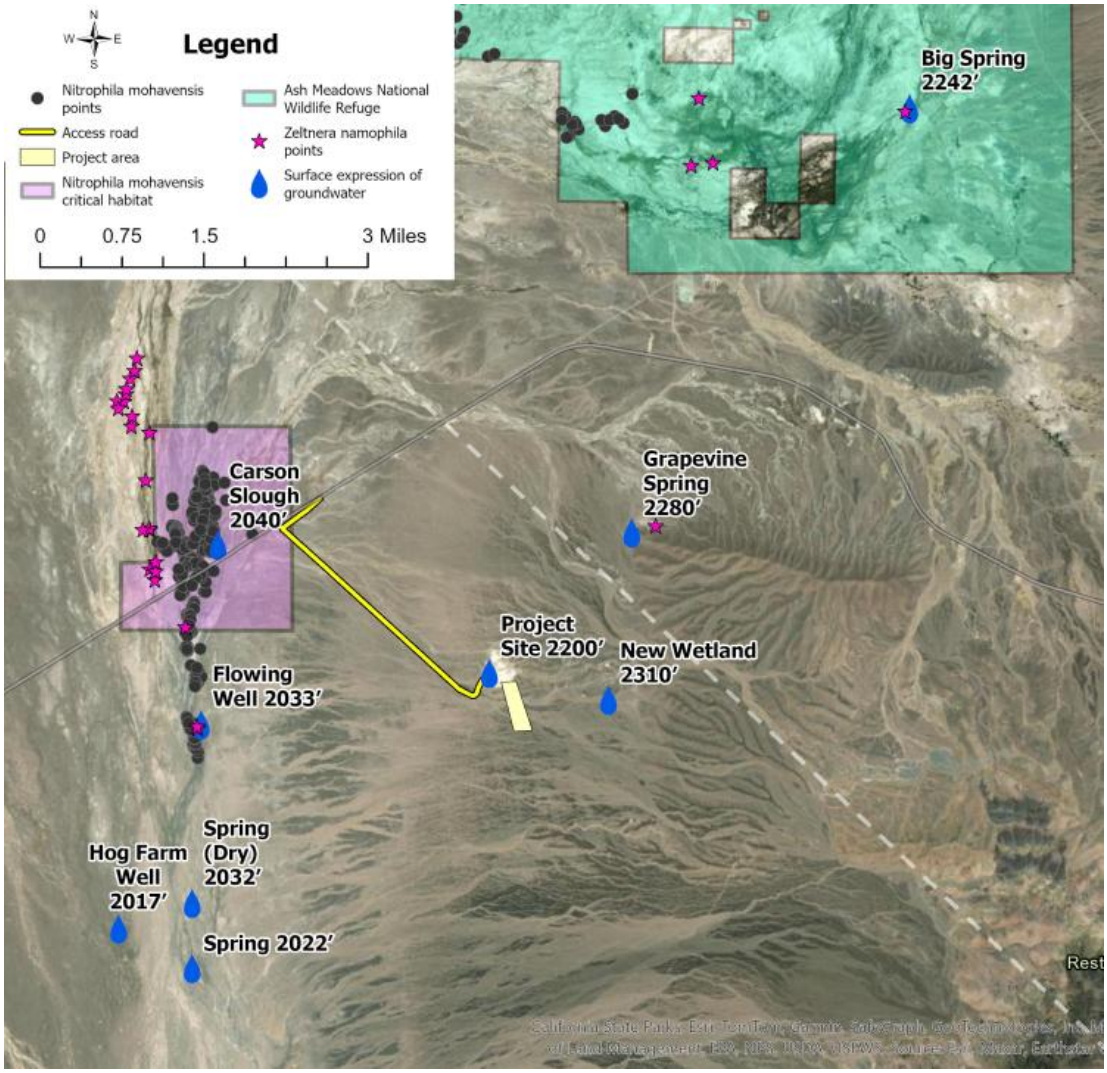

***Figure 3**: Map showing the Project site and access road, two of the Listed Plant occurrences, and key areas of groundwater discharge with their elevations.*

There is a seemingly perennial pool of water on the east side of the berm that forms the east wall of St. Cloud Mining's existing mining operation's footprint (**Figure 4**). This pool is surrounded by a robust population of tamarisk, indicating that there is shallow groundwater year-round which the tamarisk are able to access. This pool and the tamarisk have been present for decades. There are a number of reasons this pool of perennial water could be present. One includes shallow groundwater flowing down the wash from discharge above (see next paragraph), encountering resistance at the wall of the mining area and rising to the surface. Another could be that the actual water table in that area is extremely high. Either way, it is indicative that there is shallow groundwater in this system at the Project site.

Figure 4*: Standing pool of water surrounding by tamarisk on the east side of the existing zeolite mining area. Satellite photo from Google Earth taken December 2023.*

In addition, a recent field survey found a previously undocumented wetland ("new wetland") half a mile away from the project site, directly upslope at 2,310 feet (**Figure 5**). This wetland is approximately 1.25 acres in size, and includes populations of *Distichlis spicata, Juncus* sp., and *Sporobolus airoides*. In hyperarid environments such as the Death Valley region, these species are indicative of perennial wetlands.

