

APPENDIX C
Biological Resources Technical Report

**General Biological Resource Inventory,
Focused Survey for Agassiz's Desert Tortoise, and Habitat Assessments for
Western Burrowing Owl and Mohave Ground Squirrel on a Well Site for the
Indian Wells Valley Water District's Water Supply Improvement Project
in the Vicinity of Ridgecrest, Kern County, California**

(U.S. Geological Survey 7.5' Inyokern SE quadrangle, Township 27 South, Range 39 East,
portions of Section 9, M.D.B.&M.)

Job#: 11-001b

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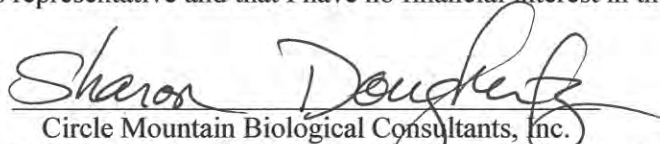
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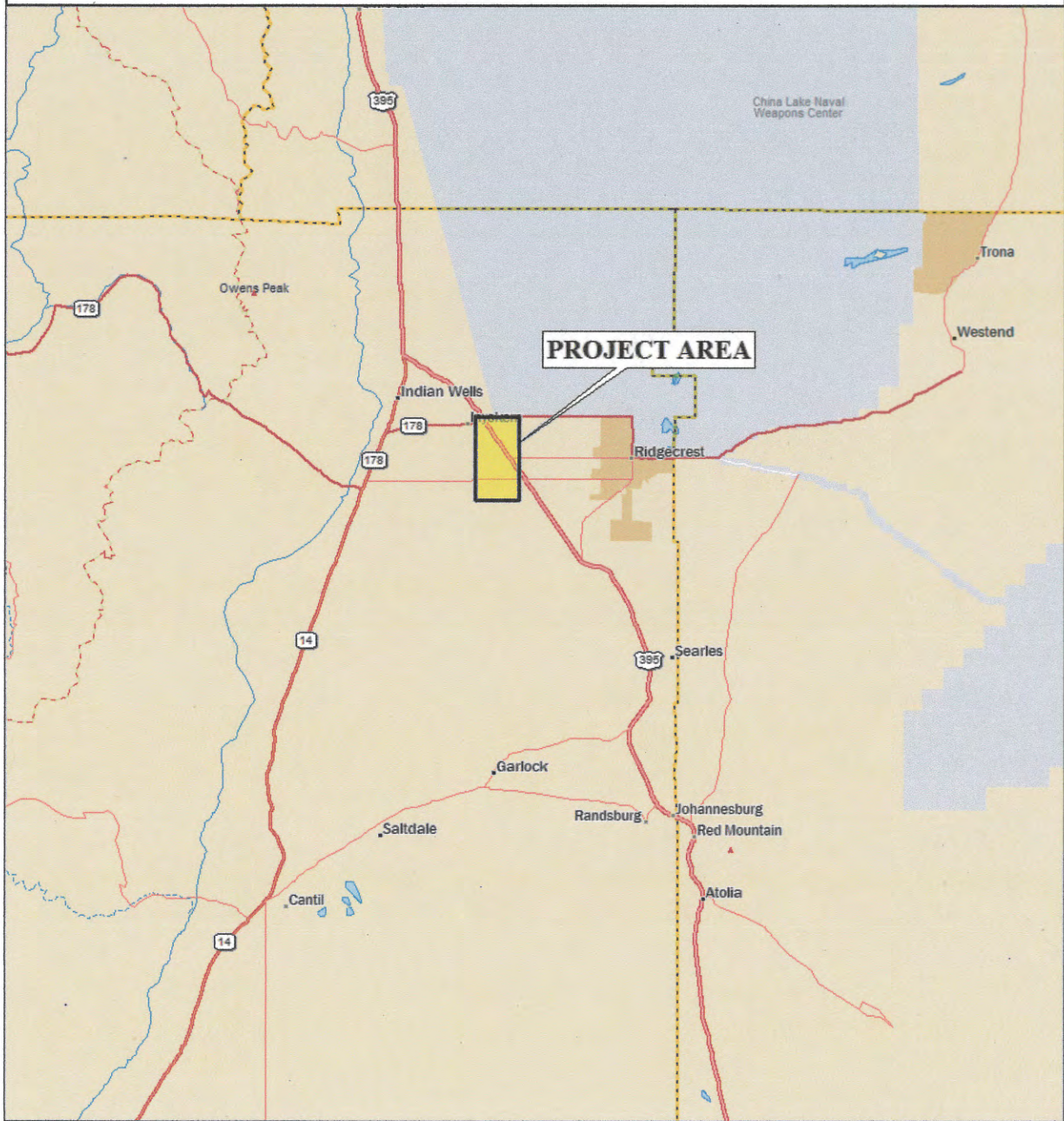
I hereby certify that the statements furnished herein, including attached exhibits, present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a nondisclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.


Circle Mountain Biological Consultants, Inc.

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August 2011

Figure 1. Indian Wells Valley Water District Water Supply Improvement Project: Vicinity Map



Map produced by Circle Mountain Biological Consultants, Inc. July 2011



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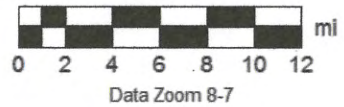
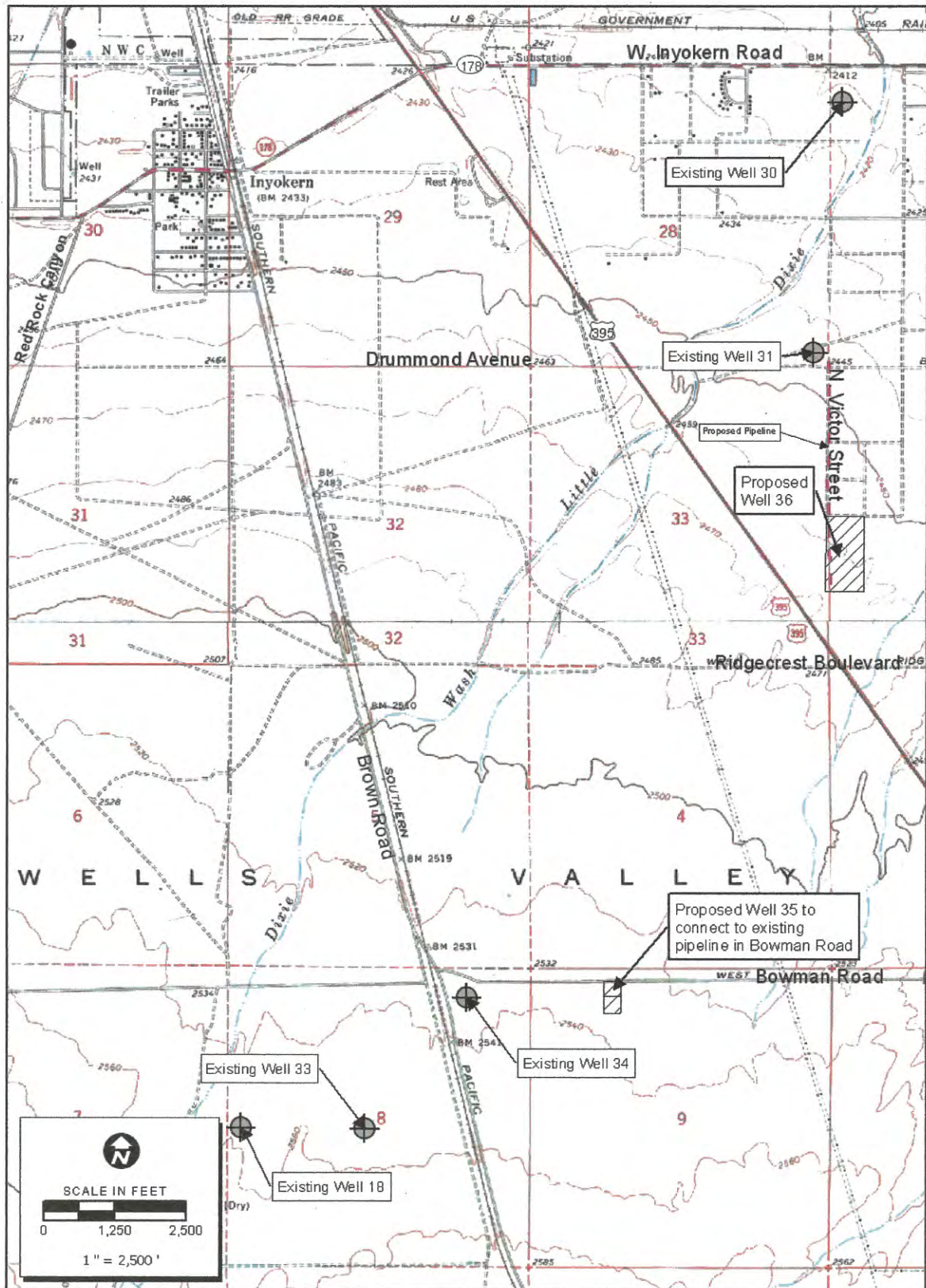
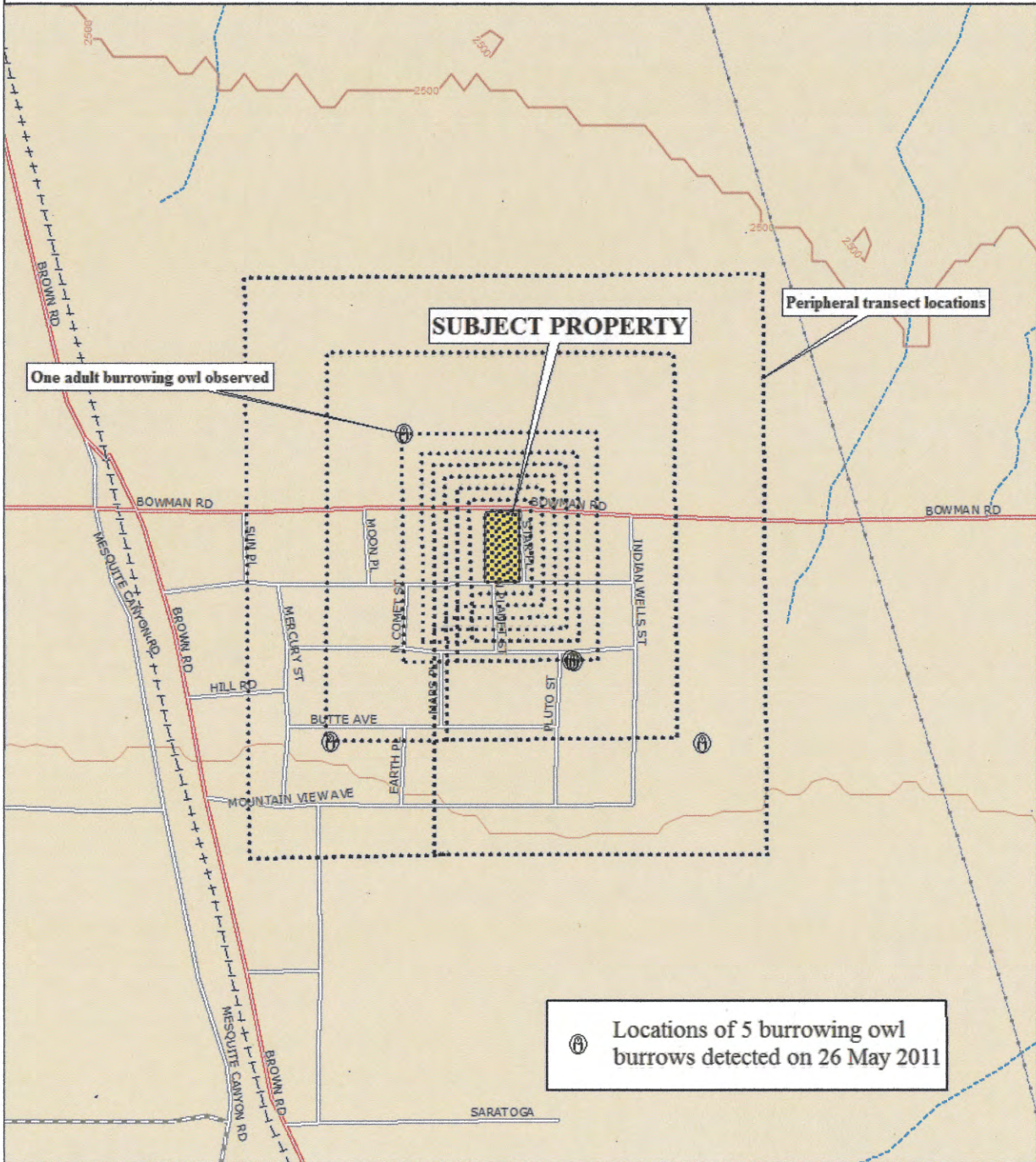


