



December 2012

**Coachella Valley Multiple Species Habitat Conservation Plan &
Natural Community Conservation Plan**

**Reserve Management Unit 6 :
Santa Rosa and San Jacinto Mountains
Conservation Area
Reserve Management Unit Plan**



**Prepared by the
Coachella Valley Mountains Conservancy
for the Coachella Valley Conservation Commission**

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Conservation & Natural Community
Conservation Plan**

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Santa Rosa and San Jacinto Mountains
Conservation Area
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**Prepared for:
Coachella Valley Conservation Commission
Palm Desert, CA**

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***Reserve Management Unit Plan
Reserve Management Unit 6:
Santa Rosa and San Jacinto Mountains Conservation
Area***

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Appendices – separate document

Appendix I Current Monitoring and Management.

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1.0 Purpose

The Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (CVMSHCP) requires that the Coachella Valley Conservation Commission (CVCC) ensures adequate management of locally (Permittee) managed Reserve Lands. This, in turn, requires that CVCC, in coordination with the Reserve Management Unit Committees (RMUC), prepares a Reserve Management Unit Plan (RMUP) for each Reserve Management Unit (RMU) for review and approval by the Reserve Management Oversight Committee (RMOC) to define specific management actions, schedules, and responsibilities. The RMUPs are to be completed within 3 years of plan adoption. This RMUP fulfills this requirement for the Santa Rosa and San Jacinto Mountains RMU, which is one of the 6 RMUs identified in the CVMSHCP. An RMU may be comprised of just one of the Conservation Areas identified in the CVMSHCP or of multiple Conservation Areas. RMU 6 consists solely of the Santa Rosa and San Jacinto Mountains Conservation Area.

In addition to providing specific management actions, schedules, and responsibilities for Permittee managed lands, the RMUP is intended to provide a framework for and to facilitate the collaborative management by all the involved management entities (local, state and federal agencies and non-profit organizations) to provide for effective, efficient, and cooperative use of the combined resources available. While individual agencies remain responsible for managing their lands, the premise of the RMUP is that maximizing cooperation and coordination should result in the best management of all Reserve lands and facilitate each entity's management.

1.1 General Background

The CVMSHCP establishes a structure for coordinating management in the Reserve System among the various entities involved through the establishment of an RMUC for each RMU. The CVMSHCP also provides for CVCC to retain a Land Manager to ensure management of the Permittees' mitigation lands and coordination with the RMUC for each RMU, and with the RMOC. Figures 1-1 and 1-2 show the relationship between the different managing entities and their role in the management of the RMUs. Land Managers and interested parties are referred to the following sections of the CVMSHCP for information regarding the identified topics:

Reserve Management Oversight Committee – Section 6.1.3

Reserve Management Unit Committees – Section 6.1.4

Land Manager – Section 6.1.5

Monitoring Program Administrator – Section 6.1.6

RMUP Requirements - Section 6.2

Reserve System Management and Monitoring Program – Section 8.0

Figure 1-1: Organizational Structure & Decision Process for the Monitoring and Management Programs

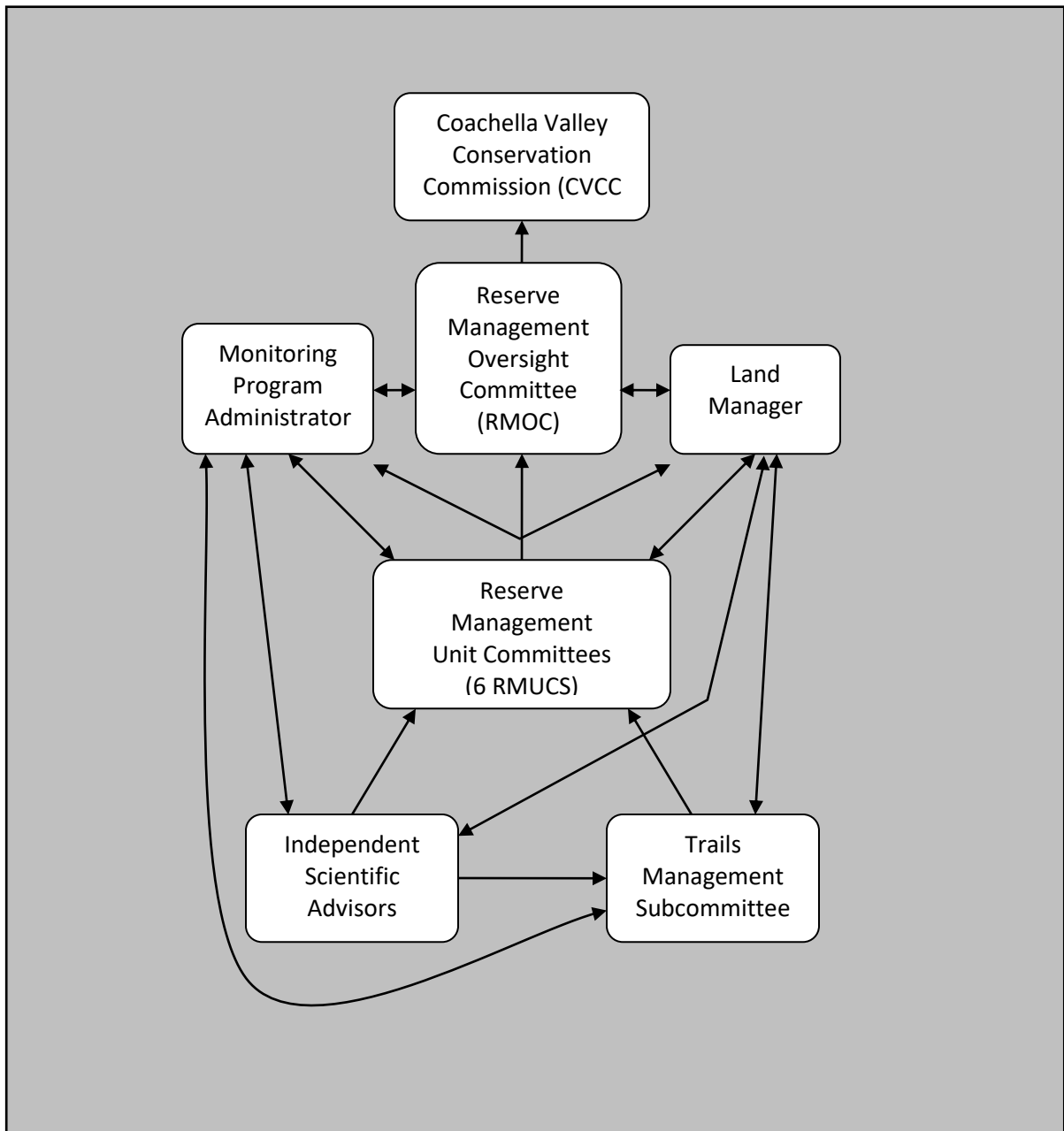
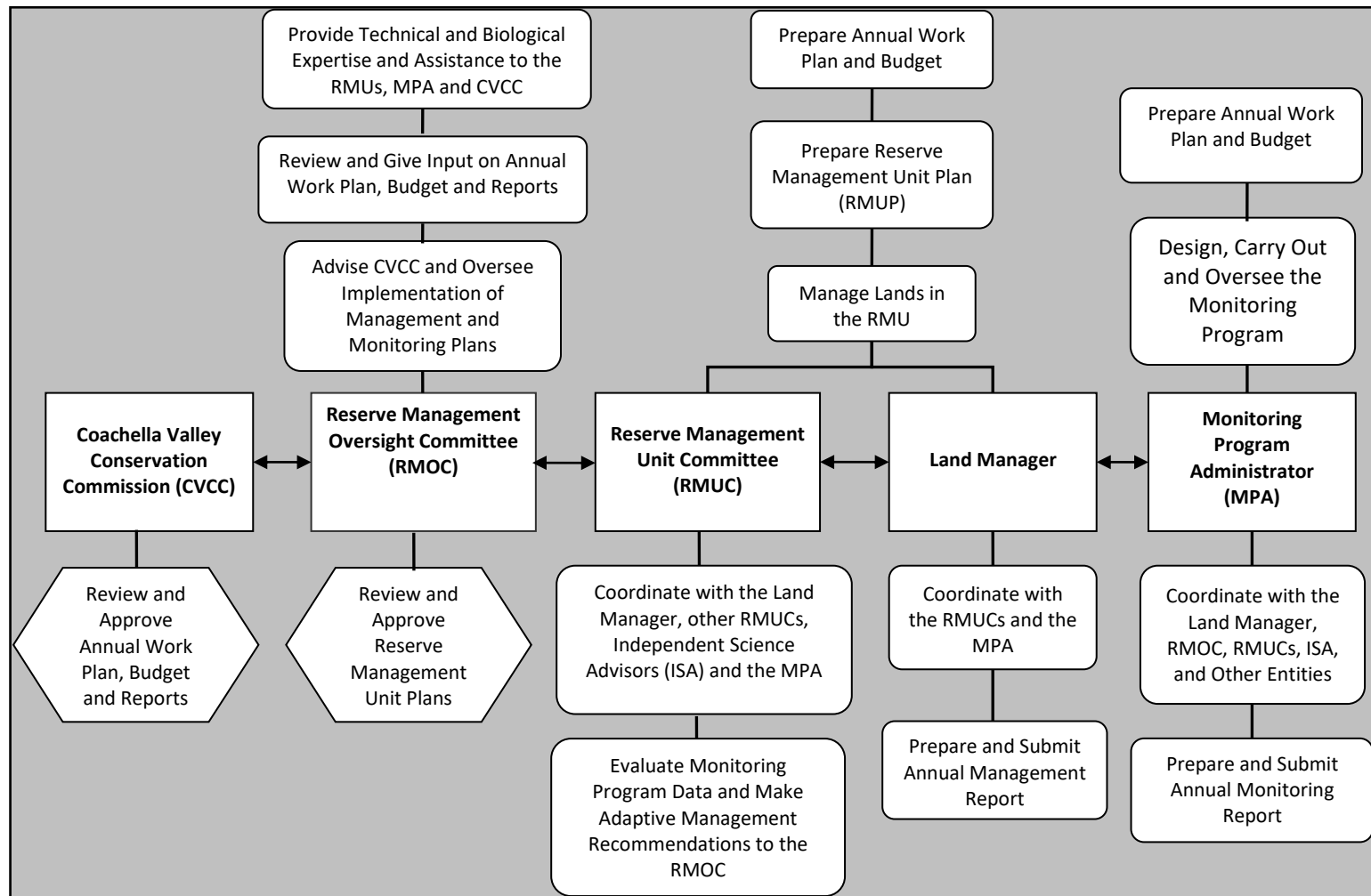


