

Heber Dunes State Vehicular Recreation Area

2024 Soil Conservation Plan



Prepared by:

California Department of Parks and Recreation
Off-Highway Motor Vehicle Recreation Division and Natural Resources Division
Ocotillo Wells District

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LIST OF FREQUENTLY USED ACRONYMS

BAS	Best Available Science
CARB	California Air Resources Board
CDFW [formerly CDFG]	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDDB	California Natural Diversity Database
EDRR	Early Detection Rapid Response
HDSVRA	Heber Dunes State Vehicular Recreation Area
HU	Hydrologic Unit
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
MU	Management Unit
NAAQS	National Ambient Air Quality Standard
NDVI	Normalized Difference Vegetation Index
OHMVRD	Off-Highway Motor Vehicle Recreation Division
OHV	Off-Highway Vehicle
PM ₁₀	Particulate Matter Less Than 10 Microns in Diameter
PRC	Public Resources Code
SB	Senate Bill
SCP	Soil Conservation Plan
SDG&E	San Diego Gas and Electric
SIP	Statewide Implementation Plan
SSAB	Salton Sea Air Basin
SSC	California Species of Special Concern
SVRA	State Vehicular Recreation Area
VegCAMP	Vegetation Classification and Mapping Program
WHPP	Wildlife Habitat Protection Plan

1 INTRODUCTION

Heber Dunes State Vehicular Recreation Area (SVRA) offers 341 acres for off-highway vehicle (OHV) recreation in Imperial County. The California Department of Parks and Recreation (DPR; State Parks) manages Heber Dunes SVRA in accordance with Public Resources Code (PRC) Section (§) 5090 et seq. and department policies, as defined in the Department Operations Manual. The 2020 Soil Conservation Standard requires each SVRA to prepare a Soil Conservation Plan; this document is intended to meet that obligation for Heber Dunes SVRA.

1.1 2020 SOIL CONSERVATION STANDARD

PRC §5090.35(b)(1) requires the Off-Highway Motor Vehicle Recreation Division (OHMVRD; Division) to “review, and, if deemed necessary, update the 2008 Soil Conservation Standard and Guidelines to establish a generic and measurable soil conservation standard.” This standard is meant to ensure appropriate resource management and maintenance in areas of OHV use, including SVRAs. Following the review, the OHMVR Division updated the 2008 document to create the 2020 Soil Conservation Standard and Guidelines for purposes of clarification and to account for technological changes in vehicles used for OHV recreation.

In full, the 2020 Soil Conservation Standard (Soil Standard) states:

Off-highway vehicle recreation facilities shall be managed for sustainable long-term prescribed use without generating soil loss that exceeds restorability, and without causing erosion or sedimentation which significantly affects resource values beyond the facilities. Management of OHV facilities shall occur in accordance with Public Resources Code, Sections 5090.2, 5090.35, and 5090.53.

The Heber Dunes SVRA Soil Conservation Plan (SCP) has been developed to demonstrate compliance with the 2020 Soil Standard by documenting assessment, maintenance and monitoring actions related to OHV road and trail management. A compliance report, which includes an annual action plan, will also be incorporated as part of the SCP to document activities and projects undertaken to continually demonstrate compliance with the Soil Standard and to detail planned actions and projects aimed at improving soil conservation efforts at the OHV recreational facility.

1.2 RELATIONSHIP WITH OTHER SVRA PLANS

An SCP is only one of several planning documents used at State Parks, so it must relate to and complement other park plans (Figure 1). Heber Dunes SVRA has a limited number of planning documents. In late 2011, a General Plan was approved for Heber Dunes that guides the management for all aspects of the SVRA. A Wildlife Habitat Protection Plan (WHPP) was finalized in 2022. The WHPP will address compliance with PRC requirements to improve and

conserve wildlife habitat. While the SCP and WHPP focus on different resources, there is overlap between the two documents and they were designed to be complementary. Additionally, a Dust Control Plan was developed in 2013 (Tetra Tech 2013) for the park unit, and is updated biennially. The most recent update occurred in 2023 (CDPR 2023).

State Park General Plans are broad, goal-oriented plans that serve as the primary management documents for park units within the California State Parks system. A general plan is expected to stand for 20 years or longer so it must provide a consistent vision, while providing flexibility for replying to changing conditions. In 2011, the first General Plan was developed for Heber Dunes SVRA, providing a vision and guide for the long-term management of the park and its resources. The goals of this General Plan focus on providing an enjoyable recreational experience, enhancing OHV recreational opportunities, and protecting the SVRA’s resources, including plants, wildlife, and cultural resources.

For further details on the park facilities and park operations, the 2011 Heber Dunes SVRA General Plan may be found online at: https://ohv.parks.ca.gov/?page_id=26033.



Figure 1. State Parks' Park Planning Structure.

1.3 CEQA COMPLIANCE

As a part of this process, the SCP identifies resource objectives, and general types of projects and/or actions that can or will be taken to ensure progress on meeting the SCP objectives. The California Environmental Quality Act (CEQA) process begins at this stage. If discretionary projects or actions are identified, State Parks will follow Department procedure for meeting

CEQA compliance. Once a project or action has been selected for implementation, it will undergo CEQA review at that time using the State Parks Project Evaluation Form.

1.4 UPDATE CYCLE

This SCP will be reevaluated at least once every five years. The SCP is meant to be a living document with changes incorporated to ensure conditions are documented and actively improved. All maintenance and monitoring plans included in the document will be updated as necessary.

1.5 ADAPTIVE MANAGEMENT

Adaptive management is a common strategy and fundamental component of implementing best available science (BAS) in natural resource management. PRC §5090.14 defines the use of adaptive management as:

“Adaptive management” means to use the results of information gathered through a monitoring program or scientific research to adjust management strategies and practices to conserve cultural resources and provide for the conservation and improvement of natural resources.

An adaptive management loop for a SCP includes an assessment of park resources and facilities, defining objectives based on those conditions, targeting maintenance and management to meet objectives, monitoring to determine success of maintenance and management actions, and determining necessary adjustments. The Heber Dunes SCP will define the adaptive management approach that guides soil conservation at the SVRA.

2 PROJECT AREA

2.1 LOCATION

Heber Dunes SVRA is located within an unincorporated area of Imperial County, approximately six miles south from the town of Holtville (Figure 2). Imperial County is primarily a rural, agricultural region. The SVRA is accessible by regional transportation routes such as Interstate 8 (I-8) and State Route 7 (SR-7). The greater San Diego area and the greater Palm Desert area are each approximately 125 miles west and northwest, respectively. The SVRA is surrounded by agricultural land with an intricate series of canals providing irrigation water for cropland. The communities of Calexico, El Centro, Holtville, Imperial, Heber, and Mexicali are within short driving distance of the park (10 miles). The international border with Mexico is approximately 2.5 miles south of Heber Dunes SVRA.

2.1.1 Regional Land Use

In general, Heber Dunes SVRA is surrounded by agricultural fields (Figure 3). The park is bounded to the north by Heber Road. The South Alamo Canal forms most of the southern and eastern boundaries of Heber Dunes SVRA. The canal traverses north and south along the entire eastern site boundary of Heber Dunes SVRA and forms a portion of the southern boundary. Immediately east of and adjacent to the canal is a 306-acre undeveloped parcel of land that was purchased by the California Department of Transportation (Caltrans) for mitigation purposes associated with previous improvements to SR-7. Agricultural fields lie west of the SVRA. A few residential home sites in the midst of the agricultural fields are within one-half mile of the SVRA.

There are multiple easements that cross Heber Dunes SVRA boundaries related to power transmission and irrigation canal access. Imperial Irrigation District (IID) supplies water to Heber Dunes SVRA and has water conveyance structures in the vicinity of the park, including the Alamo Canal. San Diego Gas and Electric (SDG&E) has three transmission towers that bisect Heber Dunes SVRA, carrying high-voltage 500-kilovolt overhead electric lines across the park. SDG&E has a 200-foot-wide easement that follows the electric lines through the SVRA. These facilities are maintained by their associated entity, and do not prohibit OHV recreation.

2.1.2 SVRA and Regional History

Heber Dunes SVRA falls within the traditional territory of the Kumeyaay. The Kumeyaay settled primarily along the New and Alamo Rivers (Kirkish et al., 2000) through the early 19th century, when traditional use of the area declined due to increased European settlement. The Kumeyaay were gatherers, living off what the land provided and supplementing their diet with floodplain horticulture along rivers and springs (Underwood and Gregory, 2006).

In the late 18th century, Spanish exploration and settlement began in what would become eastern San Diego and Imperial Counties. Mexican settlers began to enter the area after California came under Mexican rule in 1821. Anglo-European contact precipitated the spread of cattle grazing and agriculture throughout the region. The development of a water conveyance system for agriculture and residential development in the early 20th century facilitated agricultural development and associated population growth.

The dunes located within Heber Dunes SVRA were part of a much more extensive network of dunes before being graded in 1905 for the construction of irrigation canals (Craft personal communication, 1998). Anecdotally, unauthorized dumping of trash has occurred along the canals, although there aren't records quantifying that this occurred, the extent of debris remaining, or locations this occurred (Fong personal communication, 2022).

Although little recorded history is available about the Heber Dunes property, oral interviews with long-time residents have provided some information. Local residents refer to the area as

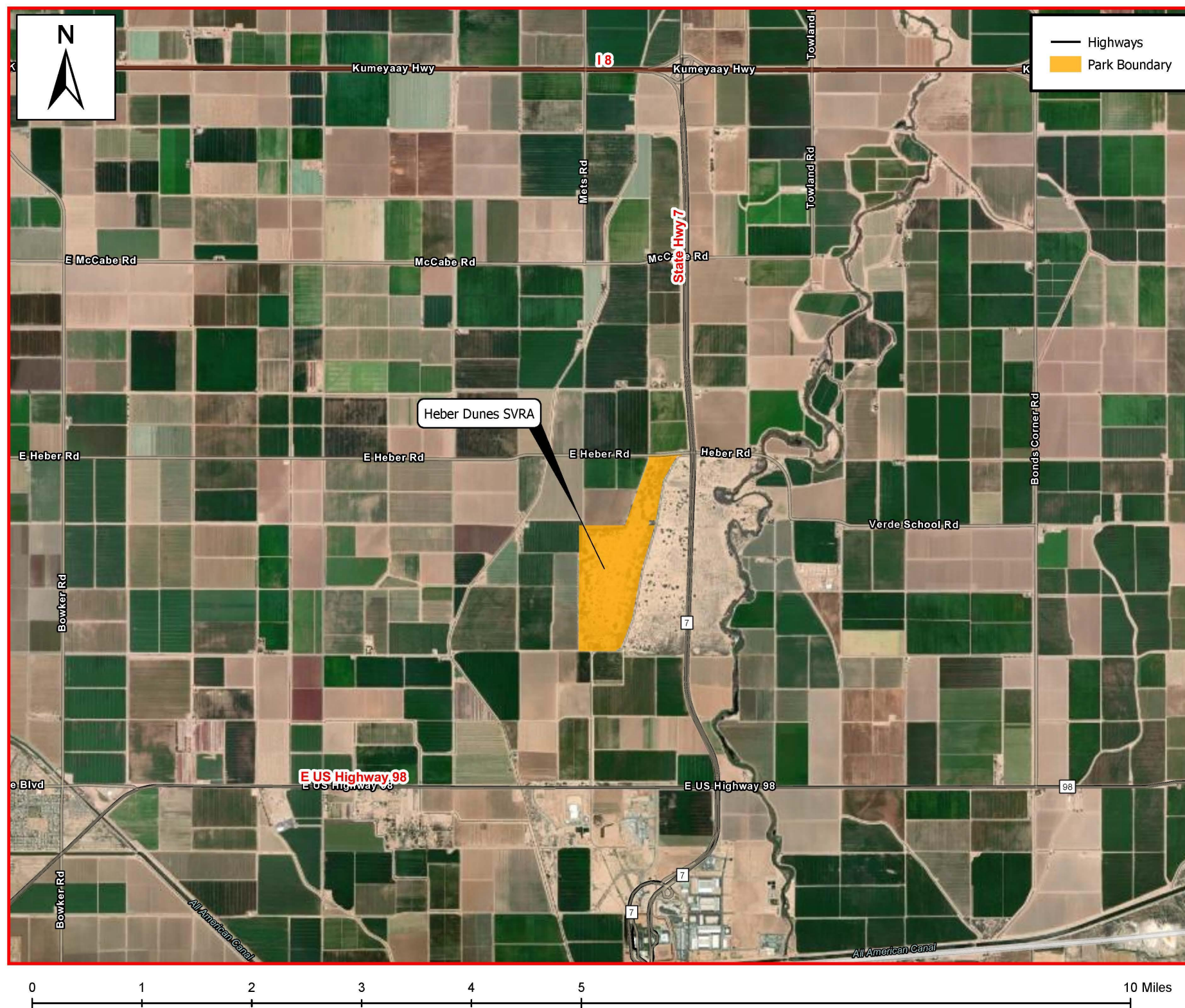


Figure 2. Regional location of Heber Dunes SVRA.

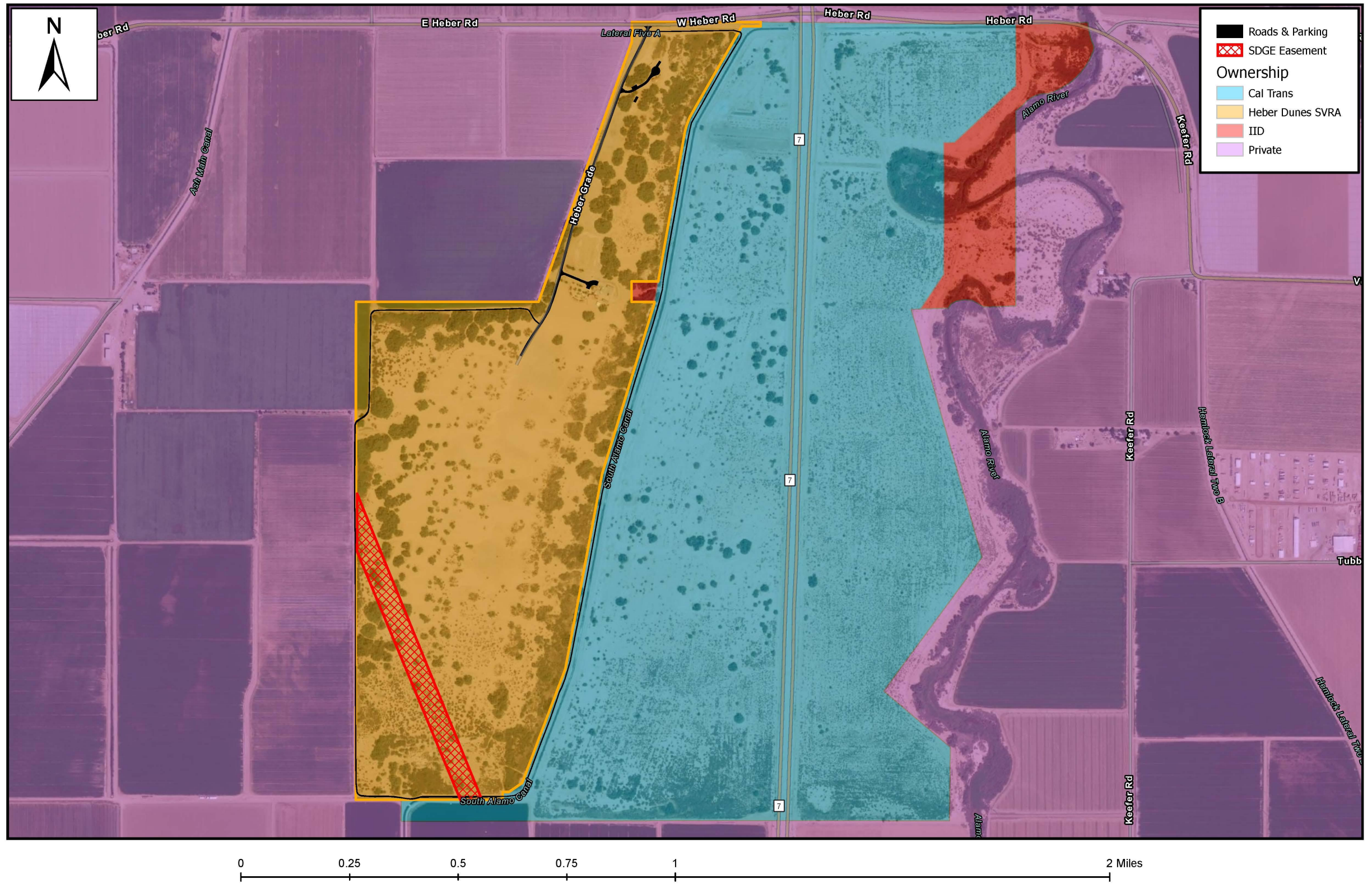


Figure 3. Regional land use at Heber Dunes SVRA.

“Heber Beach,” in reference to the consistent presence of water next to the sand dunes, although there are differing stories about how this name originated.

Before the OHMVR Division and DPR managed Heber Dunes as a SVRA, Imperial County operated the area as an OHV facility for more than 30 years. In 1998, the OHMVR Division entered into a lease with the County to assume responsibility for park operations. Heber Dunes was officially deeded to the OHMVR Division in 2007 and was subsequently classified as a SVRA.

Today, Heber Dunes SVRA offers a unique recreation opportunity in Imperial County as it is located within several miles of Imperial County population centers and provides a good opportunity for novice riders to gain experience. Due to the relatively low sand dunes, limited day use hours, and small park size, most visitation occurs from the local area. In addition to OHV recreation, the park is also popular as a gathering place for barbeques and picnics.

2.2 PARK OPERATIONS

Heber Dunes SVRA is part of the Ocotillo Wells District of DPR. The Ocotillo Wells District manages four other park units (Figure 4). They are the Ocotillo Wells SVRA, Picacho State Recreation Area (SRA), Salton Sea SRA, and Indio Hills Palms, which is managed as part of the Coachella Valley Preserve. The headquarters for the Ocotillo Wells District is at Ocotillo Wells SVRA, approximately 55 miles northwest of the Heber Dunes SVRA.

The park has limited dedicated staff including a Park Maintenance Worker I, a State Park Interpreter I, a State Park Peace Officer, and several seasonal staff hired as needed. District staff offer support as needed, including resource protection.

2.2.1 Facilities

Heber Dunes SVRA is largely undeveloped with limited infrastructure and improvements. Much of the park is composed of sand dunes and vegetations, with a network of social trails and perimeter road (Figure 5). The park unit is zoned for open riding, although the General Plan indicates that the southwestern portion of the SVRA could be operated as trails only. A small, developed area in the north-central portion of the site off Heber Dunes Road includes administrative and maintenance buildings, visitor restroom and shower facility, large picnic area, and dirt track for young OHV riders. A water treatment plant is located in the maintenance yard. A camp host area with a residence and three compacted gravel pads are in the northern portion of the facility. A dozen shade ramadas are scattered in the center of the facility, as well as one unloading ramp for OHVs.

Aside from the SVRA’s paved entrance road, the Heber Dunes Road, and a dirt perimeter road, there are no designated trails in the SVRA. However, there are well-established user created routes of travel, referred to as social or volunteer trails, throughout the unit.

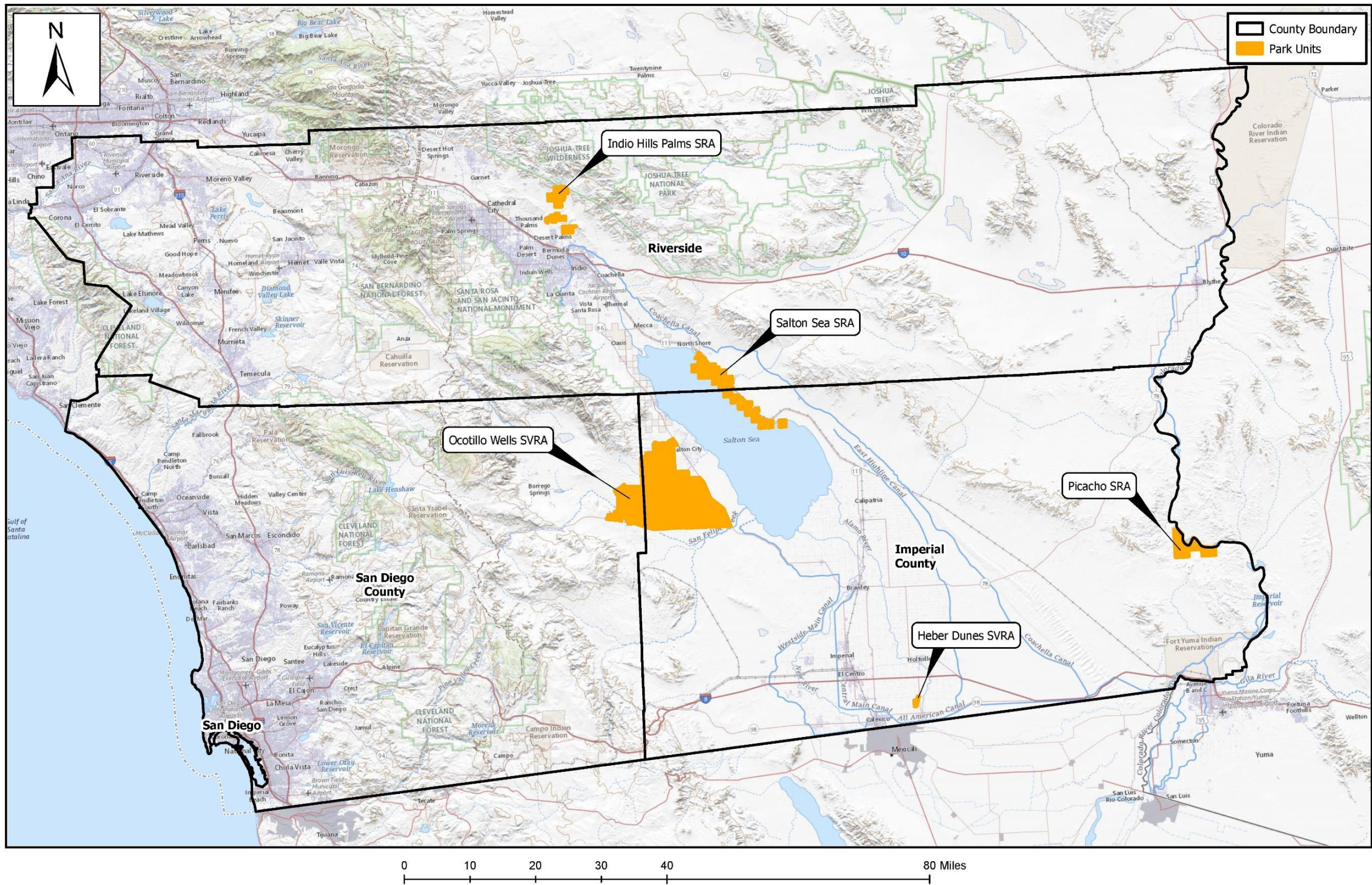


Figure 4. Park units in the Ocotillo Wells District.

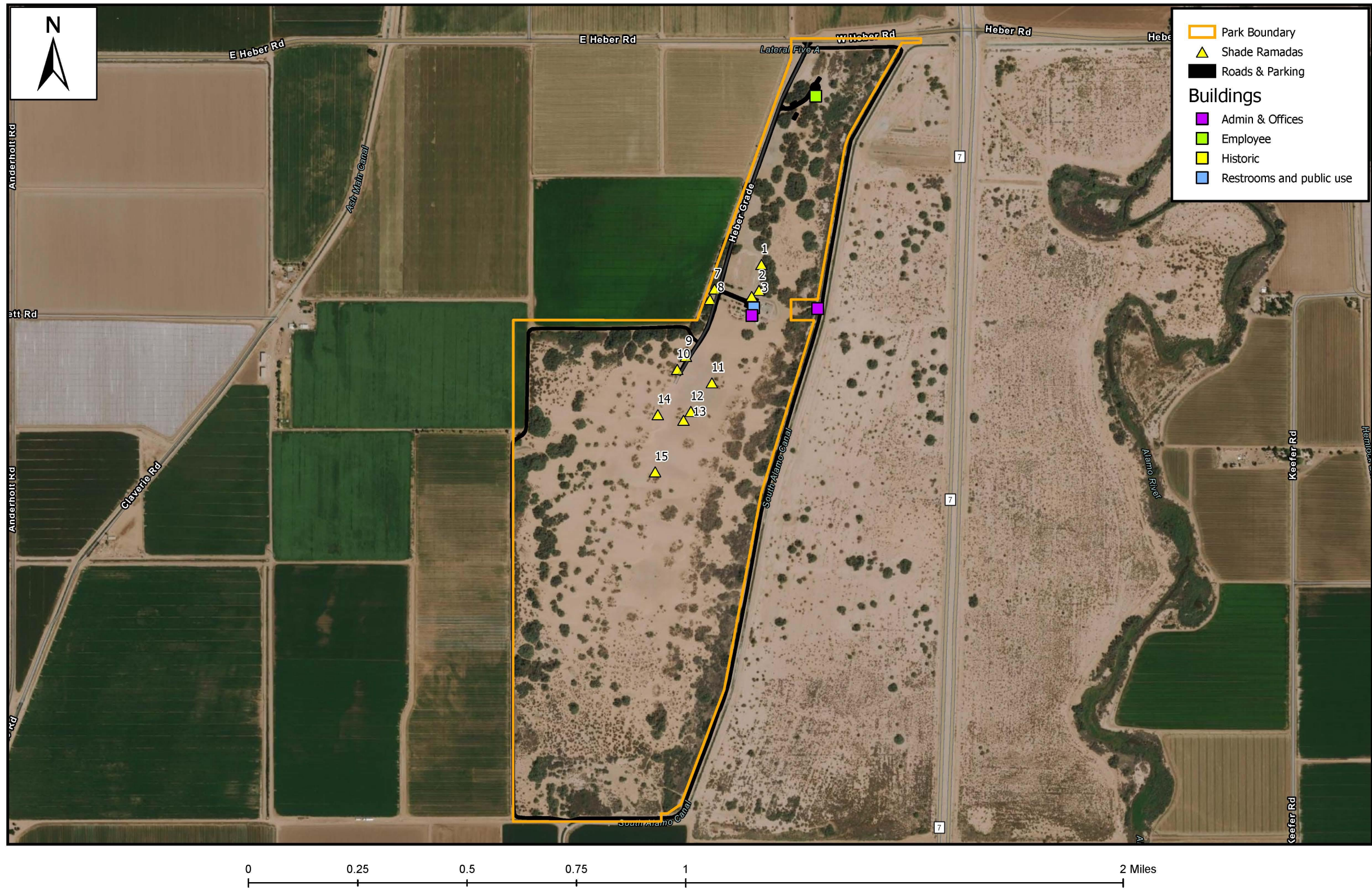


Figure 5. Heber Dunes SVRA facilities, including shade ramadas.

A pump house is located on IID property on the eastern portion of the SVRA, which is used for water delivery operations for the park. Park water is obtained from surface water in the South Alamo Canal, which is owned by IID. SDG&E has three transmission towers that run diagonally through Heber Dunes SVRA, starting in the southeastern corner.

2.2.2 Visitation and Use Levels

The terrain of Heber Dunes SVRA consists of low sand dunes, sparse vegetation, and an informal network of social trails. Infrastructure at the SVRA consists of an office building with public restrooms, a day-use picnic area, a motocross track for young motorcycle and all-terrain vehicle (ATV) riders, and scattered shade ramadas. The terrain of the Heber Dunes SVRA offers OHV recreation for the beginner and intermediate OHV enthusiast. It does not have features that provide for the more advanced OHV recreational opportunities. ATVs, also known as quads, are the predominant type of OHV used by recreationists at the SVRA. Larger four-wheel drive vehicles and motorcycles designed for trails (dirt bikes) are also used.

Heber Dunes SVRA is for day-use visitation only. Visitation consists primarily of OHV recreationists from neighboring communities. Typically, weekend visitation is higher than weekday use. Overall, visitation varies by season, with the highest levels occurring between fall and early spring. Visitation is significantly lower during the late spring and summer, when temperatures are considerably higher. Annual visitation is estimated at 13,000 vehicles with total attendance around 35,000 (Erickson et al., 2014).

Visitors tend to gather in shaded areas, including ramadas and under trees, with family and friends in small to large groups (five to ten individuals). Besides OHV recreation, socializing, picnicking and barbecuing, watching OHV recreation, and viewing scenery are popular activities.

Most visitors drive street-legal vehicles into Heber Dunes SVRA with OHVs in trailers or the bed of pick-up trucks. Visitors typically park their street-legal vehicles at picnic tables; formal parking areas are not provided within Heber Dunes SVRA. Informal parking at day-use sites tends to be preferred by visitors so that they can access supplies in their vehicles throughout the day.

2.2.3 Dust Control Plan

Imperial County Air Pollution Control District (ICAPCD) Rule 800 [[General Requirements for Control of Fine Particulate Matter \(PM-10\)](#)] requires a dust control plan (DCP) for operations capable of generating fugitive dust (PM-10) from anthropogenic sources. In 2013, the first DCP was finalized for both Heber Dunes and Ocotillo Wells SVRAs in Imperial County, with updates occurring biennially. The most recent update was submitted in 2023 (CDPR 2023).

The DCP prioritized paved and high-use unpaved roads (greater than 50 vehicles per day activity) for control measures; only two paved roads were prioritized at Heber Dunes SVRA. In total, 0.77 miles of road or trail were prioritized for control at the unit. Additionally, during off-

road special events and/or competitions that average 50 or more vehicles per day, control measures are required.

While the DCP lists several options for dust control, at Heber Dunes SVRA control typically consists of paving high use roads or watering select trails when they are in high use. Large off-road special events are rarely requested or permitted at Heber Dunes SVRA, however an appropriate control method from the DCP would be selected for use at such an event.

2.3 PROJECT AREA CHARACTERISTICS

2.3.1 Natural and Physical Setting

2.3.1.1 Climate/Air Quality

Heber Dunes SVRA is located in Imperial County, in the Imperial Valley, just north of the border between the United States and Mexico. Imperial County is located within the Salton Sea Air Basin (SSAB). The climate is typical of a desert with low annual precipitation, very hot summers, mild winters, high evaporation rates, and strong temperature differentials and inversions.

One of the main determinants of climatology in the SSAB is a semi-permanent high-pressure area (the Pacific High) over the Pacific Ocean. In the summer, the Pacific High is located well to the north, directing storm tracks north of California and maintaining clear skies for much of the year. When the Pacific High moves southward during the winter, weakened low pressure storms and the mountains to the north bring little rainfall. The combination of subsiding air pressure, surrounding mountain barriers, and sufficient distance from the cold waters of the Pacific Ocean severely limits precipitation in Imperial County.

Annual rainfall averages approximately three inches within the vicinity of Heber Dunes SVRA. Precipitation over the entire area occurs mostly from November through April, and August through September, but its distribution and intensity are often sporadic. Local thunderstorms may contribute all of the average seasonal precipitation at one time, or only a trace of precipitation may be recorded at any locale for the entire season (CRBRWQCB 2006).

The flat terrain of the SSAB, coupled with strong temperature differentials created by intense solar heat, produces moderate winds and deep thermal convections. The county experiences mild and dry winters with daily maximum temperatures that range from 65 to 75 degrees Fahrenheit (°F) range, while the daily maximum temperatures during the hot summer months are in the 104 to 115 degrees Fahrenheit range (AECOM 2011a). The mean monthly temperature ranges from 55 to 90°F (AECOM 2011a).

Wind speeds are generally less than 10 mph; however, between April and May, the county may occasionally experience wind speeds greater than 30 mph. Predominant wind directions are to the west and west-southwest during all four seasons, and the average annual daily wind speed is 6.9 mph.

A common atmospheric condition between November and June in the county is known as a temperature inversion, where air temperatures become warmer with increasing height. An inversion can be associated with little air movement and stagnant conditions, and can persist for one or more days, thereby trapping air pollutants below and preventing their dispersion, thus increasing pollutant concentrations. The height of the inversion determines the size of the mixing volume trapped below. Inversion strength or intensity is measured by the thickness of the layer and the difference in temperature between the base and the top of the inversion. The strength of the inversion determines how easily it can be broken by winds or solar heating. Inversions appear to be relatively rare between July and October.

The Imperial County Air Pollution Control District is the agency responsible for protecting public health and welfare in the county by administering federal and state air quality laws and policies. ICAPCD's tasks include monitoring air pollution, preparing the Imperial County portion of the State Implementation Plan (SIP), and promulgating its rules and regulations. The SIP includes strategies and tactics to attain and maintain acceptable air quality in Imperial County. In 2010, the county's primary sources of air emissions were from fossil fuel combustion, on-road vehicles, industrial processes, agricultural tilling, fertilizer and live-stock, and road dust (AECOM 2011a).

Both the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) designate areas according to their attainment status for criteria air pollutants. These designations aim to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified based on available information as meeting or not meeting the standards.

The Clean Air Act allows a nonattainment area to be redesignated as attainment if the EPA determines that the 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) has been attained, in addition to other requirements. The 24-hour PM_{10} NAAQS allows for one exceedance of the 24-hour average PM_{10} standard ($150 \mu\text{g}/\text{m}^3$) per year averaged over a three consecutive calendar year period, excluding exceptional events, measured at each monitoring site within an area based on quality-assured air quality monitoring data (ICAPCD Staff Report 2018). If an area is redesignated from nonattainment to attainment, the federal Clean Air Act requires a revision to the SIP. This revision, called a maintenance plan, demonstrates how the air quality standard will be maintained for ten years. Until 2018, the SSAB had been designated by federal EPA standards as a moderate nonattainment area for the 8-hour ozone standard and a serious nonattainment area for respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM_{10}).

In 2018, the ICAPCD submitted the 2018 Redesignation Request and Maintenance Plan for Particulate Matter Less than 10 Microns in Diameter (2018 PM_{10} Plan) to CARB requesting redesignation of the Imperial Valley as attainment for PM_{10} standards. According to ongoing monitoring of the SSAB, the ICAPCD demonstrated that when excluding exceptional events, the

Imperial Valley did not violate the federal 24-hour PM₁₀ NAAQS during the relevant time period. CARB approved the redesignation request in December 2018, and subsequently the request was approved by EPA in October 2020 (EPA 2020). The SSAB is in attainment for the other criteria air pollutants.

In conjunction with ICAPCD, the park finalized a Dust Control Plan for the SVRA in 2013 to comply with Imperial County's Rule 800 – General Requirements for Control of Fine Particulate Matter (PM₁₀). The Dust Control Plan calls for control measures on two paved roads within Heber Dunes SVRA that average greater than 50 vehicle trips per day. Off-road special events or races with more than fifty vehicle trips per day would also require control measures. Primary control consists of road treatments, such as gravel or pavement, to main routes of travel within Heber Dunes SVRA. The DCP is updated biennially, with the most recent update in 2023 (CDPR 2023), but treatments have largely remained consistent to the original DCP.

2.3.1.2 Geology and Soils

Heber Dunes SVRA is in the Imperial Valley, which is part of the Salton Trough, a structural and topographic depression that lies within the Colorado Desert geomorphic province. The Salton Trough marks the northern extent of tectonic plate rifting that created the Gulf of California. Over the millennia, the Colorado River has periodically meandered to the Salton Trough, filling it to create iterative versions of ancient Lake Cahuilla, before reestablishing its path to the north end of the Gulf of California.

In repeatedly filling the Salton Trough depression, the Colorado River deposited its nutrient-rich fluvial soils onto the submerged desert floor. The soils of the Imperial Valley owe their fertility and productivity to this past wandering quirk of the Colorado River. Sands and silts deposited into Lake Cahuilla by the Colorado River were exposed to westerly prevailing winds when Lake Cahuilla dried in the late 17th Century (Laylander 1995). The sediments accumulated based on the regional wind patterns and silt from deposition, eventually creating the dunes that would become the Heber Dunes SVRA, as well as the much larger Algodones Dunes found along eastern edge of the Imperial Valley.

The agricultural production potential of the Lake Cahuilla soils in their present desert setting was recognized in the later portion of the 19th century, as the country was expanding westward. Engineering attempts to more modestly divert Colorado River water to irrigate the soils of the Salton Trough began at the turn of the twentieth century. Repeated levee failures related to these early attempts caused the Colorado River to flow once again unchecked into the Salton Trough for about two years. Massive amounts of rock were repeatedly dumped into the levee breach, but it wasn't until 1907, when the Southern Pacific Railroad Company joined the effort, that the breach was closed. By that time the Salton Sea had formed, a more modest, but still massive, modern-day equivalent of ancient Lake Cahuilla.

The Salton Trough is bordered on the west and southwest by low-lying mountains comprised of deformed marine and non-marine sediments overlying older igneous and metamorphic units. Numerous active faults within the Salton Trough suggest the area is part of a depressed block at the northern end of crustal rifting caused by seafloor spreading that is still widening the Gulf of California to the south. As the trough continues to sink over time, uplift occurs in the surrounding areas, resulting in the tilting of the sedimentary deposits.

As a result of activity associated primarily with the San Andreas Fault System east of the Salton Sea, and the San Jacinto Fault System, the SVRA and region are subject to earthquakes. Related geothermal features, such as hot springs, are found along these fault traces, and commercial energy production from the regional geothermal activity is ongoing.

Geologic maps show the region as underlain by Quaternary lake deposits and alluvium (Strand 1962). Quaternary sand dunes are mapped on the property. The Imperial Fault crosses the property from southeast to northwest (Kahle et al. 1984; Real et al. 1979)(Figure 6). A 1937 aerial photograph (Youd and Wieczorek 1982) shows that the area surrounding the property was predominantly covered with sand dunes with a stream channel to the west of Heber Dunes SVRA. The overall large size of the dune substrate at Heber Dunes SVRA precluded its development for agriculture, unlike many of the smaller dune areas throughout the Salton Trough, which were easier to remove or level for other uses.

Today, Heber Dunes SVRA consists of sand dunes and areas of claypan soils. The dunes are as high as 50 feet, but most are 25 feet high and lower (AECOM 2011). A county-wide soil survey indicates that six soil types exist at Heber Dunes SVRA (USDA 1981)(Figure 7). The majority of Heber Dunes SVRA, 83 percent, is composed of Rositas fine sand (284 acres). Other on-site soil types are Meloland and Holtville loams (21 acres), Vint loamy very fine sand (13 acres), Meloland very fine sandy loam (12 acres), Vint and Indio very fine sandy loams (9 acres), and Indio loam (1 acre). Fine sands can pose an issue for vehicles and facilities. Fine sands are regularly present along the southwestern corner of the SVRA and near the base of the middle utility tower. Additionally, many sections of the SVRA regularly experience sand build-up from aeolian sands. Generally, this is not a management concern but two areas in particular have required recurring maintenance – Ramada 15 and the rock wall behind the large day use picnic area.

In 2024, district staff was informed that areas around both the residence and south RV pad (near the residence) leech fields erode following rainfall. After visiting the area, the possibility that the soil is compacting, rather than eroding, was discussed. Work will need to be done to improve the area; however, it is currently unclear how to proceed and an objective has been developed.

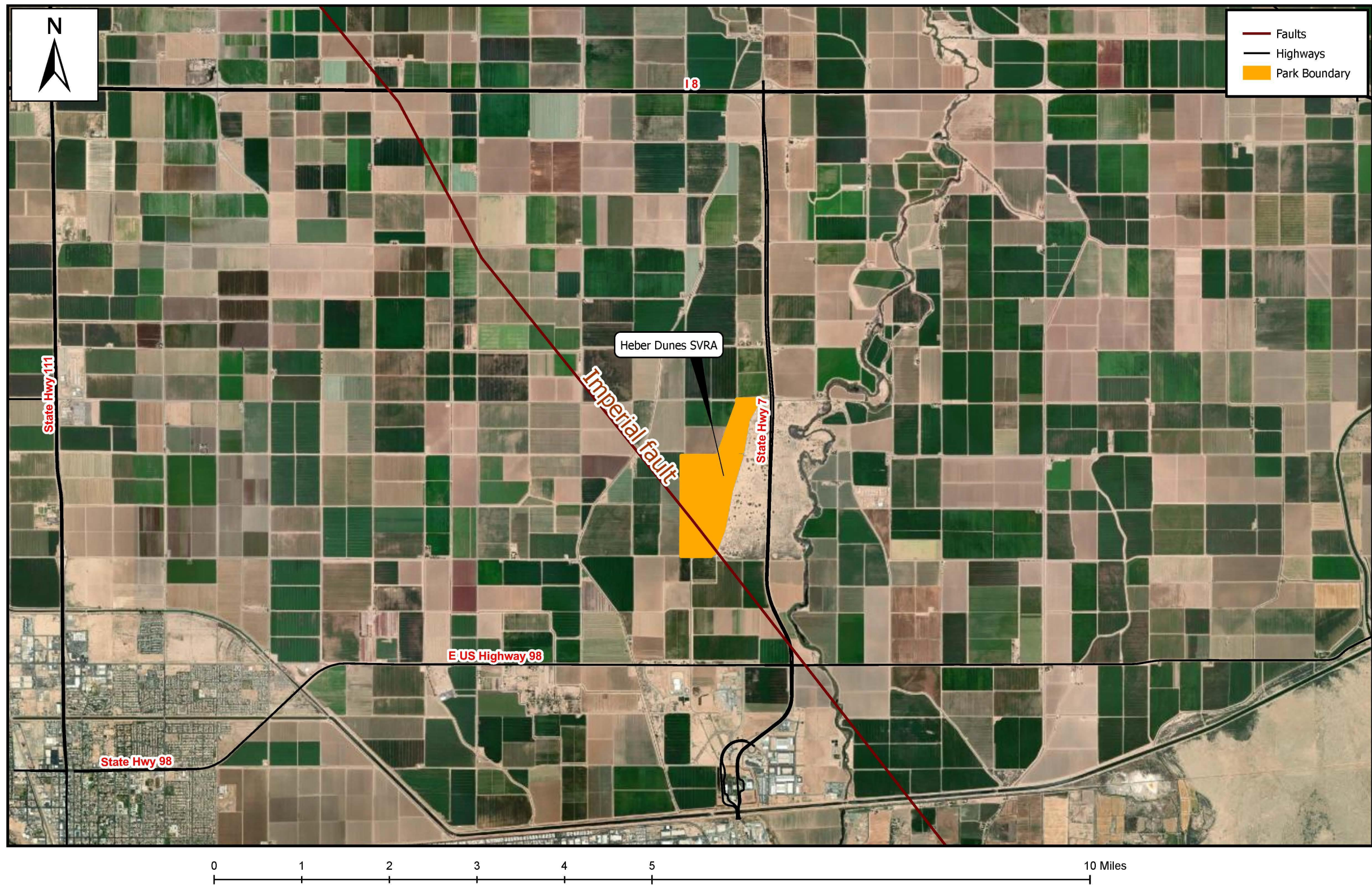


Figure 6. Heber Dunes is bisected diagonally by the Imperial Fault.

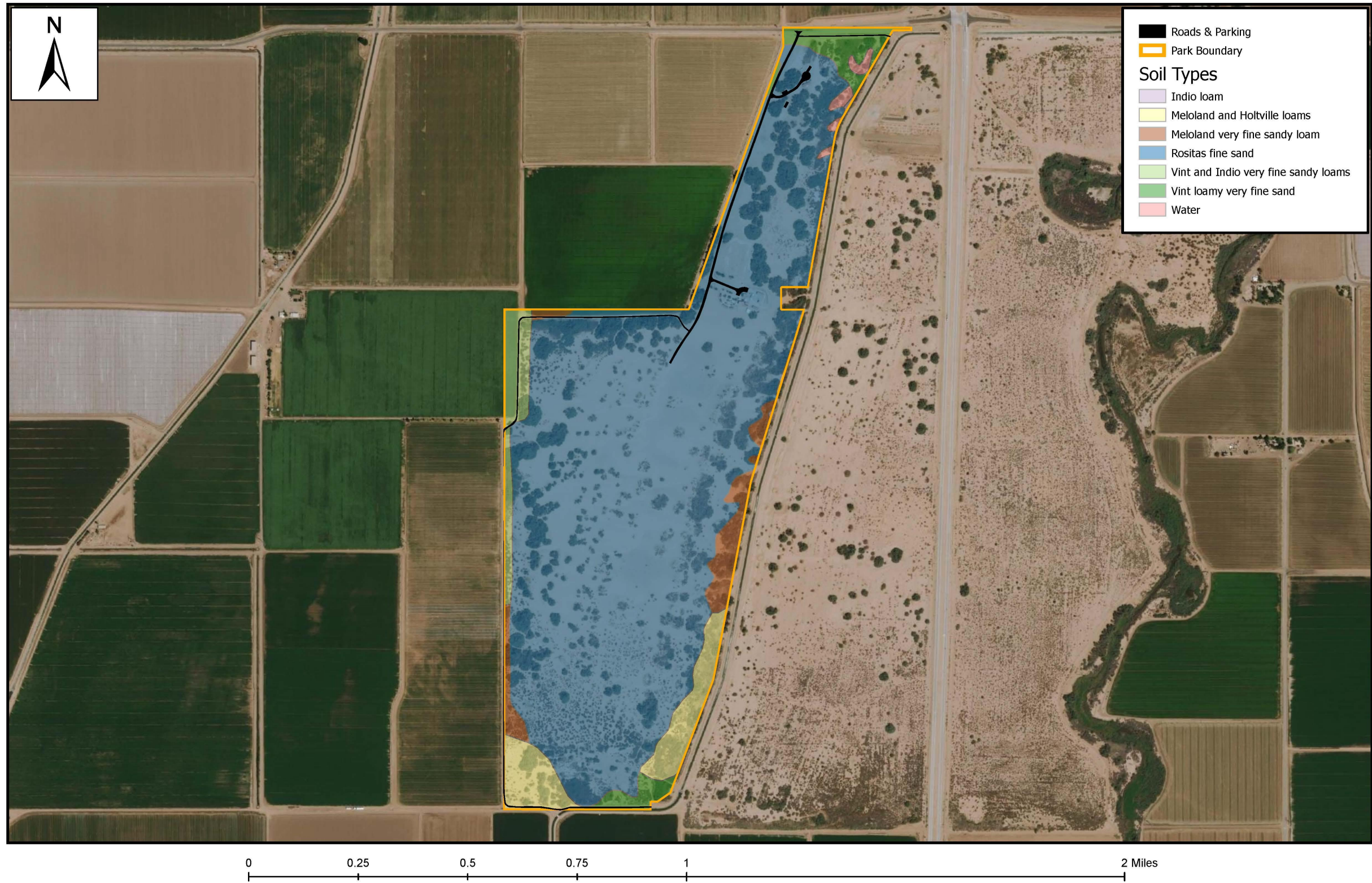


Figure 7. There are six unique soil types at Heber Dunes SVRA (USDA 1981).

The entire southern California region is a seismically active area with multiple fault lines, and Imperial County is an area of high seismic activity. Most of the seismic activity is in the Salton Trough (Imperial Valley) and, consequently, the Imperial Valley is subject to potentially destructive and devastating earthquakes. Several regional faults are known to be quite active in the Salton Basin, including the San Andreas Fault and the San Jacinto Fault. Numerous other faults are near the SVRA, including the Imperial and Brawley faults. Rupture and/or ground distress has been noted at the South Alamo Canal and on the property. Lateral spreading, likely generated by earthquake-induced liquefaction, has been observed along Heber Road following the 1979 Imperial Valley Earthquake (Wright Environmental Services 2009).

2.3.1.3 Hydrology

Heber Dunes SVRA is located within the Imperial Hydrologic Unit (HU) of the Colorado River Basin. The Imperial HU encompasses an area of approximately 2,271 square miles. The major drainages within the Imperial HU consist of the Alamo and New Rivers. The Alamo and New Rivers lie approximately 0.5 miles east and nine miles west of Heber Dunes SVRA. Both rivers drain to the Salton Sea approximately 30 miles to the north of Heber Dunes SVRA. These rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial wastewaters. The flow in the New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali, Mexico (CRBRWQCB, 2006).

Colorado River water, imported via the All American Canal, is the predominant water supply for the area and is used for irrigation and industrial and domestic purposes (CRBRWQCB, 2006). Numerous canals and agricultural drainages also occur within the Imperial HU. The Ash Main Canal lies approximately 0.5 miles to the west of Heber Dunes SVRA, while the South Alamo Canal borders Heber Dunes SVRA on the east and west boundaries.

Most of the surface drainage from the Heber Dunes SVRA appears to infiltrate the groundwater. Overall drainage is west and northwest (Wright Environmental Services, 2009). Water may pond before infiltrating in the clay flats south of the office, particularly behind the rock wall of the day use area. Groundwater is estimated to occur within 50 feet of the surface (Wright Environmental Services, 2009).

2.3.1.4 Vegetation

In 1998, San Diego State University classified the SVRA into six vegetation communities (McClenaghan et al., 1998) using aerial imagery and field surveys. An update to this vegetation community map was started in 2021 and ground-truthed in 2022, using the state's current standard for vegetation classification and mapping: California Fish and Wildlife's Vegetation Classification and Mapping Program (VegCAMP). VegCAMP classifies vegetation according to the National Vegetation Classification System standards, which is a hierarchical classification of vegetation types, distinguishing alliance and association at the finest scale. An association is a

characteristic range of species composition, while an alliance is composed of one or more associations. Field surveys identify vegetation alliances and/or associations, and mappers delineate landcover into alliance or association polygons based on information from field surveys and interpretation of aerial imagery. The resulting maps and data provide a foundation for tracking vegetation change, land use, and protection and restoration actions undertaken at the SVRA. More information about this protocol can be found in Appendix 3 of the [2022 HDSVRA WHPP](#).

In total, six vegetation community alliances were identified at Heber Dunes SVRA, along with two non-vegetative landcover types (Figure 8). Details about each alliance can be found in the 2022 HDSVRA WHPP. The 2022 survey and mapping effort found the same vegetation communities as in the 1998 classification; however, the current map delineates the community types at a finer scale, using the VegCAMP standard of a 1-acre minimum mapping unit.

The nonnative tamarisk (Athel tamarisk and saltcedar) thickets semi-natural alliance is the most common vegetation type within the park and plays an important role in soil conservation. Historically, Athel tamarisk was planted in the southwest as a windbreak around property lines as it grows into large trees. It grows in tall rows around much of the park and provides structure for dune formation. The most common native vegetation community is creosote bush scrub shrubland alliance. At times, arrow weed, which is part of the arrow weed thickets shrubland alliance, along the perimeter road must be mowed to maintain a trail corridor. Heber Dunes SVRA is not directly connected to any other undisturbed or native open space or wildlife habitat.

2.4 MANAGEMENT UNITS

Heber Dunes SVRA has been subdivided into three Management Units (MU): Canal Zone, Native Vegetation, and Tamarisk Dunes (Figure 9). MUs allow park managers to make decisions on a smaller scale than the park unit. These units were delineated primarily based on vegetation type, then on proximity to the canal (CDPR 2021). While recreation may differ slightly in each MU, overall recreation is comparable throughout the park. Subsequent discussions on maintenance and monitoring will be subdivided by MU.

2.4.1 Canal Zone MU

The Canal Zone MU totals 39.7 acres and consists of a 100-foot buffer along the eastern portion of the SVRA. The MU is open riding, with no formally established OHV trails, and contains the eastern portion of the perimeter road. OHV riders use social trails to connect from the interior of the park to the perimeter road, but overall riding is limited due to the presence of dense vegetation thickets. Primary vegetation communities in this area consist of Athel tamarisk and dense arrow weed/baccharis. At the southern end of the MU, arrow weed/saltbush communities are dominant.

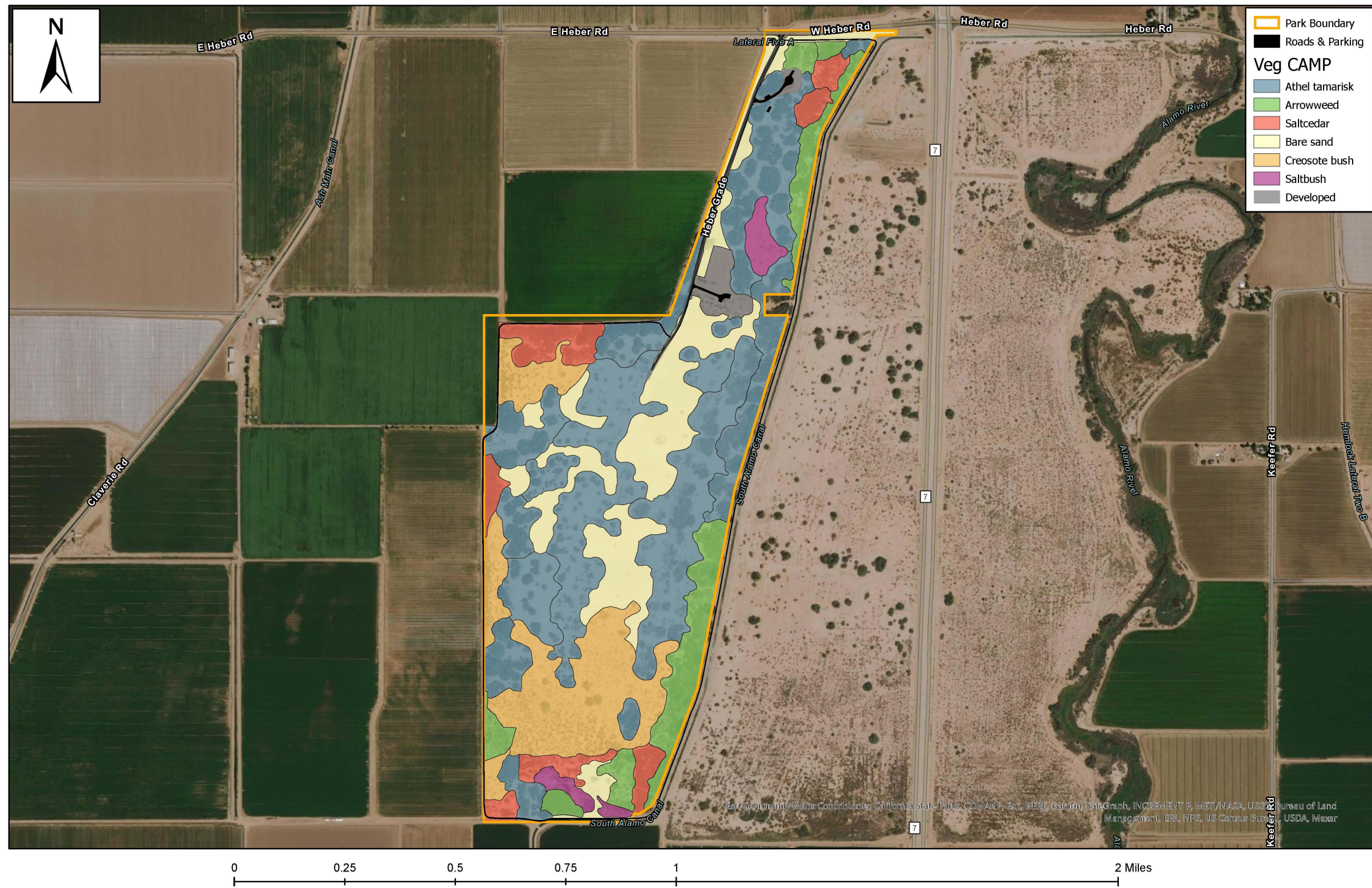


Figure 8. Six distinct vegetation alliances were mapped in VegCAMP in 2021-2022, along with open and developed landscapes. Two types of tamarisk were mapped, but both are part of one alliance.

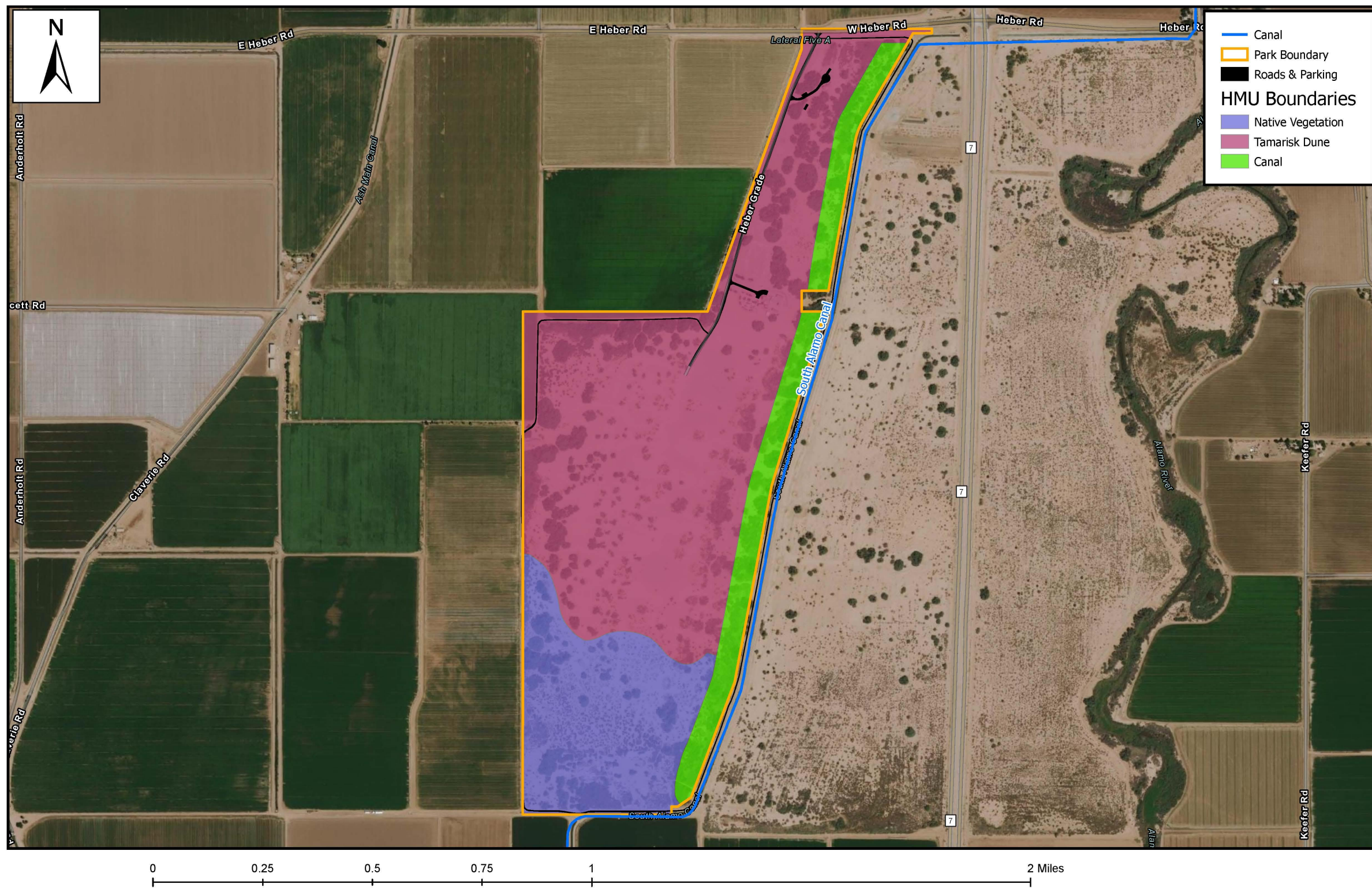


Figure 9. Heber Dunes SVRA Management Units.

2.4.2 Native Vegetation MU

The Native Vegetation MU is dominated by creosote and saltbush scrub in loamy and sandy soils. The MU is designated for open riding and a network of social trails runs throughout the area. The 2011 General Plan identified the potential for a trail system to be developed in this area. An SDG&E utility easement runs diagonally across the MU; two towers that are supported by over-head electrical lines are contained within the Native Vegetation MU, while a third tower is in the Tamarisk Dunes MU. Occasional maintenance of towers is completed by SDG&E. The Native Vegetation MU is 75.4 acres.

2.4.3 Tamarisk Dunes

Athel tamarisk and barren, stabilized sand dunes are dominant in the Tamarisk Dunes MU. It is designated as an open riding area. Day use facilities are scattered throughout the MU, and these areas are often used for family picnics with a portion of the group riding while others recreate near shade ramadas. Tall sand dunes exist throughout this MU. One tower from the SDG&E easement is located within the western portion of this MU. The Tamarisk Dunes MU is the largest MU at 225.5 acres.

3 STATE AND REGIONAL CONSERVATION PLANS CONSIDERED

PRC §5090.32(g) requires that SVRA management plans be developed in consideration of statutorily required state and regional objectives. An important step of identifying park-specific objectives is understanding broader regional conservation goals. This information is critical to defining objectives that are beneficial beyond the park's boundaries, while still focused on the needs of Heber Dunes SVRA. Several state and regional conservation objectives were identified that are relevant to Heber Dunes SVRA.

3.1 STATE CONSERVATION OBJECTIVES

3.1.1 California Healthy Soils Action Plan

From the interagency Healthy Soils Initiative, the California Department of Food and Agriculture developed the California Healthy Soils Action Plan. The plan focuses on improving organic soil composition through farm and ranch land management practices, resulting in increased carbon sequestration and reduction of greenhouse gas emissions. While the SCP is outside of the primary scope of the Healthy Soils Action Plan, both plans share common goals targeting soil health. This includes reducing erosion and dust, improving wildlife diversity and habitat, and increasing water retention.

3.1.2 State Wildlife Action Plan

The State Wildlife Action Plan (SWAP), developed by the California Department of Fish and Wildlife in concert with several partners statewide, provides a blueprint for conservation of wildlife and their habitats in the context of a growing human population and a changing climate. One of the priority goals of the Plan is to maintain and improve ecological conditions vital for sustaining ecosystems in California by, in part, improving ecosystem connectivity and community structure.

This 2022 SCP supports these SWAP goals by conserving soils over time within the SVRA. The SWAP has divided the state of California into seven provinces and developed regional conservation strategies for each. Heber Dunes SVRA falls within the Colorado Desert Ecoregion of the Desert Province, which has one identified conservation target, Sparsely Vegetated Desert Dune habitat, relevant to the park.

The five goals listed for Sparsely Vegetated Desert Dune in the 2015-2025 SWAP are:

- Increase acres where native species are dominant by at least 5%,
- Maintain or increase acres of habitat by at least 5%,
- Increase acres of habitat with suitable soil characteristics regimes by at least 5%,
- Increase acres of habitat with desired groundwater levels by at least 5%, and
- Increase acres of habitat with desired connectivity by at least 5%.

Several of these goals would be supported with the Heber Dunes SVRA SCP, particularly supporting habitat with suitable soil characteristics regimes. As a SVRA, the park meets the SWAP objective to maintain acres of habitat.

3.1.3 2018 Safeguarding California Plan

Developed by the California Natural Resources Agency, the updated 2018 Safeguarding California Plan's purpose is to lay out guidelines for how agencies can incorporate strategies necessary to address climate change into their future planning efforts. The 2018 update included a chapter specific to parks, chapter PC-5, and included the following recommendation to incorporate climate change in all California State Park and conservancy planning and decision-making. To meet the chapter PC-5 recommendation, the plan identifies the steps to prioritize conservation, protection and restoration of natural resources in climate change adaptation projects and planning to ensure sustainable recreational opportunities for the public.

In addition to conserving soils, the 2022 SCP provides Heber Dunes SVRA management information and recommendations necessary to maintain sustainable recreation opportunities for the public.

3.2 REGIONAL CONSERVATION OBJECTIVES

3.2.1 Imperial County General Plan

While State Parks is not subject to or required to comply with the Imperial County General Plan, the objectives listed within the plan were considered during the development of SCP objectives. The County's General Plan balances land-use policies and programs throughout the county while considering socioeconomics, resource management, development density, and many other factors. Of particular relevance to the SCP is the County's Conservation and Open Space Element. This portion of the General Plan considers resource management for ecological, development suitability, public health, and sensitive resource values. The Element was updated in 2014 and adopted in 2016.

The Conservation and Open Space Element identifies nine broad conservation goals, of which the following will be supported either directly or indirectly by the 2022 SCP:

- Conserve resources through land-use decisions and public education,
- Conserve critical habitats for their integrity, function, production, and long-term viability,
- Conserve, protect, and enhance water resources,
- Actively seek to improve regional air quality, and
- Maintain open space for aesthetics, natural resources, recreational opportunities, and minimize hazards to human activity.

3.2.2 Imperial County Air Pollution Control District

The Imperial County Air Pollution Control District (ICAPCD) monitors and regulates air quality. Of relevance to Heber Dunes SVRA, the ICAPCD manages the emission of particulate matter less than ten microns in diameter (PM₁₀). Historically, the county has been in serious non-attainment for PM₁₀ within a 24-hour period. An update to federal standards has allowed the ICAPCD to request re-designation to attainment when exceptional events (i.e., high winds) are excluded from the dataset. Based on historical monitoring, the ICAPCD was able to show that all exceedances of the 24-hour PM₁₀ threshold were during exceptional events.

The ICAPCD's Regulation VIII covers fugitive dust through a variety of rules. Rule 800, General Requirements for the Control of Fine Particulate Matter, applies to Heber Dunes SVRA. Heber Dunes SVRA has a Dust Control Plan that addresses the requirements of Rule 800, with further implementation support from the Soil Conservation Plan. The Dust Control Plan is updated every two calendar years and submitted to ICAPCD.

4 GOALS AND OBJECTIVES

4.1 HEBER DUNES SVRA SOIL CONSERVATION OBJECTIVES TO SUPPORT SUCH OBJECTIVES.

Given the language provided by the Soil Standard, the fundamental goals of each SCP are to:

1. Manage OHV recreation facilities for sustainable, long-term prescribed use that does not generate soil loss that exceeds restorability; and
2. Avoid causing erosion or sedimentation which significantly affects resource values beyond the facilities.

Based upon these goals, the SVRA has identified objectives to meet these goals. These objectives were developed following a resource assessment, review of state and local conservation objectives, and identifying maintenance activities that are currently being conducted. Establishment of objectives allow for monitoring programs to be implemented that have performance standards identified, so success and/or progress can be effectively measured.

Objectives have been designed to be S.M.A.R.T., where feasible, meaning they have been designed to be specific, measurable, achievable, realistic, and timely. The use of S.M.A.R.T. goals is compatible with the requirement of SCPs to incorporate BAS.

If new monitoring programs are established through the SCP or baseline data is insufficient, objectives may not currently meet the S.M.A.R.T. threshold. Anticipated timelines and data needs for developing S.M.A.R.T. objectives are addressed under each applicable objective's monitoring discussion. Once developed, these updated objectives will be addressed in the SCP annual report, as well as the action plan.

4.1.1 Conservation Objectives

Goal 1. Manage Heber Dunes SVRA's soils for long-term prescribed use and prevent erosion or sedimentation that can significantly impact resource values at the SVRA.

- **Soil Conservation Objective 1 (SCO1.1).** Through 2028, identify if anthropogenic sources of erosion or sedimentation are present on designated or improved routes of travel at Heber Dunes SVRA.

Management Actions:

1. Establish a trail assessment protocol and determine baseline trail conditions.
2. Establish reporting framework.
3. Address non-desirable field conditions through the appropriate application of maintenance or project development.

Soil conservation is an important component of the resource program at Heber Dunes SVRA. The park is zoned for open riding and is primarily composed of dunes, with limited designated routes of travel. Primary efforts will consist of developing a management and reporting framework for the park that complies with the 2020 Soil Conservation Standard. Once this is established, ongoing maintenance and monitoring will target elements identified in the framework. While erosion and sedimentation are of limited concern currently, it is important to monitor the property for long-term sustainability. Trail assessments will be used to assess the success of meeting this goal.

- **Soil Conservation Objective 2 (SCO1.2).** By 2027, resolve soil loss under two leech fields.

Management Actions:

1. Work with consultants to identify the issue, extent, and resolution for soil loss at the leech fields.
2. Develop and implement a project to resolve the problem.

In 2024, district staff were informed that the soil around the residence and south RV pad (near the residence) leech fields erode following rainfall. An initial site visit determined that the issue may be with soil compaction, rather than direct erosion. External technical expertise is needed to determine how to resolve the issue prior to performing work. Monitoring currently consists of visiting the location following storm events to document conditions.

Goal 2. Conserve plants and vegetation communities at Heber Dunes SVRA long-term to benefit soil stability and improve site restorability.

- **Soil Conservation Objective 2 (SCO2.1).** Over the next five years, conserve the existing 92 acres of native vegetation communities throughout Heber Dunes SVRA.

Management Actions:

1. Limit significant expansion of social trails (i.e., through interpretive signage, temporary closures, etc.) within the Native Vegetation MU.
2. Plan and implement small-scale projects such as invasive plant removal, planting native vegetation, and scrubbing volunteer trails.
3. Manage spread of invasive species with chemical and mechanical controls throughout the unit.
4. Maintain inventory of native species at district's native plant nursery for use in restoration projects.

Vegetation plays an important role at Heber Dunes SVRA. Vegetation is an important component of soil stability, tying back to soil conservation. In the Native Vegetation MU in

particular, the goal is to allow for OHV recreation while minimizing the footprint and avoiding significant vegetation loss. This goal will be met by assessing community-level changes park-wide and monitoring changes to landcover within the Native Vegetation MU.

Heber Dunes SVRA is a unique environmental setting as it contains healthy remnant native vegetation communities in an area that has primarily been converted to agriculture. Soils in portions of the park provide suitable habitat for these native species to grow. Additionally, the non-native Athel tamarisk communities are also important to the park as they play a critical role in holding down dunes that would otherwise become windblown.

5 MAINTENANCE PLAN

5.1 UNIT-WIDE

Heber Dunes SVRA is an open-ride park, with limited established routes of travel. The entire unit (341-acres) is zoned for open-ride. There are no designated OHV routes in the unit, however visitors have created social or volunteer OHV routes. Additionally, there are no exclusion zones within the 341-acre unit. Within the interior of the park, there are two paved roadways, and along the exterior of the park, an improved perimeter roadway.

Around the perimeter of the park, there is a lightly improved perimeter road that is owned in part by surrounding landowners and maintained by State Parks. Around most of the park, this road is composed of native material that is graded, but along the eastern boundary, class II road base covers most of the native material. The eastern portion of the trail is primarily used by State Parks staff and easement holders, while the southern and western sections are utilized by agricultural workers and State Parks staff. Along the route, there are several connecting OHV social trails that tie-in to the perimeter road.

A variety of road maintenance is conducted either on a schedule or as needed. Arrow weed (*Pluchea sericea*), a native plant that can grow into dense thickets, regularly encroaches on portions of the perimeter road, particularly along the west boundary. State Park Equipment Operators (SPEO) utilize a skid steer tractor with a mower attachment to mow the arrow weed back from the roadway annually in fall. The SPEO conducts multiple passes over areas of problematic arrow weed until the section has been flattened and compacted, similar to track walking. Work is conducted outside of the nesting bird season. Additionally, the roadway is graded using a grader depending on conditions. Small berms may be removed using a small to mid-size tractor backhoe of any brand. In compliance with the Dust Control Plan, a water truck is used to water the unpaved perimeter road monthly.

Occasional erosion along the western boundary has been observed in the past, primarily when adjacent agricultural fields are being watered. Depending on the scale of erosion, a grader, mini backhoe, or loader may utilize native materials on-site to make repairs as needed.

5.2 CANAL ZONE MU

The Canal Zone MU is a narrow MU along the eastern portion of the SVRA. It includes the eastern section of the perimeter road along the South Alamo Canal, and a handful of OHV trails that connect riders back to the primary riding area. The MU is zoned for open riding but due to the density of vegetation, riding is mostly along the canal frontage roads. These frontage roads are also regularly used by IID and SDG&E staff during maintenance of their facilities.

Outside of previously discussed maintenance of the perimeter road (section 3.1), there is no other regularly occurring maintenance in this MU.

5.3 NATIVE VEGETATION MU

The Native Vegetation MU is the southernmost MU at the park. The MU is zoned for open riding, with social trails created by riders running through the MU. There are no formally established routes of travel within the Native Vegetation MU, however southern and western portions of the perimeter road are adjacent to MU boundaries. Additionally, State Parks staff brush vegetation in trail corridors throughout the season, as needed, to maintain access. This is typically done once per season.

With the implementation of the 2022 Heber Dunes SVRA Wildlife Habitat Protection Plan, newly identified management goals may focus on this MU. While many of these goals were developed to focus on wildlife habitat, certain measures will likely result in benefits to soils or other resource values. Relevant work will be discussed in future annual reports.

Two areas within the MU are composed of fine sands – along the southwestern corner and near the base of the middle utility tower. While these areas currently do not require unique maintenance or management, consideration should be given in the future to assess needs. Beyond perimeter road maintenance (section 3.1), no regularly occurring maintenance occurs in this MU.

5.4 TAMARISK DUNES MU

The Tamarisk Dunes MU is an open riding area that contains almost all park facilities. There are two paved roads that provide access from the entrance to main attractions such as shade ramadas and the park office. Outside of a youth OHV training course, there are no maintained OHV routes of travel within the MU. Within the MU, tall sand dunes form and are popular for OHV riding. In areas without sand cover, clay soil is present.

There are two asphalt roads within the interior of the park. Heber Dunes Road runs north to south, from the SR-7 entrance to approximately Ramada 9. Heber Beach Road intersects Heber Dunes Road and runs east to west to the park offices and main day use facilities. Both roads

were constructed in approximately 2012 and have required minimal maintenance beyond periodic resurfacing.

The youth OHV training course is graded about five times per season. The track is maintained by an all-terrain utility tractor pulling a scraper, which drives around the track until it is smoothed out.

In 2024, park staff raised concerns that rainfall prompted erosion around the residence and south RV pad leech fields. Initially, the plan was to deposit additional materials into the eroded areas, however, a site visit determined that the issue was potentially more complex. Materials did not appear to be eroding from the area, but rather condensing in place. It is assumed that an insufficient amount of soil compaction occurred after the systems were put in place. Additionally, the system height may not have been appropriately installed. A resolution has not yet been determined, but SCO1.2 addresses the need to identify the extent of the problem, potential solutions, and implement a project in response. Pictures of the area are incorporated in Appendix 2.

Sand build-up is commonly observed within the MU. In most cases, this is not of maintenance concern, however there are two areas that are maintained as needed to reduce sands. Ramada 15 is the southernmost shade ramada in the park and it can become filled with sand. Every few years, a loader and backhoe are used to clear sand from underneath the ramada and redeposit it in other dune areas. On-site maintenance staff monitor and report excessive sand build-up in this area so removal can be scheduled. SPEO redistributes sand in the adjacent area at their discretion. Another area that has needed occasional maintenance of excess sand is behind the rock wall located by the large day use picnic area. Sand was removed using a loader and backhoe, then the area was filled and regraded to resolve water ponding issues. Sand removal is conducted as needed.

Water can pond in clay flats areas near shade ramadas and by the park office. Typically, maintenance does not occur in response to this ponding. However, near the office and day use rock wall areas, excess sand build-up resulted in some ponding of the area. After the sand build-up was removed, the area was filled and regraded. This maintenance is conducted as needed; however, it is uncommon.

6 MONITORING PLAN

6.1 ASSESSMENTS OF EROSION POTENTIAL

6.1.1 Trail Assessments

Formal trail assessments will be implemented through the Soil Conservation Plan to meet SCO1.1. Historically, these assessments were done informally by SPEO, but through this iteration of the Soil Conservation Plan, efforts will be made to formalize when and how these

trail assessments are completed. As a result of assessments being completed informally, a true baseline has not been established but anecdotally a few sections of the perimeter road have been noted to have erosion, dependent on neighboring agricultural land use.

The 2020 Soil Conservation Standard and Guidelines Appendix 3 contains an example Trail Evaluation Form for conducting trail assessments. From this document, district staff are modifying some of the metrics to better match assessment needs at Heber Dunes and Ocotillo Wells SVRAs. The results of the trail assessment will contribute to the development of the annual maintenance plan.

Due to the limited number of formal routes of travel at Heber Dunes SVRA, it is anticipated that all routes can be assessed once annually by either park or district staff. As the park is currently developing a protocol for trail assessments, there may be changes to the document as timing and conditions are better understood. The protocol is anticipated to be tested in 2023, then implemented in 2024 to establish baseline conditions. Further details on monitoring protocols can be found within Appendix 1.

The results of the trail assessment will be reported in the annual Soil Conservation Plan Compliance Report. The protocol, once established, will be appended to the SCP and the annual report.

- **Metric:** The trail condition of each trail will be established using a green/yellow/red rating scale of various conditions, including tread, trail width, trail depth, berms, sand drift presence, and amount of off-trail travel.
- **Baseline:** Baseline is anticipated by 2025.
- **Target:** Targets will be developed in 2025 following the availability of initial baseline data.

6.1.2 Open Riding Area Assessment

Within the open riding area, monitoring will largely focus on characterizing changes to landcover and vegetation communities over time. Aerial imagery will allow for vegetation cover and disturbance to be estimated over a larger area and will allow staff to monitor changes in cover and bare ground over time.

Informal photo points may be taken, particularly along the perimeter road where annual mowing occurs, to show changes in vegetation over time. If utilized, a protocol would be established and appended to the annual Soil Compliance Report.

The results of the open riding area assessment will be reported in both the annual Soil Conservation Plan Compliance Report and the annual Wildlife Habitat Protection Plan Compliance Report.

6.1.2.1 Unit-wide VegCAMP Monitoring

VegCAMP updates will be completed every five years, coinciding with WHPP updates. VegCAMP uses the Manual of California Vegetation to establish a hierarchical classification of vegetation on a fine scale. Data is evaluated through aerial imagery and strict protocols established by CDFW, then field surveys are conducted to assess accuracy. These surveys provide a spatial inventory of vegetation communities throughout the park. See Appendix 1 for further information.

- **Metric:** CDFW's VegCAMP protocol will categorize fine-scale vegetation communities and their extent (in acres) throughout the SVRA.
- **Baseline:** VegCAMP aerial surveys were first completed in 2021 for Heber Dunes SVRA; field surveys occurred in spring 2022. This survey effort will serve as the baseline for future assessments. Six vegetation alliances were mapped within the SVRA, along with two non-vegetation landcover types (Figure 8).
- **Target:**
 - Through 2029, maintain existing 92 acres of native vegetation communities throughout Heber Dunes SVRA.

6.1.2.2 Native Vegetation MU Landcover Monitoring

Vegetation plays an important role in providing soil stability. While the park is composed of both native and non-native vegetation communities, management largely focuses on native vegetation. Non-native and non-invasive vegetation communities are left in place to provide soil stabilization but are not actively removed or treated.

Most of the native vegetation is located within the Native Vegetation MU. The 2011 General Plan identified that the vegetation in this area has some sensitivity as a remnant habitat and, while the area is managed as an open ride area, recognized that reducing future disturbance is desirable (AECOM, 2011a). The General Plan also noted erosion at the base of some vegetation within the Native Vegetation MU.

Staff will utilize Normalized Difference Vegetation Index (NDVI) to identify the landcover characteristics, including percent vegetation coverage, of the Native Vegetation MU. NDVI is a GIS tool, which can be used to assess changes to vegetation health, as well as areas that are unvegetated (see Appendix Section 9.2.2 for further information). Changes in cover over time will be assessed to identify whether disturbance, shown through loss of percent vegetation coverage not associated with natural effects, is increasing or decreasing within the MU. NDVI will occur every two years. When vegetation loss is identified, VegCAMP data will be used to inform the specific native vegetation communities that are impacted. This data will guide management and restoration efforts within the Native Vegetation MU. A State Parks protocol, initially developed for Prairie City SVRA, will be utilized. See Appendix 1 for further information.

- **Metric:** NDVI will be used to identify changes in landcover, particularly the percent vegetation cover, within the Native Vegetation MU.
- **Baseline:** NDVI has not been utilized within the Native Vegetation MU to map disturbance. The first efforts will establish baseline landcover values and percent cover. The baseline will be established in 2026.
- **Target:** Targets will be established in 2026, following the availability of initial baseline data.

6.2 ADDITIONAL MONITORING

6.2.1 Post-Stochastic Event Monitoring

Following a sizeable stochastic event (i.e., earthquake, flooding, storm event, etc.), district or park staff monitor roads and improved trails for erosion issues resulting from the event. Additionally, monitoring of the leech fields identified in SCO1.2 will occur following storm events. Depending on the scale of event, a portion or all roads and trails may be assessed. Past monitoring would be used to determine problem areas that require repeated monitoring following similar events.

This type of monitoring would focus on:

- Erosion sources
- Large areas of pooled water on trails or near facilities
- Downed trees or other hazards
- Facility damage, such as broken water lines

Following monitoring, staff document the date monitoring was conducted, the location of monitoring, the type of event that prompted monitoring, observations, and any maintenance needs. This type of monitoring is meant to be rapidly deployed as needed so that information can be quickly gathered to prioritize maintenance needs, identify hazards, and allow for preventative action from park management.

Data will be transmitted from field staff to their supervisor through email. These records will be maintained until that year's annual report is finalized.

6.2.2 Monitoring Following a High-Use Weekend

Following a high-use weekend, monitoring of the perimeter road may be conducted to determine if there are any maintenance needs. All other improved routes within the SVRA are paved or for employee-use only, therefore they do not require monitoring.

Park staff will drive along the perimeter road to identify any maintenance needs. Following monitoring, staff would document the date monitoring was conducted, the location of

monitoring, and any maintenance needs observed. This type of monitoring is meant to be rapidly deployed as needed so that information can be quickly gathered to prioritize maintenance needs, identify hazards, and allow for responsive preventative maintenance from park management.

Data will be transmitted from field staff to their supervisor through email. These records will be maintained until that year's annual report is finalized.

7 REPORTING

An annual Soil Conservation Plan Compliance Report will be developed by the district and will contain the following elements to demonstrate compliance with the 2020 Soil Conservation Standard: Trail Assessment, a list of maintenance activities performed during the previous season, a review of any restoration and/or rehabilitation projects undertaken during the previous season, and a review of any development projects undertaken during the prior season. The Compliance Report will also contain an Action Plan that details soil conservation efforts to be undertaken during the upcoming year. The Compliance Report is anticipated to be completed annually in late summer.

District program areas will jointly be responsible for maintaining records of work completed throughout the year and developing the annual Action Plan.

8 CONSTRAINTS

Constraints are factors that may limit the district and/or State Parks' ability to achieve the soil conservation management and monitoring elements described in this document. While the Soil Conservation Plan was designed with potential constraints in mind, planning for every possibility is impossible. The annual Soil Conservation Plan Compliance Report would include a discussion if scheduled work did not occur in response to a constraint. Examples of constraints that may limit or alter described elements of the Soil Conservation Plan include:

8.1 ANNUAL WEATHER CYCLES

Annual weather cycles are an important driver of environmental conditions, and they can be highly variable. Drought conditions are a source of stress to the system, while wet seasons can boost wildlife populations and result in annual wildflower blooms. Due to the importance of annual weather cycles at Heber Dunes SVRA, a weather station has been installed at the unit. The weather station allows staff to better understand current trends at the SVRA to inform progress on WHPP goals and objectives, but this understanding does not negate the challenge associated with certain weather cycles.

8.2 LEGAL OR REGULATORY OBLIGATIONS

Heber Dunes SVRA operates under several existing legal obligations. These existing requirements and potential future legal or regulatory obligations may change or redirect staff priorities. For example, if the language of PRC §5090 were to change or a species were to be listed, staff would need to temporarily reprioritize efforts and consider whether an update to the SCP is appropriate to meet these new commitments. The decision to update a SCP outside the five-year update cycle would be determined in conjunction with OHMVRD and NRD.

