DOCKETED	
Docket Number:	23-AFC-03
Project Title:	Black Rock Geothermal Project (BRGP)
TN #:	249756
Document Title:	Black Rock Geothermal Project AFC Volume 2 Appendix 5-2 Biological Resources
Description:	N/A
Filer:	Jerry Salamy
Organization:	Jacobs
Submitter Role:	Applicant Consultant
Submission Date:	4/18/2023 11:53:42 AM
Docketed Date:	4/18/2023

Appendix 5.2A
Potential for Occurrence and Observed Species

Appendix 5.2A, Table 5.2A-1
Special-Status Plants with the Potential for Occurrence
Black Rock Geothermal Project

Scientific Name	Common Name	Family	FESA/CESA/CNPS[a]	Blooming Period	Habitat Requirements	Occurrence Potential[b]
Astragalus crotalariae	Salton milk-vetch	Fabaceae	None/None/CRPR 4.3	Jan-Apr	Perennial found in Sonoran desert scrub. May occur in saline soils. Known from clay flats, alkali sinks, mud flats, and roadsides.	Low Potential. A small area of poor quality suitable saline and alkaline habitat is present in BSA. Historical records of this speicies from 1985 are located within approximately 1 mile of the BSA. This species was not observed during protocol-level botanical surveys.
Astragalus insularis var. harwoodii	Harwood's milk-vetch	Fabaceae	None/None/CRPR 2B.2	Jan-May	Annual found in desert dunes, Mojave desert scrub, in gravel and sandy conditions. Commonly occurs on desert pavement. This species is not tolerant of saline conditions.	Not Expected. No suitable habitat in the BSA.
Astragalus sabulonum	Gravel milk-vetch	Fabaceae	None/None/CRPR 2B.2	Feb-Jun	Annual/Perennial found in desert dunes, Mojave and Sonoran desert scrub in flats, gravelly, sandy, wash conditions. Sometimes roadsides. This species is not known to occur in saline conditions.	Not Expected. No suitable habitat in the BSA.
Calliandra eriophylla	Desert fairy duster	Fabaceae	None/None/CRPR 2B.3	Feb-Mar	Perrenial found in Mojave desert scrub in sandy washes, slopes, and mesas.	Not Expected. No suitable habitat in the BSA.
Cylindropuntia munzii	Munz's cholla	Cactaceae	None/None/CRPR 1B.3	May	Perennial found in Sonoran desert scrub. This species is not tolerant of saline conditions.	Not Expected. No suitable habitat in the BSA.
Ditaxis claryana	Glandular ditaxis	Euphorbiaceae	None/None/CRPR 2B.2	Oct-Mar	Perennial found in Mojave and Sonoran desert scrub on limestone or carbonate substrait.	Not Expected. No suitable habitat in the BSA.
Euphorbia abramsiana	Abrams' spurge	Euphorbiaceae	None/None/CRPR 2B.2	(Aug) Sep-Nov	Annual found in Mojave and Sonoran desert scrub. Known to occur in sandy depressions after summer rainfall. May not tolerate saline soils.	Not Expected. No suitable habitat in the BSA.
Euphorbia arizonica	Arizona spurge	Euphorbiaceae	None/None/CRPR 2B.3	Mar-Apr	Perennial found in sandy Sonoran desert scrub. Known to occur in sandy depressions after summer rainfall. May not tolerate saline soils.	Not Expected. No suitable habitat in the BSA.
Euphorbia platysperma	Flat-seeded spurge	Euphorbiaceae	None/None/CRPR 1B.2	Feb-Sep	Annual found in desert dunes and Sonoran desert scrub. Known to occur in sandy depressions after summer rainfall. May not tolerate saline soils.	Not Expected. No suitable habitat in the BSA.
Herissantia crispa	Curly herissantia	Malvaceae	None/None/CRPR 2B.3	(Apr) Aug-Sep	Annual/perrenial found in Sonoran desert scrub. May occur in disturbed locations such as roadsides.	Not Expected. No suitable habitat in the BSA.
Hymenoxys odorata	Bitter hymenoxys	Asteraceae	None/None/CRPR 2B.1	Feb-Nov	Annual found in riparian scrub and Sonoroan desert scrub.	Not Expected. Riparian habitat in the BSA was along drains and canals and is not suitable habitat for this species. No known records in vicinity. This species was not observed during protocol-level botanical surveys.
Johnstonella costata	Ribbed cryptantha	Boraginaceae	None/None/CRPR 4.3	Feb-May	Annual found in desert dunes, and sandy Mojave and Sonoran desert scrub.	Not Expected. No suitable habitat in the BSA.
Juncus acutus ssp. leopoldii	Southwestern spiny rush	Juncaceae	None/None/CRPR 4.2	(Mar) May-Jun	Perennial found in alkaline seeps and meadows, coastal marshes and swamps, and coastal dunes.	Not Expected. No records of this species in the BSA. This species was not observed during protocol-level botanical surveys.