Figure 1-2 Organizational Responsibilities for the Monitoring and Management Program



1.2 Reserve Management Unit Background

Figure 1-3 depicts the location and boundaries of RMU 6. The Santa Rosa and San Jacinto Mountains Conservation Area encompasses virtually all of the desert slopes of the Santa Rosa and San Jacinto Mountains below the upper elevation limit of Peninsular bighorn sheep habitat, as well as much of the higher elevation areas of the Santa Rosa Mountains where there is known and potential habitat for the Grey Vireo. Indian Reservation lands in the mountains are not subject to this plan. The Agua Caliente Band of Cahuilla Indians has prepared a Tribal HCP on its reservation land, and efforts are being made to coordinate the Tribal MSHCP with the Coachella Valley MSHCP/NCCP. This Conservation Area is linked to the south with Anza Borrego Desert State Park and to the west with San Bernardino National Forest areas and Mt. San Jacinto State Park. To the north, this Conservation Area is contiguous with the Snow Creek/Windy Point Conservation Area, which includes two Biological Corridors to the San Bernardino Mountains. The ownership in the RMU as of the end of 2010 is depicted in Figure 1-4.

The Santa Rosa and San Jacinto Conservation Area is nearly conterminous with the Santa Rosa and San Jacinto Mountains National Monument established in the year 2000, depicted in Figure 1-5. As such, a majority of the land is in federal or state ownership which are covered by various management plans. The CVCC owns and manages some lands within and adjacent to the Conservation Area and facilitates coordination among various agencies for the management and monitoring.

1.3 Current Management, Monitoring and Public Access (including staffing level)

Coachella Valley Conservation Commission

The CVCC currently owns very little land in this RMU at the time this plan was approved, thus, its primary responsibility under the CVMSHCP at this time is to serve a coordinating role among the various landowners through regular meetings of the RMUC. In addition, CVCC is responsible for coordinating its member Permittee lands for public access near the urban boundaries. Several other entities own land for conservation purposes in this RMU and actively manage it. The agencies within this RMU that currently conduct management, monitoring and control public access are described in Appendix I.