This survey also revealed an extensive area of groundwater discharge among unconsolidated lacustrine sediments north of the wetland (**Figure 5**). Alkali evaporitic crust appears in patches on hills and ridges above and within washes, and these areas are fringed with *Suaeda nigra*, a wetland

obligate plant.[84] It's unusual to find *Suaeda* in an area with topography and at higher elevation. This plant indicates an area of extremely shallow groundwater. This area of shallow groundwater extends northward from the newly documented wetland toward Grapevine Spring (**Figure 1**). This provides further evidence that there may be a direct hydrologic connection between the Project site and springs which sustain the Listed Plants.

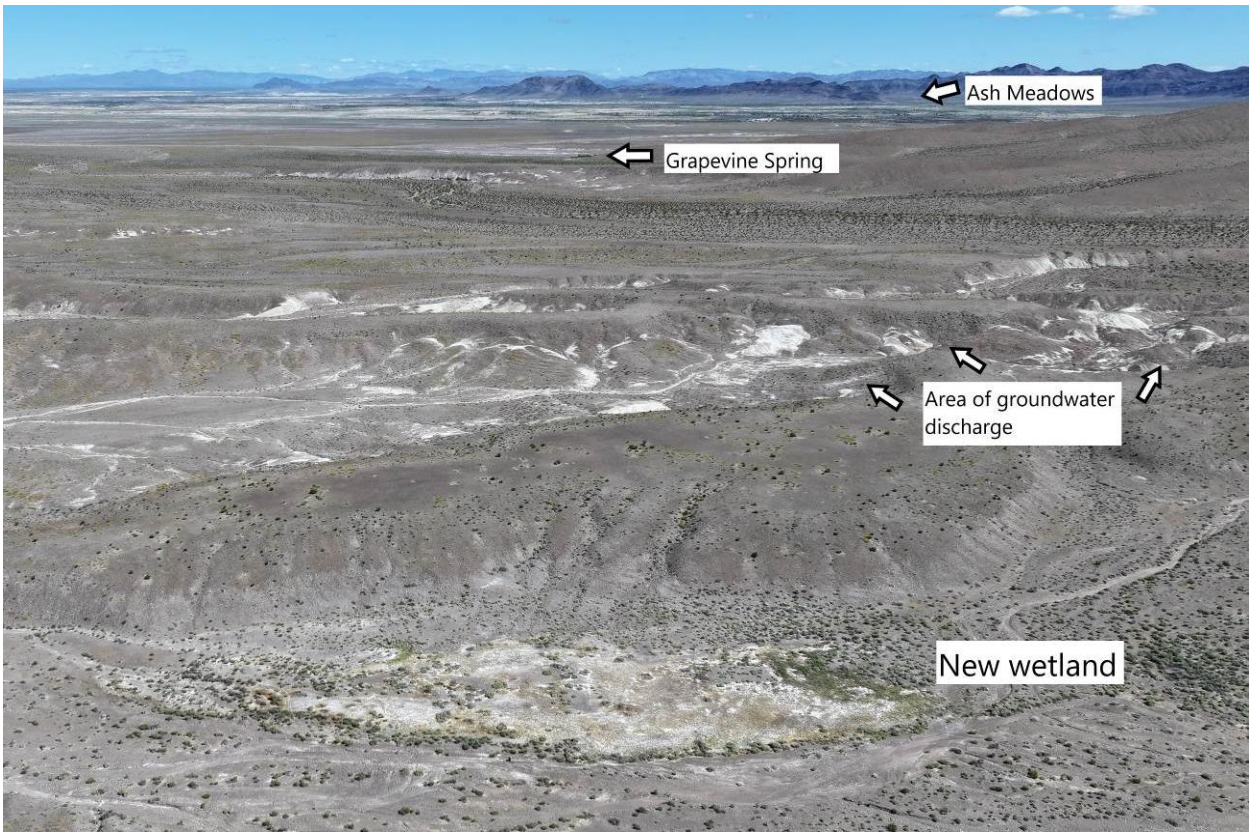

Figure 5: Aerial photograph looking northward from 36.310022, -116.313764, depicting the newly documented wetland, the area of shallow groundwater discharge with Suaeda nigra, Grapevine Spring, and Ash Meadows beyond. Grapevine Spring and the new wetland are at roughly the same elevation.

[84] *Suaeda nigra* is ranked as "OBL" by the Army Corps of Engineers, meaning it "almost always occur in wetlands." U.S. Army Corps of Engineers. (2023). 2022 National Wetland Plant List, version 3.6. U.S. Army Engineer Research and Development Center, Vicksburg, MS. http://wetland-plants.usace.army.mil/.

The localized topographic drainage basin above the Project site, the new wetland, and Grapevine Spring extends only as far as the top of Bunch Benchmark, which is too low at 2,829 feet to bring down any appreciable significant precipitation or snowfall. And due to both low precipitation and the relative impermeability of the bedrock, the area has minimal recharge (**Figure 6**).