8.3 OPERATIONAL LIMITATIONS

Operational limitations include financial obligations and staff capacity. These limitations may arise at any level within the state, not just from Heber Dunes SVRA or the district. Financial constraints may arise with competing district priorities, recessions, budget cuts, or other changes to district funding or funding sources. Depending on the scale of the financial constraint, staff will need to reprioritize efforts, which may alter capacity to meet annual targets laid out in the SCP.

Similarly, staffing at Heber Dunes SVRA is limited and district staff will primarily be responsible for meeting SCP goals and objectives. These efforts do require at least opportunistic support from unit staff, as well as administrative support from district staff. As direct changes to unit or district staff occur, staff capacity will be reduced, and challenges will arise in the ability to meet goals and objectives. When these challenges arise, staff will consider the use of statewide assistance or contracts to bolster staffing capacity, in addition to reprioritizing efforts.

8.4 STOCHASTIC EVENTS

Stochastic events are unpredictable events that may impact resources, land, or divert resources that would've otherwise been directed towards planned management actions. Examples of stochastic events include both natural events such as storms and earthquakes, as well as human-generated events such as plane crashes and hazmat events. Impacts from stochastic events may be either short or long duration.

8.5 OTHER CONSTRAINTS

The constraints listed above are not intended as a comprehensive list as a variety of constraints could impact staff's ability to meet WHPP goals and objectives, but rather as a sample of potential constraints that may arise. If any other constraint were to arise, it would be documented appropriately within an annual report.

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10 APPENDIX 1: MONITORING METHODOLOGY

This appendix details the different types of monitoring, including performance indicators and methodology, that will occur to assess SCP objectives. These monitoring efforts are new to the SVRA and will require time to establish baseline and target conditions, as well as refine methods. During the pilot phase of monitoring, changes may be made to the methodology, and it may be several years until a protocol is established. This is normal for the introduction of changes to survey protocols and assessments. Changes to any monitoring will be addressed in future SCP annual reports and updates.

10.1 SOIL AND TRAIL ASSESSMENTS

10.1.1 Performance Indicator(s)

10.1.1.1 Description

Manage Heber Dunes SVRA soil resources for sustainable long-term (25 years) prescribed use without exceeding restorability of soil loss and without causing erosion or sedimentation that significantly affects resource values beyond the facilities.

10.1.1.2 Expectation

Demonstrate compliance with the [2020 Soil Conservation Standards and Guidelines](#) by assessing OHV recreational facilities at the unit that could contribute to soil loss, erosion, or sedimentation.

10.1.1.3 Metric(s)

These metrics will be updated and evaluated annually as part of the annual SCP Report to OHMVRD.

1. Number of acres throughout the unit that are treated or closed and passively restored.
2. Condition, location, and extent of facilities (i.e., improved roads or trails) monitored or treated for erosion, sedimentation, or other related impacts.
3. The trail condition of each trail will be established using a green/yellow/red rating scale of various conditions, including tread, trail width, trail depth, berm height, presence of sand drifts, and amount of off-trail travel.

10.1.1.4 Baseline

To be established by 2025. Implementation of the Soil Conservation Plan will be new to Heber Dunes SVRA and will begin in 2024. Early efforts (2024-2025) will be focused on gathering data,

finalizing assessment methods, identifying additional areas of concern, and training field staff. As this information is gathered, it will be reported in annual SCP reports and used to establish the initial baseline.

10.1.1.5 Target(s)

To be established by 2025 following the availability of initial baseline data. Generally, targets will aim to identify and reduce sources of soil loss, sedimentation, and erosion at Heber Dunes SVRA, with efforts focused on:

1. By 2025, establish baseline conditions of soil resources and facilities within the unit as they relate to the 2020 Soil Conservation Standard.
2. By 2029, identify and implement restoration of facilities within the SVRA that significantly contribute to erosion, soil loss, and sedimentation.

These targets will be refined to be quantitative after baseline is established in 2023 and will be discussed in the annual Soil Conservation Plan Compliance Report.

10.1.1.6 Basis for Selection

Managing Heber Dunes SVRA's soil resources for sustainable long-term prescribed use is an important component of PRC §5090.35. Additionally, OHMVRD's 2020 Soil Conservation Standard and Guidelines are a requirement of the SVRA as an OHV facility. Annual maintenance, inspection, and repairs will be critical elements of meeting soil conservation objectives at the unit.

Primary management focus at Heber Dunes SVRA consists of maintaining native vegetation cover, and ensuring improved roads meet the 2020 Soil Standard. Annual maintenance and assessments will ensure facilities are operating and functioning as intended to protect soil resources at the unit. Additionally, the Native Vegetation MU, which contains the greatest contiguous extent and diversity of native vegetation, will be the focus of conservation and improvement measures throughout the lifetime of the SCP.

Monitoring will be appropriately scaled for the small unit size, limited staff capacity, and low number of known problem areas. There are no existing erosion control features at the unit, and, at this time, there does not appear to be a need for these features to be put in place. Similarly, the unit does not have a formal trail system, although a few improved roads are present, and open riding is permitted throughout the park.

10.1.2 Methodology

To be established in 2024. Survey methodology will be established in the first year of the WHPP as the SCP is finalized and implemented. Broadly, assessment measures have been modified

from recommendations in the 2020 Soil Standards and Guidelines, particularly the trail assessment example in Appendix 3 of that document. Trail assessments will focus on designated routes of travel at the unit. The protocol will be appended to the annual SCP report.

10.1.3 Program Risks and Uncertainties

While the SVRA can control for property within its boundary, ownership or land management changes to adjacent property may result in future impacts to SVRA soil resources. For example, as the adjoining cropland is irrigated, a portion of the perimeter road floods, and requires maintenance. Similarly, the SVRA boundary is not in agreement between local landowners, Imperial County, and State Parks. Without clear understanding of the legal boundary, there may be disputes regarding maintenance of or improvements to the perimeter road.

10.2 VEGETATION COMMUNITIES MONITORING

10.2.1 Performance Indicator(s)

10.2.1.1 Description

Maintain the composition and distribution of vegetation communities throughout the unit.

10.2.1.2 Expectation

Limit the loss of vegetation and large-scale changes to landcover values throughout Heber Dunes SVRA.

10.2.1.3 Metric(s)

These metrics will be updated and evaluated biennially as part of the annual SCP Report to OHMVRD.

1. Vegetation coverage percentage of the Native Vegetation MU.
2. Changes to landcover within the Native Vegetation MU over time.

These metrics will be updated and evaluated every five years during the WHPP update cycle, which will be reviewed by OHMVRD and NRD. Updates will also be incorporated into the appropriate annual SCP Report to OHMVRD.

3. Fine-scale acreage and extent of vegetation communities at Heber Dunes SVRA.

10.2.1.4 Baseline

Landcover baseline to be established by 2026. Large-scale imagery and remote sensing monitoring will be a new effort at Heber Dunes SVRA that will begin in 2024. Early efforts will

focus on ensuring property equipment and permitting is in order and initial data gathering to establish baseline conditions.

Vegetation community baselines were established in 2021 (Table 4). VegCAMP surveys were first conducted in 2021 for Heber Dunes SVRA, with ground-truthing occurring in spring 2022. This survey effort will serve as the baseline for future assessments. Data has also been mapped and stored within in ArcGIS Online geodatabase.

Baseline acreage is known to differ from the park’s acreage (2023 Ocotillo Wells District).

Table 4. Vegetation alliances identified for Heber Dunes in 2021-2022 VegCAMP mapping.

Habitat Type	Baseline Acres (2022 VegCAMP)
Arrow Weed Thickets Shrubland Alliance	31
Bare Sand	64
Bush Seepweed Shrubland Alliance	4
Creosote Bush Scrub Shrubland Alliance	52
Developed	10
Quailbush Scrub Shrubland Alliance	5
Tamarisk Thickets Shrubland Semi-Natural Alliance: Athel tamarisk	143
Tamarisk Thickets Shrubland Semi-Natural Alliance: saltcedar	25
Total VegCAMP Acres	334

10.2.1.5 Target(s)

Landcover target to be developed by 2026 following the establishment of baseline conditions. Generally, targets will focus on maintaining the extent of vegetation communities at the park.

1. Through 2029, maintain 92 acres of native vegetation communities throughout Heber Dunes SVRA.

10.2.1.6 Basis for Selection

Vegetation is an important component of any habitat and is often considered when assessing habitat condition and health. It plays a key role in soil retention, reducing erosivity (Castillo et al., 1997), and can be a visual cue to maintain riding corridors. Vegetation health can likewise be influenced by land use and anthropogenic factors (Lovich and Bainbridge, 1999; Leu et al., 2008; Guo, 2004). Primary management considerations at the SVRA consist of maintaining the existing extent of vegetation, particularly within the Native Vegetation MU.

Two methods were selected for ongoing monitoring. NDVI is a GIS tool that allows photosynthetically active vegetation to be measured within a given area. It allows land managers to map and visualize vegetation by health and distinguish them from non-vegetated areas. VegCAMP is a tool that similarly allows vegetation community and non-vegetated areas to be mapped, but health of given vegetation cannot be directly inferred. VegCAMP mapping is suitable for larger areas where changes are expected to occur at a slower rate, while NDVI allows for more focused analysis of areas where higher rates of change are anticipated, or the vegetation is more sensitive.

10.2.2 Methods

NDVI

Specific methodology to be established by 2024. District staff will work with GIS analysts and staff at Prairie City SVRA to learn more about the protocols in use at the park unit. The Ocotillo Wells district GIS analyst/drone pilot assisted Prairie City SVRA with their protocol development and will play an important role in fine tuning methodology for use at Heber Dunes SVRA.

NDVI is a GIS-based analysis that uses aerial imagery to measure the annual change in vegetation cover. NDVI measures the amount of near infrared light versus red light that is reflected from the surface of the earth. A NDVI value that is near one micrometer indicates a greener, healthier plant, while values close to zero indicate no vegetation is present and negative values indicate development or water.

Based on early discussions, tentative methodology would consist of using drones to capture high-resolution aerial imagery of the Native Vegetation MU every other year. Drone surveys would likely occur in the spring when vegetation growth is at its peak. Imagery collected would then be run through the NDVI tool in ArcMap. Data from this analysis would allow staff to assess vegetation coverage and health. Selective ground truthing will likely be required, especially in early years, as staff refine the protocol. The protocol will be appended to the annual SCP report.

VegCAMP

VegCAMP classifies vegetation according to the standards of the National Vegetation Classification System (NVCS) and Survey of California Vegetation standards, which are hierarchal classifications of vegetation types, distinguishing alliances at the finest scale. Aerial imagery is used to identify vegetation alliances and/or associations at a minimum 1-acre scale. Special stands, such as wetlands or vernal pools, are mapped at a ¼-acre scale. Further information about CDFW's VegCAMP program and protocols can be found at [Vegetation Publications, Protocols and Standards](#).

10.2.3 Program Risks and Uncertainties

NDVI is a useful tool for monitoring vegetation, but staff will need to use an array of other data, such as condition assessments within the MU and climate data, to assess whether changes were based on local or regional factors. As with all data, it is important to understand the underlying influences of increases or decreases. Climatic factors, such as precipitation, temperature, and sunlight, are strong influences on vegetation health. With analysis occurring biannually, it will be important to pay attention to ongoing climate conditions.

Using NDVI analysis requires access to high-quality imagery, which can be challenging to obtain in the area. A drone may be the most reliable source of imagery. The district currently has a trained drone operator but existing equipment, specifically the camera, is not suitable for multi-spectral imagery. With only one trained operator, staffing changes in the future could reduce the ability to consistently fly the MU and poses a risk to consistency of survey timing.

NRD staff are currently required to complete VegCAMP mapping efforts. Staff changes between SCP updates and sampling efforts will result in a knowledge gap in completing the mapping. If this mapping transitioned to district or SVRA responsibility, existing staffing may not be sufficient to absorb the task. Future training and management of this gap will be necessary.

11 APPENDIX 2: PICTURES OF LEECH FIELD SOIL LOSS



Two pictures were included from the initial report of erosion on January 3, 2024.



Leech field area photographed during site visit on January 18, 2024.



Leech field area photographed during site visit on January 18, 2024.



Leech field area photographed during site visit on January 18, 2024.