Appendix 5.2A, Table 5.2A-1
Special-Status Plants with the Potential for Occurrence
Black Rock Geothermal Project

Scientific Name	Common Name	Family	FESA/CESA/CNPS[a]	Blooming Period	Habitat Requirements	Occurrence Potential[b]
Juncus cooperi	Cooper's rush	Juncaceae	None/None/CRPR 4.3	Apr-May (Aug)	Perennial found in saline meadows and seeps.	Not Expected. No records of this species in the BSA. This species was not observed during protocol-level botanical surveys.
Lycium torreyi	Torrey's box-thorn	Solanaceae	None/None/CRPR 4.2	(Jan-Feb) Mar-Jun (Sep-Nov)	Perennial shrub found in Mojave and Sonoran desert scrub.	Not Expected. No suitable habitat in the BSA.
Mirabilis tenuiloba	Slender-lobed four o'clock	Nyctaginaceae	None/None/CRPR 4.3	(Feb) Mar-May	Perennial found in Sonoran desert scrub.	Not Expected. No suitable habitat in the BSA.
Panicum hirticaule ssp. hirticaule	Roughstalk witch grass	Poaceae	None/None/CRPR 2B.1	Aug-Dec	Annual found in sandy, silty depressions in desert dunes, Mojave and Sonoran desert scrub, and Joshua tree woodlands.	Not Expected. No suitable habitat in the BSA.
Pilostyles thurberi	Thurber's pilostyles	Apodanthaceae	None/None/CRPR 4.3	Dec-Apr	Parasitic perennial found most commonly on host plant Emory's indigo bush (*Psorothamnus emoryi*). Emory's indigo bush may occur on sandy beaches, but this species is not tolerant of saline soils.	Not Expected. No suitable habitat in the BSA.
Salvia greatae	Orocopia sage	Lamiaceae	None/None/CRPR 1B.3	Mar-Apr	Perennial shrub found in Mojave and Sonoran desert scrub. Not known to occur in saline habitats.	Not Expected. No suitable habitat in the BSA.
Teucrium cubense ssp. depressum	Dwarf germander	Lamiaceae	None/None/CRPR 2B.2	Mar-May (Sep-Nov)	Annual found in desert dunes, playa margins, and Sonoran desert scrub.	Not Expected. No suitable habitat in the BSA. No records of this species in the BSA.

Notes:
[a] Status Definitions:
CESA = California Endangered Species Act
ESA = Federal Endangered Species Act
CNPS = California Native Plant Act
CRPR = California Rare Plant Rank
1A = Presumed extinct from California
1B = Rare, threatened, or endangered in California and elsewhere
2A = Extirpated in California, common elsewhere
2B = Rare, threatened, or endangered in California, but more common elsewhere
4 = Plants of Limited Distribution – A Watch List
Threat ranks:
0.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 = Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
b Potential for Occurrence definitions are provided in the body text (Section 5.2.1.5.1)

Appendix 5.2A, Table 5.2A-2
Special-Status Wildlife with the Potential for Occurrence
Black Rock Geothermal Project

Common Name	Scientific Name	CESA/ESA	CDFW Status[a]	Other Status[b]	Habitat Requirements	Potential for Occurrence[c]
Invertebrates						
Monarch butterfly	*Danaus plexippus plexippus*	None/FC	None	None	Migratory invertebrate. Monarchs in the southwest live in canyons or riparian areas. They lay their eggs on milkweed (Asclepias spp.), which caterpillars feed exclusively on. The adults will nectar on many other species besides milkweed.	Not Expected. No milkweed observed during botanical surveys of the BSA.
Fish						
Desert pupfish	*Cyprinodon macularius*	SE/FE	None	None	Desert ponds, springs, marshes and streams in Southern California.	Not Expected. No suitable habitat for this species in the BSA. This species is known to occur in the vicintiy, but the project will not impact any water ways.
Razorback sucker	*Xyrauchen texanus*	SE/FE	FP	None	Found in the Colorado river bordering California.	Not Expected. No suitable habitat for this species in the BSA.
Amphibians and Reptiles						
Couch's spadefoot	*Scaphiopus couchii*	None	SSC	None	Temporary desert rain pools that last at least 7 days, within water temps > 15C, and subterranean refuge sites close by.	Not Expected. No suitable habitat for this species in the BSA.
Flat-tailed horned lizard	*Phrynosoma mcallii*	None	SSC	None	Restricted to desert washes and desert flats in central riverside, eastern San Diego, and Imperial counties.	Not Expected. No suitable habitat for this species in the BSA.
Lowland leopard frog	*Lithobates yavapaiensis*	None	SSC	None	Were found along the Colorado river and in streams near the Salton sea.	Not Expected. No suitable habitat for this species in the BSA.
Mojave Desert tortoise	*Gopherus agassizii*	ST[d]/FT	None	None	Most commonly inhabits desert scrub, desert wash and Joshua tree habitats. The desert tortoise requires friable soil for burrow and nest construction and prefers creosote bush habitat and areas with wildflower blooms.	Not Expected. No suitable habitat for this species in the BSA.
Sonoran Desert toad	*Incilius alvarius*	None	SSC	None	Breeds in temporary pools and irrigation ditches along the Colorado River and Southern Imperial Valley.	Not Expected. One historical CNDDB occurrence from 1916, possibly extripated. The project will not impact any water ways.
Birds						
Black skimmer	*Rynchops niger*	None	SSC	USFWS - BCC	Nest on gravel, bars, low islets, and sandy beaches. CDFW SSC status for nesting only.	Not Expected: No suitable nesting habitat in BSA. This species is known from Refuge and historical CNDDB occurrence from 1998.
Black-tailed gnatcatcher	*Polioptila melanura*	None	WL	None	Primarily inhabits wooded desert wash habitats; also occurs in desert scrub habitat, especially in winter.	Not Expected: No suitable habitat in the BSA. Historical CNDDB occurrences from 1968 and before. This species is uncommon to fairly common in the Refuge.
Burrowing owl	*Athene cunicularia*	None	SSC	USFWS - BCC	Inhabits open, dry annual or perennial grasslands, desert and scrublands characterized by low growing vegetation.	Present: Suitable habitat, sign, and live owls were obserevd within the BSA during the March 2022 surveys. CNDDB occurrences of this species in the BSA.
California black rail	*Laterallus jamaicensis coturniculus*	ST/None	FP	USFWS - BCC	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays.	Not Expected: Protocol-level rail surveys conducted in 2022 in BSA did not detect any California black rail.