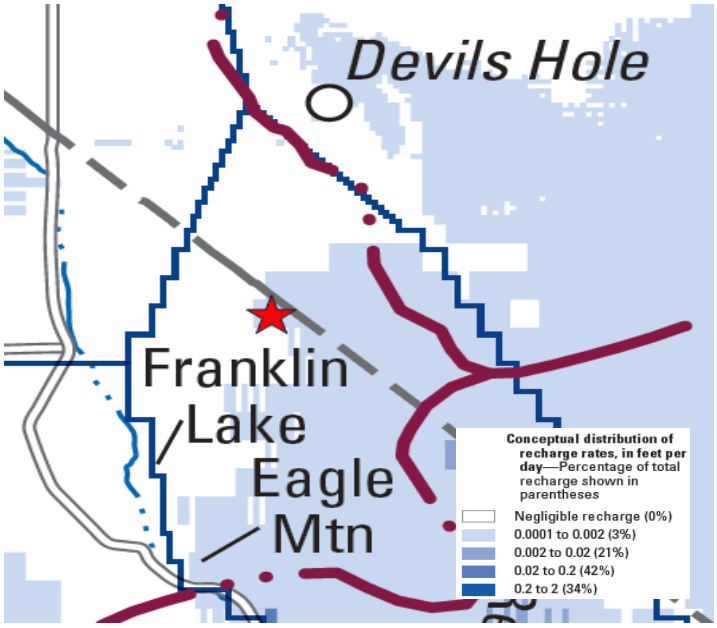

***Figure 6**: Depiction of recharge, adapted from Halford & Jackson (2020, Figure 16). The light blue is a recharge rate of 0.0001-0.002 ft/day; darker blue is 0.002-0.02 ft/day. The Project site is depicted with a red star.*

The northernmost Resting Spring Range near Shadow Mountain is comprised of Cambrian to Neoproterozoic siliciclastic rocks, which are defined as the principle confining aquitard in the Amargosa region.[85] This area includes thick layers of quartzite which form a significant barrier to groundwater flow (**Figures 7-8**).[86]

[85] Belcher, W.R., and Sweetkind, D.S., eds., 2010, Death Valley regional groundwater flow system, Nevada and California—Hydrogeologic framework and transient groundwater flow model: U.S. Geological Survey Professional Paper 1711, 398 pp. Figure B-31.

[86] Workman JB, Menges CM, Page WR, Taylor EM, Ekren EB, Rowley PD, Dixon GL, Thompson RA, & Wright LA. 2002. Geologic Map of the Death Valley ground-water model area, Nevada and California. U.S. Geological Survey Miscellaneous Field Studies MF-2381.; Halford & Jackson 2020, Figs. 29 & 44.

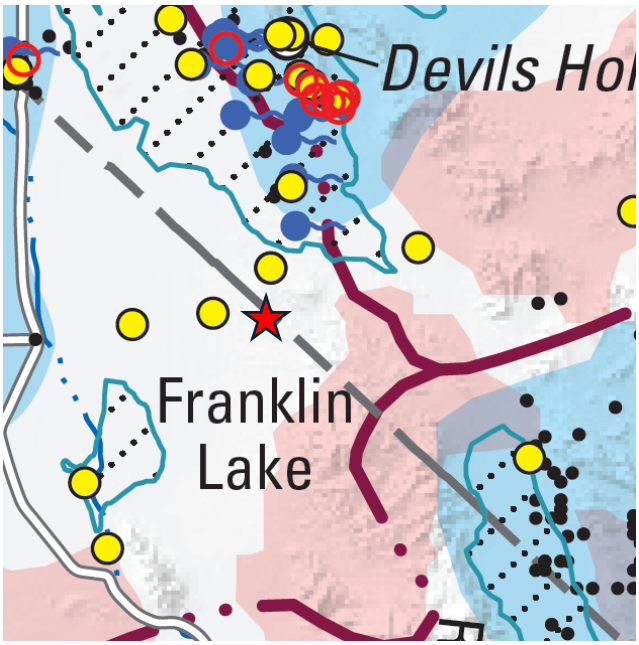

***Figure 7**: Depiction of hydraulic barriers (in red) and areas of drawdown (in blue), adapted from Halford and Jackson (2020, Fig. 29). A hydraulic barrier can be seen up-slope from the Project site. The Project site is depicted with a red star.*

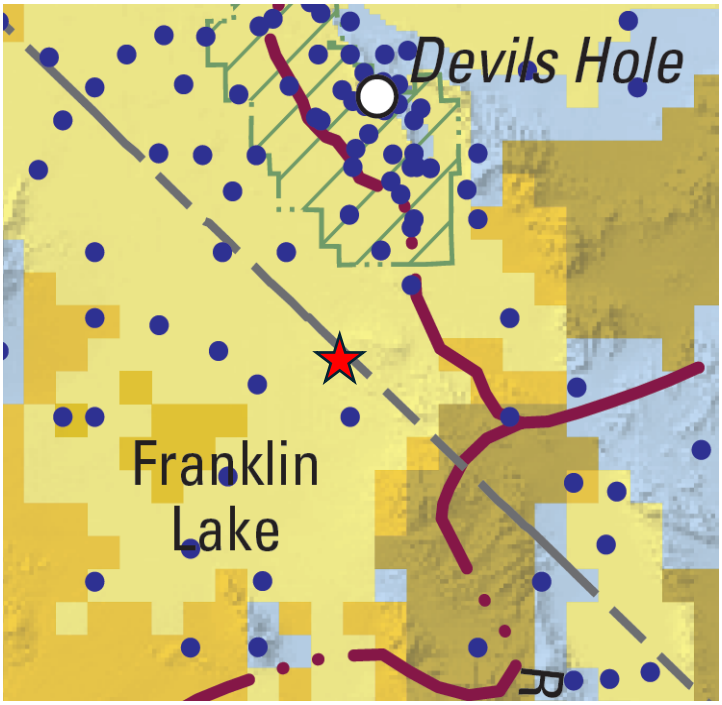

***Figure 8**: Depiction of hydrogeologic units, adapted from Halford and Jackson (2020, Fig. 44). The Project site is depicted as shallow basin fill. Up-slope is volcanic-sedimentary rocks (orange-brown) and granitic and siliciclastic rocks (darker brown). The Project site is depicted with a red star.*