Figure 2. IWVWD Water Supply Improvement Project: Detailed Vicinity Map
 (Map produced by ECRP Consulting, Inc. for IWVWD)



**Figure 3. IWWVD Water Supply Project Well Site 35:
Locations of Special-status Species and Transects**



Map produced by Circle Mountain Biological Consultants, Inc. July 2011, modified August 2011



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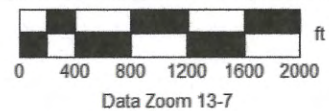


Figure 4. Results of 12 Surveys on 11 Sites from 1991 to 2010

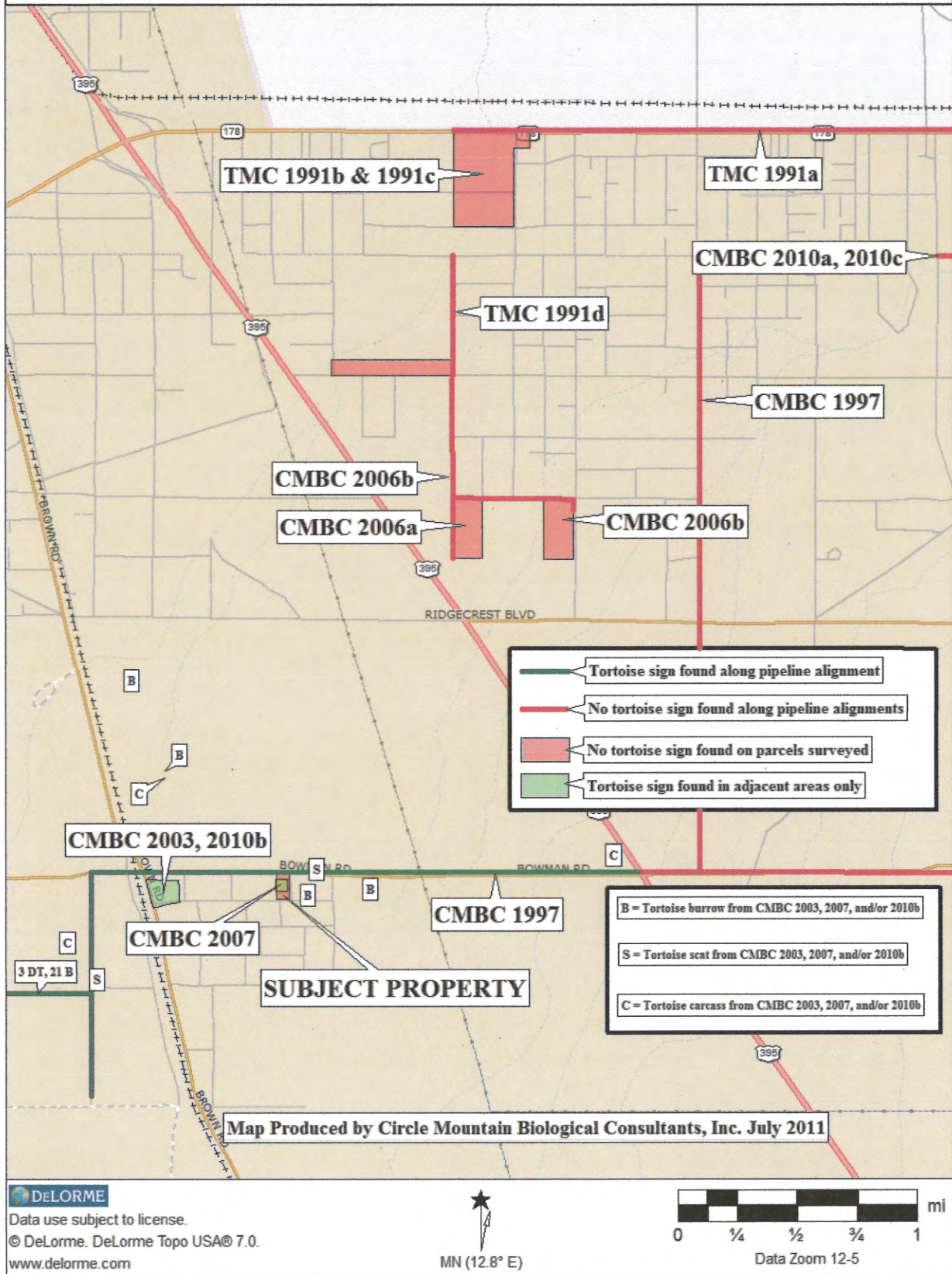
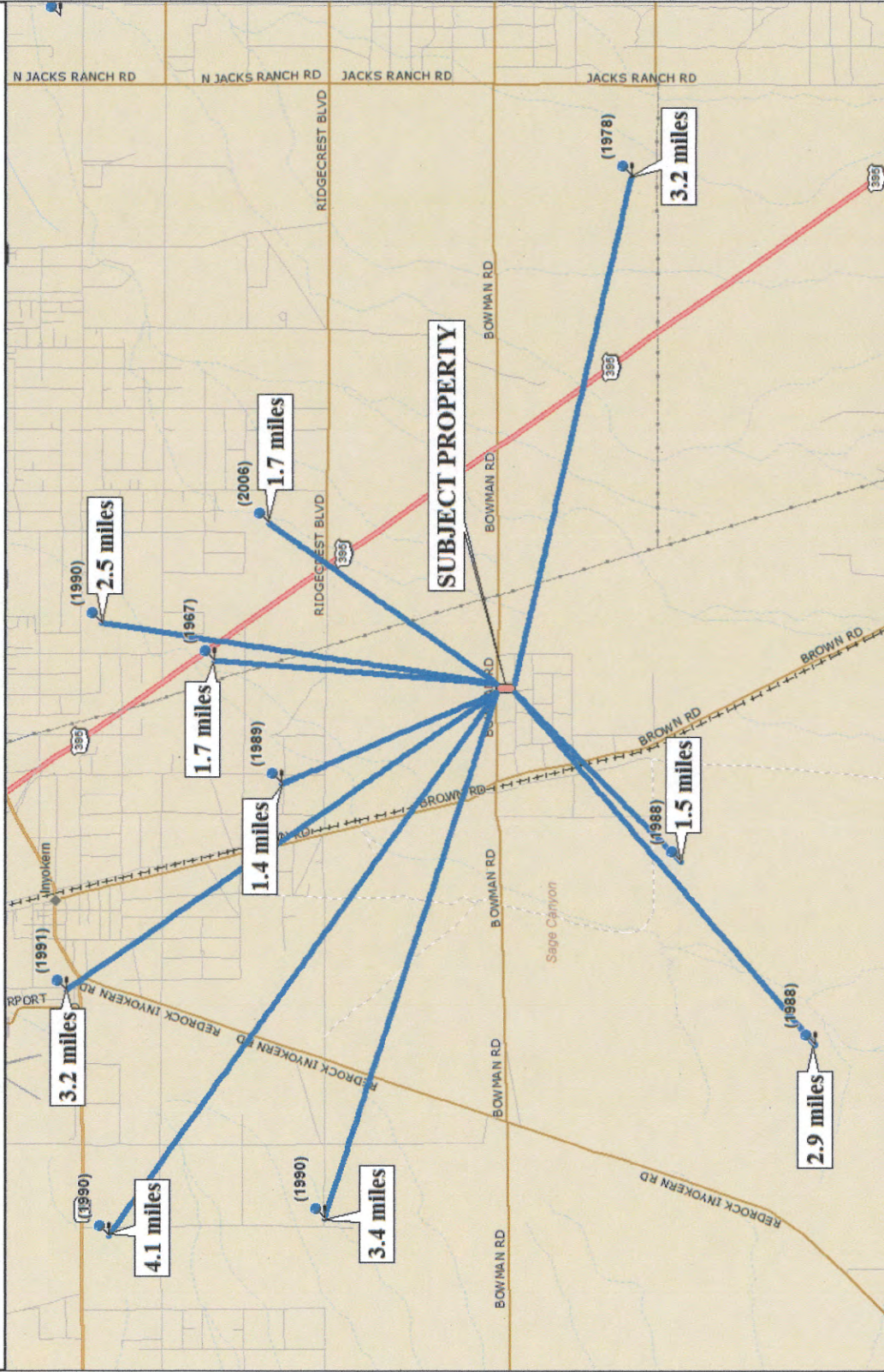