Appendix 5.2A, Table 5.2A-2
Special-Status Wildlife with the Potential for Occurrence
Black Rock Geothermal Project

Common Name	Scientific Name	CESA/ESA	CDFW Status[a]	Other Status[b]	Habitat Requirements	Potential for Occurrence[c]
California brown pelican	*Pelecanus occidentalis californicus*	Delisted/Delisted	FP	None	Colonial nester on coastal islands just outside the surf line. Known to nest on Obsidian Butte and at mouth of Alamo River.	High potential: The BSA has no potential nesting or foraging (open water) for this species, but because of proximity to a known nesting colony on Obsidian Butte, this species would be expected to fly over the BSA. Pelicans have high potential to fly over the BSA based on proximity to high use areas. Nesting colongies also known from mouth of the Alamo River. Forages on open water of Salton Sea. CNDDB records of this species in BSA vicinity. This species was not observed during biological surveys of the BSA.
California gull	*Larus californicus*	None	WL	USFWS - BCC	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mud-flats, marshes, and lakes. CDFW WL status only for nesting.	Present. Species was incidentally observed during surveys within the BSA; however, no suitable nesting habitat is present in the BSA. Historical CNDDB occurrence from 1999 and before. This species is common to abundant in the Refuge year-round.
Cooper's hawk	*Accipiter cooperii*	None	WL	None	Nest sites mainly in woodland, riparian growths of deciduous trees. CDFW WL for nesting only.	Present: Species was incidentally observed during surveys within the BSA; however, no suitable nesting habitat is present in the BSA. Uncommon to fairly common in the Refuge. This species was incidentally observed during biological surveys of BSA.
Crissal thrasher	*Toxostoma crissale*	None	SSC	None	Resident of southeastern deserts in desert riparian and desert wash habitats	Not Expected: Historical CNDDB records from 1940-1960s of this species in BSA vicinity. This species is rare to very uncommon in the Refuge. No suitable riparian habitat in the BSA.
Gila woodpecker	*Melanerpes uropygialis*	SE/None	None	USFWS - BCC	In California, inhabits cottonwoods and other desert riparian trees, shade trees and date palms.	Not Expected. Historical CNDDB occurrences of this species from 1940-1950's. This species uncommon to fairly common in the Refuge. No suitable riparian habitat in the BSA.
Gray-headed junco	*Junco hyemalis caniceps*	None	WL	None	Summer resident of Clark Mountain (Eastern San Bernardino county) and Grapevine mountains (Inyo county). Nesting only.	Not Expected. Historical CNDDB occurrence from 1957. This species is rare to very uncommon in the Refuge.
Gull-billed tern	*Gelochelidon nilotica*	None	SSC	USFWS - BCC	Only known breeding colonies at San Diego bay and the Salton Sea. CDFW SSC status is for nesting only.	Not Expected. No suitable nesting habitat in the BSA. This species is known from the Refuge but only historical CNDDB occurrences from 1998 are present in BSA vicinity.
Le Conte's thrasher	*Toxostoma lecontei*	None	SSC	USFWS - BCC	Inhabits open desert wash, desert scrub, alkali desert scrub and desert succulent scrub habitat. This species commonly nests in dense, spiny shrub or densely branched cactus in desert wash habitat.	Not Expected. No suitable nesting habitat in BSA. CNDDB occurrence from 2009 in Refuge, but Refuge lists this species as extripated breeding habitat.
Loggerhead shrike	*Lanius ludovicianus*	None	SSC	None	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub, and washes.	Low Potential. No suitable nesting habitat in BSA. CNDDB occurrence from 2007. The Refuge lists this species as occasional.
Long-billed Curlew	*Numenius americanus*	None	WL	None	Inhibits Great Basin grassland, meadow and seeps. Favors gravelly soils and gently rolling terrain, and agriculture. Breeds in upland shortgrass prairies and wet meadows. Winters in Imperial County. CDFW WL for nesting only.	Present. Species was incidentally observed during surveys within the BSA; however, no suitable nesting habitat is present in the BSA. No documented occurrences in CNDDB. In winter, abundant in the Refuge.
Merlin	*Falco columbarius*	None	WL	None	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms, and ranches. Clumps of trees or windbreaks are required for roosting in open country.	Not Expected. No potentially suitable nesting habitat in BSA. CNDDB occurrences in desert scrub east of the BSA. Rare to very uncommonly present in Refuge.