While the area of the drill site is described as alluvium in Halford and Jackson (2020), it is shown as Tertiary nonmarine rocks in geologic mapping, indicating a geologic anomaly. This is, of course, why it is a target of interest for mining. Halford and Jackson's transmissivity mapping shows that the boundary between the silicilastic rocks of the Resting Spring Range and the alluvium below is an area of increased transmissivity (**Figure 9**).[87] Indeed, the drill site itself may be of increased transmissivity. "Transmissivity estimates from pumping aquifer tests in siliciclastic rocks and zeolitized tuffs likely represent permeable inclusions in otherwise low-permeability rocks."[88]

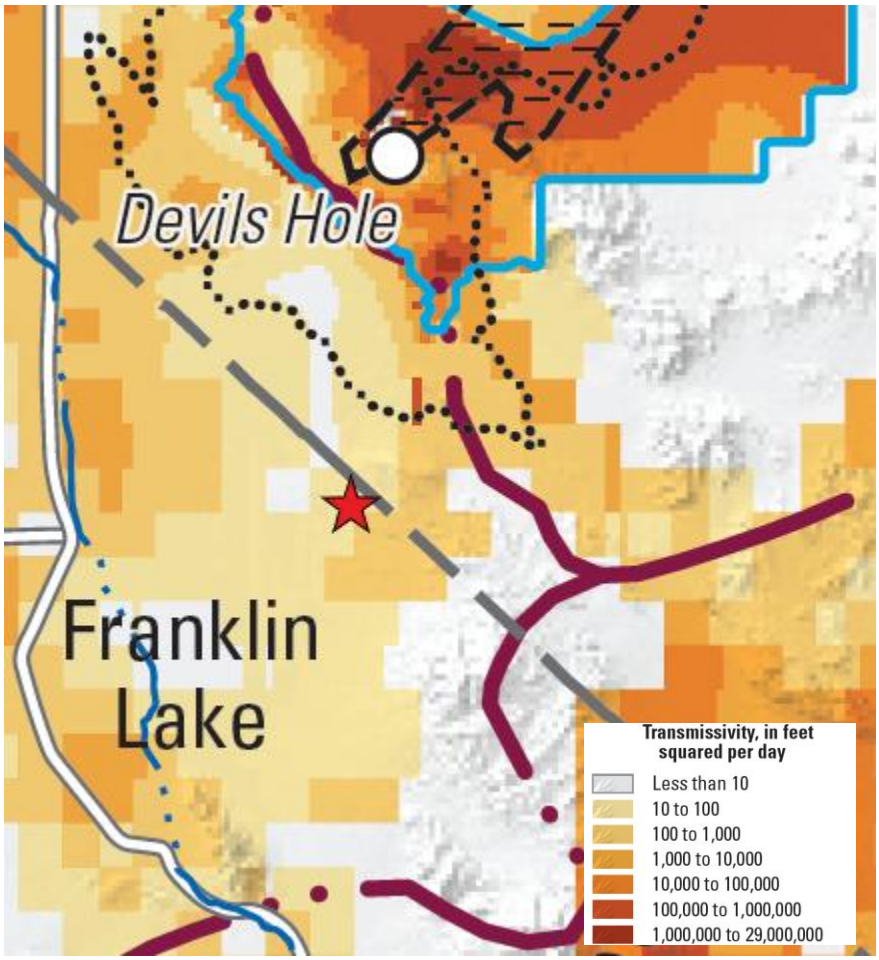

***Figure 9**: Depiction of transmissivity, adapted from Halford and Jackson (2020, Figure 68). Transmissivity increases just east of the Project site, with a possible channel for groundwater movement through the northernmost Resting Spring Range, adjacent to the Project site.*

[87] Halford and Jackson 2020, Figure 68.

[88] Halford and Jackson 2020, p. 43.

Analysis of predevelopment water budgets also suggests that water is moving across and through the Project site. DV3 finds that 30 acre-feet of water is moving from the Devils Hole subbasin to the Franklin Playa subbasin through or near the Project site, likely through the transmissive rocks previously discussed (**Figure 10**).[89] While this is a small amount of water, as discussed above, it is likely underestimated by one or more orders of magnitude.[90]