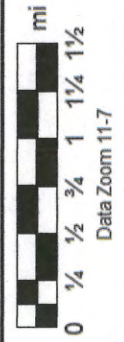
Figure 5. IWVWD Water Supply Improvement Project:
Aerial Photograph, ©2011 Google™ Earth



Figure 6. Known Mohave Ground Squirrel Locations

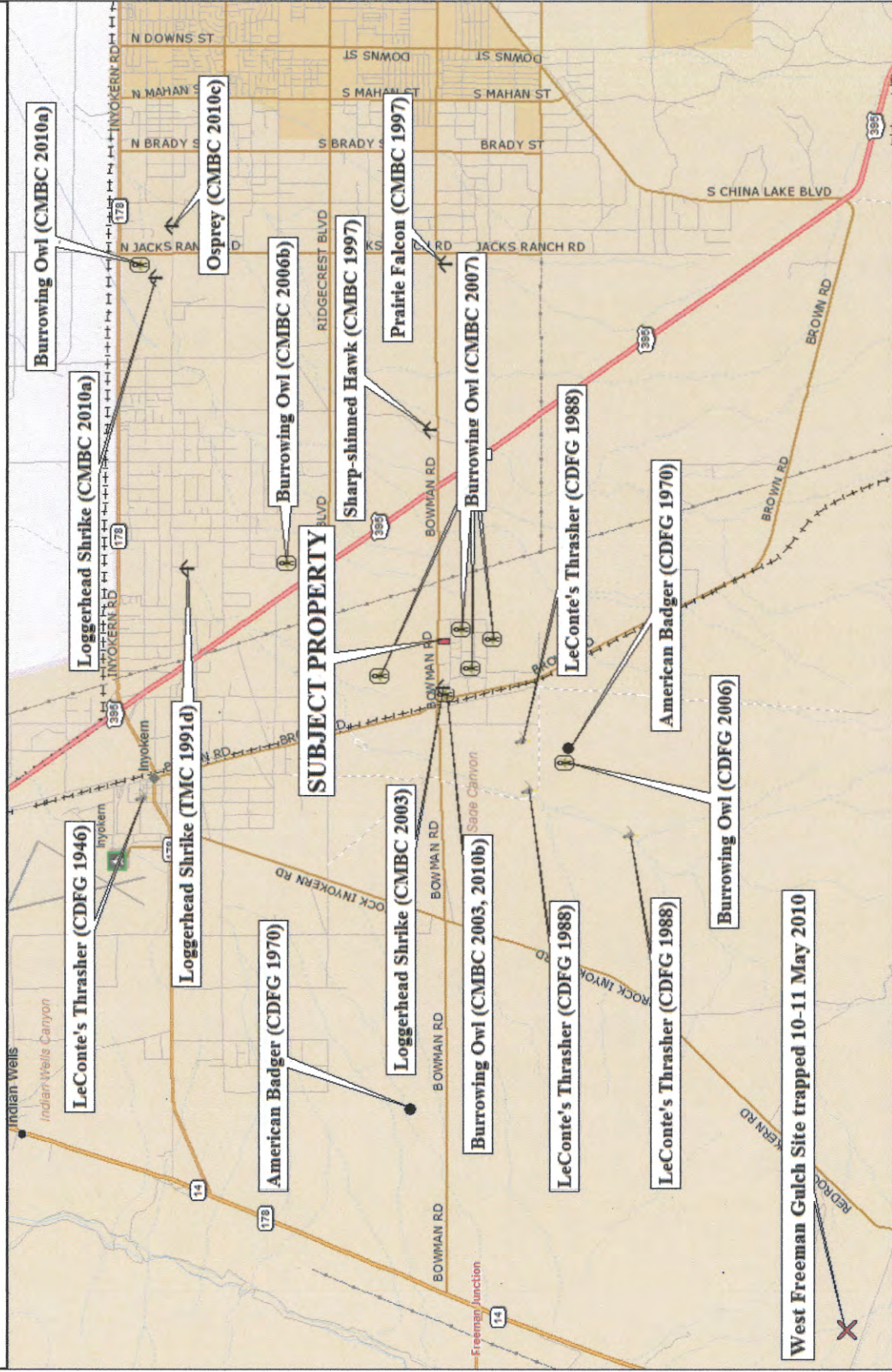


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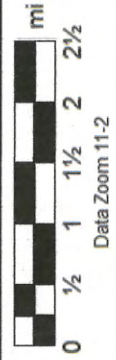


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Figure 7. Locations of Special Status Species Reported from the Region



Map produced by Circle Mountain Biological Consultants, Inc. July 2011, revised August 2011



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Executive Summary

Circle Mountain Biological Consultants, Inc. was contracted by ECORP Consulting, Inc., on behalf of Indian Wells Valley Water District, to complete a general biological resource inventory, focused surveys, and habitat assessments in support of a draft environmental impact report currently being prepared by ECORP for IWVWD's Water Supply Improvement Project.

The Proposed Project Area is located west of the City of Ridgecrest, southeast and east of Inyokern, and south of Naval Air Weapons Station, China Lake, in an unincorporated portion of Kern County, California. The Project area is located on U.S. Geological Survey 7.5' Inyokern SE quadrangle, Township 27 South, Range 39 East, portions of Section 9, M.D.B.&M.

Proposed Well 35 would be located on the south side of Bowman Road, between Moon Place and Star Place, APNs 341-234-02 & -03, totaling 3.92 acres, and would be connected to an existing pipeline along Bowman Road via a new 12-to-16-inch, 400-foot± pipeline located within the site. A second proposed well (Well 36) and associated pipeline were originally considered and surveys of the sites were completed, but these project components were later dropped.

For a total of 12 survey hours, between 0815 and 1115 on 26 May 2011, Sharon Dougherty and Clayton LaRue of CMBC, and independent subcontractors William Donnan and Sarah Teed, surveyed the site for Well 35 and adjacent areas as described herein. This entailed a survey of eight transects, spaced at 30-foot intervals and oriented in a north-south direction throughout the 3.92-acre± site.

Based on DeLorme Topo USA® 7.0 software, the elevation on Well 35 is approximately 2,530 feet (771 meters) throughout the site. Terrain is relatively flat and soils are comprised of sandy-to-gravelly loam. The 22 plant species identified on the site and in adjacent areas are listed in Appendix A. The 4 reptile, 6 bird, and 5 mammal species identified during the survey of Well 35 are listed in Appendix B.