Figure 1-3 Santa Rosa and San Jacinto Mountains Location and Boundaries

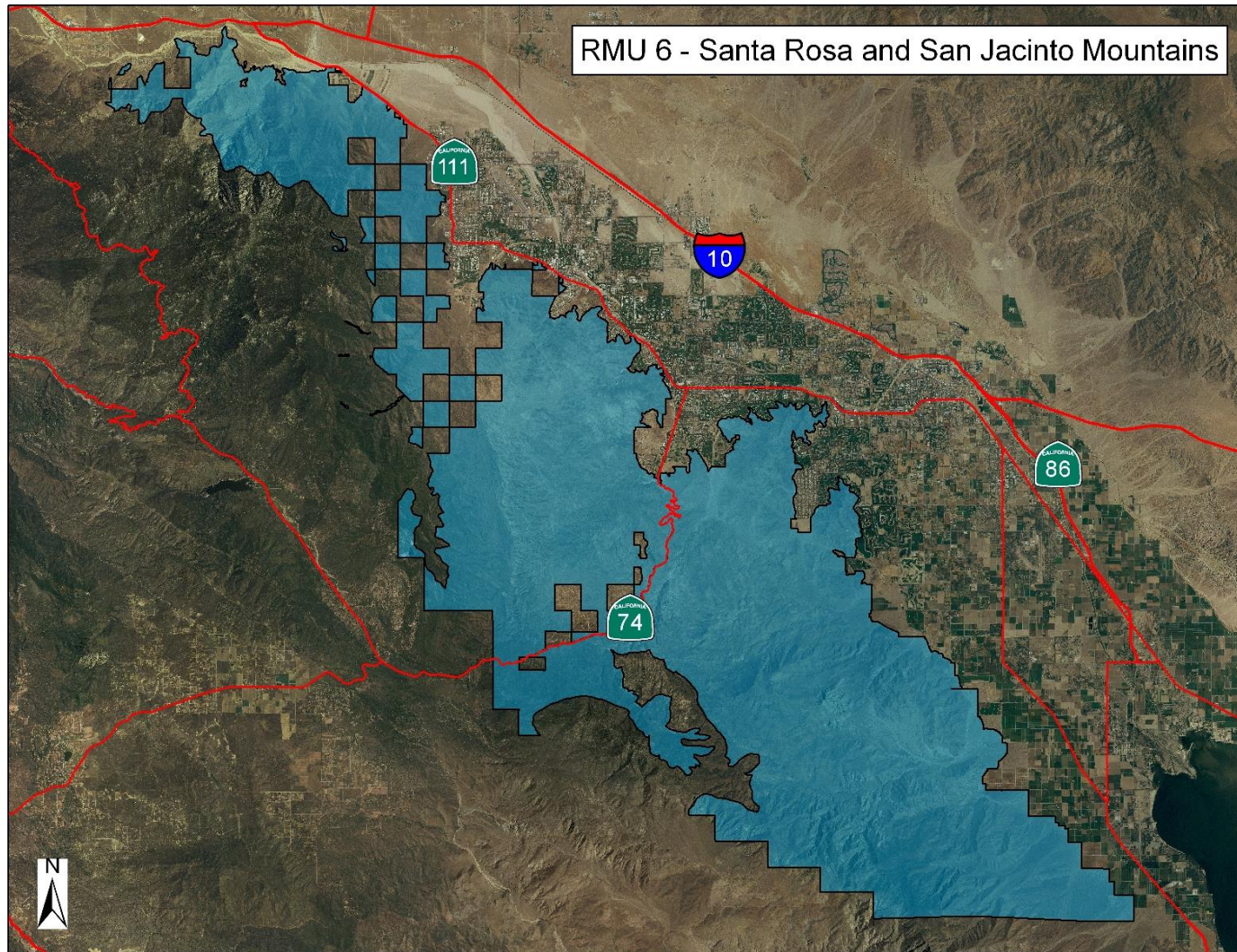


Figure 1-4 Ownership Santa Rosa and San Jacinto Mountains RMU-6

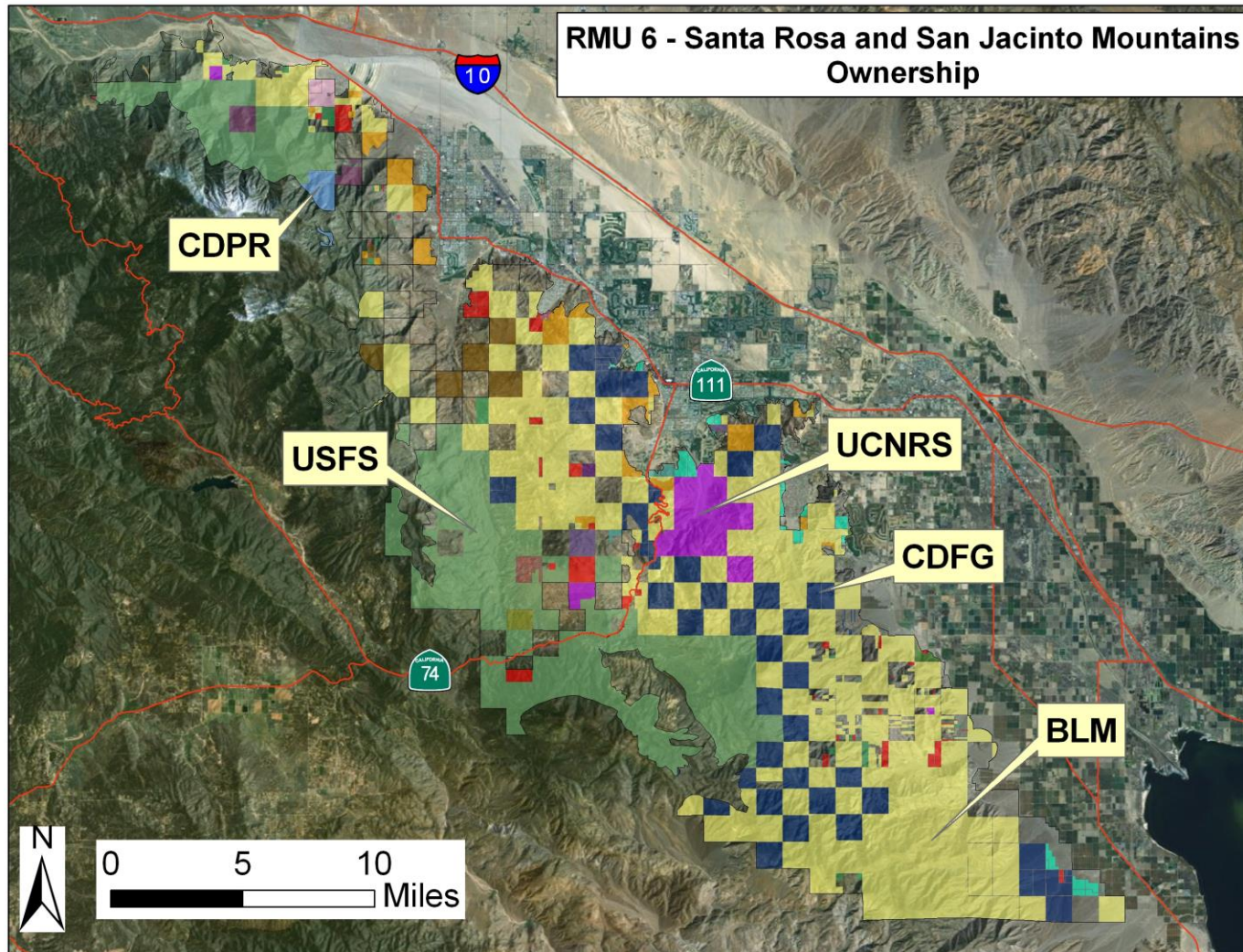
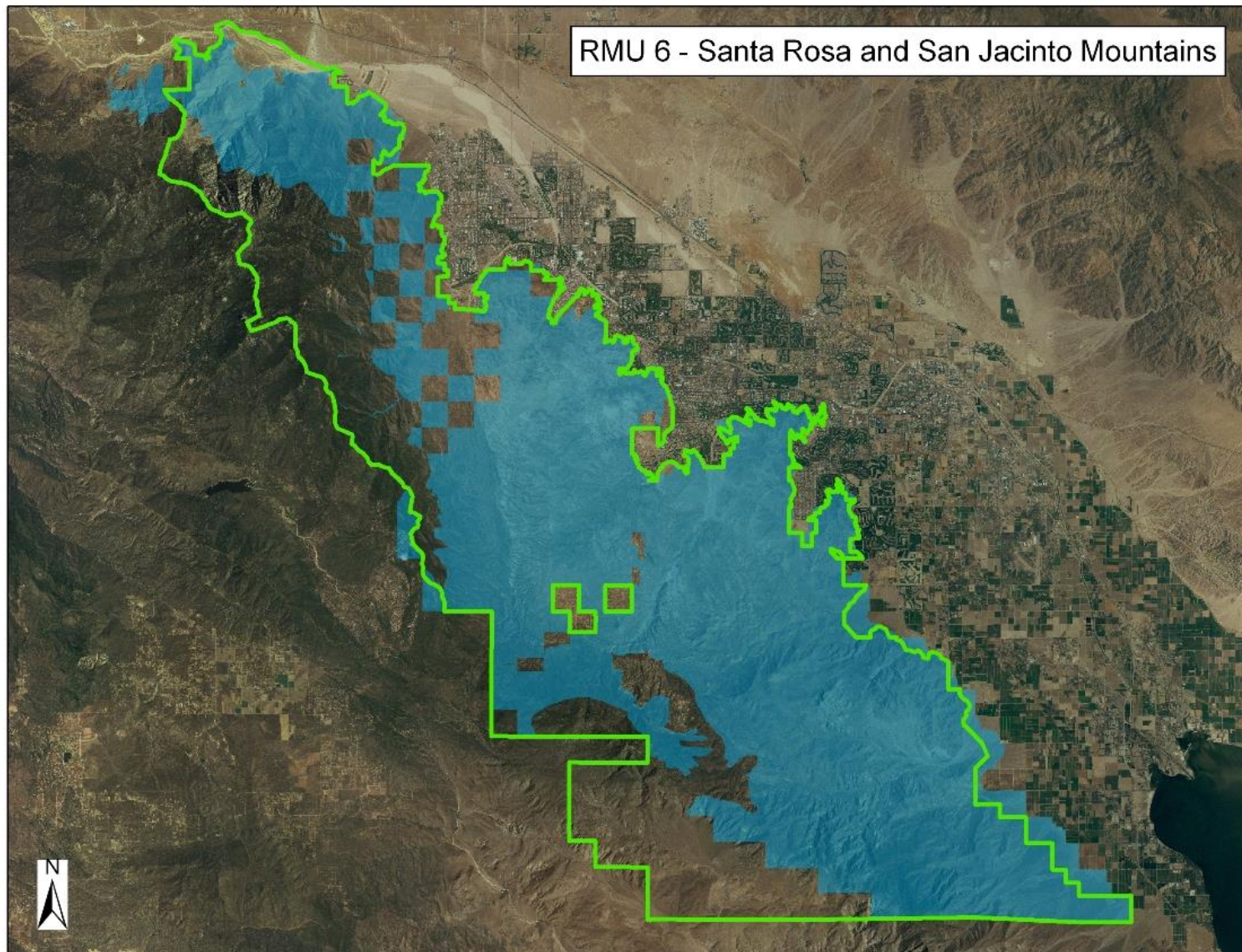


Figure 1-5 Santa Rosa and San Jacinto Mountains National Monument Boundary



2.0 Threats, Stressors, Other Management Issues

There are a number of potential threats which could affect the Covered Species and natural communities found in the Santa Rosa and San Jacinto Mountains Resource Management Unit. The natural stochasticity (randomness) of weather events, long-term climatic trends, and anthropogenic stresses can all have impacts. Section 8 of the CVMSHCP includes Threats Models for a number of the community assemblages. These models list threats and impacts of these threats to communities and species. Current and potential threats to the RMU and preventative and coordinated response measures to those threats are discussed in detail below.

2.1 Invasive Species

Invasive species occur in several natural communities within the Santa Rosa and San Jacinto Mountains RMU, being most prevalent in riparian habitats. Invasive species put pressure on the species, communities, and ecosystems of Santa Rosa and San Jacinto Mountains RMU, and in some cases they may pose a significant threat to them. They cause impacts through competition, predation, or physical alteration of the environment, or a combination of these and other factors.

Following are accounts of known invasive exotic species which occur or have the potential to occur in the Santa Rosa and San Jacinto Mountains RMU.

Management Goal: Prevent the establishment of new infestations of invasive plants and animals and reduce or eliminate current infestations.

Specific recommendations for preventative and coordinated response measures for individual invasive species or similar groups of invasive species are given in the accounts below. However, there are two general measures, applicable to all invasive species, which can help prevent their introduction and establishment or their future spread if already established. They are:

- Periodic surveys for new infestations of exotic species and their control if detected.
- Cleaning (or replacing when applicable) all equipment, gear, and supplies prior to moving from one location to another during the conduct of management and monitoring activities.

It is recommended that the Land Manager and the RMUC work together to develop a coordinated program for the detection and control of new infestations of invasive species and to develop standards for cleaning and handling equipment, gear and supplies to help prevent the spread of invasive species.

Invasive Plants

Goal: Prevent the establishment of new infestations of invasive plants and animals and reduce or eliminate current infestations.

Actions:

1. Conduct ongoing surveys/inspections for new infestations of invasive plants, animals, and pathogens (the frequency will need to be determined based on past experience and current conditions). Surveys should focus on both previously undetected species and new infestations of established species. Document infestations, including collecting a standard set of data and submitting it for inclusion in a GIS database for the RMU and the CVMSHCP area.
2. Document invasive species control efforts/treatments including collecting standardized data and submitting it for entry in a GIS database for the RMU and the CVMSHCP area.
3. Salt cedar/tamarisk - Continue tamarisk control efforts throughout the RMU prioritizing areas agreed upon by RMUC members; enter into agreements with private land owners to remove tamarisk; re-treat re-growth in treated areas; re-vegetate in treated areas as needed; consider prescribed fire management as an initial treatment in some.

Tamarisk/Salt Cedar (*Tamarix spp.*)

Introduced to North America as an ornamental shrub and windbreak in the 1800s, Tamarisk is widespread in the Salt Creek watershed and other suitable habitat in Santa Rosa and San Jacinto Mountains RMU. The deciduous species, *Tamarix ramosissima*, and *T. chinensis* and *T. parviflora*, collectively known as salt cedar, are highly invasive. They can displace native riparian trees such as mesquite, cottonwood and willows, and stands of mature trees can effectively prevent the re-establishment of native species due to shading, elevated salinity, and other possible factors such as changes to soil biota. Large dense stands of salt cedar may consume more water than equivalent stands of native cottonwoods and other native species, potentially causing ground water levels to drop and less surface water to be available. Salt cedar may also promote more frequent and intense fire in some areas. Another species of tamarisk, *Tamarix aphylla*, known as Athel Tamarisk is present to a lesser extent in the RMU. While not as invasive, as salt cedar its effects on the environment, where present, can be similar to those of salt cedar.

Preventative Measures

BLM, CDFG and the Forest Service are actively controlling salt cedar in various watersheds or the RMU including Palm Canyon, Sheep Canyon, Dead Indian Canyon, and Cat Canyon.

Sahara Mustard (*Brassica tournefortii*)

First reported in North American in the Coachella Valley in 1927, Sahara mustard is now an abundant annual weed at low elevations throughout southwestern deserts of North America. It successfully competes with native annual forbs and grasses to the extent that

there is very little growth and reproduction of native annuals in areas favorable to Sahara mustard in years which it is abundant. In the past, Sahara mustard was typically only abundant in the Coachella Valley during years of above average annual rainfall, allowing native plants to recover in other years. In recent years, including spring 2010, Sahara mustard has been abundant during years with average rainfall (Cameron Barrows, personal communication). This trend is of concern to scientists and land managers, for if it continues, large areas of the Coachella Valley could lose much of its native annual vegetation. The loss of native annuals could have significant effects on herbivores, such as desert tortoise, by reducing the amount and diversity of their food supply. A concomitant loss of native insects which utilize native forbs and grasses could affect populations of lizard species, including the Coachella Valley fringe-toed lizard, by reducing their food supply.

Sahara mustard also poses a threat to native ecosystems in several other ways. First, it has a stabilizing effect on sand fields and sand dunes due to the dense cover it forms in abundant years and to the slow deterioration of dead plants – they can persist, largely intact, for a year or more. As a result Sahara mustard is affecting sand transport, an ecological process important to the maintenance of active sand dunes habitat for the CVFTL and other rare and endemic species. Second, Sahara mustard can form a continuous and dense fuel between native shrubs and cactus, creating or increasing the potential for destructive wildfires. Historically in the Coachella Valley, fire either did not occur in many areas or it occurred at a much lower frequency and intensity. Native vegetation, not having evolved in the presence of fire, can experience high mortality during wildfires and slow or no recovery. Type conversion to Sahara mustard and associated non-native annuals, e.g., red brome and common Mediterranean grass, can result. Lastly, Sahara mustard can form a physical or visual barrier to wildlife. For example, it may be difficult if not impossible for juvenile reptiles, such as desert tortoise, to move through dense stands of Sahara mustard, and dense stands of Sahara mustard growing around burrowing owl burrows may prevent them from having sufficient sight distance to spot and avoid predators.

Sahara mustard infestations have been located in limited areas of the RMU including Cat Canyon. Selective hand pulling in priority areas such as active and stabilized sand dunes could benefit natural communities and species. Early season applications of a non-specific herbicide, glyphosate, may also be effective.

Preventative Measures

Annual inspections to locate and control new infestations and the selective treatment of established infestations may help prevent the further spread of Sahara mustard in the RMU and reduce its impacts to sensitive natural communities and species.

Coordinated Response Measures

The opportunity exists for the Land Manager and other RMUC members to work together to identify, prioritize, and treat infestations of Sahara mustard in the RMU. This approach would increase the effectiveness and efficiency of control efforts. A collaborative approach

between the RMUC and the MPA to evaluate different treatment options could also help to advance control efforts.

Fountain Grass (*Pennisetum setaceum*)

Pennisetum setaceum and *Pennisetum setaceum* 'rubrum'(cuprea) should not be used in the landscape because of their rampant reseeding behavior. While 'rubrum' is not as invasive as the parent species, landowners should not take the chance of becoming invasive. Once either of these is established they can distribute their windborn seed throughout whole neighborhoods, crowding out more desirable species and generating costly removal..

Good substitute clumping grasses are the native species *Muhlenbergia rigens* or *Stipa Speciosa*. Neither are invasive and both are drought tolerant in the desert habitat, while still showing attractive seed heads.

Cranesbill (*Erodium cicutarium*), is native to Eurasia and has become widespread throughout the United States. It is found mostly in disturbed soils, grasslands and shrubland. While innocuous, it can use valuable resources such as moisture and nutrients thus depriving the desirable native plants. *Oenothera caespitosa*, evening primrose, would be a good substitute and is a good pollen source for night flyers such as bats. Blue gramma grass, *Boutelloua gracilis*, would also work well.

Bromus species, *Bromus rubrum*, are grasses introduced to the United States as potential cattle feed. It proved to be a paltry nutrient source and was disdained by the cattle. It then spread aggressively replacing nutrient rich native grasses, and became a prime vector for the spread of wildfire. It has proven costly to control and becomes an annual problem as it dries out. The "foxtail" seeds are also detrimental to animal life as the sharp seeds pierce ears and intestines when accidentally ingested. Indian Rice Grass, *Oryzopsis hymenoides*, would be a good substitute and provides nutritious as well as attractive seeds. Again *Boutelloua gracillis* would work as well.

Mediterranean Grass, *Schismus barbatus*, is native to Eurasia and Africa and tends to propagate itself in dry, open and generally disturbed areas. It will aggressively displace more desirable native species. *Boutelloua gracillis* would be a good native substitute.

Buffelgrass (*Pennisetum ciliare*) is a drought-tolerant, warm-season, perennial grass which reaches 1.5 feet in height and 3 feet in width. Inflorescences are fat brown to purplish. It is similar in appearance to fountain grass. Buffelgrass is an invasive species in the Sonoran Desert. Although it is drought tolerant, its spread into the Colorado Desert may be limited to areas which receive significant monsoon rains. However, it is thought to have the potential to become established in riparian areas of the Colorado Desert (USGS). Buffelgrass grows densely and crowds out native plants of similar size. Competition for water can weaken and kill larger desert plants. Its dense roots and ground shading prevent the germination of native plant seeds. Until recently, there were no reports of buffelgrass in the Coachella Valley; however, several specimens were recently discovered in Indio (USGS).