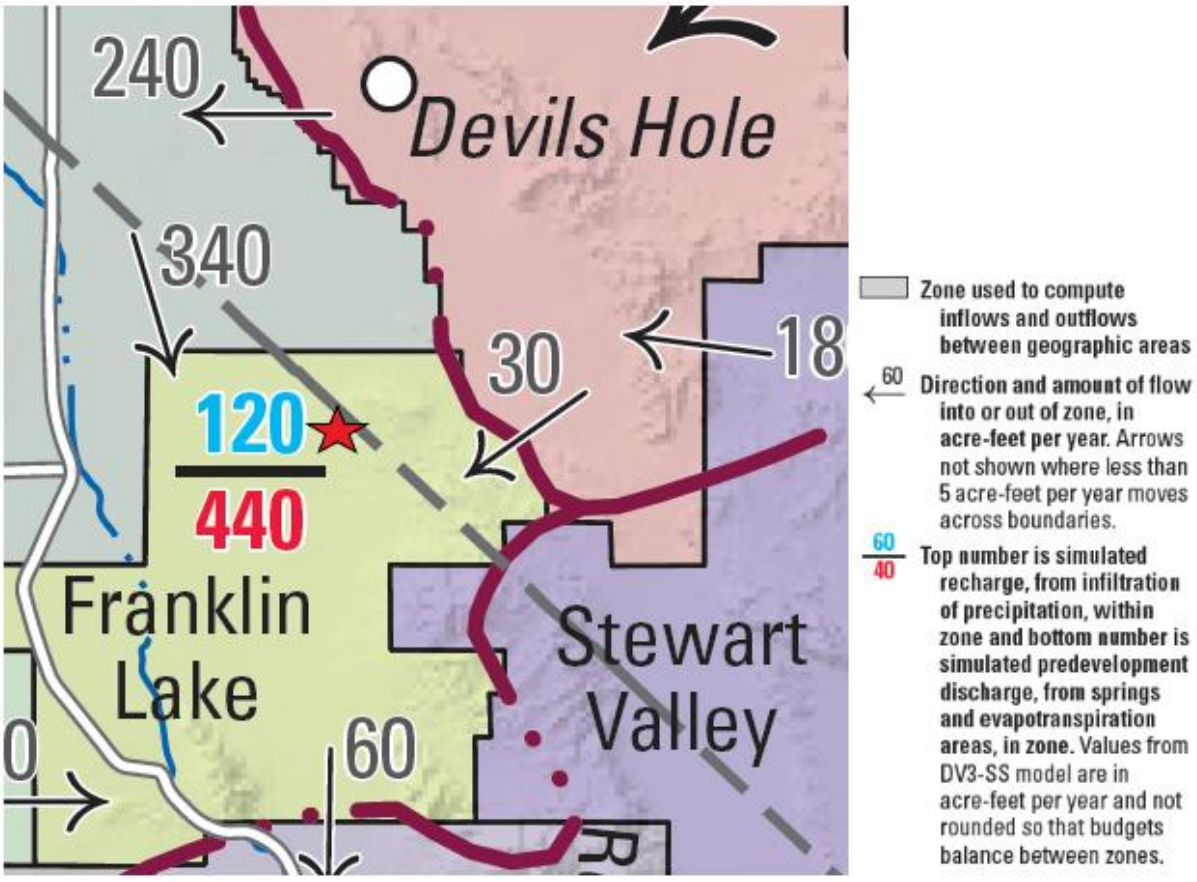

***Figure 10**: Depiction of predevelopment water budgets and intersubbasin flow, adapted from Halford and Jackson (2020, Figure 88). Flow southwestward along the face of the Resting Spring Range and toward Franklin Playa can be seen. The Project site is depicted with a red star.*

[89] Halford and Jackson 2020, Figure 88.

[90] Zdon and McNab 2022.

Other analyses have also identified structural barriers to groundwater flow in the area east of the Project site, with inferences which support the above. Belcher and Sweetkind (2010) found that the lower clastic-rock confining units of the northern Resting Spring Range and associated subsurface formations created an inferred barrier related to structurally high siliciclastic and crystalline rocks (Figure 11).[91] This inferred barrier runs northeast to southwest, roughly through the Project site.