Based on the absence of tortoise sign on-site and in adjacent areas, and available information reviewed for this habitat assessment, CMBC concludes that tortoises are absent from the Project area. Given the past presence of tortoise sign in areas adjacent to Well 35 but not on the site, CMBC recommends that the 3.9-acre± site including the quarter-acre well site and associated discharge pond and pipeline route be resurveyed immediately prior to ground disturbance and, if no tortoise sign is found, which is expected, then fenced with tortoise-proof fencing. This would preclude tortoises from the site and ensure that they do not become established on the site prior to development.

Based on the field surveys and habitat assessment given herein, CMBC concludes that none of the following special status species reported from the region will be adversely affected by site development: osprey, sharp-shinned hawk, prairie falcon, LeConte's thrasher, loggerhead shrike, and American badger. As such, no adverse impacts have been identified and no mitigation measures are recommended.

Those species either identified during the current survey or for which suitable habitats are present include western burrowing owl and Mohave ground squirrel. Impacts and proposed mitigation measures are given in Section 4.2.

IWVWD maintains a number of fenced well fields in the region that are important to species including burrowing owls. For example, the District-owned 81.2-acre± fenced area, south of Las Flores Avenue between North Victor Street and North Strecker Street to the east (APNs 352-250-33 through -36), is ideal burrowing owl habitat. Should CDFG require that compensation lands are protected to offset impacts associated with development of Well 35, which may impact about one-half acre, IWVWD should point out the existing protection already provided by these fenced areas.

The only outstanding issue would be potential occupation of the Well 35 site by Mohave ground squirrel. If so, IWVWD would have the option to assume presence on the well site and mitigate accordingly, which would require a 2081 permit and use of IWVWD's established, CDFG-approved mitigation bank. Alternatively, IWVWD may perform a focused trapping survey to determine presence or absence of the species. If no Mohave ground squirrels are trapped during the protocol survey, CDFG would assume absence, and IWVWD could develop the well site within one year without the need for formal permitting.

Given the absence of jurisdictional waters on the site, a 1601-03 Streambed Alteration Agreement should NOT be required from CDFG for development.

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Indian Wells Valley Water District's Water Supply Improvement Project
in the Vicinity of Ridgecrest, Kern County, California**

1.0. Introduction

1.1. Purpose and Need for Study. Circle Mountain Biological Consultants, Inc. (CMBC) was contracted by ECORP Consulting, Inc. (ECORP), on behalf of Indian Wells Valley Water District (IWWVD), to complete a general biological resource inventory, focused surveys, and habitat assessment in support of a draft environmental impact report (Draft EIR) currently being prepared by ECORP for IWWVD's Water Supply Improvement Project (Proposed Project).

The Proposed Project area is located west of the City of Ridgecrest, southeast and east of Inyokern, and south of Naval Air Weapons Station, China Lake in an unincorporated portion of Kern County, California (Figures 1 and 2). Based on a map provided by IWWVD, the Project area is located on U.S. Geological Survey 7.5' Inyokern SE quadrangle, Township 27 South, Range 39 East, portions of Section 9, M.D.B.&M.

For this assessment, CMBC completed focused surveys for Agassiz's desert tortoise (*Gopherus agassizii*), habitat assessments for western burrowing owl (*Athene cunicularia*) and Mohave ground squirrel (*Xerospermophilus mohavensis*), and a general biological resource inventory on a 3.9-acre± site (APNs 341-234-02 & -03) (see Figures 1 and 2). A second proposed well site (Well 36) on a 20.3-acre± parcel (APN 352-250-33) and an associated pipeline were originally considered and surveys were completed, but these project components were later dropped.

A significant paper was published in June 2011 (Murphy et al. 2011) whereby the "desert tortoise" of the Mojave Desert was split into two species, including *G. agassizii*, referred to therein as "Agassiz's desert tortoise," and a newly described species, *G. morafkai*, referred to therein as "Morafka's desert tortoise," which occurs in the Sonoran Desert. According to Murphy et al. (2011), "...this action reduces the distribution of *G. agassizii* to only 30% of its former range. This reduction has important implications for the conservation and protection of *G. agassizii*, which may deserve a higher level of protection." Agassiz's desert tortoise is the threatened species that occurs in the region including the three Project components.

Given the location of the site in an unincorporated portion of the county and because Kern County does not have a specific protocol for writing technical reports, this report has been prepared, in part, according to San Bernardino County's *Report Protocol for Biological Assessment Reports* (County of San Bernardino 2006). As the California Environmental Quality Act (CEQA) Lead Agency, IWWVD is required to complete environmental analyses and associated documents to determine if site development will result in any adverse impacts to rare biological resources.

The information will also be useful to federal and State regulatory agencies, including U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), respectively, to assess impacts associated with proposed development. Results of CMBC's focused tortoise survey, burrowing owl and Mohave ground squirrel habitat assessments, and general biological resource inventory are intended to provide sufficient baseline information to these agencies to determine if impacts will occur and to identify mitigation measures, if any, to offset those impacts.

1.2. Project Description.

Proposed Well 35 (hereafter, "Well 35") would be located on the south side of Bowman Road, between Moon Place and Star Place, on APNs 341-234-02 & -03, totaling 3.92 acres, and would be connected to an existing pipeline along Bowman Road via a new 12-to-16-inch, 400-foot± pipeline, located on the site. The Draft EIR will include a more detailed project description, some of which is given below.

The proposed well site would be cleared of vegetation and graded to prepare it for the construction of the well. A chain-link, tortoise-exclusion fence with three-strand barbed wire would be erected around the perimeter of the well site. Construction equipment would be staged within the fenced area. The well would be drilled using direct or reverse-rotary drilling rigs. Drilling would take several months. The new well would include steel louvered screens, a 50-foot sanitary seal and conductor casing, and a 4-foot by 4-foot concrete pump foundation. Pumping units, motors, controls, and electric switchgear would be installed based on parameters determined during well drilling operations. Electrical services would come from the nearest Southern California Edison power pole. The new well would be developed using air-lift equipment with 500 to 600 hp diesel engine drivers. The well would be tested using the temporary diesel-driven pump for approximately two weeks. The water discharged from the development and testing of the well would be percolated into the ground locally, either by discharge to an on-site percolation pond or by sprinklers.

The new well would require chlorination facilities (dosing pump and sodium hypochlorite storage tank with secondary containment) and such additional treatment facilities that may be indicated by water quality testing performed at the time of drilling. Prior to operation, the well would be disinfected in accordance with IWVWD's standard specifications. Disinfected water would be de-chlorinated and discharged on the site in the same manner as the development and testing water. An approximate one-half to one acre discharge pond would be constructed immediately adjacent to the well, within the 3.9-acre± area and be approximately 3 to 6 feet deep.

The well would be operated in accordance with system demands and maintenance schedules, approximately 70 to 90 percent of the time during high-demand summer months and 20 to 40 percent of the time during winter months. Back-up generators would not be installed.

2.0. Methods

2.1. Literature Review. CMBC consulted materials included in our library to determine the nearest tortoise locations and other special status plant and animal species that have been reported from the vicinity of the Project Area. Since the tortoise was listed as a threatened species in 1990, CMBC has performed 22 focused surveys in the Indian Wells Valley, including Ridgecrest and unincorporated portions of Kern County, between 1991 (Tierra Madre Consultants, Inc. 1991a through 1991d) and the current, 2011 survey.

Of particular relevance are 12 focused tortoise surveys completed on 11 sites within approximately five miles of the site between 1991 and 2010, which, along with the Project Area, are mapped in Figure 4. A 1.86-acre portion of the 3.9-acre site encompassing Well 35 was surveyed on 22 August 2007 (Circle Mountain Biological Consultants, Inc. 2007). These and other materials used in the completion of this report are listed in Section 5.0, below.

2.2. Field Survey.

2.2.1. *Survey and Habitat Assessment Protocols.* For **Agassiz's desert tortoise**, CMBC generally followed the survey protocol first identified by the USFWS (1992) and recently revised (USFWS 2010) for their detection. USFWS (2010) protocol recommends that if neither tortoises nor sign are encountered during *action area* surveys and the project, or any portion of project, is $\leq 0.8 \text{ km}^2$ (200 acres) or linear, three additional 30-foot (9 meters) belt transects at 655-foot (200 meters), 1,310-foot (400 meters), and 1,970-foot (600 meters) intervals parallel to and/or encircling the project perimeter should be surveyed.

The *action area* is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). For this assessment, the regional action area consisting of some 12-square miles is depicted in Figures 1 and 2. Since it is infeasible to survey such a large area according to protocol guidelines (i.e., along transects spaced at 30-foot intervals), CMBC completed a survey as described above for the site and herein relies on other available focused surveys within and adjacent to the regional action area, as depicted in Figure 4.

For **western burrowing owl**, the CDFG (1995) survey protocol recommends transects be surveyed at 100-foot (30-meter) intervals throughout a given site with five transects spaced at 100-foot intervals surveyed in adjacent areas in potential habitat (i.e., excluding areas substantially developed for commercial, residential, industrial, etc. purposes). Importantly, this methodology is considered a formal *habitat assessment* for presence of burrowing owls, which can be conducted any time of the year. Since burrowing owl sign was found in the vicinity of the well site, CDFG may require breeding owl surveys during the spring and summer as outlined in CDFG (2007). With its narrower transect intervals, the tortoise survey was sufficient to cover the well site for burrowing owl.

The habitat evaluation for **Mohave ground squirrel** is based on the results of CMBC's field survey, reported occurrences of the species in the region (California Department of Fish and Game 2011; see Figure 6), and CDFG's criteria for assessing potential impacts to the species (CDFG Wildlife Biologist, Adrienne Disbrow, personal communication to CMBC in 2004): (1) Is the site within the range of the species? (2) Is there native habitat with a relatively diverse shrub component? (3) Is the site surrounded by development and therefore isolated from potentially occupied habitat?

2.2.2. Field Survey Methods. For a total of 12 survey hours, between 0815 and 1115 on 26 May 2011, Sharon Dougherty and Clayton LaRue of CMBC, and independent subcontractors William Donnan and Sarah Teed, surveyed the site for Well 35 and adjacent areas as described herein. This entailed a survey of eight transects, spaced at 30-foot intervals and oriented in a north-south direction throughout the 3.9-acre± site. Peripheral surveys were completed to the north, south, east and west out to 600 m.

As transects were surveyed, Dougherty kept tallies of observable human disturbances encountered on 3 of 8 transects surveyed on Well 35. The results of this method provide *encounter rates* for observable human disturbances. For example, two roads observed on each of 20 transects would yield a tally of 40 roads (i.e., two roads encountered 20 times). Habitat quality, adjacent land uses, and this disturbance information are discussed below in Section 3.2 relative to the potential occurrence of tortoise and other special status species on and adjacent to the Proposed Project.

Weather conditions at the beginning of the survey included a temperature [measured approximately 2.5 inches (5 centimeters) above the ground] of 64°F, with 75% cloud cover, and average winds of 6 miles per hour and gusts up to 15 miles per hour out of the southwest, as measured by a hand-held Kestrel® weather and wind speed meter.

All plant and animal species identified during the surveys were recorded in field notes and are listed in Appendices A and B, respectively. A Garmin® hand-held, global positioning system (GPS) unit was used to survey straight transects and record Universal Transverse Mercator (UTM) coordinates (North American Datum – NAD 83) for property boundaries, rare species locations, and other pertinent information (Appendix C). A digital camera was used to take representative photographs (Appendix D), with locations and directions of exhibits shown in Figure 8. ©2007 Google™ Earth was accessed via the internet to provide recent aerial photographs of the subject property and surrounding areas (Figure 5).

3.0. Results

3.1. Common Biological Resources. The common plant and animal species identified during the surveys are influenced by multiple factors such as elevation, topography, soil substrates, and adjacent land uses. Based on DeLorme Topo USA® 7.0 software, the elevation is approximately 2,530 feet (771 meters) throughout the site. Terrain is relatively flat and soils are comprised of sandy-to-gravelly loam.

3.1.1. *Common Flora.* The 22 plant species identified on the site and in adjacent areas are listed in Appendix A. The area is vegetated by Mojavean creosote bush scrub (Sawyer and Keeler-Wolf 1995). Dominant perennial species include creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), desert goldenhead (*Acamptopappus sphaerocephalus*), and Anderson's boxthorn (*Lycium andersonii*). Annual species such as fiddleneck (*Amsinckia tessellata*), tumble mustard (*Sisymbrium altissimum*), London rocket (*Sisymbrium irio*), red-stemmed filaree (*Erodium cicutarium*), red brome (*Bromus madritensis* ssp. *rubens*), and split-grass (*Schismus* sp.) are either not native to California or are native weedy species, and are indicative of somewhat degraded habitats characteristic of rural areas.

3.1.2. *Common Fauna.* The 4 reptile, 6 bird, and 5 mammal species identified during the survey of Well 35 are listed in Appendix B. The three lizard species are common to the area and are desert iguana (*Dipsosaurus dorsalis*), side-blotched lizard (*Uta stansburiana*), and western whiptail (*Cnemidophorus tigris*). Gopher snake (*Pituophis melanoleucus*) was the only snake species identified. Other locally common reptile species that likely occur include zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), red racer (*Masticophis flagellum*), glossy snake (*Arizona elegans*), long-nosed snake (*Rhinocheilus lecontei*), and various rattlesnake species (*Crotalus* ssp.).

Common bird species identified during the surveys include year-round residents associated with both degraded and pristine habitats, i.e., horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), and sage sparrow (*Amphispiza belli*), those associated with urbanizing areas, i.e., common raven (*Corvus corax*), seasonal residents i.e., lesser nighthawk (*Chordeiles acutipennis*), and incidental migrants i.e., turkey vulture (*Cathartes aura*), white-crowned sparrow (*Zonotrichia leucophrys*).

All mammal species detected are common to the region and relatively tolerant of urbanizing areas. Small burrowing mammals included kangaroo rat (*Dipodomys* sp.) and antelope ground squirrel (*Ammospermophilus leucurus*). Medium-sized mammals included black-tailed hare (*Lepus californicus*). Two predator species detected included coyote (*Canis latrans*) and kit fox (*Vulpes macrotis*).

3.2. Uncommon Biological Resources.

3.2.1. *Agassiz's Desert Tortoise.* No tortoise sign was found on the site or in adjacent areas during these focused, protocol surveys (U.S. Fish and Wildlife Service 1992, 2010) for the species. Given previous observations of tortoises in the vicinity of Well 35, there is some limited potential for tortoises to occur there in the future, although they are currently deemed to be absent. These conclusions are based on the following observations.

On 22 August 2007, Ed LaRue surveyed a 1.86-acre portion of the 5.0-acre Well 35 site and adjacent areas (Circle Mountain Biological Consultants, Inc. 2007). Well 35 is located far enough south and west of Ridgcrest that surrounding areas are undeveloped (see Figure 5) and tortoises still persist. Although no tortoise sign was found on-site during either the 2007 or the 2011 surveys, tortoise sign *was* found in adjacent areas in 2007. At that time, LaRue found fresh and older tortoise scat inside and adjacent to a burrow located approximately 3,300 feet northwest of the subject property. The burrow was sufficiently deep and well-established to constitute a primary hibernation burrow rather than a temporary pallet burrow. Although no tortoise sign was found any nearer to the Well 35 site during either the 2007 or the 2011 surveys, tortoise burrows were found 500 feet and 1,800 feet to the east in 1997 during monitoring of the Bowman Road Pipeline and a tortoise scat was found 800 feet east during that same effort (Circle Mountain Biological Consultants 1997).

In 2007, LaRue tallied, in descending order of occurrence, 7 off-highway vehicle tracks, 4 dump sites, 1 road, and 1 domestic dog sign. There was also evidence of sheep grazing on-site, although the intensity and time since grazing were unknown. In 2011, Dougherty observed 1 off-highway vehicle track, 1 dump site, and recent evidence of sheep grazing. These persisting low levels of habitat degradation are not sufficiently severe to have eliminated tortoises from the area, as CMBC personnel have observed tortoises in even more degraded conditions. The relatively small size of the site and apparent low densities of tortoises in the area are likely more responsible for the absence of tortoises than poor habitat conditions.

3.2.1.c. *Regional Occurrence of Tortoises.* Figure 4 shows a consistent pattern of tortoise occurrence in the region: tortoise sign has not been found on any of nine surveys east of Highway 395 (Circle Mountain Biological Consultants 1997, 2006a, 2006b, 2010a, 2010c; Tierra Madre Consultants, Inc. 1991a, 1991b, 1991c, 1991d) but has been found during four previous surveys west of Highway 395 (Circle Mountain Biological Consultants 1997, 2003, 2007, 2010b). These observations support the conclusion that habitats have been substantially degraded east of Highway 395 but still appear to support low densities of tortoises west of this heavily-traveled highway. As such, tortoises are may occur in the vicinity of Well 35.

Although available data do not allow CMBC to determine exactly how many tortoises occur in the region, the data do allow CMBC to draw the following conclusions: At present, (1) no tortoises occur on the site and are not likely to occur within several hundred feet; (2) there appears to be a persisting low density of desert tortoises in the region west of Highway 395, including the vicinity of Well 35; and (3) there is some potential for one or more tortoises to immigrate onto or through the Well 35 site.

The County (2004) requires that habitat categories designated by the U.S. Bureau of Land Management (1989) be identified in all tortoise technical reports. Although habitat categories apply only to public lands administered by the BLM, regulatory agencies typically determine habitat compensation ratios based on the nearest BLM habitat categories (Desert Tortoise Compensation Team 1991). With the adoption of the West

Mojave Plan (U.S. Bureau of Land Management 2005), all lands that are outside Desert Wildlife Management Areas, including the subject property, are characterized as Category 3 Habitat, which is the lowest priority management area for viable populations of the tortoise.

The site is not found within tortoise critical habitat, which was designated in 1994 (U.S. Fish and Wildlife Service 1994a) nor within a Desert Wildlife Management Area as recommended in the Desert Tortoise (Mojave Population) Recovery Plan (U.S. Fish and Wildlife Service 1994b) and formally adopted in March 2006 as a result of the West Mojave Plan (U.S. Bureau of Land Management 2005). The nearest such areas are the Fremont-Kramer Critical Habitat Unit and Desert Wildlife Management Area, which are located approximately 13 miles south of the Well 35 site.

3.2.2. *Other Special Status Species.* U.S. Fish and Wildlife Service (2002), California Department of Fish and Game (2009a, 2011), and California Native Plant Society (CNPS 2010) maintain lists of animals and/or plants considered rare, threatened, or endangered, which are collectively referred to as “special status species.” The list of special status species considered in this section resulted from the California Natural Diversity Data Base electronic search for the Inyokern and Inyokern SE USGS quadrangles (CDFG 2011) and species observed during CMBC’s focused surveys of the site depicted in Figure 4. Locations from these two sources are mapped in Figure 7. Each of the bird species discussed below is considered a Bird of Conservation Concern by the USFWS (2008) and/or a Bird Species of Special Concern by the CDFG (2009a).

Osprey (*Pandion haliaetus*) has been observed 4.8 miles northeast of project site (Circle Mountain Biological Consultants, Inc. 2010c). Sometimes referred to as “fish-eating eagle,” ospreys feed on fish and require proximate bodies of water, such as lakes or the ocean. The one observed by LaRue over Ward Avenue in 2010 was considered to be incidental to the area, passing through to some regional water body. Osprey is considered incidental to the Project area and would not be affected by Project development.

Sharp-shinned hawk (*Accipiter striatus*) was observed by LaRue 2.1 miles northeast of Well 35 while surveying the Bowman Road Pipeline in 1997 (Circle Mountain Biological Consultants 1997). As a small raptor wintering in southern California, sharp-shinned hawks would not nest in the area although they may depredate small passerines throughout the Project area, including those at backyard bird feeders. Project development would have no direct adverse impacts to sharp-shinned hawk.

Prairie falcon (*Falco mexicanus*) was observed by LaRue 3.7 miles northeast of Well 35 during surveys of the Bowman Road Pipeline (Circle Mountain Biological Consultants 1997) where it was feeding on a rock dove. Prairie falcons nest on inaccessible cliff faces in mountainous areas, such as occur in the Sierras to the west and Black Mountain to the south, and would not nest in the Project area. They frequently prey on mourning doves and rock doves in suburban areas, and may forage throughout the Project area. They would not be adversely affected by Project development.

LeConte's thrasher (*Toxostoma lecontei*) has been reported four times to the California Natural Diversity Data Base (CDFG 2011), including 3.3 miles northeast of the site in 1946, and 1.2, 1.6, and 2.5 miles southwest of the site in 1988. They are mostly associated with denser vegetation along well-developed washes, such as Little Dixie Wash, and are less likely to be found in the types of habitats within the Project area due to the lack of wash-adapted vegetation. No impacts are expected from Project development.

Loggerhead shrike (*Lanius ludovicianus*) has been observed 2.5 miles north of the site (Tierra Madre Consultants, Inc. 1991), 4.5 miles northeast of the site (Circle Mountain Biological Consultants 2010a), and 2,200 feet west of the site (Circle Mountain Biological Consultants 2003). Loggerhead shrikes are most likely to nest in Joshua trees, Mohave yuccas, and other large shrubs and small trees. Since such features are absent from the project site, the species is not likely to nest on site, but may forage in the project areas. Since nesting birds would not be affected and the impact footprint is relatively small, no significant impacts are expected.

Western burrowing owl (*Athene cunicularia*) was one of the target species for the surveys and is one of the most often encountered special status species reported from the region, having been reported once to the California Natural Diversity Data Base (CDFG 2011) and observed during four CMBC surveys. Burrowing owl has been observed 4.7 miles northeast of the project site (Circle Mountain Biological Consultants, Inc. 2010a), ½ mile northwest (Circle Mountain Biological Consultants 2003, 2010b), and 1.7 miles north-north east of the site (CMBC 2006b), and at four locations between 830 and 3,300 feet around the site of Well 35 (Circle Mountain Biological Consultants, Inc. 2007). CDFG (1995) has defined impacts and identified mitigation, which are described below in Section 4.2.

American badger (*Taxidea taxus*) has no federal designation but is considered a California Species of Special Concern by the Fish and Game Commission. Badgers were not detected on the site during CMBC's surveys; in 1970 they were reported 1.5 miles southwest and 4.5 miles west of Well 35 (CDFG 2011). Although the species was not detected, areas around Well 35 are sufficiently undeveloped that badgers may occur in the vicinity. Even so, given the absence of sign during both previous and current surveys, CMBC concludes that no impacts are expected.

Mohave ground squirrel is designated as a threatened species by the California Fish and Game Commission. Several years ago, the USFWS declined to list the species as endangered stating, in part, that it was already being protected by the CDFG. There was a new petition in 2010 to federally list Mohave ground squirrel as endangered but the final determination has not been published at the time of this writing. In recent years, the CDFG has considered three criteria in assessing potential impacts to the Mohave ground squirrel (CDFG Wildlife Biologist, Adrienne Disbrow, personal communication to CMBC in 2004): (1) Is the site within the range of the species? (2) Is there native habitat with a relatively diverse shrub component? (3) Is the site surrounded by development and therefore isolated from potentially occupied habitat?

First, Figure 6 shows known locations of Mohave ground squirrels relative to the subject property (California Department of Fish and Game 2011), which is within the known range of the species (Gustafson 1993; U.S. Bureau of Land Management 2005). The closest reported occurrence is approximately 1.4 miles north-northwest of the project site (1989). Other proximate occurrences have been 1.5 miles southwest (1988), 1.7 miles north and northeast (1967 and 2006, respectively), 2.5 miles north (1990), 2.9 southwest (1988), 3.2 miles northwest and east-southeast (1991 and 1978, respectively), 3.4 miles west-northwest (1990), and 4.1 miles northwest.

Second, Mohave ground squirrel has been reported between 1,800 feet (549 meters) and 5,600 feet (1,707 meters) elevation from a wide range of habitats including creosote bush scrub, Joshua tree woodland, juniper woodland, and Mohave mixed woody scrub (U.S. Bureau of Land Management 2005). At 2,530-foot elevation, the site is well within the known elevational range of the species. There is a moderate level of diversity of native perennial plants, with about six shrub species identified. In the nearby Coso Range on China Lake NAWS, winter fat and spiny hop-sage are considered ecologically important shrubs for Mohave ground squirrel (see U.S. Bureau of Land Management 2005 for a summary of Dr. Philip Leitner's long-term studies). Dougherty observed winter fat in areas adjacent to Well 35 and did not observe any spiny hop-sage.

Finally, as shown by Figure 5, Well 35 is completely surrounded by undeveloped desert, although dirt roads have been graded in adjacent areas. The 2006 capture of a young Mohave ground squirrel approximately 2.5 miles north (Sundance Biology 2006) and the 2010 capture of a post-lactating female west of Jacks Ranch Road (LaRue and Vanherweg 2010) are indicative that Mohave ground squirrel has persisted and even reproduced, in the immediate vicinity of developed areas in the Indian Wells Valley. Given the above information, CMBC concludes that the Mohave ground squirrel may occur on the site.

3.3. Other Protected Biological Resources.

3.3.1. *Jurisdictional Waters.* Stream courses provide relatively important resources to animals and plants. In dry years, and particularly during prolonged drought, annual plants may only germinate in the vicinity of washes where the water table is relatively near the surface. Perennial shrubs adjacent to washes are often the only plants that produce flowers and fruit, which in turn are important to insects and the avian predators that feed on them. Shrubs also tend to be somewhat taller and denser alongside washes, which provides cover for medium and larger sized animals that may use them as travel corridors. Biodiversity is generally enhanced by washes, and there are often both annual and perennial plants that are either restricted to or mostly associated with wash margins. There are both anecdotal accounts and published literature on washes being important to tortoises, which use them as travel corridors and access to nearby annual forage. However, no designated streams or jurisdictional waters will be affected by development of the well site.

3.3.2. *Protected Plant Species.* At the State level, the 1998 Food and Agricultural Code, Division 23: California Desert Native Plants, Chapter 3: Regulated Native Plants, Section 80073 states: The following native plants, or any parts thereof, may not be harvested except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing:

- (a) All species of the family Agavaceae (century plants, nolinias, yuccas).
- (b) All species of the family Cactaceae (cacti), except for the plants listed in subdivisions (b) and (c) of Section 80072 (i.e., saguaro and barrel cacti), which may be harvested under a permit obtained pursuant to that section.
- (c) All species of the family Fouquieriaceae (ocotillo, candlewood).
- (d) All species of the genus *Prosopis* (mesquites).
- (e) All species of the genus *Cercidium* (palo verdes).
- (f) *Acacia greggii* (catclaw acacia).
- (g) *Atriplex hymenelytra* (desert holly).
- (h) *Dalea (Psorothamnus) spinosa* (smoke tree).
- (i) *Olneya tesota* (desert ironwood), including both dead and live desert ironwood.