Appendix 5.2A, Table 5.2A-2
Special-Status Wildlife with the Potential for Occurrence
Black Rock Geothermal Project

Common Name	Scientific Name	CESA/ESA	CDFW Status[a]	Other Status[b]	Habitat Requirements	Potential for Occurrence[c]
Mountain plover	*Charadrius montanus*	None	SSC	USFWS - BCC	Inhabits Great Basin grassland and scrub, Mojavean desert scrub, and Sonoran desert scrub. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores. This species is known to overwinter and forage in agricultural lands in Imperial Valley.	Low Potential. No suitable breeding habitat in the BSA, but this species is known to forage and overwinter in agricultural lands. Numerous CNDDB occurrences in BSA vicinity. This species is uncommon to farily common in the Refuge. This species was not observed during biological surveys of the BSA.
Short-eared owl	*Asio flammeus*	None	SSC	USFWS - BCC	Found in swamp lands, both fresh and salt lowland meadows, irrigated alfalfa fields. CDFW SSC status for nesting only.	Low Potential. No suitable nesting habitat in the BSA. Historical CNDDB occurrence of this species from 1956. This species is rare to occassionally observed in the Refuge.
Southwestern willow flycatcher	*Empidonax traillii extimus*	SE/FE	None	None	Inhabits riparian woodlands in southern California.	Not Expected: No suitable habitat in BSA. One CNDDB occurrence in vicinity from 2007, and not reported from occurring in the Refuge.
Western Snowy Plover	*Charadrius alexandrinus nivosus*	None/FT	SSC	None	Inhabits Great Basin standing waters, sandy shore, and wetland habitats. Needs sandy, gravelly, or friable soils for nesting.	Not Expected: No suitable nesting habitat in BSA. One historical CNDDB occurrence of this species from 1999. This species is uncommon to fairly common in the Refuge.
White-faced Ibis	*Plegadis chihi*	None	WL	None	Forages in fresh emergent wetland, wet meadows, and flooded/irrigated pastures and croplands. Nests in dense fresh emergent wetland. CDFW WL for nesting only.	Present. Species was incidentally observed during surveys within the BSA; however, no suitable nesting habitat is present in the BSA. Historical CNDDB occurrence from 1980. This species is common to abundant in the Refuge.
Yellow warbler	*Setophaga petechia*	None	SSC	USFWS - BCC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in cascades and Sierra Nevada. CDFW SSC status for nesting only.	Low Potential. No suitable riparian nesting habitat in the BSA. Historical CNDDB occurrences of this species from the 1952. This species is common, abundant or occassionally known in the Refuge. This species was not observed during biological surveys of the BSA.
Yellow-breasted chat	*Icteria virens*	None	SSC	None	Summer resident inhabits riparian thickets of willow and salt cedar near watercourses. CDFW SSC status for nesting only.	Not Expected: No suitable riparian habitat in the BSA. Historical CNDDB occurrences of this species from the 1960s. This species is rare to very uncommon in the Refuge.
Yuma Ridgway's rail	*Rallus obsoletus yumanensis*	ST/FE	FP	None	Nests in freshwater marshes along the Colorado river and along the south and east ends of the Salton sea.	Not Expected: No suitable habitat identified in the BSA based on protocol-level rail surveys conducted 2022.
Mammals						
American badger	*Taxidea taxus*	None	SSC	Fur bearing mammal	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils in uncultivated land.	Low Potential. Historical CNDDB occurrences of this species from 1937. This species is known to occur on the Refuge. The BSA provides low quality suitable habitat. This species was not observed during biological surveys of the BSA.
Big free-tailed bat	*Nyctinomops macrotis*	None	SSC	None	Roosts in cliffs, rock crevices and some documentation of in buildings, caves, and tree cavities. This species prefers rocky and arid habitats including desert shrub, woodlands, evergreen forests, and riparian.	Low Potential. No CNDDB records of this species in vicinity, but this species is known to occur on the Refuge. No suitable roosting habitat other than low quality buildings. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Desert bighorn sheep	*Ovis canadensis nelsoni*	None	FP	None	Widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County.	Not Expected: Historical CNDDB occurrence from 1986 near Chocolate Mountains. No suitable habitat in the BSA.
Desert kit fox	*Vulpes macrotis arsipus*	None	None	Fur bearing mammal	Inhabits open desert, shrubby, or shrub-grass habitat. This nocturnal species forages at night and typically resides in a den or burrow during the day.	Low Potential. No CNDDB records of this species in vicinity, but this species is known to occur on the Refuge. This species was not observed during biological surveys of the BSA.