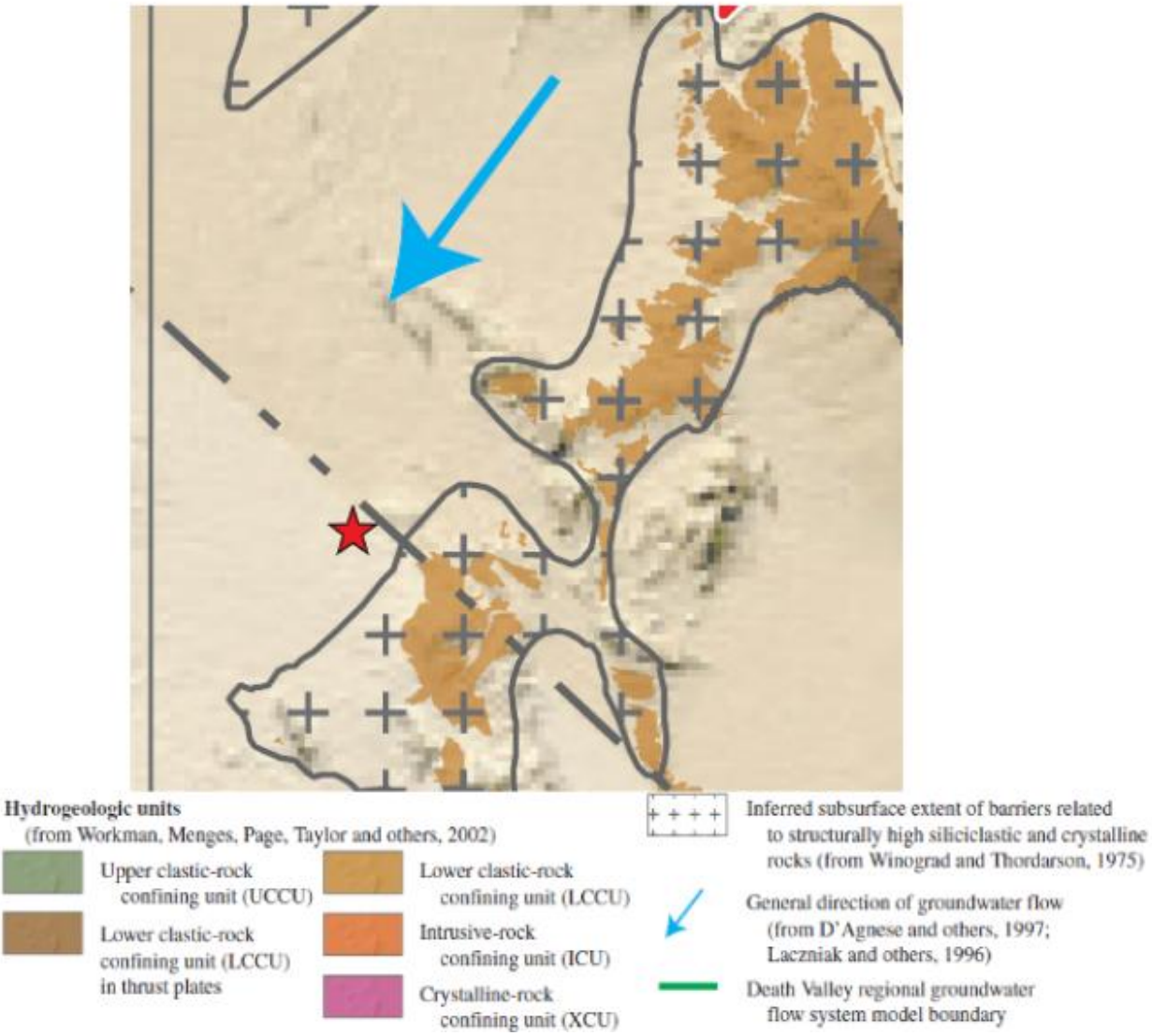

Figure 11*: Hydraulic barriers, adapted from Belcher and Sweetkind (2010). Barriers along the western front of the Resting Spring Range may funnel groundwater through the Project site.*

[91] Belcher and Sweetkind 2010, Figure B-29.

Workman's 2002 Death Valley Region geologic map depicts structural barriers to flow in the direct vicinity of the Project, with a "well constrained structure" running north-south from Grapevine Spring to the Project site, and another running southwest toward Franklin Playa, which provided evidence for the inferred barrier depicted in Belcher and Sweetkind (2010) (**Figure 12**).

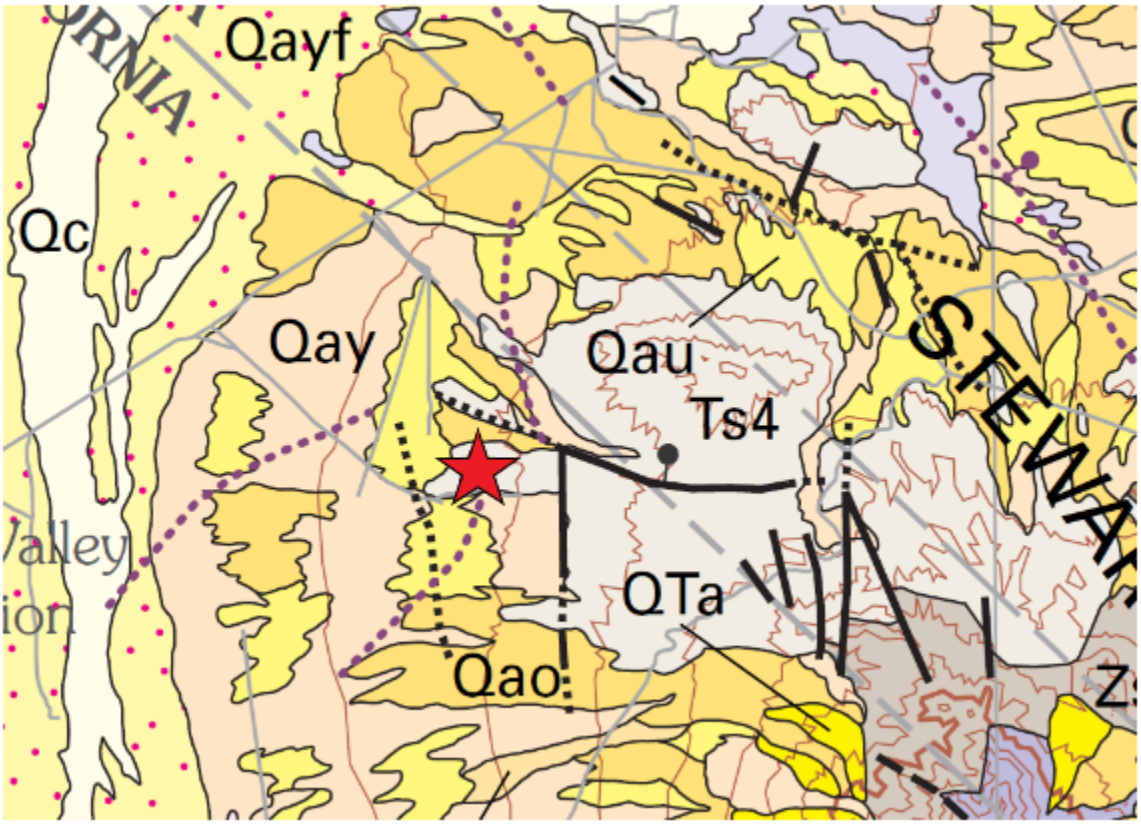

Figure 12*: Geologic map of the Project Area, adapted from Workman (2002). Purple dashed lines are "well constrained structures," and black dashed lines are "poorly constrained structures."*

C. Hydrologic Impacts of the Project on the Listed Plants

To summarize the evidence presented above:

1. The Project site is at 2,200 feet. Grapevine Spring, 1.25 miles to the north, is at 2,280 feet. The new wetland, 0.5 miles to the east, is at 2,310 feet. Big Spring in Ash Meadows NWR, 4 miles north-northeast, is at 2,242 feet. Carson Slough, discharging shallow groundwater 3 miles west, is at 2,040 feet. Hog Farm Well, with artesian flow, is 3 miles west and at 2,017 feet. In short, there is surface water discharging both above and below the Project site, and to the north, east and west.

2. Previous wells drilled at the Project site have encountered groundwater within 100 feet. There is shallow groundwater discharging at the mine site in a small lake with perennial phreatophytes growing.

3. There is an area of shallow groundwater discharge between the new wetland and Grapevine Spring.

4. There is negligible recharge from meteoric precipitation in the mountains up-slope from the Project site.

5. The northernmost Resting Spring Range is composed of granitic and siliciclastic rocks which form a primary aquitard and barrier to groundwater transport. This aquitard occurs directly east of the Project site.

6. The areas bounding the aquitard to the west (i.e. the Project site) have increased transmissivity.

7. Physical, geochemical, and water budget evidence indicates that substantial groundwater is moving southward from the Ash Meadows area and the Project site into the Amargosa River.

This evidence indicates that there is likely a flowpath of groundwater, originally sourced from Mount Charleston and discharging from the carbonate at Ash Meadows, which is likely flowing southwestward beneath the Project site through the basin-fill aquifer.[92] This water emerges at the surface at Grapevine Spring, at the new wetland, at the mine site, and below on Carson Slough and at Hog Farm Well. We can infer a flat potentiometric surface between the Project site and the surface discharge sites, indicating that they share the same groundwater.

[92] O'Connor 2024. Hydrologic Report for the Ash Meadows Mine Plan of Operations Modification Environmental Assessment, Appendix I. 25 pp., p. 21.

Whether or not the drilling encounters groundwater is not merely of academic interest. Rather, the groundwater aquifer which underlies this area supports groundwater dependent ecosystems that harbor dozens of endemic species, including the Listed Plants and their critical habitats. Maintaining the integrity of this aquifer is essential to the survival and conservation of these species and habitats. Indeed, as the BLM acknowledged in an April 2023 Notice to Cease and Desist, use of water from four wells approximately 5 miles north of Death Valley Junction (and approximately 10 miles from the proposed Project site) would "extract[] water which is needed for the Amargosa Wild and Scenic River and surrounding wildlife."[93]

In the words of BLM State Hydrologist O'Connor: "It's possible that regional groundwater is discharging to basin fill beneath the site via unmapped faults, or as diffuse seepage, and it's possible artesian aquifer conditions exist shallowly below the Drill Site. It's assumed artesian conditions exist below the site at the hard rock aquifer depth beneath the site (unknown)."[94]

BLM State Hydrologist O'Connor similarly described the potential consequences of drilling into this interconnected aquifer: "Groundwater is expected to be encountered below the Drill Site at approximately 100 ft bgs at the deepest, if not more shallowly. If a confining layer and artesian conditions are encountered, artesian flow of regionally sourced groundwater is expected, which may have negative effects to Amargosa North ACEC, Ash Meadows NWR, and Amargosa WSR."[95]

Drilling which encountered artesian flow that altered the groundwater aquifer could have catastrophic consequences on the Listed Plants. All three rely on sustained supplies of shallow groundwater keeping their habitats wetted. Any change to discharge, decrease in groundwater levels, or other perturbations in the aquifer system could dry up habitats for the Listed Plants, including adversely modifying their critical habitats.

V. Impacts of Dust on the Listed Plants

The access road for the Project runs through Amargosa niterwort critical habitat and within 0.5 miles of known occurrences of the niterwort. There are known occurrences of the Ash Meadows gumplant and spring-loving centaury within 1.25 miles of the project site at Grapevine Spring. This presents the clear possibility that fugitive dust created by increased use of the access road by trucks, drill rigs, and heavy equipment, and by drilling operations, may affect known occurrences and critical habitats of Listed Plants.

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[93] Letter from Marc Stamer, Barstow Field Manager, BLM to Robert Ford, ABC Recycling Industries (Apr. 27, 2023).

[94] *Id.*

[95] *Id.,* p. 22.

Fugitive dust emissions can cause significant impacts to plants. Dust deposition can impact plant health by limiting reproduction, reducing light availability, CO^2 assimilation, and thus reducing photosynthetic capacity.[96] It can also reduce transpiration leading to higher leaf temperatures and reduced water use efficiency.[97] Ambient dust has also been correlated with plant stress symptoms such as water stress, plant die-back, and smaller leaf size.[98] Dust deposition in the Mojave Desert of Nevada has been shown to cause plant defoliation and shoot death in the common shrub *Larrea tridentata* (creosote bush).[99] Local conditions can exacerbate dust deposition including precipitation, temperature, geologic substrate, and wind speed.[100] One study found plants growing within 400 meters of mining disturbance, including unprotected stockpiles, occurred in habitats that were degraded due to dust deposition.[101] Plants further away, but in areas that are exposed to prevailing winds were also negatively impacted by dust deposition.

The lands surrounding the Project Area are known to be subject to high winds, with wind gusts of 40-50 mph regularly reported from the Ash Meadows, Nevada weather station, located approximately 6.5 miles north of the project site.[102] The Project has the potential to greatly increase dust deposition on rare plants at Grapevine Spring and Carson Slough from the use of access roads, cross-country travel by vehicles and the drill rig, and due to drilling activities. The Project would also substantially increase daily road traffic at the site, which is currently near zero, likely by several orders of magnitude, not just due to access by workers and equipment but also numerous daily trips from water trucks, increasing the potential for dust deposition on plants throughout the lifetime of the Project. Even if some dust suppression measures are implemented during on-site activities, the amount of dust in the air will increase overall due to the Project.

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[96] Wijayratne U.C., S.J. Scoles-Sciulla, and L.A. Defalco. 2009. Dust deposition effects on growth and physiology of the endangered *Astragalus jaegerianus* (Fabaceae). Madroño. 56L 81-88. *See also* Padgett, P.E., Dobrowolski, W.M., Arbaugh M.J., Eliason, S.A. 2007. Patterns of carbonate dust deposition: implications for four federally listed endangered plant species. *Madroño 54*: 275-285.

[97] Sharifi, M.R., A.C. Gibson and P.W. Rundel. 1997. Dust Impacts on Gas Exchange in Mojave Desert Shrubs. Journal of Applied Ecology. 34: 837-846. *See also* USFWS, 2022, Species Status Assessment for Tiehm's buckwheat *(Eriogonum Tiehmii*).

[98] Talley, T.S., Holyoak, M., 2006. "The Effects of Dust on the Federally Threatened Valley Elderberry Longhorn Beetle." *Environmental Management* 37(5): 647-658.

[99] Beatley, J. C. 1965. Effects of radioactive and non- radioactive dust upon Larrea divaricata Cav., Nevada Test Site. Health Physics 11:1621–1625.

[100] Padgett, *et al.*, 2007.

[101] *Id.*

[102] Data from the Western Regional Climate Center's Remote Automatic Weather Station Network, Ash Meadows Nevada Station, https://wrcc.dri.edu/cgi-bin/wea_daysum.pl?nvNASH.

Dust is a significant concern for the Listed Plants and their critical habitats. Ambient dust has been shown to negatively affect the ability of plants to set fruit, and also affects the number of seeds per plant and mean seed weight, meaning that dust has widespread effects on plant reproduction.[103] Ambient dust has also been correlated with plant stress symptoms such as water stress, plant die-back, and smaller leaf size.[104] Dust deposition at a different mine site had "a significant effect on photosynthesis and gas exchange," under both high and low dust deposition regimes.[105] Appreciable changes to the species composition of shrubland communities have been associated with significant dust deposition.[106] In short, dust can have adverse effects on plant species and communities.

According to the BLM's Environmental Assessment, the Project will create dust through use of the access road by vehicles and drill rigs, by overland travel at the Project site, and by use of the drill rigs including from drill cuttings. Given that the access road runs through Amargosa niterwort critical habitat, and that the Project has the distinct possibility of increasing ambient dust both in the critical habitat and at occurrences of the Listed Plants, it is clear that the Project "may affect" the Listed Plants. As such, the BLM was legally required to consult with USFWS on the Project before approving it.

VI. The BLM Has Violated the Endangered Species Act

The BLM must consult on any action which "may affect" federally listed species or their critical habitats. Based on best available science as reflected in the evidence presented above, and evidence presented in a comment letter submitted to BLM during the NEPA process and an appeal for state director's review, it is clear that the Project "may affect" the Listed Plants. Indeed, it is evident that the project may have myriad adverse impacts on listed species and critical habitats, and hence that formal consultation is required under the ESA and implementing regulations.

The Project site is a groundwater conduit for water discharging from Ash Meadows, and is on a flat potentiometric surface with surface water resources sustaining the Listed Plants. The Project site is directly above the critical habitat for the Amargosa niterwort. Drilling at the site could affect the aquifer and its surface discharge which sustains the plants. This is clearly an action that "may affect"—and, indeed, is likely to adversely affect—the Listed Plants and their critical habitats.

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[103] Lewis, M.B., Schupp, E.W., Monaco, T.A., 2017. "Road Dust Correlated with Decreased Reproduction of the Endangered Utah Shrub *Hesperidanthus suffrutescens*." *Western North American Naturalist*, 77(4):430-439.

[104] Talley & Holyoak, 2006.

[105] Padgett *et al*., 2007.

[106] Farmer, A.M., 1993. "The effects of dust on vegetation – a review." *Environmental Pollution 79*(1993): 63-75.

Additionally, dust produced by vehicular access and drilling activities "may affect" and is likely to adversely affect the Listed Plants and their critical habitats.

By authorizing the project without complying in any manner with the consultation process required by Section 7 of the Endangered Species Act, 16 U.S.C. § 1536, BLM has violated both the procedural and substantive requirements of that provision. Under the circumstances here, BLM must not only engage in consultation, but it is evident that formal consultation—culminating in a biological opinion issued by USFWS—is required to satisfy the ESA. If, within 60 days, BLM fails to initiate ESA Section 7 consultation and to suspend all project activities that may affect listed species or critical habitat during the interim, the Center and the Amargosa Conservancy plan to take further legal action, including seeking injunctive relief in the United State District Court for the Central District of California to enforce the ESA.

Sincerely,

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Center for Biological Diversity
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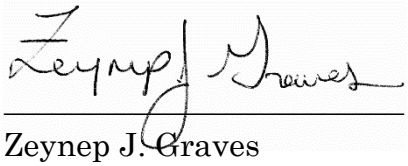
pdonnelly@biologicaldiversity.org



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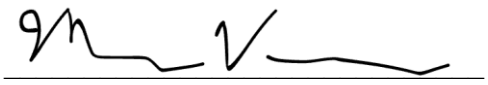

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References

All references cited in these comments are available for download via the OneDrive link below:
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