Silver cholla is the only plant species included in the above list that was observed during the survey. However this species was not detected on the project site, but only in adjacent areas. No silver chollas are expected to be lost during development of the project site.

4.0. Conclusions and Recommendations

4.1. Impacts to the Agassiz's Desert Tortoise and Proposed Mitigation. Based on the absence of tortoise sign on-site and in adjacent areas, and available information reviewed for this habitat assessment, CMBC concludes that tortoises are absent from the Project area. Given the past presence of tortoise sign in areas adjacent to Well 35 but not on the site, CMBC recommends that the 3.9-acre± site including the quarter-acre well site and associated discharge pond and pipeline route be resurveyed immediately prior to ground disturbance and, if no tortoise sign is found, which is expected, then fenced with tortoise-proof fencing. This would preclude tortoises from the site and ensure that they do not become established on the site prior to development.

According to USFWS (2010) pre-project survey protocol the results of this survey will remain valid for the period of one year, or until 26 May 2012, after which time, if the site has not been developed in the interim, another survey may be required to determine the presence or absence of tortoises.

Regardless of survey results and conclusions given herein, tortoises are protected by applicable State and federal laws, including the California Endangered Species Act and Federal Endangered Species Act, respectively. As such, if a tortoise is found within the Project area at the time of construction, all activities likely to affect that animal(s) should cease and the regulatory agencies contacted to determine appropriate steps.

Importantly, nothing given in this report, including recommended mitigation measures, is intended to authorize the incidental take of tortoises during site development. Such authorization must come from the appropriate regulatory agencies, including California Department of Fish and Game (i.e., authorization under section 2081 of the Fish and Game Code) and U.S. Fish and Wildlife Service [i.e., authorization under section 10(a)(1)(B) of the Federal Endangered Species Act].

The January 2010 USFWS' revised pre-project survey protocol states that occurrence of either live tortoises or tortoise sign (burrows, scats, and carcasses) in the action area indicates tortoise presence and therefore requires formal consultation with USFWS. Although no tortoise sign was found in 2011, tortoise sign was found within 500 feet east of Well 35 in 1997 (Circle Mountain Biological Consultants 1997) and 3,300 feet northwest in 2007 (Circle Mountain Biological Consultants, Inc. 2007). As such, it is appropriate to share this report with USFWS to see if they agree with the determinations given herein or if, alternatively, formal consultation and federal permitting would be required.

4.2. Impacts to Other Biological Resources and Proposed Mitigation.

4.2.1 *Other Special Status Species.* Based on the field surveys and habitat assessment given herein, CMBC concludes that none of the following special status species reported from the region will be adversely affected by site development: osprey, sharp-shinned hawk, prairie falcon, LeConte's thrasher, loggerhead shrike, and American badger. As such, no adverse impacts have been identified and no mitigation measures are recommended.

Those species either identified during the current survey or for which suitable habitats are present include western burrowing owl and Mohave ground squirrel.

4.2.1.a. Western Burrowing Owl. For western burrowing owl, CDFG (California Department of Fish and Game 1995) has stipulated that the following should be considered impacts to the species:

- *Disturbance within 50 meters (approximately 160 feet), which may result in harassment of owls at occupied burrows;*
- *Destruction of natural or artificial burrows (i.e., culverts, concrete slabs, and debris piles that provide shelter to burrowing owls); and*
- *Destruction and/or degradation of foraging habitat adjacent [within 100 meters (approximately 320 feet)] of an occupied burrow(s).*

If impacts cannot be avoided, specified mitigation measures include (a) avoiding occupied burrows during the breeding season, between February 1 and August 31; (b) purchasing and permanently protecting 6.5 acres of foraging habitat per pair or unpaired resident bird impacted; (c) creating new burrows or enhancing others when destruction of occupied burrows is unavoidable; (d) implementing passive relocation if owls must be moved; and (e) provide funding for long-term management and monitoring of protected lands.

Given this information, CMBC reiterates that it is highly advisable (and cost effective) to avoid impacts. CDFG (1995) states the following:

If avoidance is the preferred method of dealing with potential project impacts, then no disturbance should occur within 50 meters (approximately 160 feet) of occupied burrows during the nonbreeding season of September 1 through January 31 or within 75 meters (approximately 250 feet) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be permanently preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird. The configuration of the protected habitat should be approved by the Department [CDFG].

IWVWD maintains a number of fenced well fields in the region that are important to species including burrowing owls. For example, the District-owned 81.2-acre± fenced area, south of Las Flores Avenue between North Victor Street and North Strecker Street to the east (APNs 352-250-33 through -36), is ideal burrowing owl habitat. Should CDFG require that compensation lands are protected to offset impacts associated with development of Well 35, which may impact about one-half acre, IWVWD should point out the existing protection already provided by these fenced areas.

4.2.1.b. Mohave Ground Squirrel. Although a focused Mohave ground squirrel trapping survey was not performed, CMBC assessed habitats and reviewed available information to provide a professional opinion as to the presence or absence of this species. Given the information discussed herein, CMBC concludes that development of Well 35 may impact approximately one-half acre of suitable Mohave ground squirrel habitat. Habitats at Well 35 are suitable and Mohave ground squirrel has been reported from surrounding areas, so CMBC cannot conclude that the species is absent from the well site.

IWVWD would have the option to assume presence on the well site and mitigate accordingly, which would require a 2081 permit and use of IWVWD's established, CDFG-approved mitigation bank. Alternatively, IWVWD may perform a focused trapping survey to determine presence or absence of the species. If no Mohave ground squirrels are trapped during the protocol survey, CDFG would assume absence, and the well site could be developed within one year without the need for formal permitting.

4.2.2. Other Protected Biological Resources. Neither jurisdictional waters nor protected plant species are expected to be adversely affected by site development, as described below.

4.2.2.a. Jurisdictional Waters. Given the absence of jurisdictional waters on the site, a 1601-03 Streambed Alteration Agreement should NOT be required from CDFG for development.

4.2.2.b. Protected Plant Species. CMBC found silver cholla occurring in areas adjacent to the Well 35 site, but did not note any occurring on the site. Therefore, no mitigation is necessary.

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Appendix A. Plant Species Detected

The following plant species were identified on-site or in adjacent areas (i.e., signified by “+”) during the general biological inventory described in this report. Those plant species that are protected by pertinent State ordinances are signified by “(SC)” following the common name.

ANGIOSPERMAE: DICOTYLEDONES

DICOT FLOWERING PLANTS

Asteraceae

+*Acamptopappus sphaerocephalus*
Ambrosia acanthicarpa
Ambrosia dumosa
+*Lasthenia californica*
Malacothrix glabrata
+*Stephanomeria pauciflora*

Sunflower family

Desert goldenhead
Annual bur-sage
Burrobush
California goldfields
Desert dandelion
Desert milk aster

Boraginaceae

Amsinckia tessellata
Cryptantha angustifolia

Borage family

Fiddleneck
Narrow-leaved forget-me-not

Brassicaceae

Guillenia lasiophylla (*Thelypodium lasiophyllum*)
**Sisymbrium altissimum*
**Sisymbrium irio*

Mustard family

California mustard
Tumble mustard
London rocket

Cactaceae

+*Opuntia echinocarpa*

Cactus family

Silver cholla (SC)

Chenopodiaceae

+*Krascheninnikovia* (*Eurotia*) *lanata*

Goosefoot family

Winter fat

Cuscutaceae

Cuscuta sp.

Dodder family

Dodder

Geraneaceae

**Erodium cicutarium*

Geranium family

Red-stemmed filaree

Lamiaceae

+*Salvia carduacea*

Mint family

Thistle sage

Nyctaginaceae

Mirabilis bigelovii

Four o'clock family

Desert wishbone plant

Onagraceae

+*Camissonia claviformis*

Evening-primrose family

Brown-eyed primrose

Polygonaceae

Chorizanthe brevicornu

Solanaceae

Lycium andersonii

Zygophyllaceae

Larrea tridentata

ANGIOSPERMAE: MONOCOTYLEDONES

Poaceae

+*Achnatherum (Oryzopsis) hymenoides*

+**Bromus madritensis* ssp. *rubens*

**Schismus* sp.

Buckwheat family

Brittle spineflower

Nightshade family

Anderson's box-thorn

Caltrop family

Creosote bush

MONOCOT FLOWERING PLANTS

Grass family

Indian ricegrass

Red brome

Split-grass

* - indicates a non-native (introduced) species.

c.f. - compares favorably to a given species when the actual species is unknown.

Some species may not have been detected because of the seasonal nature of their occurrence. Common names are taken from Beauchamp (1986), Hickman (1993), Jaeger (1969), and Munz (1974).

Appendix B. Animal Species Detected on Proposed Well 35

The following animal species were detected during the general biological inventory described in this report. Those animals that are designated as special status species by State and/or federal regulatory agencies are signified by “(SC)” following the common name.

REPTILIA

Iguanidae

Dipsosaurus dorsalis

Uta stansburiana

Teiidae

Cnemidophorus tigris

Colubridae

Pituophis melanoleucus

AVES

Cathartidae

Cathartes aura

Strigidae

Athene cunicularia

Camprimulgidae

Chordeiles acutipennis

Corvidae

Corvus corax

Emberizidae

Amphispiza bilineata

Amphispiza belli

Zonotrichia leucophrys

MAMMALIA

Leporidae

Lepus californicus

Sciuridae

Ammospermophilus leucurus

REPTILES

Iguanids

Desert iguana

Side-blotched lizard

Whiptails

Western whiptail

Colubrids

Gopher snake

BIRDS

Vultures

Turkey vulture

Typical owls

Burrowing owl (SC)

Nightjars

Lesser nighthawk

Crows and jays

Common raven

Sparrows, warblers, tanagers

Black-throated sparrow

Sage sparrow

White-crowned sparrow

MAMMALS

Hares and rabbits

Black-tailed hare

Squirrels

Antelope ground squirrel

Heteromyidae*Dipodomys* sp.**Canidae***Canis latrans**Vulpes macrotis***Pocket mice**

Kangaroo rat

Foxes, wolves and coyotes

Coyote

Kit fox

Nomenclature follows Stebbins, *A Field Guide to Western Reptiles and Amphibians* (2003), third edition; Sibley, National Audubon Society, the Sibley Guide to Birds (2000), first edition; and Ingles, *Mammals of the Pacific States* (1965), second edition.

Appendix C. Field Data Sheets Completed on 26 May 2011

The USFWS requires consultants to include copies of the data collected in the field from which the results and conclusions given in this report are derived. As such, following this page are copies of the data sheets completed by Sharon Dougherty on 26 May 2011.

1st page of field notes, Proposed Well 35 Site

Page ___ of ___

JOB #/NAME	DATE	DRIVE TIME		MILES	FIELD TIME		SURVEYORS				
11-001 Sacres WVWD Boardman Rd	5/26/11	TO	FROM	See p. 2	BEGIN	END	SD, WD, ST, CL				
		0605-0810			0815	1115					
WEATHER CONDITIONS				UTM (NAD 27) (circle starting corner)							
TEMP: 64°F WIND X: 6.2 ↑ 14.8 N S E W CLOUD: 75%				NE →		NW →		SE →		SW →	
				428564		- 8465		- 8565		- 8465	
				3940710		- 0710		- 0535		- 0535	
PERENNIAL PLANTS			ANNUAL PLANTS			BIRDS		HERP	MAM		
CAR TR			CHO BRE			HOLA		WEWH	BT HA		
AMB DUM			CRY ANA			LE NI		SB LI	KR AT		
KR ALAN			SCH SP.			COR A		DE IG	CO Y		
OPU ECH			MAL GLA			BT SP		GOS N	AG S		
ACA SP H			SIS IRY			TU VU			KFO X		
ACA Hy M			AMB ACA			WC SP					
STE PAU			SIS ALT			SASP					
			AMS TES								
			PRO CK								
			Dal der								
			SU LAS								
			PRO MAD								
			SAL CAR								
			LAS CAL								
			CAM CLA								
OBSERVABLE HUMAN DISTURBANCES											
T#	East	North	OHV	Road	Dog	Dump	S Gun	Rifle	Target	Sheep	
1	-8565	-0715								+	
4	-8535	-0535								+	
8	-8495	-0715								+	
TOTAL		12								+	
CL	30ms	-0505		30m E	-8595		30m N	-	0745	30m W	-8485
SP	60ms	-0475		60m E	-8625		60m N	-	0775	60m W	-8405
ST	90ms	-0445		90m E	-8655		90m N	-	0805	90m W	-8375
WD	120ms	-0415		120m E	-8685		120m N	-	0835	120m W	-8345
CL	150ms	-0385		150m E	-8715		150m N	-	0865	150m W	-8315
SD	200ms	-0355		200m E	-8765		200m N	-	0915	200m W	-8265
ST	400ms	-0135		400m E	-8965		400m N	-	1115	400m W	-8065
WD	600ms	-9835		600m E	-9165		600m N	-	1315	600m W	-7865

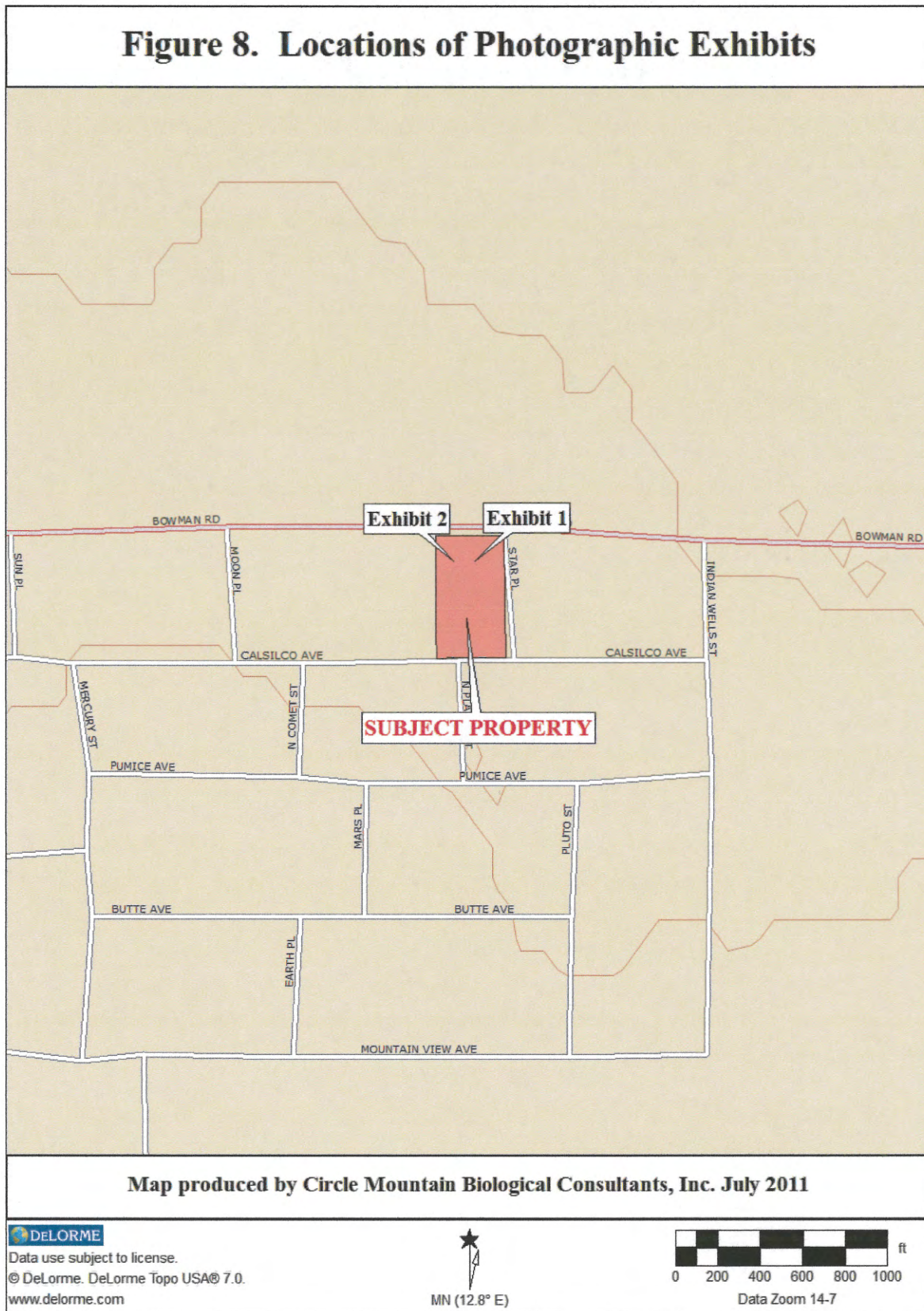
- 8743,
- 0432

K fox ^u ~~burrow~~ den (active) ^u - 0795, -0142
 - 8743, -0432

OTHER SPECIES					UTM COORDINATES			
(K fox)	Buow burrow active, 1 adult owl	Scat	pellets, w/w		- 8265	- 0909		
	Buow burrow w/pellets				- 8688	- 0331		
	"	"	"		- 8696	- 0328		
(K fox)	"	"	"		- 8071	0126		
	"	"	"		- 9023	- 1116		
DESERT TORTOISE SCAT								
SCAT	EAST	NORTH	SCAT	EAST	NORTH	SCAT	EAST	NORTH
TORTOISES					UTM COORDINATES			
AGE CLASS/GENDER	MCL	COMMENTS			EAST	NORTH		
CARCASSES					UTM COORDINATES			
AGE CLASS/GENDER	TIME OF DEATH	DESCRIPTION			EAST	NORTH		
BURROWS					UTM COORDINATES			
WIDTH	DEPTH	CONDITION	COMMENTS		EAST	NORTH		

Appendix D. Photographic Exhibits

Figure 8. Locations of Photographic Exhibits



Locations of the eight photographic exhibits on the next four pages are depicted in Figure 8.



Exhibit 1. Proposed Well 35: View from the northeast corner of the parcel, facing southwest (see Figure 8 for locations and directions of photographs).



Exhibit 2. Proposed Well 35: View from the northwest corner of the parcel, facing southeast.