Preventative and Coordinated Response Measures

It is recommended that the RMUC familiarize itself with the characteristics of this species and that it be searched for and controlled, if found, as part of coordinated periodic surveys for new infestations of invasive exotic plant species.

Invasive Aquatic Animals

Trout in Snow Creek and Tahquitz Creek

There are historical records of trout in Snow Creek. A survey was done in 1997 that documented tree frogs in both forks and trout in the west fork only. There is a record from 1953 for mountain yellow legged frog in Snow Creek. In addition, there are trout in Tahquitz Creek. CDFG staff are surveying in late July 2011 to assess the feasibility of removal.

Mosquito Fish (*Gambusia spp.*)

There is the possibility that mosquito fish used by the Coachella Valley Mosquito and Vector Control District to control Mosquito larvae have made their way into some water sources. Mosquito fish can compete with native larvaevores or prey on macro invertebrates.

Crayfish (*Procambarus clarkia*)

The presence/absence of Crayfish in this RMU is currently unknown

Coordinated Response Measures

Currently there are no ongoing efforts, except for Tahquitz Creek mentioned above, to control invasive aquatic species in the Santa Rosa and San Jacinto Mountains RMU (BLM and CDFG, personal communication). Future efforts will almost always involve a coordinated response including the managing entity or entities, CDFG and the USFWS (to address listed species issues), and the Monitoring Program Administrator (to develop and/or evaluate monitoring protocols and to evaluate monitoring results).

The Report prepared by ICF, *Invasive Species Management Options for Dos Palmas Area of Critical Environmental Concern*, lists a number of potential control techniques for invasive aquatic species which could be implemented in RMU 6 including Water Management, a control technique that alternatively inundates and desiccates habitat, trapping, and pesticides. Each of these methods may have applicability for some species and circumstances.

Trapping

Due to the inability of most trapping techniques to secure juveniles, trapping would at best control invasive species. However, by reducing predation and competition on native aquatic species, including macroinvertebrates, trapping and/or fishing may benefit the aquatic systems sufficiently to incorporate it into the ongoing management program.

It is recommended that one or more pilot trapping and/or fishing programs be implemented, including a monitoring component to determine their effectiveness and feasibility.

Pesticides

The use of pesticides that would be effective against invasive fish would also kill native fishes, mollusks and aquatic arthropods. However, in some cases, a targeted application of pesticides might be effective. For example, pesticides might be used to treat small areas of residual water from springs or seeps in an area which has otherwise been dewatered if other methods, such as trapping, were not feasible. It is recommended that the limited application of pesticides be maintained as a potential management tool, but they only be used when all other options have been determined to be infeasible and adequate precautions have been taken to protect native species.

Invasive Terrestrial Animals

Feral Dogs and Cats

Domestic pets pose a potential threat to wildlife in the Santa Rosa and San Jacinto Mountains RMU. For example, loose dogs and cats can impact burrowing owls by digging out the nest and removing the chicks (Point Reyes Bird Observatory) and dogs can harm tortoises or their burrows (USGS). While the occurrence of loose or feral domestic animals is currently low in the RMU due to its overall remoteness, future development along its boundaries could increase the level of this threat. Section 4 of the CVMSHCP includes Land Use Adjacency Guidelines. Guideline 4.5.6 Barriers includes project design requirements such as the incorporation of barriers in project designs to, among other things, minimize domestic animal predation.

Preventative and Coordinated Response Measures

Monitoring of the existing and future affects associated with development along the urban interface and identification of corrective measures should be the highest priority among federal and non-federal partners in the RMUC. Specific actions agreed upon in annual workplans will reflect this ongoing priority. RMUC will work with the CVCC and the Permittees during the annual workplan process to ensure that Land Use Adjacency Guideline

4.5.6, the *Santa Rosa and San Jacinto Mountains Trails Plan*, as well as the provisions in Biological Opinion for BLM are followed and provide specific implementation measures specific to, and coordinated with each document or provision. Additional recommendations, such as providing homeowners with brochures about living adjacent to a reserve (including information about pets), may also be appropriate.

2.2 Threats to Hydrological Regime/Processes

The RMUC members have agreed that natural and man-made water sources throughout the Conservation Area should regularly, at least once in the summer months and once during winter, be inventoried and monitored using a standard protocol (Bighorn Institute protocol recommended).

2.3 Climate Change and Habitat Fragmentation

Climate change is an issue for the entire Colorado Desert, including the Coachella Valley. Trends and predictions indicate that the area is gradually becoming more arid. The ability to move north to higher latitudes or up in elevation in response to this change will be essential for many species' prospects for persistence over time. In the Coachella Valley, areas in the northwest end of the Valley are cooler and wetter due to coastal influences in the Banning Pass area. Thus the ability of species, especially Bighorn Sheep in this RMU, to move northwest will be important. This need is being borne out by changes in the distribution of some species in response to recent climate change, including the Coachella Valley Jerusalem cricket (Cameron Barrows, personal communication).

Preventative and Coordinated Response Measures

Providing for the movement of wildlife northward or to higher elevation and the acquisition and management of alluvial fan/high elevation corridors are two primary means of addressing the effects of climate change in the RMU.

2.4 Fire Management

BLM's CDCA CV Plan includes a fire management strategy addressing suppression and pre-suppression that was developed in response to issues regarding the protection and management of habitats. BLM and Forest Service have interagency fire management plans affecting the RMU. Forest Service has Direct Protection Area responsibility for lands within the Monument north/west of Highway 74. BLM has Direct Protection Area responsibility for Monument lands south/east of Highway 74.

A priority task in the annual workplans of the RMUC should be to review current fire management plans and strategies that are already in place. To the extent necessary, current plans should be considered for revision to reflect goals and objectives of protecting Covered species of MSHCP.

Goal: Prevent damaging wildfires and use prescribed fire as a tool if it will benefit conserved natural communities and species.

Actions:

1. Develop and implement pre-suppression measures in areas subject to repeated wildfires.
2. Provide fire suppression agencies with maps and other information (including the Fire Management Plan when completed) prior to and during wildfire incidents.
3. Provide training for the CVCC land manager and other land management personnel in the Incident Command System.
4. Participate in the development and implementation of post fire rehabilitation plans.
5. Assess the potential for using prescribed fire as a tool to control exotic species and/or revitalize marsh habitat. Utilize it as a management tool if an assessment determines that one or more applications are beneficial and feasible.

2.5 Other Management Issues

Off-highway Vehicle Trespass

Illegal off-highway vehicle (OHV) use occurs at various locations throughout the CVMSHCP area including the Santa Rosa and San Jacinto Mountains RMU. The managing agencies report several discrete locations in the RMU where unauthorized OHV use is a problem.

Preventative and Coordinated Response Measures

Fencing and/or barricades, outreach, signing, and law enforcement are the primary means of preventing and controlling OHV access. The BLM and CDFG have erected fences and posted signs as control measures. Strategically placed directional and regulatory signs could help prevent both unintentional and intentional off-road travel. Coordination between the various law enforcement entities, e.g., among CDPR, BLM, and the OHV task force, has proven effective in addressing the OHV issue and should continue. The action plan in Appendix II addresses site-specific measures for OHV impacts.

Urban Development

Additional development adjacent to or within the Santa Rosa and San Jacinto Mountains RMU result in indirect environmental effects. Commonly referred to as edge effects, they may include noise, lighting, drainage, intrusion of people, and the introduction of non-native plants and non-native predators such as dogs and cats. Another edge effect with respect to the SRSJM RMU is the attraction of non-native vegetation to Peninsular bighorn sheep,

“luring” them off the RMU into unhealthy circumstances—ingestion of grasses with parasites, temporary abandonment by ewes of lambs thereby subjecting them to predation, entanglement in fences. The current level of development along the edges and within this RMU create an ongoing challenge for protected species and should be treated as a high priority in all future annual workplans.

Preventative Measures

The most effective measure to prevent future development within the RMU is to acquire private non-conservation lands within it, with an emphasis on those which protect Covered Species and communities, and preserve habitat linkages and ecological processes. Specific conservation objectives for land acquisition within the Santa Rosa and San Jacinto Mountains RMU are outlined in Section 4 of the CVMSHCP.

Coordinated Response Measures

The CVMSHCP includes Land Use Adjacency Guidelines. It is recommended that the Land Manager and the other RMUC members work with the CVCC to ensure that future development proposals adhere to the Land Use Adjacency Guidelines and, when appropriate, make specific recommendations for measures and actions related to them. The RMUC or a subset of its members may also want to coordinate on the construction and maintenance of boundary fencing and/or signing to address edge effects.

Dumping and Hazardous Materials

Dumping does occasionally occur in some areas in the RMU, primarily along the urban interfaces and more rural alluvial fan portions.

Preventative and Coordinated Response Measures

Recommended measures to prevent and respond to dumping include the strategic placement of fencing and barricades, signing, and communication between and within agencies about dumping issues, including communication between law enforcement personnel and Riverside County Code Enforcement. Periodic cleanup events involving volunteers from the local community could also help to prevent dumping and to build a local constituency in support of the RMU.

For hazardous material spills, it is recommended that the Land Manager, the reserve managers, and law enforcement personnel work with the County of Riverside Hazardous Materials Response (HAZMAT) Team to plan for incidents involving hazardous materials. The HAZMAT team possesses the necessary technical expertise and capability to mitigate hazardous spill emergencies. It is also recommended that the Land Manager and other personnel attend appropriate HAZMAT training if available.

Power and Gas Lines

Preventative and Coordinated Response Measures

It is recommended that the RMUC work cooperatively with the relevant utility companies to develop a plan for addressing the threats posed by power lines and gas lines and to educate them, if needed, about the Conservation Goals and Objectives of the CVMSHCP. Measures to avoid and mitigate potential impacts from power and gas lines may include:

- Modifying fuels under the power lines to reduce the potential for wildfire.
- Modifying the power poles to discourage raptors from perching.
- Identifying sensitive resources, if any, under (or in the case of the gas line, on top of) the utility lines and coming up with a plan to avoid, minimize, and mitigate impacts to them during maintenance and repairs.
- Providing all personnel with the names of the relevant utility companies and their contact numbers in the event a problem, such as a gas leak or downed or arcing power line/transformer, is detected.

3.0 Processes and Structure for Management, Adaptive Management, and Integration with Monitoring

Section 8 of the CVMSHCP describes general ongoing management actions that will be needed.

For the Santa Rosa and San Jacinto Mountains RMU/Conservation Area, the actions that may be relevant include:

1. Control of non-native or invasive species, primarily the continuation of tamarisk removal and monitoring
2. Control of other invasive species that may adversely impact Covered Species or natural communities.
3. To the extent activities are under Plan authority, maintain water levels, water quality, and proper functioning condition of seeps, springs, manmade water sources and wetlands.
4. Restrict human access to unoccupied habitat during the sensitive periods for Covered species, namely bighorn sheep, and during the breeding and nesting season for other species.
5. Ensure the compatibility of activities, and any restrictions on those activities, allowed within Conservation Areas with the conservation of species, habitats, natural communities, and their associated ecological functions.

6. Control of habitat disturbance from heavy public use areas or vehicle trespass by installation of signage, fencing, and gates; patrolling; law enforcement; installation of barriers.
7. Conserved populations of Covered Species shall be protected from edge effects, from urban areas, and from any activities that may result in disturbance to them, to the greatest extent feasible.
8. Prevention of habitat disturbance from unauthorized dumping, including removal of non-organic debris and installation of barriers, gates, and fences.
9. Maintain and manage wetland, seep, spring and manmade water sources, which provide habitat and water availability for riparian species and other Covered Species on Reserve Lands.
10. Only utilize pesticides or other toxic chemicals when absolutely necessary to carryout management actions identified in the Management Plans or as part of an Adaptive Management action.
11. Prevent poaching or illegal collection of Covered Species and other desert organisms including reptile and cactus species.

Proposed Management Actions and Prioritization

Following is a list of proposed management actions for the Santa Rosa and San Jacinto Mountains RMU. Specific management goals, actions, and priorities¹, including thresholds for success, will be determined each year and listed by agency and entity in the Annual Work Plan. The outcome of each planned action will be reported in the Annual Report for the RMU.

While the management plan is intended to be comprehensive for the RMU, it is recognized that each participating agency and entity will be responsible for its implementation on the Reserve Lands which they manage. As such, implementation will be affected by each agency's and entity's mission, mandates (as defined by applicable regulations, land use plans and other documents), and the amount of resources, i.e., staffing and funding, they have available.

Implementation of a comprehensive plan for the entire RMU will provide an opportunity to reinforce and build upon the existing close coordination and cooperation in management of the reserve lands within the RMU.

As additional Conservation Lands are acquired, management of these lands will be integrated with the management of Existing Conservation Lands.

Habitat Restoration and Enhancement

¹ The number and prioritization of management actions will change over time as a result of changing conditions, so it is recommended that specific priorities be set each year in the Annual Work Plan. To ensure the success of projects, the Annual Work Plan should identify and commit staffing and funding to (to the extent possible) those projects which will require multi-year funding to complete, including initial and follow-up actions.

Goal: Restore and enhance natural communities/habitats as needed to counter the effects of past disturbance and loss and to provide for the conservation of Covered Species.

Actions:

1. Re-vegetate areas where exotic vegetation has been removed when natural regeneration of native vegetation is not sufficient to provide the desired composition and cover.
2. Create new habitat where appropriate and/or required.
3. Remove interior fences to facilitate wildlife access and movement.
4. Modify existing fences, where needed, to provide for the movement of wildlife.
5. Evaluate the potential use of prescribed fire (including efficacy and feasibility) as a tool to periodically revitalize chaparral habitats.

Maintenance of Ecological Processes

Goal: Maintain ecological processes to support Natural Communities

Actions:

1. Identify impacted natural processes (e.g., hydrology, erosion, vegetation succession) and potential remediation needs/options.
2. Develop and implement remediation measures.

Managing Public Use and Access and Resource Protection

Public access is covered extensively in Section 7 of the MSHCP and should be directly referred to for more specific and complex management and planning decisions. Listed below are general goals and actions that can be used as a general guide.

Goal: Provide for public use in a manner which is consistent with the conservation goals and objectives of the Coachella Valley Multiple Species Habitat Conservation Plan.

Actions:

1. Post and maintain boundary/regulation signs at key locations along property lines including pedestrian and vehicle access points.
2. Install and maintain directional and regulatory signs as needed on access roads to assist visitors and reduce off-road vehicle travel.
3. Install additional visitor information kiosks and interpretive panels at trailheads and access points where needed.
4. Install and maintain perimeter fences and gates where needed, to prevent unauthorized vehicle use, dumping, and other activities which can result in wildlife mortality and habitat degradation.
5. Inventory access roads and, where feasible, re-route and/or close those which are redundant and/or causing significant resource impacts.

Existing public uses at Santa Rosa and San Jacinto Mountains RMU include hiking, camping, photography, bird watching, picnicking, and similar activities. Hunting is allowed in some areas. Vehicles are permitted on some dirt roads approved for motorized-vehicle use.

Coordination with the Monitoring Program Including Adaptive Management

Linking the Monitoring Program with Adaptive Management actions will inform reserve managers of the status of Covered Species, natural communities, and Essential Ecological Processes, as well as the effectiveness of management actions, in a manner that provides data to allow informed management actions and decisions.

The Monitoring Program Administrator (MPA) is responsible for coordinating with reserve managers to facilitate the exchange of Monitoring Program data. Likewise, the Land Manager has the responsibility to facilitate the exchange of information regarding all completed and proposed management and Adaptive Management actions. For the Santa Rosa and San Jacinto RMU, the key monitoring objectives are shown in Appendix I.

Facilitating Adaptive Management is a primary reason for coordination between the monitoring and management programs. The essence of Adaptive Management is the integration of design, management, and monitoring to test assumptions systematically in order to adapt and learn. An active Adaptive Management strategy utilizes an experimental approach to address the need for new knowledge about the nature of a threat, or the affect of a variable, or a new active management strategy or to reduce uncertainty about an ecological question.

New and modified management actions will periodically be necessary as indicated by the results of the Monitoring Program in regard to unanticipated changes in the needs of species, natural communities, and ecological processes. They will also be necessary in response to information from the monitoring program about the effectiveness of current management techniques and actions. The Adaptive Management Conceptual Model from Section 8-5 of the CVMSHCP is shown in Figure 3.1 below. It illustrates the Adaptive Management process.

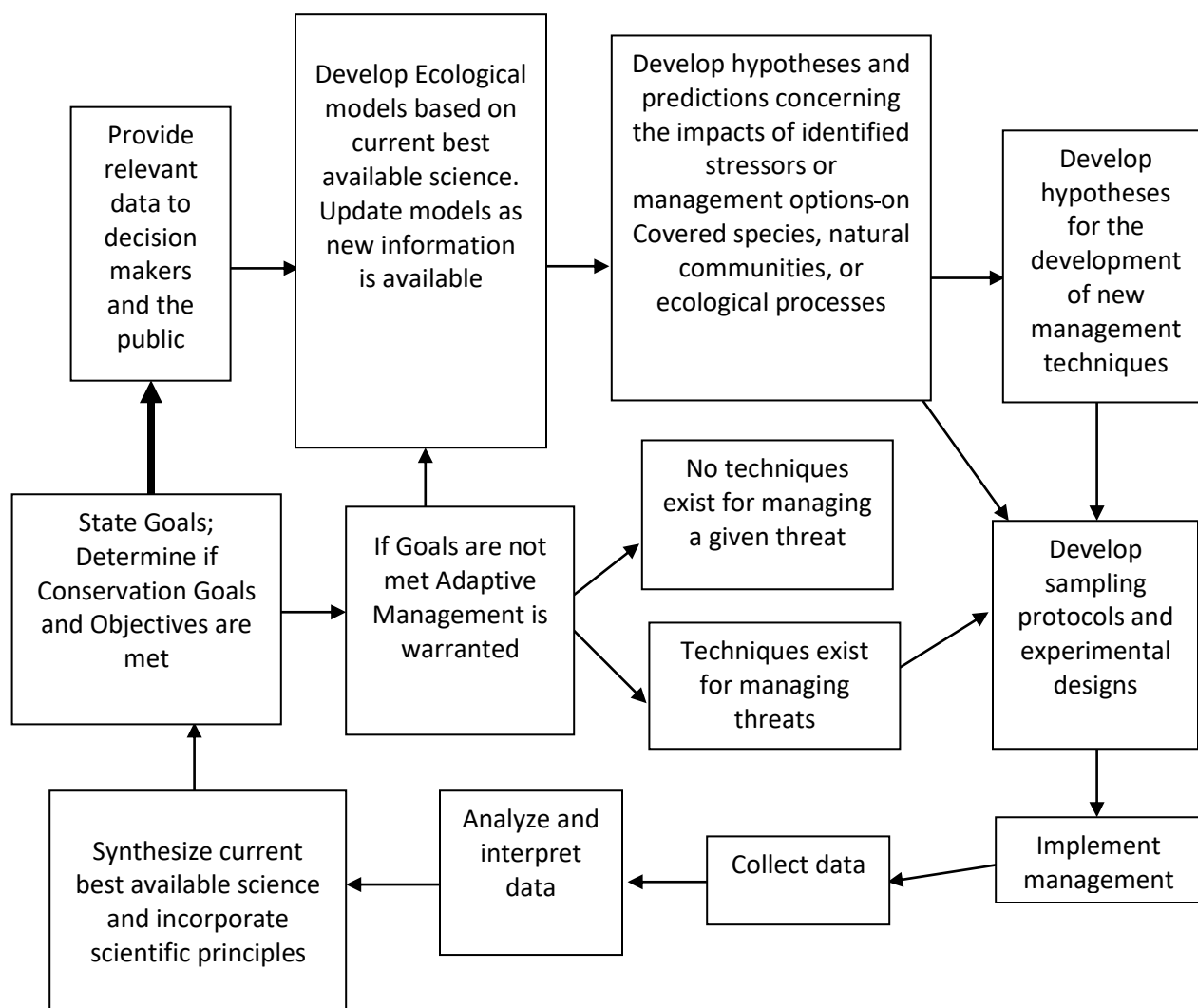
The initial focus of the Monitoring Program is on developing monitoring protocols for the natural communities and Covered Species, conducting baseline surveys of desert wetlands communities and species, and completing surveys and a model and monitoring protocol for the burrowing owl. As of December 2009, current or scheduled monitoring activities at the Santa Rosa and San Jacinto Mountains RMU undertaken by the CVCC monitoring team, (University of California Riverside Center for Conservation Biology (UCR CCB) and ICF/Jones & Stokes), include development of “Draft Monitoring Protocols for the Desert Wetland Communities and Covered Species” and a draft report on “Invasive Species Management Options for the Santa Rosa and San Jacinto Mountains Area”

Goal: Provide for an ongoing, dynamic system of information gathering and exchange between the MPA, the RMUC (the Land Manager and Reserve Managers) and the Evaluation Committee that facilitates close coordination between the Management and Monitoring programs, including the identification, implementation, and evaluation of Adaptive Management Measures.

Actions:

1. The Land Manager, the other Reserve Managers and the MPA will work with the RMOC to establish a working group composed of land managers and scientists to evaluate the efficacy of current and Adaptive Management actions and associated experiments; both those which are proposed and those which have implemented.
2. The MPA, Land Manager and the Reserve Managers will meet annually to discuss the results of the Annual Monitoring and Management reports. Based on the results they will:
 - Identify a list of needed Adaptive Management actions, experiments to test alternative responses, and associated monitoring needs.
 - Identify current research needs and make recommendations for their implementation.
 - Evaluate current Adaptive Management measures for further use or modification.
 - Develop a list of Adaptive Management recommendations for the Annual Management and Monitoring Work Plans.
 - Review the Threats Models and make recommendations for their updating.
3. The evaluation working group will review the recommendations of the MPA and RMUC for Adaptive Management, research, and updates to the Threats Models. They will give feedback to the MPA and the full RMUC.
4. Incorporating the input of the Evaluation Subcommittee, the RMUC and MPA will finalize their Adaptive Management recommendations and submit them to the RMOC for review and approval.
5. The Land Manager will communicate at least quarterly with the MPA and the Reserve Managers and the Evaluation Committee to ensure that information is being exchanged, and that recommendations for Adaptive Management actions are included in the Annual Work and are being implemented.

Figure 3.1 : Adaptive Management Conceptual Model



Independent Scientific Advisors

Per Section 8 of the CVMSHCP, as needed, or every 5 years, the RMOC may empanel a group of Independent Science Advisors (ISAs), which will, in coordination with the MPA, provide scientific expertise and recommendations on specific reserve management and monitoring issues. This process will help to ensure that the best available scientific information and methods are employed in the Monitoring and Management programs, including Adaptive Management.

Ongoing and Needed Research

The CVMSHCP provides for a research component that will be funded and implemented by the Permittees. Research needs will evolve over time and will be identified by the same process used to evaluate monitoring and management protocols and results. See Section 5.3 above for the process.

Priority research needs identified by RMUC members include those listed below. Proposals that address these identified research needs should be developed and ready for opportunities where funding becomes available.

1. Trails plan research focusing on population level effects of recreation on Peninsular bighorn sheep.
2. Encroachment of non-native Cape Ricegrass, *Stipa capensis*. Found in Chino Canyon, along hwy 111, Windy Point and Snow Creek. It has extremely sharp seed points that can harm wildlife.
3. Distribution of invasive Fountain Grass and proposal to remove it.
4. Bird (especially songbird) migration patterns along foothills of Santa Rosa and San Jacinto Mountains.
5. Monitoring of cowbirds in riparian areas and plans for removal
6. Bighorn sheep status in the monument, with added emphasis in the San Jacinto population.
7. Biodiversity study covering plants, vertebrates and invertebrates.
8. Soil studies especially pertaining to watershed factors.
9. Follow up of 2004/2005 UC Riverside inventory and plotted bird species of concern listed in the CVHCP for contribution to trend analysis.

Related Management Needs

Management needs related to public access and use include law enforcement, public education and interpretation, and facility maintenance.

4.0 Responsibilities for Implementation

The CVCC, its Land Manager, and the other Reserve Management Unit Committee members (reserve managers) are responsible for the implementation of the Reserve Management Unit Plan. This commitment to collaboratively manage Reserve Lands pursuant to the CVMSHCP is articulated in the Planning Agreement for the CVMSHCP, the CVMSHCP, and in the Implementing Agreement. Specific responsibilities and commitments for each year will be articulated in the Annual Work Plan.

4.1 Work Plan and Schedule

The Land Manager, in coordination with the RMUC, will prepare an Annual Work Plan to be reviewed and commented on by the RMOC, and then submitted to the CVCC for budget approval. The Annual Work Plan will specify CVCC's responsibilities and identify anticipated actions by other RMUC member entities. Appendix I contains an Annual Work Plan for calendar year 2012. This and future Annual Work Plans will describe the proposed management prescriptions, a work schedule for management actions, and a budget.

4.2 Personnel, Equipment and Supplies

Each of the RMUP members is expected to provide personnel, equipment and supplies, as agency budgets and other priorities allow for allocation, to implement the management actions identified in the Reserve Management Unit Plan. The specific contribution of each member will be delineated in the Annual Work Plan.

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The CVMSHCP Management Program Budget identifies the following personnel and categories of equipment and supplies:

Personnel (for the entire Reserve System)

- Reserve Land Manager
- Assistant Reserve Manager (4)
- Ranger-Warden (2)
- Field Crew Labor (contract)
- Administrative Assistant (0.25-0.5)

Equipment and Supplies

- Site Protection and Maintenance
- Habitat Maintenance and Restoration
- Field Equipment and Supplies
- Office Equipment

A line item budget amount is associated with each position and with each equipment and supply category. Initially, only one Assistant Reserve Manager is funded, with the additional three positions phased in over time.

A portion of the CVCC staff, equipment, and supply resources will be dedicated to the Santa Rosa and San Jacinto Mountains Resource Management Unit. This will occur as the CVCC acquires Conservation Lands in the RMU and/or if it becomes a partner in one or more cooperative management efforts. The amount of CVCC staffing, equipment, and supplies necessary to implement the Santa Rosa and San Jacinto Mountains RMUP will be determined over time as lands are acquired and partnership opportunities become available.

Other Agencies and Entities

Current staffing levels for BLM, CDFG, CDPR and CNLM are described in Section 2.3 of this document. These staffing levels are expected to vary over time depending on the management needs of the plan and the ability of each agency and entity to contribute to meeting them.

See figure 7-5 for the management cost estimate for the RMU. It includes personnel equipment, and supply estimates for each management action.

4.3 Law Enforcement

Four agencies with land management responsibilities in the RMU have law enforcement personnel: USFS, BLM, CDPR and CDFG. In addition, the Riverside County Sheriff and Code Enforcement have jurisdiction over private lands. The law enforcement capability of the three agencies in the RMU varies.

As stated above, the CVMSHCP provides for the funding of two ranger/warden positions. It is anticipated that a portion of their time will be dedicated to patrolling the Santa Rosa and San Jacinto Mountains RMU in coordination with other agencies with law enforcement responsibilities in the area.

See Appendix I for management cost estimate for the RMU.

4.4 Program Cost Estimates

An accurate determination of the program costs for the life of the plan is not possible due to unknown factors, including the ultimate acreage and composition of the Reserve Lands which will be managed by the CVCC and its partners, and to uncertainties concerning future conditions, e.g., the number and extent of threats and stressors. A cost estimate of near term costs, those expected in the next year, can be found in Appendix I. This portion of the plan will be reviewed and revised by the RMUC every year to reflect current management needs and costs.

4.5 Funding for Implementation

CVCC Reserve Lands

The Permittees (CVCC) will fund the annual costs for the Monitoring and Management Program, and Adaptive Management for the 75-year term of the Permits. During the 75-year term of the Permits, an endowment will be established to fund the Monitoring Program, the Management Program, and Adaptive Management in perpetuity. Funding sources for CVCC's obligations include but are not limited to:

- Local Development Mitigation Fees
- Fees on the importation of waste into landfills in Riverside County

- Transportation project mitigation
- Mitigation for regional infrastructure projects
- Eagle Mountain Landfill Environmental Mitigation Trust Fund²

Table 5-3b in Section 5 of the CVMSHCP provides revenue and expenditure projections for the 75 year life of the plan. Due to the recent economic downturn, funding amounts for monitoring and management are less than projected.

Other Conservation Lands

As stated in Section 7.1, the CVCC through the Land Manager and the reserve managers, i.e., BLM, CDFG, CDPR and CNLM have agreed to cooperatively manage the Santa Rosa and San Jacinto Mountains RMU consistent with the Conservation Goals and Objectives of the CVMSHCP. A cooperative and collaborative approach will result in greater management efficiency by eliminating redundancy and providing the opportunity to pool resources. It will also create funding opportunities through the grant application process that might not otherwise be available, e.g. grant funds which are targeted to Natural Communities Conservation Planning areas.

As part of their annual budgeting process, the Reserve managers will coordinate with the Land Manager to identify management funding needs and responsibilities for the coming year. They will use this information to make their respective annual funding requests. Their annual management budget for the RMU and the associated goals, outcomes, and targets, will be included in the Annual Work Plan.

The three year management cost estimate and subsequent revisions will also be used to help obtain funding for implementation by providing information which can be used in advance budget planning and the preparation of competitive grant applications.

Grants

A number of grant opportunities are available which could potentially provide management funding. They include:

- Wildlife Conservation Board Grants
- Cal-Fire Vegetation Management Grants
- California Recreational Trails Program Grants
- California Off-Highway Motor Vehicle Recreation Division Grants
- California Department of Agriculture Grants
- CDPR (State Parks) Stewardship Grants (Internal to CDPR)
- North American Wetlands Conservation Act Grants
- National Landscape Conservation System research grants
- National Fish and Wildlife Foundation Grants³

² The Eagle Mountain Landfill was expected to provide a significant source of management funds; however, the landfill project may not occur, in which case CVCC will have to identify or develop replacement funding sources.

³ These grants are targeted to specific areas, natural communities, and species, so they may or may not be applicable to the Santa Rosa and San Jacinto Mountains RMU in a given year.

It is recommended that the RMUC, with the Land Manager serving as coordinator, meet at least annually to identify grant opportunities and timing to determine grants it wishes to pursue and to assign responsibility for grant preparation and receipt.

4.6 Partnership Opportunities

There are a number of partnership opportunities in Santa Rosa and San Jacinto Mountains, some of which are already in place. Current partnerships include:

In cooperative efforts in the future, the RMUC could:

- Partner with various entities including Riverside County Community Improvement Department, waste disposal companies, and non-profit conservation groups to sponsor volunteer clean ups in the RMU.
- Organize additional volunteer events including invasive species control, e.g. Sahara mustard, fountain grass and tamarisk, and planting native vegetation.
- In coordination with the MPA, partner with universities or other entities to conduct applied and basic research with the purpose of obtaining information useful to management.
- Pool funds between its members for signing, fencing, and other items.
- Share equipment and/or personnel to maintain facilities, monitor resources, patrol the RMU, and accomplish larger projects.

4.7 Data Storage and Analysis

The collection and storage of data in a manner which facilitates its easy retrieval and analysis is crucial to the success of both the monitoring and management programs. It will enable managers and wildlife agencies to evaluate the efficacy of conservation measures, and to develop and implement Adaptive Management measures as needed.

Section 8.6 of the CVMSHCP, Data Storage and Management, addresses data management, including database consolidation, data handling and storage, data availability, and data compilation and analysis.

Key aspects of the data management program for land managers in the RMU are anticipated to be the development of standard and comprehensive data forms which facilitate the

collection of consistent and robust data, and the ability to easily retrieve the data for analysis to assist in the development and evaluation of management actions.

The CVCC has applied for grants to fund the development of a robust, standardized database for the CVMSHCP. CVCC staff will work with the MPA, the Land Manager and the other members of the RMUC, the RMOC, and other entities to develop the reserve management and monitoring portion of the database.

In addition, a wealth of information exists in the Deep Canyon Databases to assist researchers and inform management of the Conservation Area. These data enable researchers to interpret results in the context of within and between-year variance of biological and environmental variables. The nature of the databases ranges from paper copy to computer files and traditional biological collections. Database publications include species lists and seven books on the flora and fauna of Deep Canyon. The Deep Canyon Bibliography is posted on the NRS website (www.ucnrs.org/nrs/biblio/BoydDeepCanyon.enl) and updated yearly.

Goal: Develop a land management database which is integrated with the monitoring database, which provides open access and easy data retrieval and transfer, which contains an easy to use field user interface, and which complies with applicable standards, e.g., the North American Invasive Plant Mapping Standard.

Actions:

1. Develop a land management database which is integrated with baseline and monitoring data and which provides for robust data queries and analysis.
2. Develop standardized data entry formats and forms for field personnel.
3. Identify who is responsible for data management tasks.
4. Identify the process for access to and communication of data.

4.8 Reporting

An Annual Report will be prepared by the Land Manager in cooperation with the other reserve managers which summarizes management activities in the previous year. It will include completed and proposed management actions, including Adaptive Management actions. It will also discuss any significant issues encountered during implementation of the management program.