Appendix 5.2A, Table 5.2A-2
Special-Status Wildlife with the Potential for Occurrence
Black Rock Geothermal Project

Common Name	Scientific Name	CESA/ESA	CDFW Status[a]	Other Status[b]	Habitat Requirements	Potential for Occurrence[c]
California leaf-nosed boat	*Macrotis californicus*	None	SSC	None	Roost in caves, mines and buildings. Utilizes desert riparian habitat.	Low Potential. No CNDDB records of this species in vicinity, but this species is known to occur on the Refuge. No suitable roosting habitat other than low quality buildings. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Mexican long-tongued bat	*Choeronycteris maxicana*	None	SSC	None	Roosts in caves, mines, rock crevices, and abandoned buildings. Known to use thorn scrub, Palo Verde-saguaro desert, semi-desert grassland, oak woodland, tropical deciduous forests, and riparian vegetation.	Low Potential. No CNDDB records of this species in vicinity, but this species is known to occur on the Refuge. No suitable roosting habitat other than low quality buildings. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Pallid bat	*Antrozous pallidus*	None	SSC	None	Inhabits rocky canyons, open farmland, scattered desert scrub, grassland, shrubland, woodland, and mixed conifer forest.	Low Potential. Historical CNDDB occurrences of this species from 1994. This species is known to occur on the Refuge. No suitable roosting habitat. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	None	SSC	None	Variety of arid areas in southern California; pine juniper woodlands, desert scrub, palm oasis, desert wash desert riparian, etc.	Low Potential. Historical CNDDB occurrences of this species from 1994. This species is known to occur on the Refuge. No suitable roosting habitat. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Spotted bat	*Euderma maculatum*	None	SSC	None	Roosts in prominent rock features. Desert desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pasture.	Low Potential. No CNDDB records of this species in vicinity, but this species is known to occur on the Refuge. No suitable roosting habitat other than low quality buildings. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Western mastiff bat	*Eumops perotis californicus*	None	SSC	None	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	Low Potential. Historical CNDDB occurrences of this species from 1994. No suitable roosting habitat. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Western yellow bat	*Lasiurus xanthinus*	None	SSC	None	Found in valley foothill riparian, desert riparian, desert wash and palm oasis habitats.	Low Potential. Historical CNDDB occurrences of this species from 1994. This species is known to occur on the Refuge. No suitable roosting habitat. This species may forage on agricultural lands in BSA and vicinity. This species was not observed during biological surveys of the BSA.
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*	None	SSC	None	Along the Colorado river and in grass and agricultural areas near irrigation waters. Refuge literature indicates this species is relatively common in agricultural fields and moist habitats.	Moderate Potential. CNDDB occurrence of this species from 2008 in 1 mile buffer. This species is common in the Refuge. Moderate quality suitable habitat is present in the agricultural fields in BSA. This species was not observed during biological surveys of the BSA.

Notes:
Caspian tern were included in CNDDB query but were not included in this analysis because their only special-status listing is International Union for Conservation of Nature least concern.
[a] CDFW Status
[b] Other Status
CESA = California Endangered Species Act
CDFW = California Department of Fish and Wildlife
ESA = Federal Endangered Species Act

Appendix 5.2A, Table 5.2A-2
Special-Status Wildlife with the Potential for Occurrence
Black Rock Geothermal Project

					Habitat Requirements
Common Name	**Scientific Name**	**CESA/ESA**	**CDFW Status[a]**	**Other Status[b]**	**Potential for Occurrence[c]**

FC = Federal Candidate for listing
FE = Federally Endangered
FT = Federally Threatened
FP = Fully Protected
SE = State Endangered
ST = State Threatened
SSC = Species of Special Concern
USFWS BCC = United State Fish and Wildlife Service Bird of Conservation Concern
c Potential for Occurrence definitions are provided in the body text (Section 5.2.1.5)

d Desert tortoise are listed as CESA threatened. As of October 19, 2020, California Fish and Game Commission listed this species as candidate species for consideration as CESA endangered (2020).

Appendix 5.2A, Table 5.2A-3
Observed Plant Species
Black Rock Geothermal Project

Family	Species Name	Common Name	Cal-IPC/CDFA/CCR 4500 Noxious Weed
Aizoaceae	*Sesuvium verrucosum*	Western sea-purslane	
Amaranthaceae	*Atriplex hymenelytra*	Desert-holly	
Amaranthaceae	*Atriplex lentiformis*	Big saltbush	
Amaranthaceae	*Atriplex polycarpa*	Allscale saltbush	
Amaranthaceae	*Beta sp.*	Beet (cultivated)	
Amaranthaceae	*Chenopodium murale*	Nettle lead goosefoot	
Amaranthaceae	*Salsola tragus*	Russian thistle	Cal-IPC Limited/CDFA C/Yes
Amaranthaceae	*Suaeda nigra*	Bush seepweed	
Amaryllidaceae	*Allium sp.*	Onion (cultivated)	
Arecaceae	*Washingtonia filifera*	California fan palm	
Asteraceae	*Chloracantha spinosa*	Spiny Chloracantha	
Asteraceae	*Eclipta prostrata*	False daisy	
Asteraceae	*Lactuca sativa*	Romaine lettuce	
Asteraceae	*Pluchea sericea*	Arrow-weed	
Asteraceae	*Sonchus oleraceus*	Common sow thistle	
Boraginaceae	*Heliotropium curassavicum*	Seaside heliotrope, Alkali heliotrope	
Brassicaceae	*Sisymbrium irio*	London rocket	Cal-IPC Limited/None/None
Convolvulaceae	*Cressa truxillensis*	Alkali weed	
Cyperaceae	*Bolboschoenus maritimus ssp. Paludosus*	Alkali bulrush	
Fabaceae	*Medicago sativa*	Alfalfa (cultivated)	
Fabaceae	*Melilotus albus*	White sweetclover	
Fabaceae	*Melilotus indicus*	Sourclover	
Fabaceae	*Parkinsonia florida*	Palo verde	
Fabaceae	*Prosopsis glandulosa*	Honey mesquite	

Malvaceae	*Malvella leprosa*	Alkali-mallow	
Poaceae	*Arundo donax*	Giant reed	Cal-IPC High/None/Yes
Poaceae	*Avena sativa*	Oat (cultivated)	
Poaceae	*Cynodon dactylon*	Bermuda grass	Cal-IPC Moderate/None/None
Poaceae	*Distichlis spicata*	Salt grass	
Poaceae	*Leptochloa fusca*	Sprangletop	
Poaceae	*Phalaris minor*	Little-seeded canary grass	
Poaceae	*Poa pratensis*	Kentucky bluegrass	Cal-IPC Limited/None/None
Poaceae	*Polypogon monspeliensis*	Rabbitfoot grass	Cal-IPC Limited/None/None
Poaceae	*Triticum aestivum*	Wheat (cultivated)	
Poaceae	*Zea mays*	Corn (cultivated)	
Polygonaceae	*Rumex obtusifolius*	Bitter dock	
Portulacaceae	*Portulaca oleracea*	Purslane	
Solanaceae	*Lycium cooperi*	Cooper's box thorn	
Tamaricaceae	*Tamarix sp.*	Salt cedar	Cal-IPC High/None/Yes
Typhaceae	*Typha domingensis*	Southern cattail	

Appendix 5.2A, Table 5.2A-4
Observed Wildlife Species
Black Rock Geothermal Project

Species Category	Common Name	Species Name
Reptiles	Marcy's checkered garter snake	*Thamnophis marcianus marcianus*
	Side-blotched lizard	*Uta stansburiana*
Birds	American avocet	*Recurvirostra americana*
	American coot	*Fulica americana*
	American kestrel	*Falco sparverius*
	Barn swallow	*Hirundo rustica*
	Black-crowned night heron	*Nycticorax nycticorac*
	Black phoebe	*Sayornis nigricans*
	Black-necked stilt	*Himantopus mexicanus*
	Black-throated sparrow	*Amphispiza bilineata*
	Burrowing owl *	*Athene cunicularia*
	California gull *	*Larus californicus*
	California quail	*Callipepla californica*
	Cattle egret	*Bubulcus ibis*
	Common raven	*Corvus corax*
	Cooper's hawk *	*Accipiter cooperi*
	Costa's hummingbird	*Calypte costae*
	Double-crested cormorant	*Phalacrocorax auratus*
	European starling	*Sturnus vulgaris*
	Great blue heron	*Ardea herodias*
	Great egret	*Casmerodius albus*
	Greater roadrunner	*Geococcyx californianus*
	Great-tailed grackle	*Quiscalus mexicanus*
	Ground dove	*Columbina passerine*
	Inca dove	*Columbina inca*
	Killdeer	*Charadrius vociferus*
	Long-billed curlew *	*Numenius americanus*
	Mallard	*Anas platyrhynochos*
	Marsh wren	*Cistothorus palustris*
	Mourning dove	*Zenaida macroura*
	Northern harrier	*Circus cyaneus*
	Northern shoveler	*Spatula clypeata*
	Red-tailed hawk	*Buteo jamaicensis*
	Red-winged blackbird	*Agelaius phoeniceus*
	Ring-billed gull	*Larus delawarensis*
	Rock pigeon	*Columba livia*
	Rough-winged swallow	*Stelgidopteryx serripennis*
	Ruddy duck	*Oxyura jamaicensis*
	Sandhill crane	*Grus canadensis*
	Snowy egret	*Egretta thula*
	Snowy plover	*Charadrius nivosus*
	Turkey vulture	*Cathartes aura*
	Western meadowlark	*Sturnella neglecta*
	White pelican	*Pelecanus erythrorhynchos*
	White-faced ibis *	*Plegadis chihi*
	Yellow-rumped warbler	*Setophaga coronata*
Mammals	Bobcat	*Lynx rufus*
	Botta's pocket gopher	*Thomomys bottae*
	Coyote	*Canis latrans*
	Racoon	*Procyon lotor*
	Desert Cottontail	*Sylvilagus audubonii*

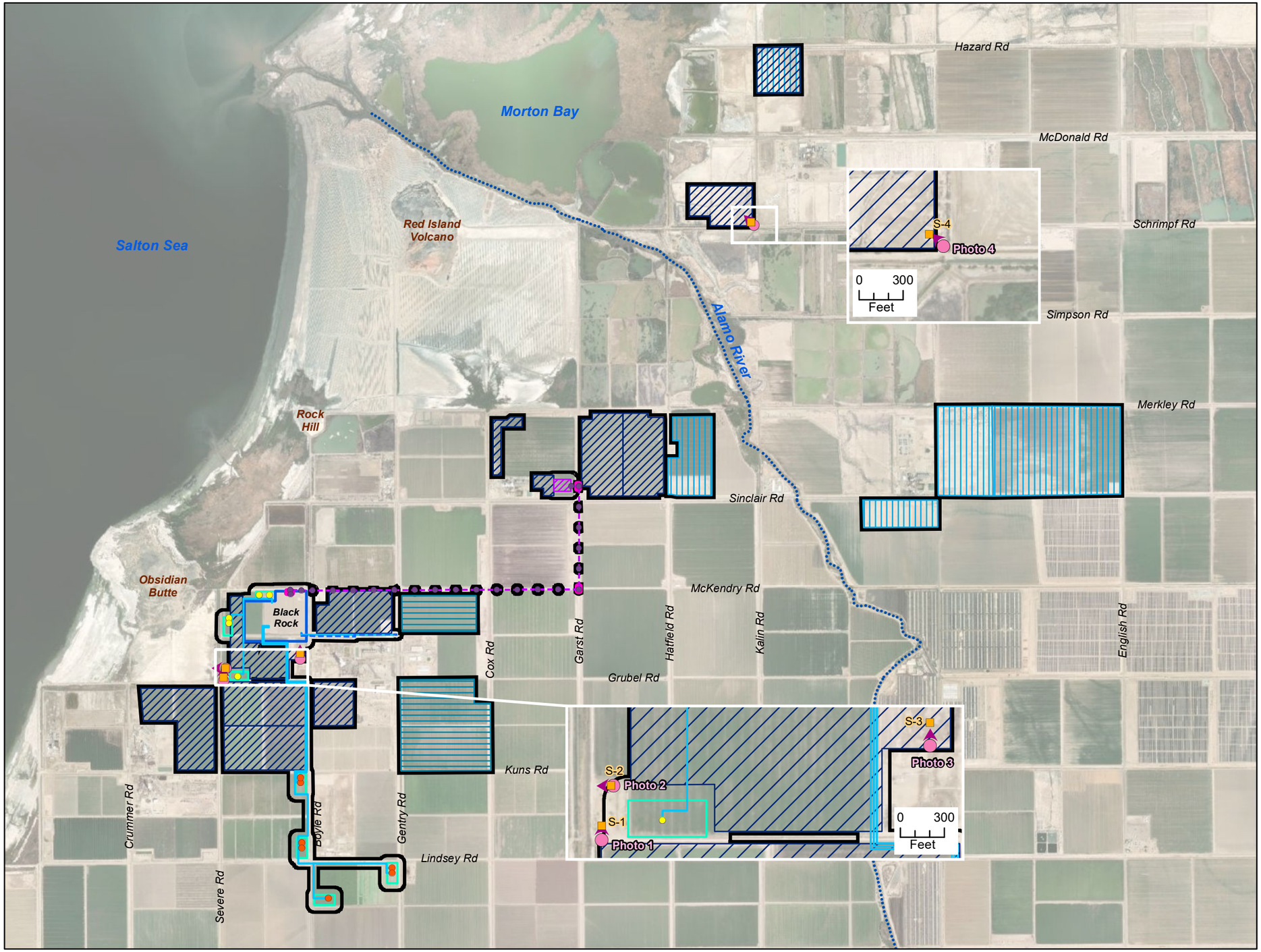
* This is a special-status wildlife species with more information provided in Appendix 5.2A.

Appendix 5.2B
CNDDB Figures - Confidential

This Appendix is filed under a request for confidential designation

Appendix 5.2 B, Confidential Figures have been provided under a request for confidentiality.

Appendix 5.2C
Aquatic Resource Delineation Documentation



Legend

- Biological Study Area
- Sample Point
- Photo Point
- Plant
- Well Pad
- Injection Well
- Production Well
- Pipeline
- Water Supply Pipeline
- Gen-Tie Line Pole
- Gen-Tie Line
- Pull Site
- Switching Station
- Borrow Pit
- Construction Camp
- Construction Laydown and Parking Areas

N

0 0.25 0.5 1
Miles

Appendix 5.2C Figure 1
Aquatic Resource Delineation Results
Black Rock Geothermal Project
Imperial County, California

Jacobs

\\dc1vs01\gisproj\B\BHE_Renewables\Imperial_Valley\MapFiles\Aquatic_Resources\BR\Figure_1_230319.mxd

Photo 1: View to the north at **Sample Point 1.** Photo shows an area mapped by National Wetland Inventory (NWI) as Palustrine Unconsolidated Shore Seasonally Flooded Excavated (PUSCx), but no wetland indicators are present.

Photo 2: View to the west at **Sample Point 2.** Photo shows an area mapped by NWI as PUSCx, but no wetland indicators are present.

Photo 3: View to the north at **Sample Point 3.** Photo shows an area mapped by NWI as PUSCx, but no wetland indicators are present.

Photo 4: View to the northwest at **Sample Point 4**. The area mapped by NWI as PUSCx and as an intermittent reservoir by the National Hydrography Dataset, but no soil or hydrology indicators are present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Black Rock Geothermal Project City/County: Imperial County Sampling Date: 3/1/22

Applicant/Owner: Black Rock Geothermal LLC State: CA Sampling Point: S-1

Investigator(s): R. Newton, R. John Section, Township, Range: S33 T 11S R13E

Landform (hillslope, terrace, etc.): manmade terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): D - Interior Deserts Lat: 33.163210° Long: -115.631048° Datum: WGS84

Soil Map Unit Name: Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Area mapped by NWI as a seasonally flooded excavated pond (PUSCx), but no wetland indicators are present. The Antecedent Precipitation Tool determined the area was drier than normal at the time of sampling.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Atriplex lentiformis	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species 20	x 4 =	80
UPL species _____	x 5 =	_____
Column Totals: 20 (A)		80 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: S-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5 YR 4/3	100					SiLo	~40% gravels/fill
3 - 18	7.5 YR 4/3	100					SiLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Constructed area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Black Rock Geothermal Project City/County: Imperial County Sampling Date: 3/1/22

Applicant/Owner: Black Rock Geothermal LLC State: CA Sampling Point: S-2

Investigator(s): R. Newton, R. John Section, Township, Range: S33 T 11S R13E

Landform (hillslope, terrace, etc.): manmade terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): D - Interior Deserts Lat: 33.162224° Long: -115.631193° Datum: WGS84

Soil Map Unit Name: Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Area mapped by NWI as a seasonally flooded excavated pond (PUSCx), but no wetland indicators are present. The Antecedent Precipitation Tool determined the area was drier than normal at the time of sampling.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Atriplex lentiformis	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species 20	x 4 =	80
UPL species _____	x 5 =	_____
Column Totals: 20 (A)		80 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: S-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5 YR 4/3	100					SiLo	~40% gravels
3 - 18	7.5 YR 4/3	100					SiLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Constructed area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Black Rock Geothermal Project City/County: Imperial County Sampling Date: 3/1/22

Applicant/Owner: Black Rock Geothermal LLC State: CA Sampling Point: S-3

Investigator(s): R. Newton, R. John Section, Township, Range: S33 T 11S R13E

Landform (hillslope, terrace, etc.): cleared dirt parking lot? Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): D - Interior Deserts Lat: 33.164214° Long: -115.624017° Datum: WGS84

Soil Map Unit Name: Holtville silty clay, wet NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Area mapped by NWI as a seasonally flooded excavated pond (PUSCx), but no wetland indicators are present. The Antecedent Precipitation Tool determined the area was drier than normal at the time of sampling.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

No vegetation present. Area has been cleared of vegetation and may serve as parking for neighboring industries.

SOIL

Sampling Point: S-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	7.5 YR 4/3	100					SiLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Black Rock Geothermal Project City/County: Imperial County Sampling Date: 3/14/22

Applicant/Owner: Black Rock Geothermal LLC State: CA Sampling Point: S-4

Investigator(s): R. Newton Section, Township, Range: S23 T 11S R13E

Landform (hillslope, terrace, etc.): excavation Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): D - Interior Deserts Lat: 33.199224° Long: -115.580945° Datum: WGS84

Soil Map Unit Name: Imperial silty clay, wet NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Area mapped by NWI as PUSCx and NHD as an intermittent reservoir, but no hydric soil or wetland hydrology indicators are present. The Antecedent Precipitation Tool determined the area was drier than normal at the time of sampling.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Allenrolfea occidentalis	8	Y	FACW
2.			
3.			
4.			
5.			
	8 = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 8	x 2 = 16
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: 8 (A)	16 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: S-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 8	7.5 YR 5/3	100					SiLo	
8-17	7.5 YR 4/3	92	7.5 YR 5/1	8	C	M	SiLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: