Appendix E

Covered Species Survey Methods

1.0 WILDLIFE RESOURCES

Dudek conducted surveys for special-status wildlife species in accordance with official protocol methods or other accepted methods where protocol survey methods were not available. Special-status wildlife species include all species listed under the Federal Endangered Species Act, the California Endangered Species Act (CESA), as well as (1) California Special Concern (CSC) species designated by the California Department of Fish and Game (CDFG); (2) mammals and birds that are Fully Protected (FP) species, as described in Fish and Game Code, Sections 4700 and 3511; and (3) Birds of Conservation Concern (BCC) designated by the U.S. Fish and Wildlife Service (USFWS). When appropriate, global positioning system (GPS) equipment was used to collect data using sub-meter accuracy Trimble GPS units, unless otherwise noted.

The wildlife surveys described herein were conducted within the 26,417 ac. Tejon Mountain Village (TMV) Specific Plan Area but they also included the nearby off-site Castac Lake and portions of Grapevine Creek to provide context for the surveys (e.g., surveys for species that may primarily use the lake but also occur on the TMV project). Suitable habitat modeling was conducted for the special-status species addressed in this document for the entire 138,000 ac. of Covered Lands. Because systematic wildlife surveys were not conducted in approximately 111,580 acres (81%) of the Covered Lands, the habitat modeling had to rely on available vegetation community, soil, elevation, canopy cover, and topographic information, as described in detail in Appendix D. Because the habitat models used general landscape-level data and do not include all microhabitat features that may be necessary for predicting species occurrences and occupied habitat, the habitat models are not intended to be used to quantify impacts and conservation of occupied habitat or species populations.

1.1 LITERATURE REVIEW

Prior to conducting fieldwork, pertinent literature on the wildlife of the region was reviewed to determine potential presence of species on the site, accepted protocol survey methodologies, and habitat preference and life history characteristics. This information was used to develop survey methodologies for those species that do not have a current standardized survey protocol. The literature included reports from prior wildlife surveys and literature on special-status wildlife species that could potentially occur within the TMV Planning Area. Information regarding wildlife in the region also was obtained through consultation with biologists at Jones & Stokes (J&S) that had previously surveyed portions of the site, other Dudek biologists with experience in the region, and staff at the Tejon Ranchcorp (TRC).

The following list summarizes the principal references reviewed to conduct special-status wildlife surveys on the site:

- The CDFG California Natural Diversity Database (CNDDB) *Special Animals List*, which was first reviewed in January 2007 and reviewed after publication of each subsequent edition through February 2008 (CDFG 2008a)
- The CDFG CNDDB *Rarefind*, first reviewed for the TMV Planning Area and all areas within 10 mi. of the TMV Planning Area in January 2007 and reviewed again following subsequent editions through March 2008 (CDFG 2008b)
- *An Illustrated Exploration of the Herpetofauna of California*, including reptile and amphibian range maps (CaliforniaHerps 2008)
- *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994)
- *Amphibian Declines: The Conservation Status of United States Species* (Lannoo 2005)
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003).
- Range maps and descriptions provided in *California's Wildlife, Volume 2: Birds* (Zeiner et al. 1990a) and as updated by CDFG (2006a)
- Descriptions of range and occurrences within *Birds of Southern California: Status and Distribution* (Garrett and Dunn 1981)
- *The Birds of North America Online* references published by the Cornell Laboratory of Ornithology and the American Ornithologists' Union (Poole 2005)
- *A Field Guide to the Mammals: North America, North of Mexico* (Burt and Grossenheider 1976)
- *Wild Mammals of North America: Biology, Management, and Economics* (Chapman and Feldhamer 1982)
- *Mammals of the Pacific States: California, Oregon, and Washington* (Ingles 1965)
- *California Mammals* (Jameson and Peeters 1988)
- *California's Wildlife, Volume 3: Mammals* (Zeiner et al. 1990b)
- Maps and descriptions provided by *Butterflies and Moths of North America* online database (Opler et al. 2006)

- Range maps and descriptions provided in *Fish Species of Special Concern in California* (Moyle et al. 1995)
- *Jurisdictional Delineation Report for the Tejon Mountain Village Study Area* (Impact Sciences 2008)
- *Sensitive Butterfly Survey on Phase 1 Portion of Tejon Mountain Village Specific Plan, Kern County, California* (Bruyea Biological Consulting 2003)
- *Special-Status Amphibian, Reptile, and Bird Biological Evaluation for TMV* (Impact Sciences 2004)
- *Tejon Mountain Village Phase I Small Mammal Trapping Study* (Compliance Biology 2003)
- Unpublished draft *Tejon Mountain Village Biological Resources Technical Report* (J&S 2006).

1.2 NOMENCLATURE AND GENERAL SURVEY TECHNIQUES

Wildlife species detected during all field surveys by sight, calls, tracks, scat, or other sign were recorded. A list of all wildlife species observed within the TMV Specific Plan Area is included in Appendix B to Appendix I to Appendix E-1 to the Tejon Mountain Village EIR (Kern County 2009). Latin and common names of animals follow the *Complete List of Amphibian, Reptile, Bird, and Mammal Species in California* (CDFG 2006b) for reptiles, amphibians, birds, and mammals. For bird species, the 48th Supplement to the American Ornithologists' Union Check-list (Banks et al. 2007) was used to update the nomenclature used in CDFG (2006b). For insects, Emmel and Emmel (1973), Emmel (1998), Howe (1975), Scott (1986), and Hogue (1974) were used to update CDFG (2006b). Nelson et al. (2004) was used to update nomenclature for fish. Stebbins (2003) was used to update nomenclature for reptiles and amphibians. The CDFG Special Animals List (CDFG 2008a) was used for both the Latin and common names applied to special-status species, and to resolve nomenclature differences between the *Complete List of Amphibian, Reptile, Bird, and Mammal Species in California* (CDFG 2006b) and any of the updates listed above. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used to aid in the identification of observed wildlife.

1.3 SPECIAL-STATUS INVERTEBRATE SPECIES

Dudek conducted USFWS protocol-level focused surveys for the Federally listed threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) in the TMV Planning Area.

Valley Elderberry Longhorn Beetle

Surveys for valley elderberry longhorn beetle were conducted in accordance with the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999). All areas at elevations less than 3,500 ft amsl (an elevation level approximately 500 ft higher than recorded for the species) within the TMV project's development envelope and within a 100 ft buffer of the development envelope were surveyed in accordance with the USFWS guidelines (USFWS 1999).

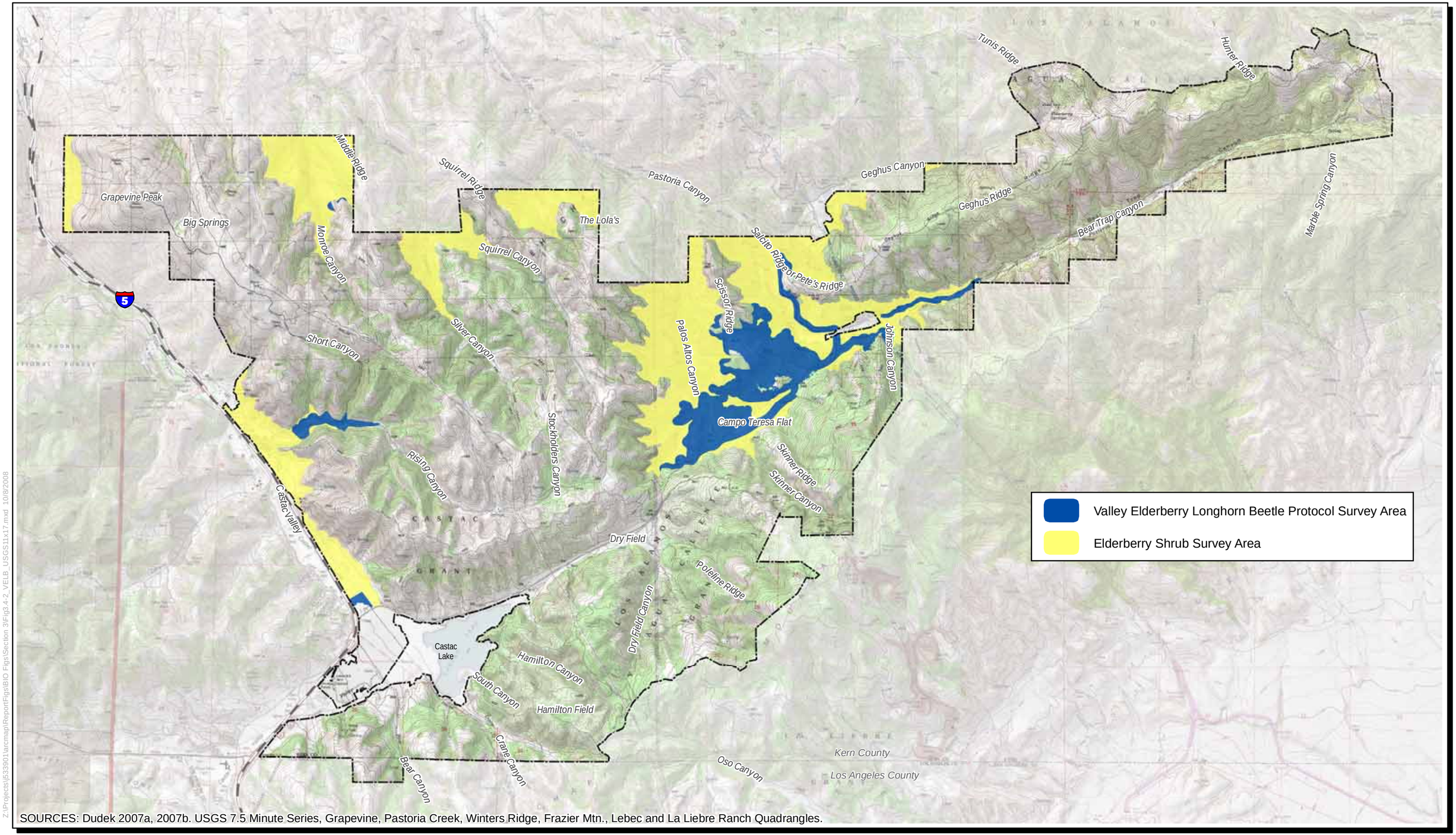
All elderberry plants within the general survey area were mapped using a GPS receiver. The elderberry shrub surveys were conducted by Dudek urban foresters and/or arborists Gerhard Bombe, Doug Duncanson, and Patrick Craig April 23 through 27, April 30, and May 1 through 3, 2007. The results of the general elderberry shrub survey are shown in yellow and blue on Figure D.1-1 of this appendix.

Dudek biologists Anita M. Hayworth and Brianna Wood conducted focused surveys for valley elderberry longhorn beetle within the focused survey areas, shown in blue only on Figure D.1-1 of this appendix, between April 30 and May 1, 2007 (see Table D.1-1). All elderberry shrubs within the survey area having one or more stems measuring 1 in. or greater in diameter at ground level were thoroughly searched for beetle exit holes, and the diameter size class of the elderberry was recorded.

Table D.1-1. Special-Status Valley Elderberry Longhorn Beetle Survey Schedule and Conditions

Survey Area	Personnel	Date
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/23/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/24/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/25/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/26/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/27/07
Elderberry Shrub Survey Area	GDB, DJD, PDC	04/30/07
Focused Survey Area	AMH, BMW	04/30/07[1]
Elderberry Shrub Survey Area	GDB, DJD, PDC	05/01/07
Focused Survey Area	AMH, BMW	05/01/07[2]
Elderberry Shrub Survey Area	GDB, DJD, PDC	05/02/07
Elderberry Shrub Survey Area	GDB, DJD, PDB	05/03/07

Personnel key:
GDB: Gerhard Bombe; DJD: Doug Duncanson; PDC: Patrick Craig; AMH: Anita Hayworth; BMW: Brianna Wood.
[1]On 04/30/07, survey was conducted from 0911–1900; temperature 76°F to 80°F; winds 1 to 3 mph; and cloud cover 30%.
[2]On 05/1/07, survey was conducted from 1000–1800; temperature 68°F to 76°F; winds 0 to 5 mph; and cloud cover 50%.



SOURCES: Dudek 2007a, 2007b. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Valley Elderberry Longhorn Beetle Survey Areas

FIGURE D.1-1

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1.4 SPECIAL-STATUS AMPHIBIAN AND REPTILE SPECIES

Focused on-site surveys for special-status amphibian and reptile species were conducted for the following species:

- Western spadefoot (*Spea* [*Scaphiopus*] *hammondii*), a CSC species
- Tehachapi slender salamander, a state-listed threatened species
- Yellow-blotched salamander (*Ensatina eschscholtzii croceater*), a CSC species.

1.4.1 WESTERN SPADEFOOT TOAD

Dudek conducted focused surveys for western spadefoot toad larvae and/or adults and juveniles in appropriate areas of ponded water, seeps, and springs in the TMV Planning Area (see Figure D.1-2 of this appendix). These surveys occurred on eight occasions in conjunction with USFWS protocol-level fairy shrimp surveys, with survey areas reviewed at least one additional time when conducting habitat assessments or focused surveys for California red-legged frog.

The initial habitat assessment for western spadefoot (in conjunction with fairy shrimp surveys) was conducted a few weeks following the first rain events of 2007 (January 27th and 28th) to determine the abundance of suitable basins on site. Initial screening criteria for determining potential basin areas included mapped vegetation communities, topography, and elevation. Areas considered potentially suitable for western spadefoot included native and non-native grasslands, barren habitat, and oak savannah, within relatively flat areas (0%–10% slope) at elevations less than 3,500 ft.

The field habitat assessment was completed on three days: February 12th, 20th, and 21st. Follow-up ground surveys were conducted within 2 weeks of the initial habitat assessments. All identified basin locations in the TMV project area were evaluated during each survey to investigate inundation levels. If new rains occurred during survey season, all suitable areas identified during the initial habitat assessment were reevaluated and sampling was performed where appropriate. The surveyed basins were distributed throughout the study area and were of three main types: (1) road ruts: depressions typically formed by vehicular traffic within or adjacent to roadways that lack aquatic vegetation; (2) fauna drinking pools: depressions within grasslands that retain sufficient water volume, are heavily utilized by fauna for drinking and cleansing, and are very muddy and lack vegetation due to heavy continuous fauna disturbance; and (3) ephemeral pools: depressions within grasslands that retain sufficient water level, have abundant aquatic vegetation, and lack evident heavy fauna disturbance.

Surveys conducted in conjunction with fairy shrimp surveys occurred monthly during March, April, and May (see Table D.1-2). Ground surveys only included visits to areas where inundation was recorded during the habitat assessments, not the entire study area. Therefore, not all sites depicted in Figure D.1-2 were visited throughout the survey period. During each visit, all basins were inspected for depth of inundation, surface area of water, air and water temperature, level of disturbance, and presence of aquatic wildlife. All information was recorded on a data sheet as provided in the Fairy Shrimp Survey Protocol with the most pertinent information (i.e., inundation species, species identification) recorded on a survey log. Each pool was visually inspected and or dip-netted for the presence of spadefoot toad larvae during the surveys. For every inundated basin that met USFWS protocol related to fairy shrimp, an aquarium net was passed through nearly all portions of the ponded water from the bottom to the surface and surveyors identified fairy shrimp and tadpoles where present. Where dip-netting was not conducted, surveys for tadpoles were visual. The additional surveys for western spadefoot conducted in conjunction with the red-legged frog surveys were conducted in June and August.

Tunis Ridge
Hunter Ridge
Bear Trap Canyon
Marble Spring Canyon
Geghus Canyon
Geghus Ridge
Pastoria Canyon
Middle Ridge
Squirrel Ridge
Squirrel Canyon
Grapevine Peak
Big Springs
Monroe Canyon
Scissor Ridge
Johnson Canyon
Silver Canyon
Short Canyon
Stockholders Canyon
Palos Altos Canyon
Campo Teresa Flat
Skinner Ridge
Skinner Canyon
Rising Canyon
Castac Valley
Dry Field
Poleline Ridge
Castac Lake
Hamilton Canyon
South Canyon
Hamilton Field
Crane Canyon
Bear Canyon
Oso Canyon

Western Spadefoot Toad Survey Area

SOURCES: Dudek 2007c. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Western Spadefoot Toad Survey Areas

FIGURE D.1-2

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Table D.1-2. Western Spadefoot Toad Survey Schedule and Conditions

Date	Survey Type	Personnel	Time	Air Temp. (°F)	Avg. Water Temp. (°C)
02/12/07	Habitat assessment	TSL	NR	NR	NR
02/20/07	Habitat assessment	MSE, TSL	NR	NR	NR
02/21/07	Habitat assessment	MSE, TSL	NR	NR	NR
02/28/07	Focused survey	MSE	1256–1706	2	11
03/05/07	Focused survey	BAO	1300–1541	24	17
03/05/07	Focused survey	JTS, MLW	—	NR	NR
03/06/07	Focused survey	BAO	0915–1623	22	16
03/15/07	Focused survey	MSE	1000–1005	14	17
03/20/07	Focused survey	BAO	1455–1500	20	14
03/21/07	Focused survey	BAO	0655–1159	9	9
03/29/07	Focused survey	BAO	0920–1215	15	14
04/03/07	Focused survey	BAO	1249–1830	22	22
04/04/07	Focused survey	MSE	1200–1301	20	19
04/09/07	Focused survey	MLW, SMD	—	64	63
04/10/07	Focused survey	MLW, SMD, SMB	—	42–59	53–64
04/10/07	Focused survey	MLW, SMD	1100–1545	65	65–69
04/11/07	Focused survey	MLW, SMD	0915–NR	NR	NR
04/16/07	Focused survey	MLW, JTS	—	47–54	54
04/16/07	Focused survey	MLW, JTS	1430–1645	49–62	54–64
04/17/07	Basin sampling	VRJ	1056–1740	19	22
04/17/07	Focused survey	MLW, JTS	—	42–50	50–57
04/17/07	Focused survey	MLW, JTS	0945–1445	51–64	54–65
04/18/07	Basin sampling	VRJ	0805–1636	2	6
04/25/07	Focused survey	MLW, JSH	—	54–55	56
04/25/07	Focused survey	MLW	1000–NR	54–60	48–56

Table D.1-2 (Continued)

Date	Survey Type	Personnel	Time	Air Temp. (°F)	Avg. Water Temp. (°C)
04/26/07	Focused survey	MLW, JSH	—	NR	NR
05/01/07	Basin sampling	MSE	1241–1831	27	26
05/16/07	Basin sampling	VRJ	1400–1839	21	20
05/16/07	Focused survey	BAO	1300–1800	65	58
05/29/07	Basin sampling	TSL	1642–1648	23	28
06/10/07	Focused survey	BAO	—	64–70	63
06/10/07	Focused survey	BAO	1235–1910	70–75	63
08/22/07	Focused survey	BAO	2030–0010	70–75	67
08/23/07	Focused survey	BAO	1130–1530	85–90	67

Personnel key:
BAO: Brock Ortega; JDP: Jeff Priest; MLW: Manna Warburton; JTS: Travis Smith; JSH: Joanna Hsu; PML: Paul Lemons; SMB: Scott Boczkiewicz; SMD: Scott Duff, MSE: Megan Enright, TSL: Thomas Liddicoat; VRJ: Vipul Joshi.
NR = Not recorded.

1.4.2 TEHACHAPI SLENDER SALAMANDER

There are no accepted survey protocols for determining presence/absence of Tehachapi slender salamander or standardized methods to assess suitable habitat. Site-specific survey methods were based primarily on canopy cover percentage, canopy vegetation, substrate information obtained during initial reconnaissance-level surveys and a literature review of suitable habitat features, microhabitat requirements, and general biology of the Tehachapi slender salamander. Established protocols for other salamander species in California (e.g., Del Norte salamander (*Plethodon elongatus*), Siskiyou Mountain salamander (*Plethodon stormi*)) and the survey methodologies used by Pacific Wildlife Research for Oregon slender salamanders (*Batrachoseps wrighti*) were consulted to develop survey methods for Tehachapi slender salamander.

The surveys for Tehachapi slender salamander were conducted in four phases within the TMV Planning Area. The first phase occurred in April and June 2005 and consisted of initial reconnaissance-level surveys for Tehachapi slender salamander to: (1) assess potential on-site suitable habitat; and (2) determine if the species could be detected during April through June (see Table D.1-3). Reconnaissance-level habitat assessments included drainage information regarding the percentage of canopy cover and dominant species present; the percentage of terrestrial cover (or understory) and type of understory cover; aquatic substrate; bank slope; stream aspect;

disturbance; species presence/absence and location, if applicable; and terrestrial cover type. These field-collected data were combined with GIS drainage data to create a map of potentially suitable Tehachapi slender salamander habitat within the TMV Planning Area. Drainages that were identified as having the following attributes were considered to be potentially suitable for Tehachapi slender salamander: a moderate to high canopy cover (equal to or greater than 50%) of certain tree species (canyon live oak (*Quercus chrysolepis*), valley oak (*Quercus lobata*), California buckeye (*Aesculus californica*), and other riparian-associated species); a low percentage of cover of annual grasses in the drainage (typically less than 30% cover); and the presence of leaf litter, woody debris, and rock/talus.

Tehachapi slender salamanders were detected in the TMV Planning Area in Monroe Canyon during the first phase of the survey, and the identification was confirmed by Dr. Wake, Professor of the Graduate School, Department of Integrative Biology, and Curator of Herpetology in the Museum of Vertebrate Zoology at the University of California, Berkeley. The reconnaissance-level survey also developed a general understanding of the on-site habitat features most suitable for the Tehachapi slender salamander based on existing, publicly available information on the salamander and the habitat features present in the observed areas of occupancy in Monroe Canyon and in two locations in Bear Trap Canyon previously reported in the CNDDB.

The second phase of surveys was conducted on March 26 and March 27, 2007, and included additional drainages that were not surveyed in 2005 and 2006 to assess the suitability of additional habitat for Tehachapi slender salamander within the TMV Planning Area using the criteria previously described. Based on the reconnaissance surveys conducted in phases one and two, 75 drainages were identified as supporting suitable habitat for Tehachapi slender salamander. The drainages that were selected for conducting focused surveys typically included all or most of the habitat attributes listed previously.

The third phase entailed focused surveys of the 75 drainages identified during phases one and two to determine if these locations were occupied by the species.

Focused surveys of these drainages were conducted between May 7 and May 25, 2007, and concentrated on the areas located 20 ft on either side of the streambed within the drainages where areas generally remain moist for the longest period during the summer. Within these drainages and associated slopes, the biologists carefully overturned logs and rocks and sifted through leaf litter. To reduce any potential impact of the surveys on these species, the biologists focused on identification of salamanders that were active on the surface rather than those underground. Additionally, the surveys were only conducted in drainages that had flowing water or were moist. Those drainages that appeared to provide suitable habitat but were dry were not surveyed because salamanders are typically underground if moist surface conditions are not present. To

avoid impacts to these species, no digging or excavating occurred during the survey, and all logs and rocks that were moved were returned as closely as possible to their original location.

Information recorded during the focused surveys included the survey date; the surveyors' names; the drainage number; beginning and end times of the survey; the air temperature (taken 1 cm above the ground surface), soil temperature, and soil moisture; cloud cover; precipitation; documentation that freezing did not occur within 24 hours of the survey; habitat conditions of the drainage; drainage aspect; drainage slope; ground cover; canopy cover; and common and scientific names of the species observed. Photographs were taken of all drainages surveyed and the locations of the surveyed areas were documented using a GPS unit (Garmin eTrex GPS unit, generally accurate to approximately 3 m). All Tehachapi slender salamanders observed were photographed and their locations documented using the GPS unit.

A fourth phase habitat assessment was conducted in July, August, and September 2007 and consisted of supplementary field assessments in several additional drainages. A jurisdictional wetland delineation prepared for the TMV project (Impact Sciences 2008) was used to create an updated, comprehensive drainage map of the TMV Planning Area (see Figure D.1-3 of this appendix). Additional habitat assessments were conducted in previously unsurveyed drainages identified in the delineation to evaluate habitat quality for the species. The habitat assessments focused on areas in and within 20 ft of the streambed. The biologists walked the drainages and recorded the extent of areas considered suitable for the salamander, including canopy cover, dominant canopy species, and ground cover on a map and on field data forms.

Table D.1-3 summarizes the Tehachapi slender salamander survey schedule and includes the date, drainage number surveyed, personnel, survey type, time, and other survey conditions.

Table D.1-3. Tehachapi Slender Salamander Survey Schedule and Conditions

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
04/01/2005	Not Recorded	Reconnaissance Survey	WHK	Not Recorded	Not Recorded	Not Recorded
06/16/2005	32-1	Reconnaissance Survey	WHK	11:00–12:00	74	50
06/17/2005	32-1; 57-1; 57-2; 67-1; 69-2; 69-2; 80-1; 81-1; 81-2; 91-1; 95-1; 102-1; 106B	Reconnaissance Survey	WHK	7:30–2:00	59–76	100
03/26/2007	33-1; 33-2; 34-1; 35-1; 107-1; 108-1	Habitat Assessment	WHK, SRA	8:00–2:00	Not Recorded	Not Recorded
05/07/2007	14-1; 32-1; 15-1; 15-2; 6-1; 12-1; 33A-1; 33A-2; 33A-3	Focused Survey	WHK, KAM	8:30–5:41	41–70	0

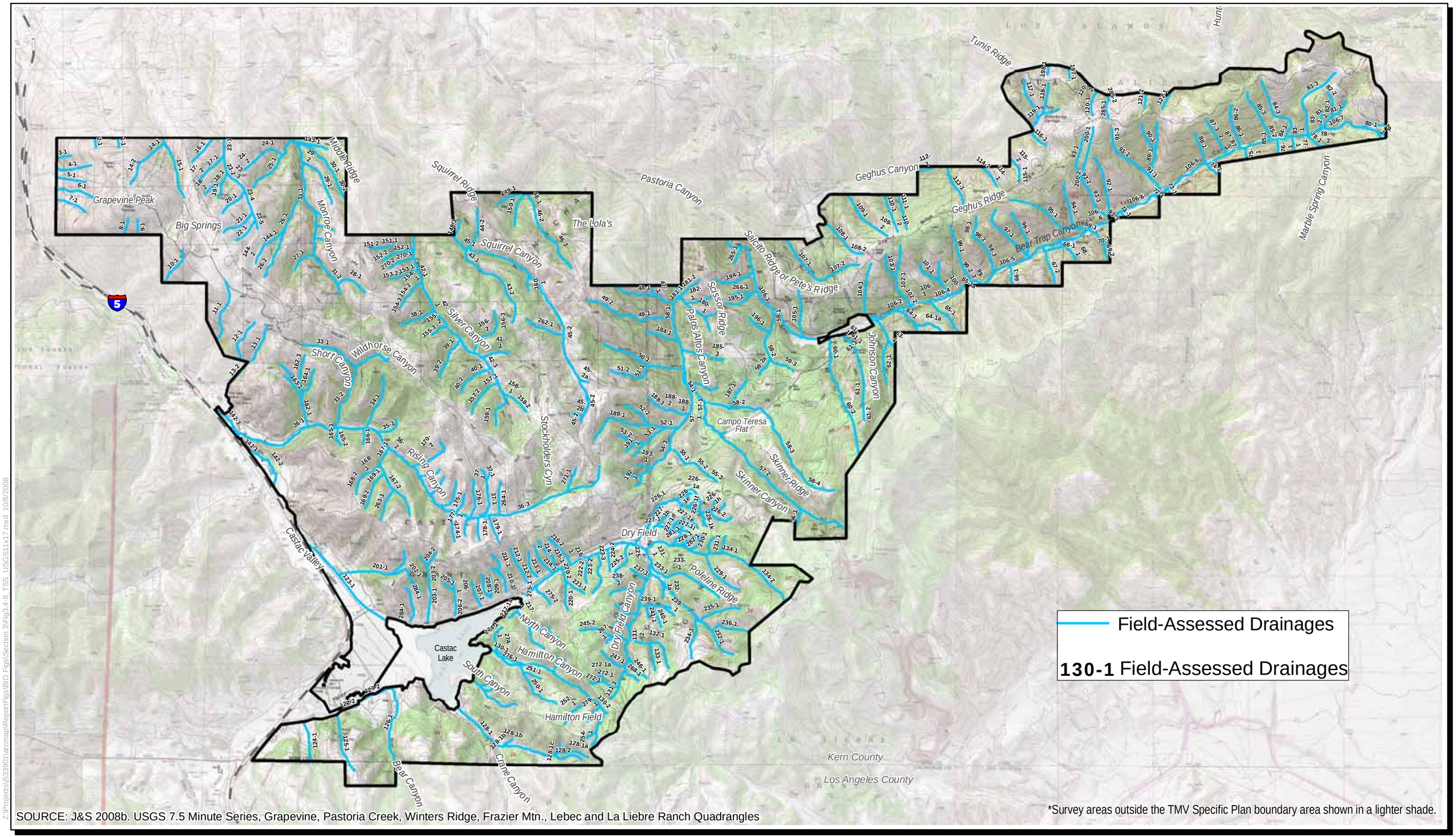
Table D.1-3 (Continued)

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
05/08/2007	34-1; 34-2; 35-1; 35-2; 36-1; 36-2; 36-3; 37-1; 42A-1; 42A-2; 42A-3	Focused Survey	WHK, KAM	7:35–4:00	45–77	0
05/09/2007	42A-4; 42A-4; 38-1	Focused Survey	WHK, KAM	8:05–4:30	49–77	0
05/10/2007	23-1; 25-1; 25-2; 25-3; 31-1; 30-1	Focused Survey	WHK, KAM	9:15–3:46	55–76	0
05/14/2007	140; 124; 129; 131A-1; 131A-2; 132-1; 133-1; 132-2; 131A-3; 131A-4; 135-1; 135-1; 135-1; 136-2; 136-3	Focused Survey	KAM, KTM	8:25–2:40	47–74	0
05/15/2007	27-1; 26-1;26-2; 26-3; 45A	Focused Survey	KAM, KTM	8:00–2:50	51–73	0
05/16/2007	44; 43; 46-1; 58A-2; 48-1; 47; 58A-3; 49-1; 58A-1	Focused Survey	KAM, KTM	8:00–4:06	54–76	0
05/17/2007	106A-2 to 4; 50-1; 51-1; 57A-1; 57A-2; 57A-3; 56; 80-1; 79; 106A-1	Focused Survey	KAM, KTM	7:20–3:48	50–73	0
05/22/2007	63; 62-1; 62-2; 64; 65-1; 65-2; 66; 78-1; 78-2; 77; 76; 75; 74; 73; 72; 71; 69-1; 70; 69-2	Focused Survey	HS, KAM	8:58–5:00	50–68	50
05/23/2007	67-1; 67-2; 68; 106A-W; 107A-1; 107A-2; 108-1; 109-1; 109-2; 109-3; 41)	Focused Survey	HS, KAM	7:58–4:30	50–78	0
05/24/2007	118; 114; 113A-1; 113A-2; 111-1; 111-2; 110-1; 110-2; 108-2; 121; 55; 55-2; 55-3; 54; 53-1; 52-1; 53/5-1; 53/5-2)	Focused Survey	HS, KAM	7:15–6:10	54–79	0
05/25/2007	53-2; 53-3; 52-5-1; 52-2; 52-3; 52-5-3	Focused Survey	HS, KAM	7:17–10:12	53–70	1
07/23/2007	1; 2; 3; 4; 5; 7; 8; 9	Habitat Assessment	WHK, JLC	1:45–5:16	82–85	Not Recorded
07/24/2007	10; 11; 13; 33B; 125; 127;	Habitat Assessment	WHK, JLC	8:10–2:40	78–92	Not Recorded
07/25/2007	16; 17; 18; 19; 20; 21; 22; 23; 28; 29	Habitat Assessment	WHK, JLC	7:50–2:55	80–92	Not Recorded
07/26/2007	40; 42B; 45B; 57B; 58B	Habitat Assessment	WHK, JLC	7:50–10:45	74–84	Not Recorded
08/08/2007	91; 92; 93	Habitat Assessment	WHK, JLC	12:42–2:48	75–79	Not Recorded
08/09/2007	94; 95; 96; 97; 98; 99; 100; 101; 102; 103; 104	Habitat Assessment	WHK, JLC	7:52–4:58	65–85	Not Recorded
08/10/2007	106B	Habitat Assessment	WHK, JLC	10:40–11:00	79	Not Recorded

Table D.1-3 (Continued)

Survey Date	Drainage Number	Survey Type	Personnel	Time	Air Temp. (°F)	Percent Cloud Cover
09/12/2007	161; 162; 163; 164; 165; 166; 167; 168; 169; 170; 171; 172; 173; 174; 175; 263;	Habitat Assessment	KAM, EKH	8:10–3:18	64–90	0
09/13/2007	143; 144; 145; 146; 147; 176; 177; 178; 179; 202; 203; 204	Habitat Assessment	KAM, EKH	9:35–5:00	53–73	98
09/14/2007	151; 152; 153; 154; 155; 156; 157; 158; 159; 201; 205; 206; 270	Habitat Assessment	KAM, EKH	8:00–1:30	50–67	5
09/23/2007	207; 208; 209; 210; 211; 212; 213; 214; 215; 216; 248; 249; 250; 251	Habitat Assessment	KAM, EKH	10:25–5:12	58-67	5
09/24/2007	228; 229; 230; 231; 232; 233; 234; 235; 236; 237; 238; 239; 241; 242; 243; 244; 246; 247; 252; 253; 254; 255; 256; 257; 258; 259; 260; 261; 267; 268; 269	Habitat Assessment	KAM, EKH	7:05–5:40	49–83	3
09/25/2007	180; 181; 182; 183; 184; 185; 186; 187; 188; 189; 190; 191; 192; 193; 217; 218; 219; 220; 221; 222; 223; 224; 225; 226; 227; 245	Habitat Assessment	KAM, EKH	7:10–5:50	54–79	5
09/26/2007	148; 149; 150; 160; 194; 195; 196; 197; 198; 199; 200; 262; 263; 264; 265; 266	Habitat Assessment	KAM, EKH	6:45–2:10	53–87	5

Personnel key:
WHK: Will Kohn; SRA: Steve Avery; KAM: Kara Martinusen; KTM: Kailash Mozumder; HS: Holly Shepley; JLC: Julia Camp; EKH: Erin Hitchcock.



SOURCE: J&S 2008b. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Drainages Included in Special-Status Salamander Field Surveys

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Habitat Modeling and Data Quality Assurance

On July 19, 2008, Dudek and J&S biologists met with Tehachapi slender salamander experts Dr. David Wake, Professor of the Graduate School at the University of California, Berkeley, and Mr. Robert Hansen, Editor of Herpetological Review, to review the suitable habitat analysis and location of Tehachapi slender salamanders on the site and to confirm species identification. Based on input from Dr. Wake and Mr. Hansen, the key habitat features for Tehachapi slender salamander were determined to include vegetation communities with canyon live oak as a dominant species, north-facing slopes, talus, and moderate to high percent canopy cover. In addition, based on existing observation, the species was determined to not occur above 5,000 ft in elevation. Following the meeting, Dudek prepared a habitat suitability model, which is discussed further in Appendix D of the TU MSHCP.

1.4.3 YELLOW-BLOTCHED SALAMANDER

There is one CNDDB record documenting the detection of yellow-blotched salamander within the TMV Planning Area. A yellow-blotched salamander was also observed during a June 2005 reconnaissance survey. Surveys for yellow-blotched salamander were conducted concurrently with surveys for Tehachapi slender salamander using the same field methods described previously in Section 1.4.2. Although the two salamander species can and do co-occur, the yellow-blotched salamander has a broader geographical, elevational, and ecological distribution than Tehachapi slender salamander. Because the primary focus of the salamander surveys was on Tehachapi slender salamander, it is expected that yellow-blotched salamander could also occur in habitat areas that were not surveyed. Locations of yellow-blotched salamanders observed during the Tehachapi slender salamander surveys were recorded with a GPS unit (Garmin eTrex GPS unit, generally accurate to approximately 3 m) and habitat requirements for the species were discussed during the July 19, 2008, meeting with Dr. Wake and Mr. Hansen, as described previously. While a separate habitat model was not developed for the yellow-blotched salamander for the purposes of directing field surveys, a habitat model for yellow-blotched salamander was subsequently developed for the conservation analysis and is discussed in more detail in Appendix D of the TU MSHCP. As noted previously, the yellow-blotched salamander has broader habitat associations than Tehachapi slender salamander, which are reflected in the habitat model in Appendix D of the TU MSHCP.

1.4.4 OTHER REPTILE SPECIES PRESUMED TO OCCUPY THE SITE

Based on the literature review and site reconnaissance, the following two reptile species were determined or assumed to be present on the site and appropriate habitat was modeled for each species:

- Coast horned lizard (*blainvillii* and *frontale* populations)
- Two-striped garter snake.

1.5 SPECIAL-STATUS BIRDS

This section discusses the wintering and breeding focused bird surveys conducted within the TMV Planning Area.

Breeding bird focused surveys included the following: (1) species-specific surveys for species with official USFWS survey protocols (i.e., generally species that are Federally listed, state-listed, and/or Fully Protected); (2) species-specific surveys for which there are no official USFWS protocols but have generally accepted, scientific- or resource-agency-supported survey guidelines or methods; and (3) surveys for groups of special-status bird species that have similar habitat preferences, specifically riparian birds, general raptors, and aquatic/marsh/meadow birds.

The following subsections describe the focused bird surveys that were conducted in 2006 and 2007 in the TMV Planning Area. However, bird surveys were also conducted prior to the 2006–2007 surveys in 2004 by Impact Sciences, Inc., (2004) and 2005 by J&S (2006). This survey information was incorporated into the species database analyzed for the TU MSHCP and EIS. The focus of the Impact Sciences, Inc., 2004 bird surveys was to identify special-status species of birds expected to nest in the TMV Planning Area. These surveys were conducted from January 26 to 30, March 1 to 5, and July 12 to 15. The January surveys were conducted to identify any wintering special-status bird species that may use the site, particularly Castac Lake. Surveys for special-status birds were also conducted concurrently with plant surveys from April 26 to May 1 and June 14 to 20, 2004. Birds observed during the course of the surveys were identified to species and, if special-status, locations were mapped. The J&S bird surveys were conducted from March 28 to June 21, 2005, and included raptor nesting surveys on five separate days from March 28 to April 1. Other nesting bird surveys were conducted on four separate days from April 25 to April 28: a purple martin (*Progne subis*) and northern goshawk (*Accipiter gentilis*) survey on May 27; an evening California spotted owl (*Strix occidentalis*) survey on May 27; a willow flycatcher (*Empidonax traillii*) and purple martin at Bear Trap on June 8; a willow flycatcher, purple martin, and northern goshawk survey at Castac Lake on June 9; a golden eagle (*Aquila chrysaetos*) nest check on June 17 and June 20; and a willow flycatcher and purple martin survey at Castac Lake on June 21.

1.5.1 FEDERALLY LISTED AND STATE-LISTED BIRDS

Focused surveys for the following Federally and state-listed birds were conducted by Dudek in accordance with established USFWS or CDFG survey protocols:

- Least Bell's vireo (*Vireo bellii pusillus*)
- Southwestern willow flycatcher (*Empidonax extimus traillii*)

- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*).

The following species do not have established USFWS survey protocols but are subject to generally accepted survey methods based on current scientific understanding of the species' habitat preferences and life history:

- American peregrine falcon (*Falco peregrinus anatum*)
- Bald eagle (*Haliaeetus leucocephalus*)
- California condor (*Gymnogyps californianus*).

Listed Riparian Birds

Focused surveys were conducted for least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo.

General Survey Methods

Focused riparian bird surveys were divided into four survey areas (Areas 1–4) due to the size and the distribution of suitable habitat on the site. These survey areas generally included riparian habitat adjacent to Castac Lake and suitable habitat patches located within Bear Trap Canyon and Rising Canyon. Approximately 87 ac. of suitable riparian forest habitat on or adjacent to the TMV Planning Area were surveyed to ensure that the survey was as comprehensive as possible (see Figure D.1-4).

Surveyors included biologists Brock A. Ortega (TE813545-6), Jeff D. Priest (TE840619-2), Anita M. Hayworth, PhD (TE781084-7), John Konecny (TE837308-4), Paul M. Lemons (TE051248-2), Thomas Liddicoat, and Scott M. Duff (Table D.1-4). Only biologists holding permits to conduct surveys for southwestern willow flycatcher, including Brock Ortega, Jeff Priest, Anita Hayworth, and John Konecny, conducted surveys for southwestern willow flycatcher. Biologist John Konecny conducted all western yellow-billed cuckoo surveys concurrently with southwestern willow flycatcher and least Bell's vireo surveys. Biologists Thomas Liddicoat, Scott Duff, and Paul Lemons conducted least Bell's vireo surveys only. The entire area of suitable habitat was surveyed for southwestern willow flycatcher and least Bell's vireo a total of 35 times.

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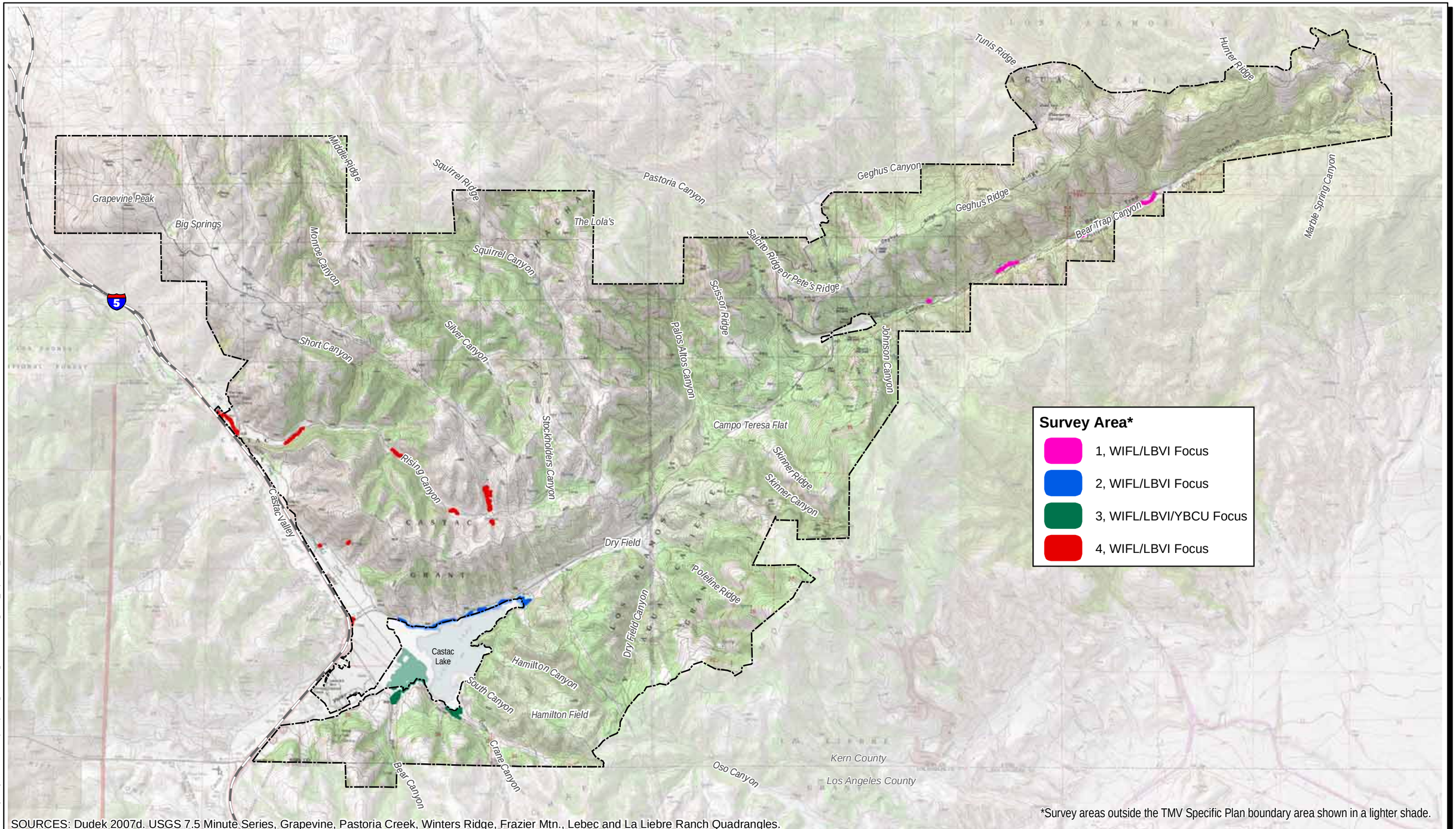

SOURCES: Dudek 2007d. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Tehachapi Upland MSHCP

Special-Status Riparian Bird Survey Areas

FIGURE D.1-4

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Southwestern Willow Flycatcher Specific Survey Methods

A recovery permit pursuant to Section 10(a)(1)(A) of FESA is required to conduct presence/absence surveys for the southwestern willow flycatcher. The surveys followed the current protocol (Sogge et al. 1997; USFWS 2000), which states that a minimum of five survey visits are necessary to evaluate TMV project effects on flycatchers (USFWS 2000). In accordance with the protocol, one survey was conducted in each of the four survey areas during the period from May 15 to 31, one survey was conducted in each of the four survey areas between June 1 and 21, and three surveys were conducted in each of the four survey areas between June 22 and July 17 at a minimum of 5-day intervals. All four survey areas were surveyed a total of five times for the presence of southwestern willow flycatcher during the three survey time periods (see Table D.1-4).

Table D.1-4. Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-Billed Cuckoo Survey Schedule and Conditions

Date	Personnel	Focal Species	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
Area 1 – Bear Trap Canyon						
04/23/07	TSL	LBVI[1]	0730–1130	36	2–9	100
05/03/07	PML	LBVI	0700–1130	48–54	3–6	100
05/16/07	BAO	LBVI/WIFL[2]	0500–1115	50–65	0–3	0
05/30/07	AMH	LBVI	0600–1100	55–75	1–3	0
06/11/07	BAO	LBVI/WIFL	0510–1100	54–77	1–5	0–10
06/22/07	BAO	LBVI/WIFL	0630–1100	58–70	0–5	30
07/02/07	AMH	LBVI/WIFL	0540–1030	60–78	1–7	10–0
07/16/07	JDP	LBVI/WIFL	0515–1045	58–83	0–3	0
07/30/07	TSL	LBVI	0600–1000	55–88	0–2	0
Area 2 – Shoreline of Castac Lake (North Side)						
04/23/07	SMD	LBVI	0700–1230	40–60	0–3	100–80
05/03/07	SMD	LBVI	0700–1230	45–69	0–3	99–20
05/23/07	JK	LBVI/WIFL	0540–0950	63–71	1–3	0
06/02/07	JK	LBVI/WIFL	0540–0935	61–74	3–5	50
06/23/07	JK	LBVI/WIFL	0530–0925	61–78	1–3	0
07/07/07	JK	LBVI/WIFL	0535–0955	61–89	3–10	0
07/17/07	JK	LBVI/WIFL	0530–0945	61–89	3–10	0
07/31/07	TAC	LBVI	0600–1000	65–75	0–1	0
Area 3 – Cuddy Creek (South Side)						
04/24/07	TSL	LBVI	0700–1100	48	0–4	0
05/04/07	PML	LBVI	0730–1130	55–66	2–4	0
05/24/07	JK	LBVI/WIFL	0545–0955	64–70	1–3	0

Table D.1-4 (Continued)

Date	Personnel	Focal Species	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
06/03/07	JK	LBVI/WIFL	0530–1000	63–78	1–5	30
06/24/07	JK	LBVI/WIFL/YBCU[3]	0535–1010	61–76	1–3	0
07/8/07	JK	LBVI/WIFL/YBCU	0540–1000	53–83	3–6	0
07/18/07	JK	LBVI/WIFL/YBCU	0545–1010	53–83	3–6	0
07/26/07	TAC	LBVI	0600–1030	65–70	0–1	0
08/17/07	JK	YBCU	0550–1020	65–93	3–9	0
Area 4 – Rising Canyon and Grapevine Creek						
04/24/07	SMD	LB VI	0700–1230	45–60	0–5	0
05/04/07	SMD	LBVI	0830–1300	48–64	0–6	100–80
05/17/07	BAO	LBVI/WIFL	0500–1110	53–75	0–1	0
05/29/07	AMH	LBVI	0600–1100	56–84	1–3	0
06/12/07	BAO	LBVI/WIFL	0530–1030	57–70	1–4	0
06/23/07	BAO	LBVI/WIFL	0610–1015	60–78	1–5	50–20
07/03/07	AMH	LBVI/WIFL	0545–1045	61–76	3–6	0
07/17/07	JDP	LBVI/WIFL	0500–1045	55–76	0–1	0
07/31/07	TSL	LBVI	0615–1020	59–91	0–2	0

Personnel key:
TSL: Thomas Liddicoat; PML: Paul Lemons; BAO: Brock Ortega; AMH: Anita Hayworth; JDP: Jeff Priest; SMD: Scott Duff; JK: John Konecny; TAC: Traci Caddy.
[1]WIFL = southwestern willow flycatcher.
[2]LBVI = least Bell's vireo.
[3]YBCU = yellow-billed cuckoo.

Three visits were conducted during the final survey period in order to determine whether any flycatchers observed during the first two survey periods were resident. Various subspecies of this species are not easily differentiated visually or by call or song in the field, and any resident willow flycatchers observed in the final survey period were assumed to be the "southwestern" subspecies. Non-resident willow flycatchers were assumed to be migrant willow flycatchers.

The surveys began as soon as it was light enough to walk safely until approximately 11:00 a.m. A tape of recorded southwestern willow flycatcher vocalizations was played approximately every 50 to 100 ft within suitable habitat to induce willow flycatcher responses. A "Willow Flycatcher Survey and Detection Form" was filled out for each survey visit.

Least Bell's Vireo Specific Survey Methods

A Section 10(a)(1)(A) permit is not required to conduct focused surveys for least Bell's vireo. The surveys for least Bell's vireo followed the current protocol (USFWS 2001), which requires a minimum of eight survey visits to all riparian areas and any other potential vireo habitats during the period of April 10 to July 31. A minimum of 10-day intervals separated each visit in accordance

with the protocol. Surveys were conducted between dawn and 11:00 a.m. by a qualified biologist familiar with least Bell's vireo songs, calls, and plumage. All four survey areas were surveyed at least eight times for the presence of least Bell's vireo in accordance with the USFWS protocol for this species. Survey areas 1 and 4 received one additional survey, for a total of nine least Bell's vireo surveys.

Western Yellow-Billed Cuckoo Specific Survey Methods

A recovery permit pursuant to Section 10(a)(1)(A) is not required to conduct surveys for the western yellow-billed cuckoo. Surveys for the cuckoo were conducted by John Konecny (Biological Resource Consultants). Mr. Konecny holds a memorandum of understanding (MOU) from CDFG that allows for the use of tape playbacks. The survey method for determining presence or absence of the western yellow-billed cuckoo followed the Halterman and Johnson (2003) draft protocol. A total of four survey visits were made to the suitable habitat during the breeding season between June 15 and August 17, at approximate 10- to 14-day intervals. The survey method included visiting the site between 6:30 a.m. and 12:00 p.m. Survey transects were spaced no more than 300 ft apart and a recorded call was played every 600 ft in accordance with the protocol. A maximum of 2.5 linear mi. of suitable habitat was surveyed per day.

Listed Raptors

American Peregrine Falcon Survey Methods

There is no official protocol survey method for determining the presence or absence of the American peregrine falcon.

Peregrine falcons nest almost exclusively on protected ledges of high cliffs (CDFG 1980; USFWS 1982). All large rock outcrops and cliffs located within the TMV Planning Area were surveyed for peregrine falcon activity, including large rock outcrops in Rising Canyon, Skinner Canyon, Grapevine Peak, Pastoria Canyon, and Salcito Ridge (see Figure D.1-5).

Two focused surveys were conducted by Dudek biologists during the time period when peregrines would be present and breeding. An initial survey was conducted on May 1, 2007, by Dudek biologists Anita M. Hayworth, PhD, and Brianna M. Wood. A second focused survey was conducted by Dudek biologist Rebekah M. Krebs on July 7, 2007 (see Table D.1-5). Surveys were conducted on days with suitable weather conditions (i.e., moderate temperatures, no rain, and moderate or no wind). The biologists conducting the surveys were familiar with peregrine behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15–60× and Bushnell 20–60× magnification) were used for viewing. A survey map at a suitable scale (1 in. = 400 ft) was prepared and observations of observed (if any) peregrines were mapped. Large rock outcrops and cliff faces were surveyed for whitewash, nests, and raptor activity. When signs of raptor activity were confirmed, these areas were observed for

a long enough period of time to identify the species of raptor utilizing the area. Rock outcrops adjacent to known raptor nests were observed to determine if the usage of the nest site was by peregrine falcon.

Table D.1-5. American Peregrine Falcon Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
05/01/07	AMH,BTW	0800–1000	68–76	0–5	50
07/07/07	RMK	0815–1400	78–93	5–10	0

Personnel key:

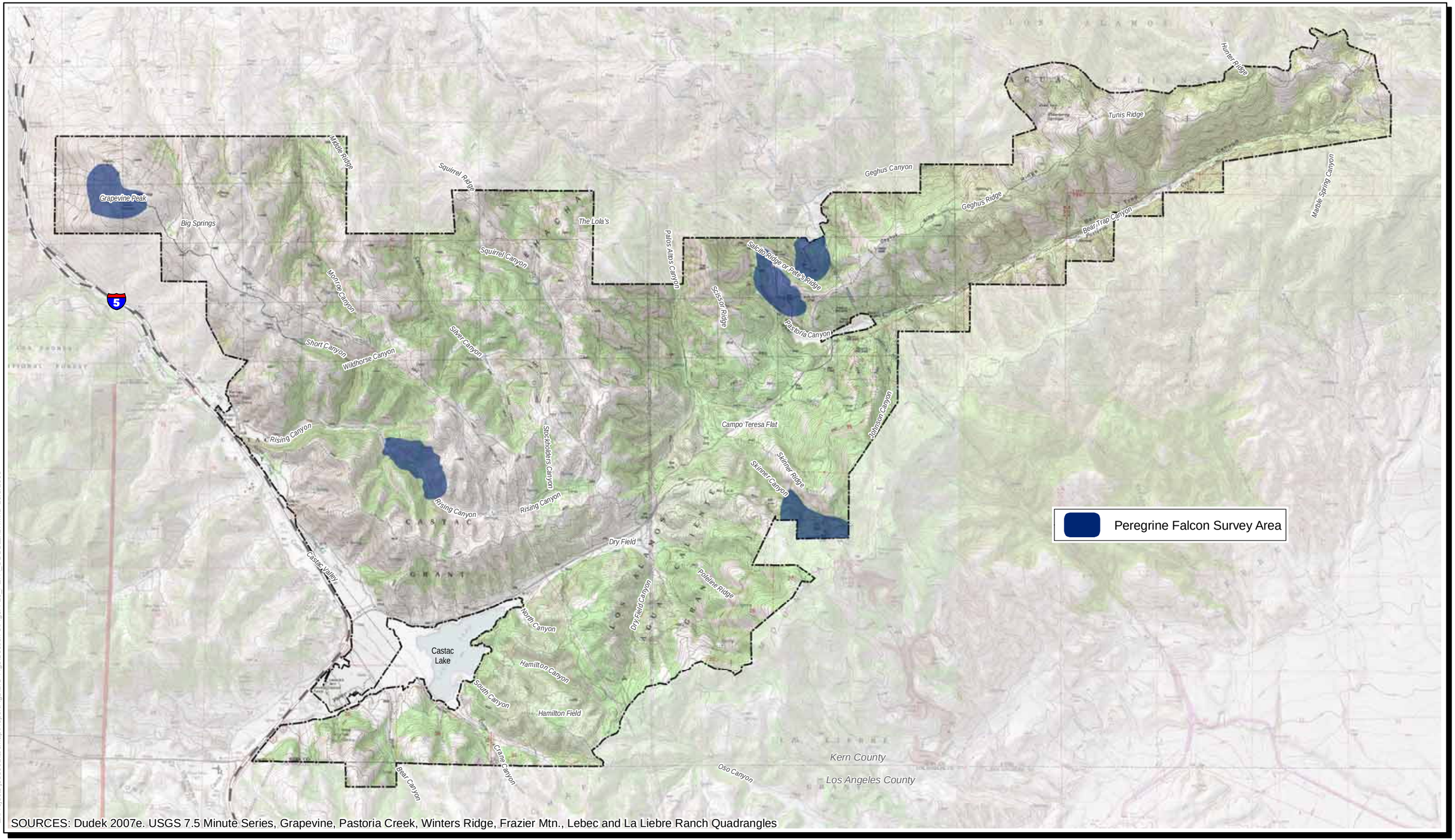
AMH: Anita Hayworth, PhD; BTW: Brianna Wood; RMK: Rebekah Krebs.

Other surveys were conducted on site that would have detected peregrine usage, including general raptor surveys, aquatic and marsh bird surveys, and bald eagle surveys (as discussed below). Raptor surveys focused on searching trees, fence lines, rock outcrops, and the ground for direct observation or evidence of raptor nesting. The aquatic and marsh bird surveys and bald eagle surveys included an inventory of all wildlife utilizing aquatic resources in and around Castac Lake.

Bald Eagle (Wintering and Nesting) Survey Methods

There is currently no established USFWS protocol to survey for the bald eagle. A survey protocol has been prepared by Pacific Gas & Electric (PG&E) for the USFWS (PG&E 2004) that provides a detailed description of methods to conduct surveys for wintering and nesting bald eagles. The PG&E protocol was used to conduct focused surveys within suitable habitat within the TMV Planning Area.

Suitable habitat for the bald eagle consists of a variety of natural structures, including ledges on cliffs, trees protruding from cliffs, and deciduous or coniferous trees found along or near major water bodies. The survey method recommends surveying applicable water bodies as well as a buffer area of 1 mi. Approximately 4,290 ac. within the TMV Planning Area were surveyed in accordance with these criteria (see Figure D.1-6 of this appendix). Observation of other piscivorous (fish-eating) birds, such as cormorants and osprey, was recorded to evaluate whether Castac Lake could support the bald eagle.



SOURCES: Dudek 2007e. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

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Tehachapi Upland MSHCP

Peregrine Falcon Survey Areas

FIGURE D.1-5

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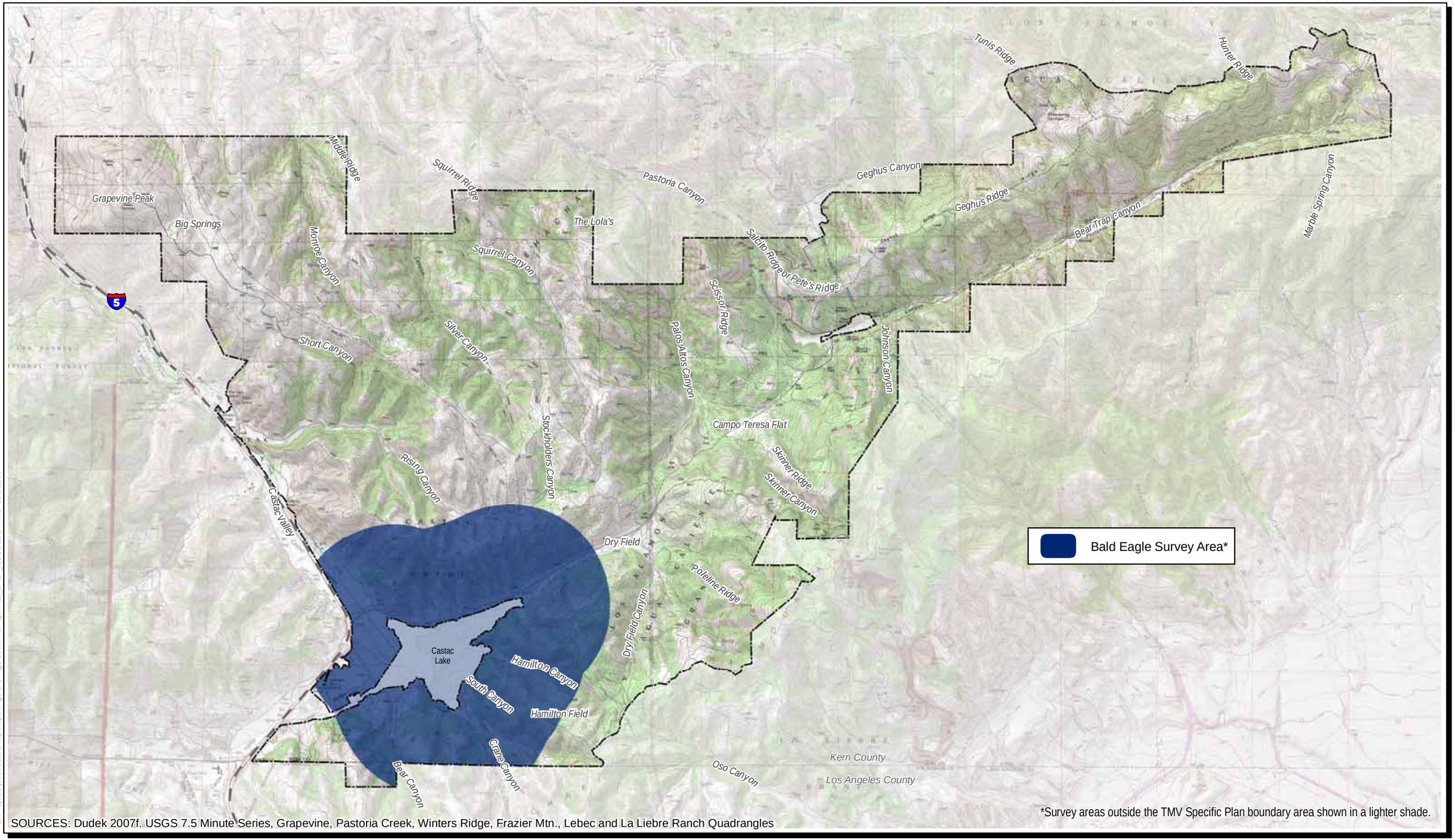

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: Dudek 2007f. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

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Tehachapi Upland MSHCPD

Wintering and Breeding Bald Eagle Survey Area

FIGURE D.1-6

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The survey for wintering eagles included three site visits conducted at monthly intervals and with no less than a 2-week interval between surveys (see Table D.1-6). Wintering bald eagle surveys were conducted by Dudek biologist Anita Hayworth, PhD, on December 29, 2006; January 30, 2007; and February 22, 2007. Each survey was conducted over an approximately 6.5- to 10-hour period and the lake and surrounding areas were scanned for bald eagles from several stationary locations. Suitable perching areas were observed using a road survey to look for eagles up to 1 mi. from the lake. The biologist conducting the survey was familiar with bald eagle behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. A survey map at a suitable scale (generally 1 in. = 400 to 1 in. = 800 ft) was prepared and observations of bald eagles were mapped.

The survey for nesting bald eagle was conducted when eagles were most likely to be found at the nest site and as early in the breeding season as possible. A total of three breeding surveys are recommended in the PG&E survey protocol (PG&E 2004). In accordance with the protocol, Dudek biologist Traci Caddy conducted breeding bald eagle surveys on March 19, May 29, and June 18, 2007 (see Table D.1-6). Surveys were conducted on foot and by vehicle and included searching for bald eagles and bulky nest structures along the lake and within a 1 mi. buffer around the lake. Each survey was conducted over an approximately 8- to 9-hour period. The biologist conducting the survey was familiar with bald eagle behavior, habitat use, and appearance. Binoculars (10 × 50 mm; 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. A 1 in. = 600 ft survey map was used to map any observed bald eagle or nest locations.

Table D.1-6. Wintering and Breeding Bald Eagle Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
12/29/06	AMH	0800–1430	30–41	1–8	0
01/30/07	AMH	0630–1530	36–46	1–5	100
02/22/07	AMH	0625–1615	33–48	5–10	90
03/19/07	TAC	0730–1530	45–50	Not Recorded	0
05/29/07	TAC	0800–1700	65–70	0–5	0
06/18/07	TAC	0730–1630	65–75	Not Recorded	0

Personnel key:
AMH: Anita Hayworth; TAC: Traci Caddy.

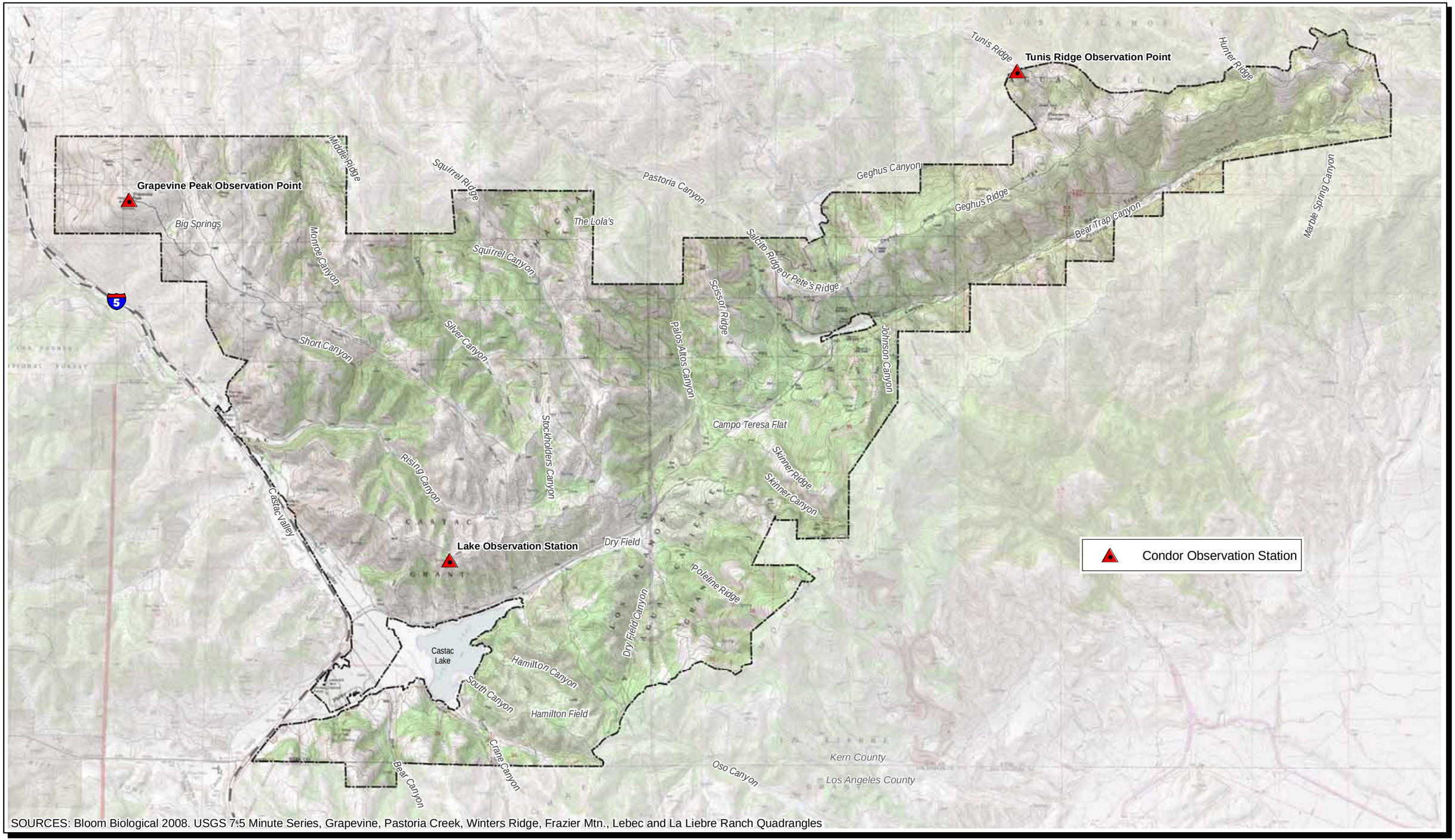
California Condor

Analyses regarding historical and current condor use of Tejon Ranch, including the TMV Planning Area, are based primarily on an evaluation of GPS data provided by the USFWS. In particular, a team of condor scientists (Condor Panel) retained for the TMV project and biologists from Dudek compiled and reviewed these data, which recorded condor location information within the southern California range of the species, including Tejon Ranch. The review included all GPS data recorded by the USFWS from 2002 (when the first condors carrying GPS transmitters were released) to

August 2009. The data were incorporated into a GIS program where it could then be overlain onto various project and habitat maps. The evaluation of the GPS data is discussed in more detail in the *Tejon Ranch California Condor Conservation and Management Plan*, which included data from 2002 to 2008, (Appendix C to the TU MSHCP), as well as in the Addendum to Appendix C, *California Condor Occurrence Data in Southern California*, which included data from 2002 through August 2009, attached to the TU MSHCP.

Field assessments of the site were also conducted by the Condor Panel and Dudek biologists on several occasions in 2007. Specifically, Bloom Biological, Inc. (Bloom Biological), assisted by Dudek, conducted surveys for California condor during the late summer and fall of 2007. Three monitoring stations (observation points) were established within the TMV Planning Area in late July 2007 to search for and, if observed, identify numbers of California condors flying or foraging over the site (see Figure D.1-7 of the appendix). Each observation point was attended by a single field monitor from Bloom Biological or Dudek. Field monitors were experienced in or otherwise qualified for identifying condors and other raptor species. Monitoring began on August 13 and was completed on November 17, 2007. Each observation point was staffed 8 hours per day, 5 days per week (Monday through Friday), for the duration of the monitoring effort.

Most of the condors in the wild were bred in captivity and outfitted with radio transmitters prior to release. All field monitors periodically scanned for radio signals (each wild condor has a unique assigned radio frequency) using three-element Yagi antennas and attached radio transceivers (Communications Specialists, Inc., Model R-1000, with a range of approximately 60 mi.). Data collected for condors detected by radio signal and/or visual observation included date and time of detection, the frequency identification code and, if on site, the approximate location of the detection or observation of the condor. Other data that was collected included weather conditions, USFWS patagial wing identification number (if visible), length of observation, behavior (e.g., foraging, perching), and estimated altitude. The location of each on-site detection or observation was noted on a USGS topographic map. Observations of other raptors were also documented. Visual and radio monitoring of condors (primarily of those wearing VHF transmitters) on Tejon Ranch, primarily within the TMV Planning Area, has continued on a daily basis (weather permitting) since August 2008.



SOURCES: Bloom Biological 2008. USGS 7:5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles

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Tehachapi Upland MSHCP

Condor Survey Observation Stations

FIGURE D.1-7

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1.5.2 OTHER SPECIES-SPECIFIC BIRD SURVEYS

Surveys were conducted within the TMV Planning Area for other special-status bird species that are not Federally or state listed. In general, these special-status species are either CSC- or BCC-designated birds, or Fully Protected species. Surveys for these birds are described below and include the following: riparian birds; marsh-nesting birds; burrowing owl (*Athene cunicularia*); California spotted owl; northern goshawk; Fully Protected raptors, including golden eagle and white-tailed kite (*Elanus leucurus*); and purple martin. In addition, a winter bird survey was conducted that included golden eagle.

Riparian Birds

During focused surveys for Federally and/or state-listed riparian birds (see Section 1.5.1 of this appendix), biologists also surveyed for other special-status birds that could occur within riparian habitat, including the yellow warbler (*Dendroica petechia*).

Aquatic and Marsh-Nesting Birds

A focused survey for these species, including tricolored blackbird (*Agelius tricolor*), was conducted on the margins of Castac Lake and Grapevine Creek to determine if aquatic and marsh-dwelling special-status birds breed on site or in areas directly adjacent to the TMV Planning Area. No official method has been established for conducting surveys for aquatic and marsh-dwelling bird species.

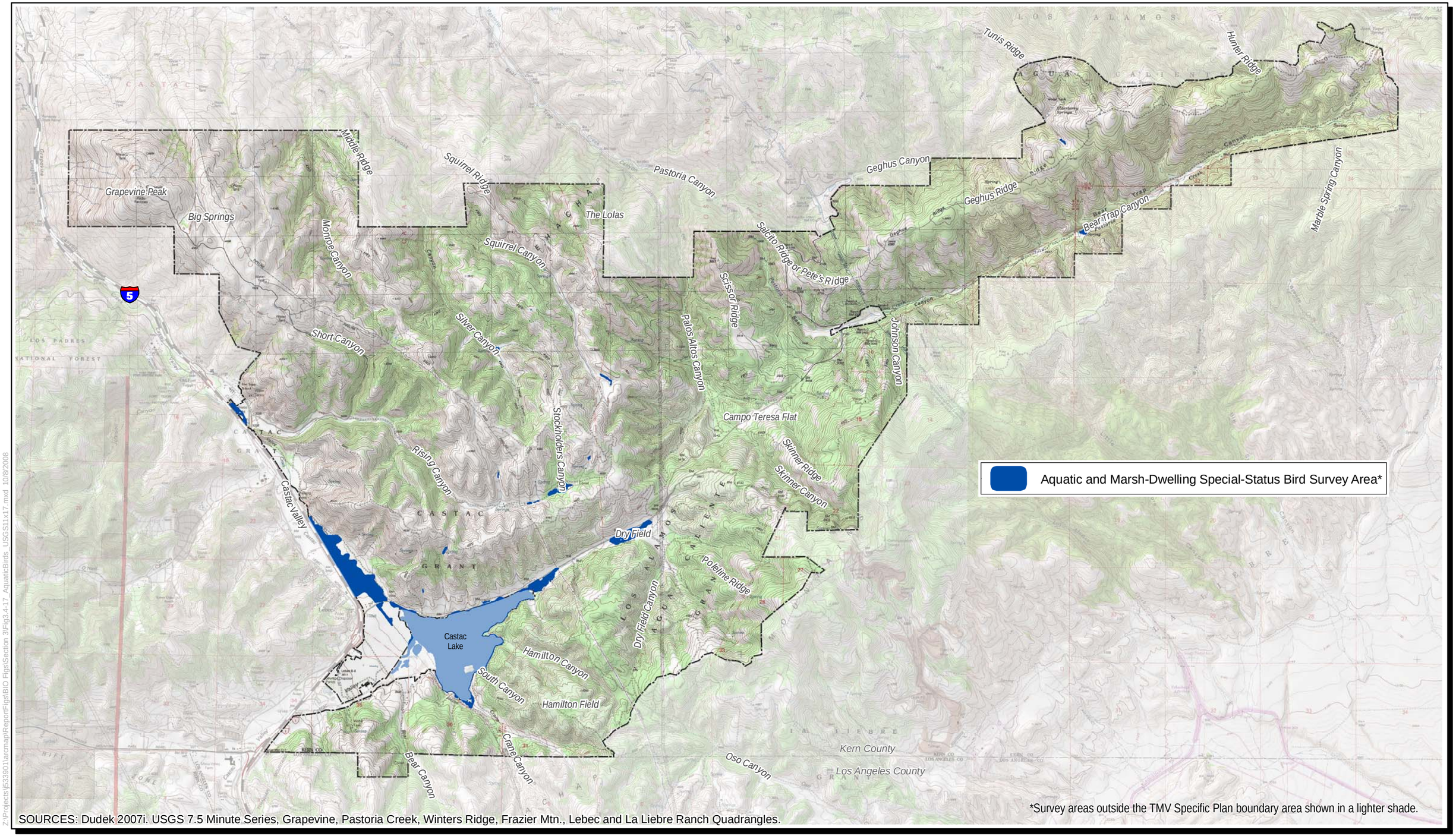
The surveys were conducted throughout the breeding season in May and June of 2007 and included approximately 560 ac. of suitable meadow and marsh habitat within the TMV Planning Area, including areas around Castac Lake (see Figure D.1-8 of this appendix).

The survey area was observed from several vantage points with binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification). Observers spent approximately 20 minutes at each location to scan for target birds. Biologists also walked through or adjacent to suitable habitat searching for the species during periods of non-inclement weather. Standard survey information was recorded, including survey conditions, survey routes, and results (see Table D.1-7). All observed special-status bird species were recorded and mapped on 1 in. = 400 ft aerial photographs of the site, and notes were recorded regarding observed breeding status.

Table D.1-7. Aquatic and Marsh-Dwelling Special-Status Bird Survey Schedule and Condition

Date	Personnel	Time	Air Temp. (°F)	Wind Speed (mph)	Cloud Cover (%)
Round 1					
05/22/07	SMD	1130–2030	69–85	0–3	5
05/23/07	SMD	0630–2030	68–90	0–5	0
05/24/07	SMD	0900–1930	76–86	0–3	0
Round 2					
06/11/07	SMD	0730–2030	71–78	0–6	2–3
06/12/07	SMD	0800–1830	72–91	0–10	0–3
06/19/07	TAC	0915–1800	65–75	5–15	0
06/20/07	TAC	0900–1800	65–75	0	0

Personnel key:
SMD: Scott Duff; TAC: Traci Caddy.



SOURCES: Dudek 2007i. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

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Aquatic and Marsh-Dwelling Special-Status Bird Survey Areas

FIGURE D.1-8

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Burrowing Owl

Surveys for the burrowing owl conformed to the protocols described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). See Table D.1-8. Surveys were conducted within suitable habitat composed primarily of non-native and native grasslands within the site (see Figure D.1-9). Biologists walked approximate 100 ft transects throughout suitable habitat and assessed whether each potential burrow that was observed exhibited evidence of burrowing owl (i.e., feathers, whitewash, pellets, insect remains, tracks). The locations of potential burrows were recorded on a map with survey results, including evidence of occupation (e.g., feathers, pellets, tracks, and prey remains), the presence of ground squirrels (e.g., active latrines, recent digging), or evidence of lack of use (e.g., entrance full of debris, soil, or the presence of spider webs). Burrows with evidence of potential burrowing owl use were surveyed again at the time of day recommended in the CDFG protocols. Owls observed during these additional surveys, if any, were recorded and mapped.

Table D.1-8. Burrowing Owl Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
04/23/07	SMD, TSL	1800–2000	43–53	0–6	0
05/01/07	RMK	1130–1750	74–79	5–10	10
05/02/07	RMK	0815–1600	72–78	15–25	40
05/08/07	SMD	1500–2030	90	0–5	0
05/09/07	SMD	0830–1430	90	0–3	0
05/09/07	SMD	1600–2030	95	5–10	0
05/10/07	RMK	1800–1940	70–75	10–20	0
05/11/07	RMK	1000–1830	63–76	10–15	0
05/12/07	RMK	0830–1300	64–77	8–17	5
05/16/07	SMD	1030–2000	85	0–5	0
05/16/07	RMK	1045–1700	75–85	5–15	0
06/13/07	RMK	1420–1620	82	5–15	0
06/19/07	RMK	1700–1900	78–84	5–10	0
06/20/07	RMK	0900–1735	77–82	2–8	0
06/21/07	RMK	0925–1630	78–83	5–20	0
06/22/07	RMK	0900–1250	78–82	2–5	2
06/26/07	RMK	0910–1130	77–82	3–5	0
06/26/07	RMK	1250–1800	77–82	3–5	0
06/27/07	RMK, TSL	0830–1430	77–81	2–10	0

Personnel key: SMD: Scott Duff; RMK: Rebekah Krebs; TSL: Thomas Liddicoat.

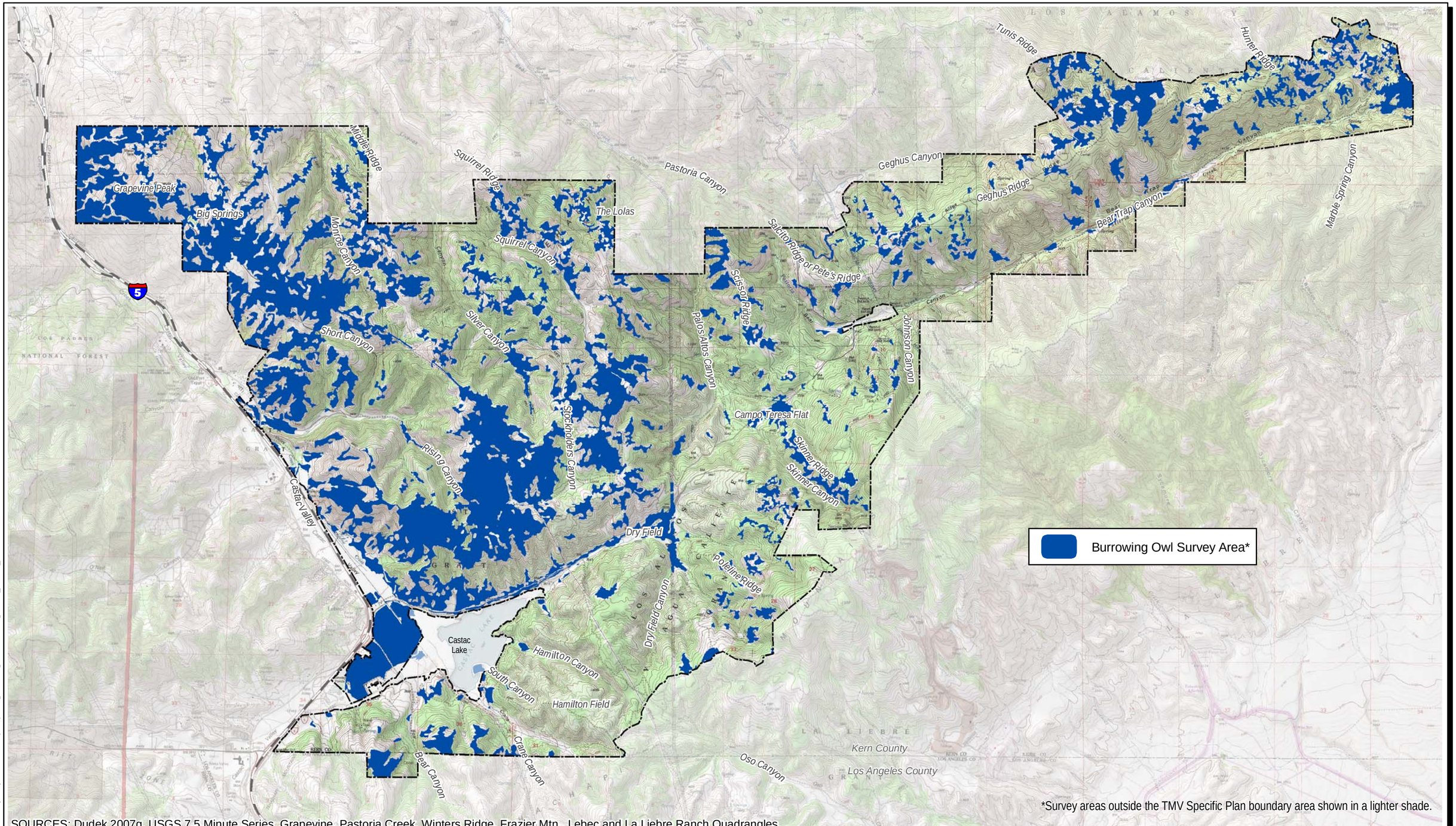
California Spotted Owl

Surveys for the California spotted owl were conducted by BioResource Consultants (2008) in accordance with the survey protocol developed by the United States Forest Service (USFS) (USFS 1993) within approximately 2,240 ac. of suitable California spotted owl habitat on site.

Initial site visits were conducted on March 29 and April 9, 2007. During the March 29 visit, suitable habitat patches and likely locations for calling stations were recorded on USGS topographic maps and with a handheld GPS unit (Magellan eXplorist 210, generally accurate to approximately 3 m). The visit on April 9 included follow-up visits to the selected calling stations, and trial nighttime calling surveys were conducted. A total of 40 transects and/or calling points were established to adequately cover all suitable spotted owl habitat within the area. Calling stations were spaced approximately .25 to .5 mi. apart depending on perceived sound attenuation due to topography and ambient noise.

Based on the initial results, surveys were conducted at night from sunset to sunrise during May, June, July, and August 2007 and included calling from each of the 40 calling stations. Calling was conducted either by imitating spotted owl vocalizations or by playing a tape of owl calls. Each calling station was visited a total of six times. Calls were played for three to seven calls and played again after a pause of 1 to 2 minutes. A surveyor remained at each calling station for 10 minutes. During each nighttime survey, 6 to 15 of the calling stations were visited depending on the distance between the stations. For each survey visit, recorded information included general survey conditions, the survey route, start and stop times, and the survey results. Surveys were not conducted during periods of inclement weather. Visits were spaced at least 5 days apart and at least four of the visits were conducted before June 30.

A daytime follow-up reproductive survey was conducted to verify whether spotted owls detected at night were nesting and/or fledging young. This phase of the survey was accomplished by locating a detected owl, offering the owl mice, and following the owl to determine whether the owl consumed the mouse, delivered the mouse to a nest, or fed the mouse to a fledgling. Reproductive surveys were conducted as soon as possible, generally 2 to 8 days following a positive night response detection. The reproductive surveys were performed a minimum of four times at each location with a positive owl response or until reproductive status of the owl could be confirmed.



*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: Dudek 2007g. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Burrowing Owl Survey Areas

FIGURE D.1-9

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Table D.1-9 lists the dates and times of the spotted owl surveys, and the survey area is shown in Figure D.1-10 of this appendix.

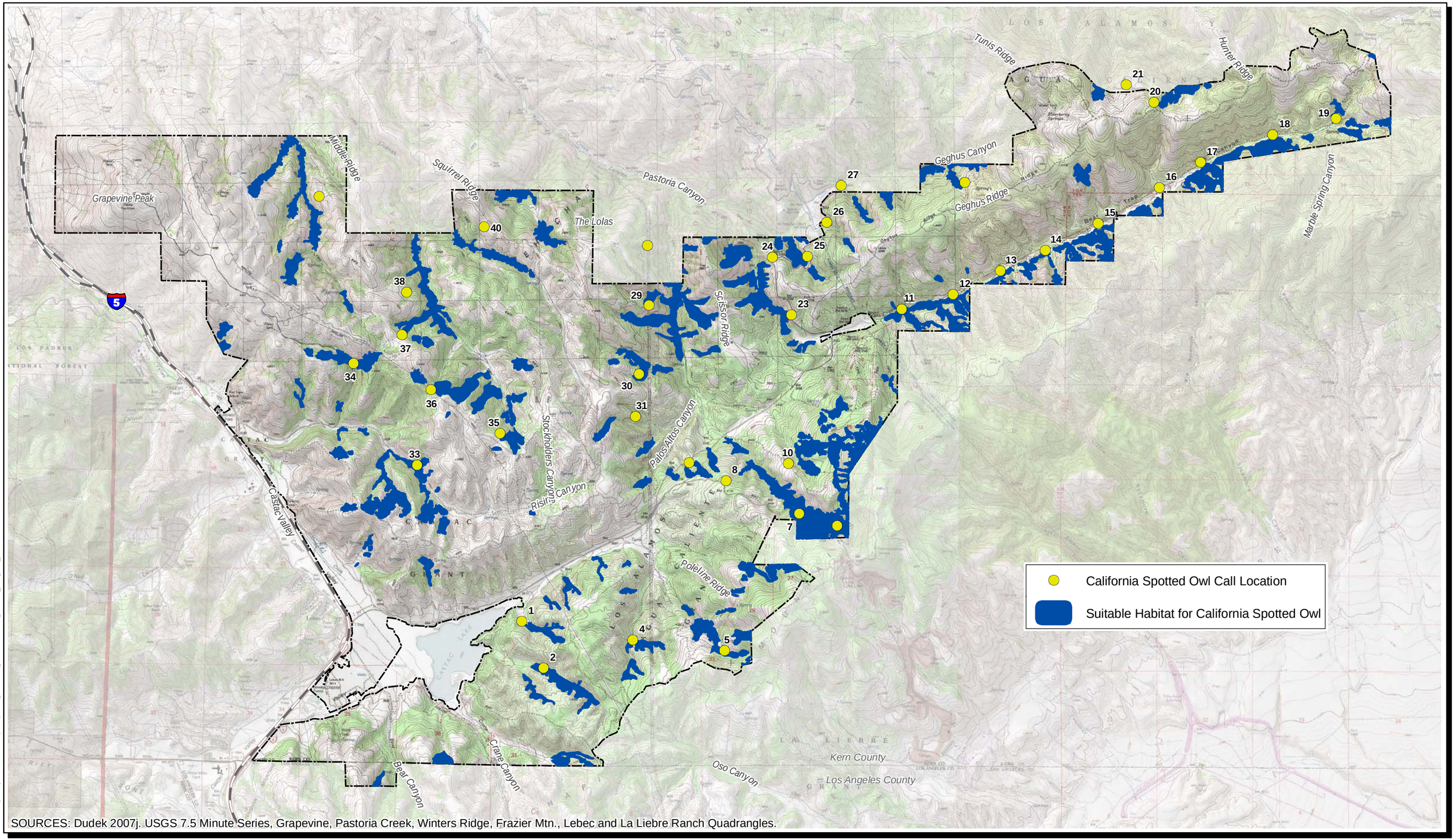
Table D.1-9. California Spotted Owl Survey Schedule and Conditions

Date	Type of Survey	Visit number	Personnel	Time	Temp. (°F)	Wind (mph)	Weather	Moon Phase
04/17/07	Presence/absence	1	VAP, SMW	1940–1238	60	0–8	No precipitation	—
04/19/07 to 04/20/07	Presence/absence	1	VAP, SMW	1943–0151	40–50	0–3	No precipitation	—
04/24/07 to 04/25/07	Presence/absence	1	VAP, SMW	1954–0105	50–55	1–3	No precipitation	—
04/25/07	Presence/absence	1	VAP, SMW	1940–1103	55	10	No precipitation	—
05/08/07 to 05/09/07	Presence/absence	2	VAP, SMW	1945–0141	60–65	0–2	No precipitation	Half moon - 2 days
05/9/07	Presence/absence	2	VAP, SMW	2035–2357	60–65	2–5	No precipitation	Half moon - 1 day
05/10/07 to 05/11/07	Presence/absence	2	VAP, SMW	1951–0119	45–70	1–2	No precipitation	Half moon
05/17/07	Reproductive survey	1	VAP, SMW	0453–0505	65	0	No precipitation	New moon + 1 day
05/22/07 to 05/23/07	Presence/absence	3	VAP, SMW	2008–0044	55–90	1–10	No precipitation	Half moon - 1 day
05/23/07	Presence/absence	3	VAP, SMW	2018–2254	50–70	1–5	No precipitation	Half moon
05/24/07	Reproductive survey	1	VAP, SMW	0450–0520	65	0	No precipitation	Half moon + 1 day
05/24/07 to 05/25/07	Presence/absence	3	VAP, SMW	2001–0046	55–70	0–8	No precipitation	Half moon + 1 day
06/13/07	Presence/absence	4	VAP, SMW	2012–2348	60–65	0–5	No precipitation	New moon - 2 days
06/14/07	Presence/absence	4	VAP, SMW	2120–2216	60–70	0–3	No precipitation	—
06/14/07	Reproductive survey	1	VAP, SMW	1949–2341	65–70	0–3	No precipitation	New moon - 1 day

Table D.1-9 (Continued)

Date	Type of Survey	Visit number	Personnel	Time	Temp. (°F)	Wind (mph)	Weather	Moon Phase
06/18/07 to 06/19/07	Presence/absence	4	VAP, SMW	2007–0007	65	0–5	No precipitation	New moon + 3 days
06/19/07	Presence/absence	4	VAP, SMW	2142–2323	65	0–1	No precipitation	Half moon - 3 days
06/20/07	Reproductive survey	2	VAP, SMW	0620–0600	65	0	No precipitation	Half moon - 2 days
07/11/07 to 07/12/07	Presence/absence	5	VAP, SMW	2028–0030	60–65	0–8	No precipitation	—
07/12/07 to 07/13/07	Presence/absence	5	VAP, SMW	2038–0309	60–65	0–10	No precipitation	—
07/19–07/20/07	Reproductive survey	2	VAP, SMW	—	65	0	No precipitation	New moon + 4 days
07/19–07/20/07	Reproductive survey	2	VAP, SMW	2015–2130	65	5	No precipitation	New moon + 4 days
07/24/07	Presence/absence	6	VAP, SMW	2042–2345	60–70	0–3	No precipitation	—
07/31/07	Presence/absence	6	VAP, SMW	2010–2243	65	0–3	No precipitation	—
08/1/07	Presence/absence	6	VAP, SMW	2004–1214	65–70	0–3	No precipitation	—
08/06–08/08/07	Reproductive survey	3	VAP, SMW	—	65	0	No precipitation	Half moon
08/06–08/08/07	Reproductive survey	3	VAP, SMW	—	65	0	No precipitation	Half moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	—	65	0	No precipitation	New moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	1915–2126	75	0	No precipitation	New moon + 2 days
08/13–08/15/07	Reproductive survey	4	VAP, SMW	1951–2055	70	0	No precipitation	New moon

Personnel key:
SMW: Scott M. Werner; VAP: Veronica A. Pedro.



SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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California Spotted Owl Survey Areas

FIGURE D.1-10

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Nesting Golden Eagle/White-Tailed Kite

Surveys for nesting golden eagles and white-tailed kites within the TMV Planning Area were conducted in conjunction with general nesting raptor surveys. The surveys used methods described by Fuller and Mosher (1987), including (1) early season driving and road surveys to identify nest locations and (2) follow-up driving, road, or pedestrian surveys to identify additional locations and provide nesting success information.

The surveys focused on oak woodland habitats (see Figure D.1-11 of this appendix). Observations were also recorded during other surveys (i.e., riparian bird, marsh bird, and burrowing owl surveys described above). Chaparral habitats were surveyed by road to supplement the oak woodland surveys.

The first survey was conducted early in the nesting period (see Table D.1-10). Surveys were conducted from March 6 through March 30, 2007. Surveys were conducted by Dudek biologists Anita Hayworth, Brock Ortega, Brianna Wood, F. Marcus Obregon, Keith Babcock, Paul Lemons, Rebekah Krebs, Stuart Fraser, Scott Boczkiewicz, Scott Duff, Traci Caddy, and Thomas Liddicoat. In general, most deciduous trees had not leafed out so nests, including golden eagle nests, were very visible during this period. A second set of surveys were conducted during June 4 through July 6, 2007 (see Table D.1-10).

Table D.1-10. Golden Eagle/White-Tailed Kite Survey Schedule and Conditions

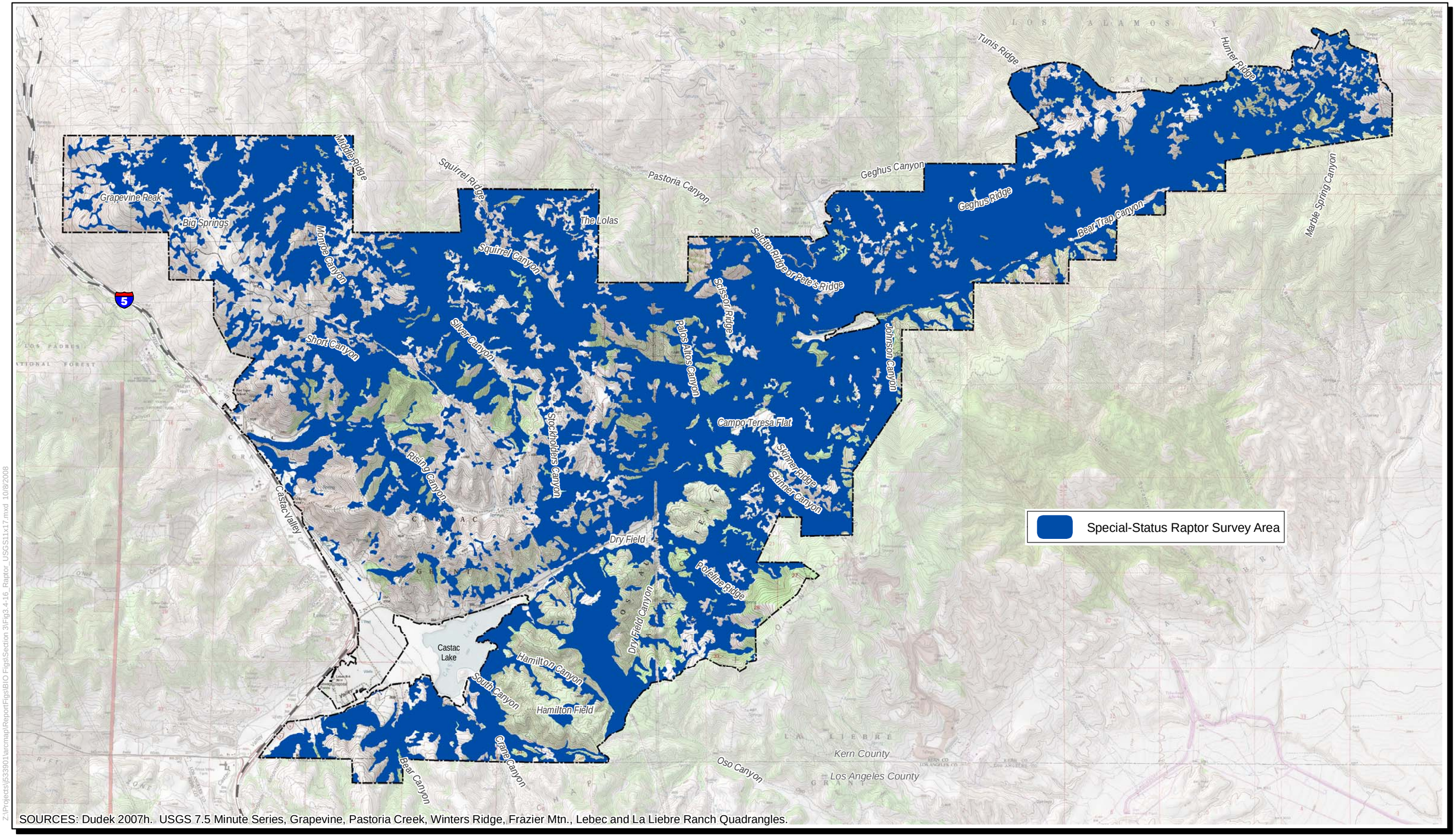
Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
Spring Survey					
03/06/07	SMB, SFF	0845–1700	48	0–3	0
03/07/07	SFF, SMB	0730–1815	46	Not recorded	0
03/08/07	SMB, SFF	0645–1800	58–60	3–5	0
03/12/07	TAC, RMK	0830–1800	58–72	0–4	0
03/13/07	AMH, BMW	0700–1720	42–65	0–3	0
03/13/07	TAC, RMK	0805–1800	55	0–3	0
03/14/07	RMK, TAC	0940–1745	55–63	0–4	0
03/15/07	RMK, TAC	0930–1600	55–62	1–3	0
03/16/07	RMK, TAC	0845–2245	56–58	5–15	0
03/19/07	BAO, RMK	0930–1730	55–65	0–3	0
03/19/07	KWB, KJM	0945–1815	50–60	10–15	0
03/22/07	RMK, TAC	1000–1700	45–68	0–3	0
03/23/07	RMK, TAC	1010–1300	48–70	0–3	0
03/26/07	TAC, RMK	0930–1515	48–68	0–5	0
03/28/07	RMK, TAC	1530–1800	40	5–20	50
03/29/07	SMD, PML	0800–1630	69	1–4	0
03/29/07	TAC, RMK	1430–1710	45–50	Not recorded	0
03/30/07	PML, SMD	0745–1230	48–65	0–5	0
Summer Survey					
06/04/07	TAC	0830–1715	5–80	Not recorded	0
06/05/07	TAC	0930–1700	65–70	5–15	0
06/06/07	TAC	0700–1700	55–65	5–15	0
06/06/07	RMK	0910–1700	65–72	5–20	95

Table D.1-10 (Continued)

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
06/07/07	TAC	0700–1700	70–75	1–3	0
06/07/07	RMK	0830–1630	73–78	2–8	0
06/12/07	RMK	1200–1925	76–85	3–5	0
06/13/07	RMK	1420–1620	82	5–15	0
06/14/07	RMK	0855–1750	73–84	2–10	0
06/15/07	RMK	0900–1200	75–85	0–5	0
06/21/07	RMK	0925–1630	78–83	5–20	0
06/26/07	RMK	0910–1130	77–82	3–5	0
06/27/07	RMK, TSL	0830–1430	77–81	2–10	0
06/28/07	RMK, TSL	0840–2045	70–78	3–25	0
06/29/07	RMK, TSL	0820–1120	74	3–5	0
07/05/07	RMK	0900–1900	79–85	2–5	0
07/06/07	RMK, FMO	0825–1915	78–93	0–20	0

Personnel key:

AMH: Anita Hayworth; BAO: Brock Ortega; BMW: Brianna Wood; FMO: F. Marcus Obregon; KJM: Kam Muri; KWB: Keith Babcock; PML: Paul Lemons; RMK: Rebekah Krebs; SFF: Stuart Fraser; SMB: Scott Boczkiewicz; SMD: Scott Duff; TAC: Traci Caddy; TSL: Thomas Liddicoat.



SOURCES: Dudek 2007h. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Special-Status Raptor Survey Areas

FIGURE D.1-11

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Teams of two biologists conducted the spring surveys, and single observers conducted the summer surveys. Stops were made at intervals ranging between 1,000 and 1,500 ft to scan the landscape for raptors or nest locations. Each stop lasted approximately 5 minutes and binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. The interval between stops varied with the size of the applicable habitat patch and the ability to scan the patch based on topography. All areas of woodland vegetation were visited or visually scanned with binoculars. Trees, fence lines, rock outcrops, and ground sites were searched for direct observation or evidence of raptor nesting, including direct observation of a nest or whitewash, feathers, and prey debris. The surveys were conducted during periods without persistent precipitation or fog and when wind speeds were less than 15 mph.

Northern Goshawk

The current survey protocol for the northern goshawk was developed by the USFS (2000). There is no USFWS survey protocol for this species. Although the TMV project site is not within the breeding range of this species, it was recorded for the site and the breeding range is located nearby (Squires and Reynolds 1997). Focused surveys for northern goshawk were conducted by Dudek biologists within suitable habitat on site, including canyon live oak forest typically characterized as montane riparian deciduous forest and mixed hardwood forest. There is very little conifer forest located on site. A total of 2,240 ac. of suitable northern goshawk habitat on site was surveyed (see Figure D.1-12).

Dawn acoustic surveys based on detection of courtship vocalizations and flight displays of goshawks at nest sites were conducted to survey for the species. Listening stations in close proximity to patches of suitable habitat were established, and 1.5-hour listening periods were conducted at dawn or within early morning hours during the early part of the breeding season. The USFS protocol indicates that two surveys are required and a third is recommended if the results of the first two surveys are negative. The surveyor arrived at each listening station 45 minutes before sunrise and remained for a total of 1.5 hours. Dudek biologists conducted the surveys from March through April 2007 in accordance with the USFS protocol (see Table D.1-11).

Table D.1-11. Northern Goshawk Survey Schedule and Conditions

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
03/14/07	TAC, RMK	0715–0940	55–63	0–4	0
03/15/07	TAC, RMK	0815–0930	55–62	1–3	0
03/16/07	TAC, RMK	0800–0842	56–58	5–15	0
03/19/07	BAO, RMK	0800–0930	55–65	0–3	0
03/20/07	BAO, RMK	0751–0940	41–55	NR	100
03/22/07	TAC, RMK	0745–1000	45–68	0–3	0
03/23/07	TAC, RMK	0850–1010	48–70	0–5	0
03/26/07	TAC, RMK	0850–0929	48–68	0–5	0

Table D.1-11 (Continued)

Date	Personnel	Time	Temp. (°F)	Wind (mph)	Cloud Cover (%)
03/27/07	TAC, RMK	0910–0920	35	NR	0
03/28/07	TAC, RMK	0826–0946	40	10–15	0
04/04/07	RMK, TSL	0742–1100	60	0–1	100
04/11/07	TAC	0745–0940	55–60	0–5	0
04/13/07	TAC	0750–0904	55–60	NR	0
04/17/07	TAC	0818–0907	50–55	NR	0
04/18/07	TAC	0900–0950	30–35	5–15	100
04/19/07	TAC	0819–1000	50–55	NR	0

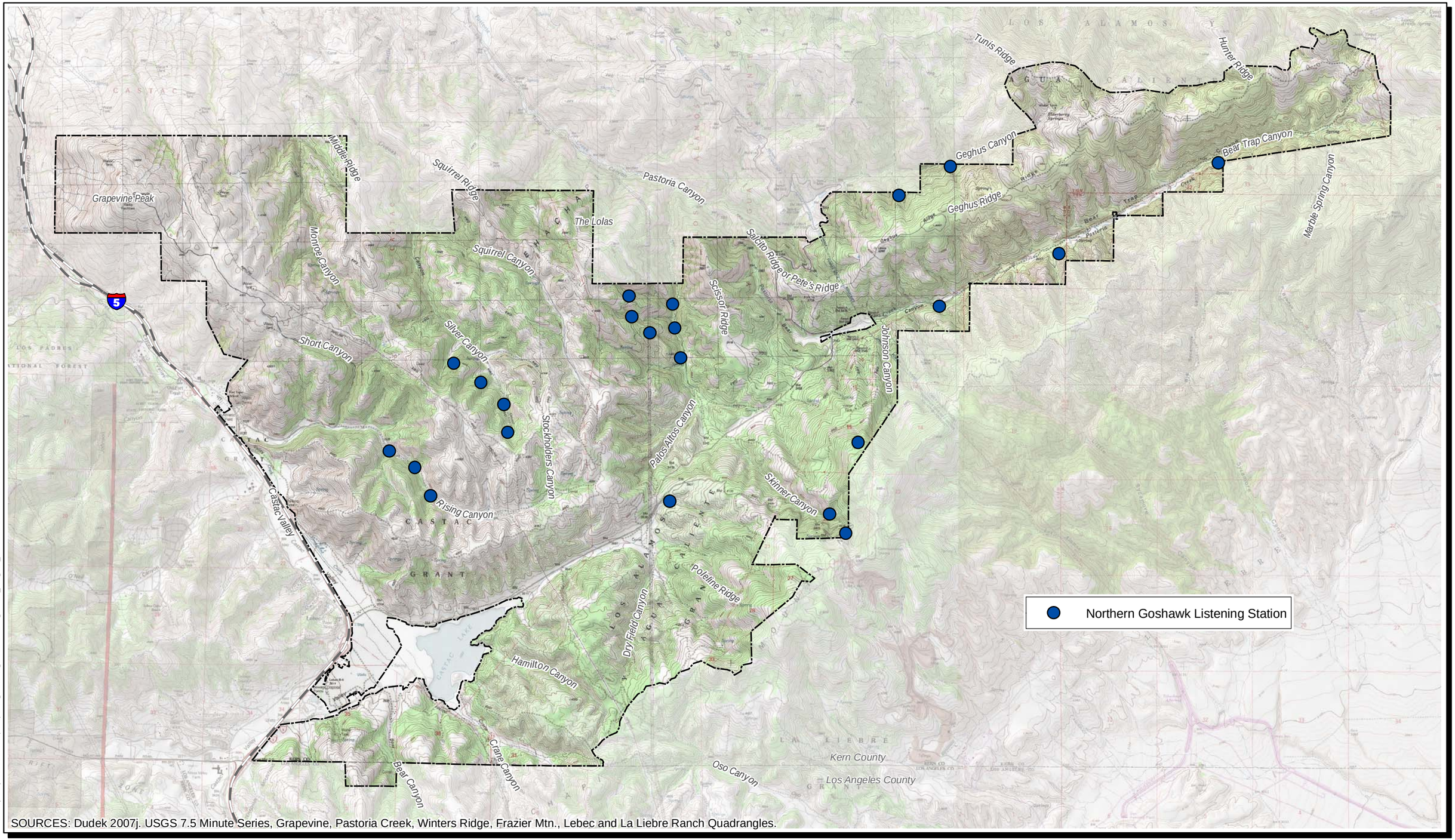
Personnel key:
BAO: Brock Ortega; TAC: Traci Caddy; RMK: Rebekah Krebs; TSL: Thomas Liddicoat.
NR = Not recorded

Purple Martin

There is no established protocol survey methodology for purple martin. Surveys for purple martin were primarily conducted in conjunction with surveys for golden eagle, white-tailed kite, and northern goshawk, as described above, because purple martins nest in similar habitats and would be observed during the period the nesting raptors surveys were conducted. Purple martins may also use riparian habitat, and the focused surveys conducted for riparian bird species described above also would have resulted in detections of purple martin if this species were nesting in on-site riparian habitats. Biologists were attentive to birds in flight and bird calls and surveys were on foot, so overall habitat coverage was very good. In addition, with the raptor surveys, the biologists were searching oak trees for nesting raptors, so nesting activity of other bird species was also noted. Purple martins also tend to nest in colonies or clusters, so several adults entering and emerging from nesting areas (e.g., snags, broken tree tops) are easily detected.

Wintering Birds

Suitable habitat and winter arrival information for wintering bird species was determined by reviewing published literature (Zeiner et al. 1990a; Garrett and Dunn 1981; Poole 2005). The areas determined to be suitable habitat for special-status wintering birds are identified in Figure D.1-13 of this appendix. Note that wintering bald eagle surveys are addressed separately above.



SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Northern Goshawk Listening Stations

FIGURE D.1-12

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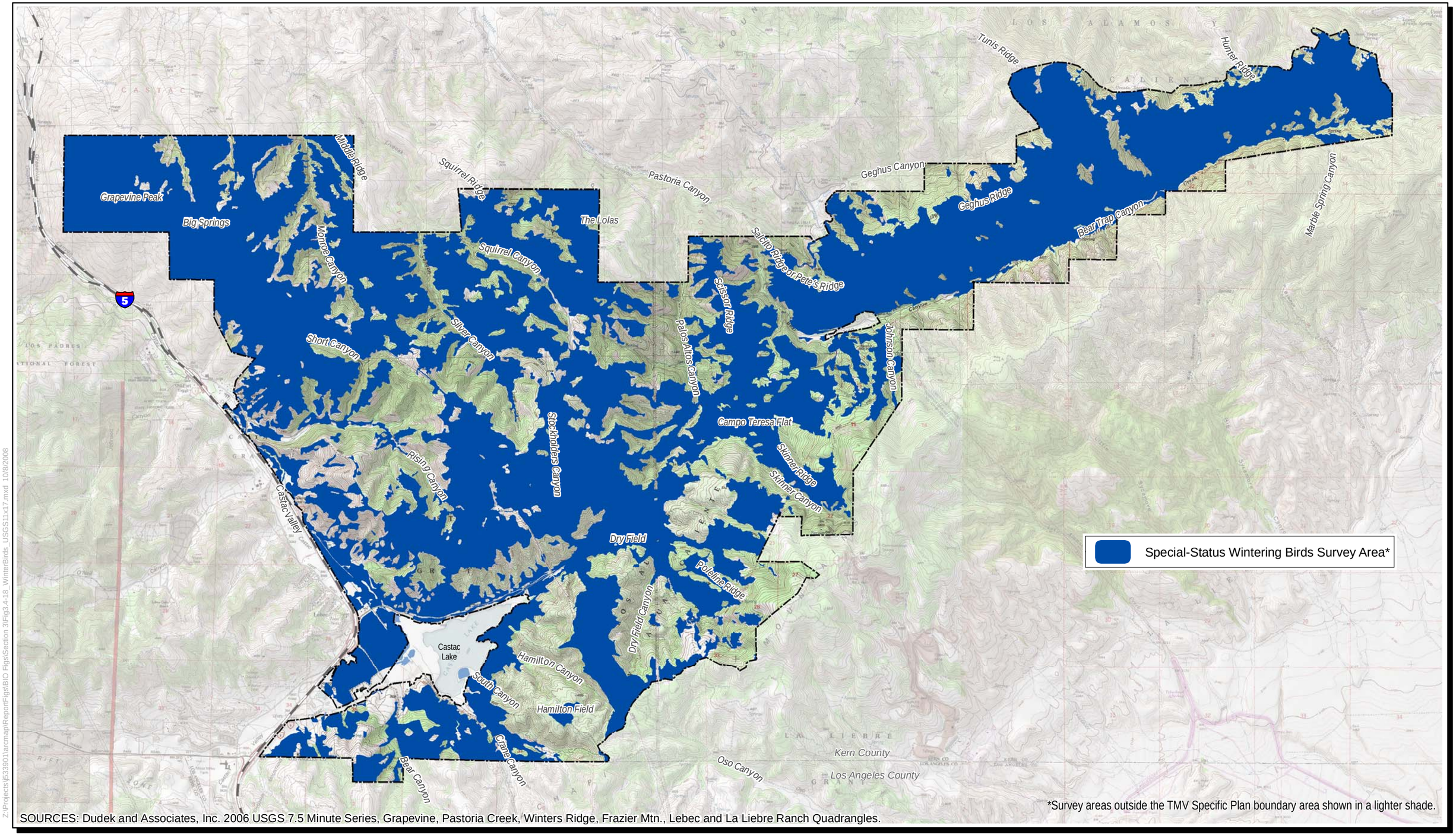

SOURCES: Dudek and Associates, Inc. 2006 USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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Special-Status Wintering Bird Survey Areas

FIGURE D.1-13

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Wintering bird surveys were conducted during November 14 to 16, 2006. Teams of two surveyors conducted road/driving surveys according to accepted methods (Ethier n.d.). All roads that pass through or near the suitable habitat for these species were traversed at approximately 10 mph and no faster than 25 mph. The route traveled was recorded, and at intervals of approximately 1,000 to 1,500 ft, the surveyors stopped to search for special-status species. The stops generally lasted for approximately 5 minutes, and binoculars (10 × 50 mm and 8 × 32 mm power) and spotting scopes (Nikon 15×–60× and Bushnell 20×–60× magnification) were used. The survey schedule and conditions are summarized in Table D.1-12.

Table D.1-12. Wintering Bird Survey Schedule

Date	Personnel	Time	Air Temp. (°F)	Wind (mph)	Cloud Cover (%)
11/14/06	RMK, JDP	1000–1517	57–59	2–5	0
11/14/06	KJM, PML	1000–1700	51–55	5–10	10–100
11/14/06	BAO, SLT	1015–1700	51–55	3–5	100
11/15/06	BAO, SLT	0730–1300	50–65	0–1	0
11/15/06	RMK, JDP	0730–1700	57–59	1–5	2–5
11/15/06	KJM, SFF	0745–1700	57–58	2–5	0
11/15/06	TSL, PML	0800–1715	58–62	5–10	2
11/16/06	TSL, PML	0745–1200	58–73	0–2	5
11/16/06	RMK, JDP	0815–1710	53–58	3–4	0
11/16/06	KJM, SFF	0830–1200	58–73	1–3	0–5

Personnel key:
RMK: Rebekah Krebs; JDP: Jeff Priest; KJM: Kam Muri; PML: Paul Lemons; BAO: Brock Ortega; SLT: Sara Townsend; SFF: Stuart Fraser; TSL: Thomas Liddicoat.

1.6 SPECIAL-STATUS MAMMALS

1.6.1 RINGTAIL

Survey Methods

There is no established protocol for conducting ringtail (*Bassariscus astutus*) surveys. A survey protocol was developed based on a review of applicable survey methods and literature related to the habitat preferences, behavior, survey methods, and trapping methods, including Zielinski et al. (2000, 2005), Harris and Ogan (1997), Jaeger (1961), Hawbaker (1974), Halfpenny (1986), Jameson and Peeters (1988), Chapman and Feldhamer (1982), Belluomini (1980), Trapp (1972), Taylor (1954), Howard (1957), Kavanau (1971), Lindstedt et al. (1986), Campbell (2004), and Orloff (1980).

This review indicated that baited analog cameras and sooted plates located within suitable habitat was the most effective method for detecting the presence of the ringtail within a landscape. Camera stations were placed along perennial or longer-lasting intermittent streams, other permanent water sources (e.g., cattle guzzlers, springs), and Castac Lake, at approximate 0.25 km intervals (820 ft) and at the distal ends of linear water courses and adjacent to springs or other point source water sources throughout the TMV Planning Area (Figure D.1-14 of this

appendix). Where multiple point sources (e.g., cattle guzzlers or springs) occurred near each other (not more than 0.25 km from each other), a single camera station was placed near the center of these locations. Camera stations included one digital Cuddeback camera with a 512 Mb CompactFlash card and an opposing bait station. Camera stations were set between 3 and 5 ft off the ground and between 10 and 20 ft from the lure station. The field of view of the camera was situated such that the ground and bait station were both visible. In most instances, both the camera and the bait stations were affixed to the trunks of trees. Where it was not possible to set bait stations or cameras on trees, they were affixed to a survey stake. Cameras were affixed to the tree or stake by 4 in. stainless steel screws. Bait stations were affixed to trees or stakes by inserting 3 in. stainless steel screws through metal framing nail plates. Each station was baited with a combination of raw chicken thighs, whole sardines, and the commercial lure, Gusto (Minnesota Trapline Products, Pennock, Minnesota). Bait was placed within wire mesh baskets that allowed wildlife to eventually remove the bait, but delayed removal long enough for the animal to be captured on camera. Camera sensors were generally directed away from the direction of solar travel to minimize glare and inadvertent triggering of the camera. Bait and camera batteries were reapplied and replaced on the first and eighth day of the camera trapping session. A 3-minute delay was set between triggering photos to preserve battery life and memory space. Cameras were maintained in place for a period of 16 consecutive days.

Ringtail Camera Station Location (with camera number)*

*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: Dudek 2007j. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Ringtail Camera Station Locations

FIGURE D.1-14

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The cameras were deployed in 14 sessions at approximately 220 camera stations throughout the TMV Planning Area. Approximately 18 camera stations were used for each of the 14 camera sessions. Every 16 days over a 9-month period, the 18 cameras were rotated from the current session locations to the next location. The survey began in February 2007 and was completed in November 2007 (see Table D.1-13).

Table D.1-13. Ringtail Survey Session Schedule

Session Number	Date	Event	Personnel
1	03/12/07	Set up camera	BAO
1	03/20/07	Battery check/download	TAC
1	03/28/07	Remove camera	TAC
2	03/29/07	Set up camera	TAC
2	04/06/07	Battery check/download	PCS
2	04/14/07	Remove camera	TAC
3	04/15/07	Set up camera	TAC
3	04/23/07	Battery check/download	PML
3	05/01/07	Remove camera	PML
4	05/02/07	Set up camera	PML
4	05/10/07	Battery check/download	SMD
4	05/18/07	Remove camera	SMD
5	05/19/07	Set up camera	SMD
5	05/27/07	Battery check/download	RMK
5	06/04/07	Remove camera	RMK
6	06/05/07	Set up camera	RMK
6	06/13/07	Battery check/download	TSL
6	06/21/07	Remove camera	TSL
7	06/22/07	Set up camera	TSL
7	06/30/07	Battery check/download	TAC
7	070/8/07	Remove camera	TAC
8	07/09/07	Set up camera	TAC
8	07/17/07	Battery check/download	TSL
8	07/25/07	Remove camera	TSL
9	07/26/07	Set up camera	TSL
9	08/03/07	Battery check/download	TSL
9	08/11/07	Remove camera	TSL
10	08/12/07	Set up camera	TSL
10	08/20/07	Battery check/download	JDP
10	08/28/07	Remove camera	JDP
11	08/29/07	Set up camera	JDP
11	09/06/07	Battery check/download	TLW
11	09/14/07	Remove camera	TLW
12	09/15/07	Set up camera	TLW
12	09/23/07	Battery check/download	PML
12	10/01/07	Remove camera	PML
13	10/02/07	Set up camera	PML
13	10/10/07	Battery check/download	PCS
13	10/18/07	Remove camera	PCS
14	10/19/07	Set up camera	PCS
14	10/27/07	Battery check/download	TAC
14	11/03/07	Remove camera	TAC

Personnel key:
BAO: Brock Ortega; JDP: Jeff Priest; PCS: Patricia Schuyler; PML: Paul Lemons; RMK: Rebekah Krebs; SMD: Scott Duff; TSL: Thomas Liddicoat; TAC: Traci Caddy; TLW: Tricia Wotipka.

1.6.2 SPECIAL-STATUS SMALL MAMMALS

Focused small mammal trapping was conducted by Compliance Biology in 2003 over an approximately 4,500 ac. portion of the TMV Planning Area (Compliance Biology 2003) and at additional locations in 2007 (J&S 2008a). The surveys were conducted within suitable habitats for the species (e.g., chaparral and sagebrush habitats at lower elevations and open pine forests at higher elevations for Tehachapi pocket mouse).

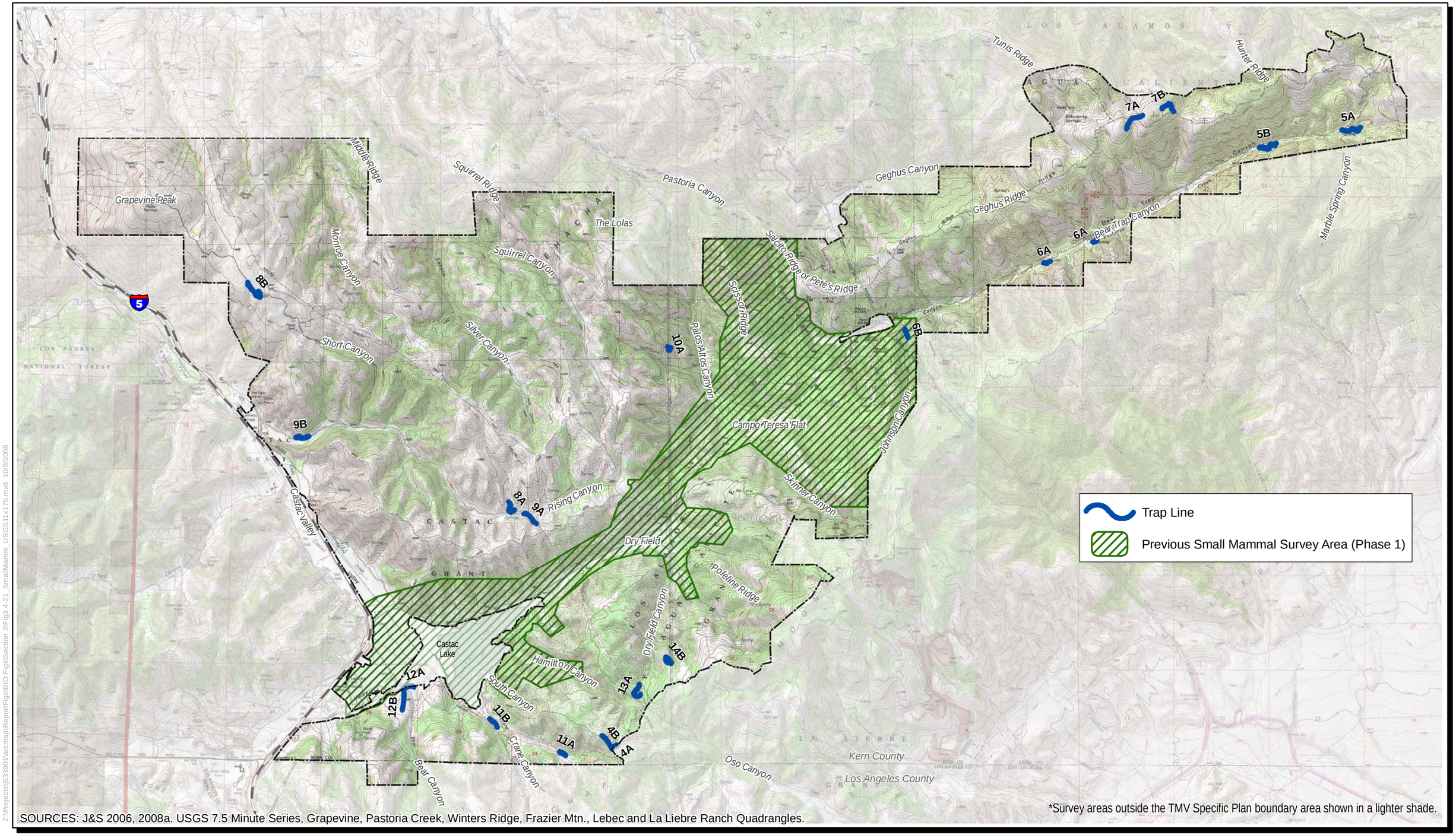
Survey Methods

Prior to conducting field studies, relevant literature resources were reviewed, including the results of prior small mammal surveys conducted within the TMV Planning Area.

Following the literature reviews, a reconnaissance-level survey to select trapline transects was completed on May 16 and May 17, 2007. Trapline locations were selected to sample the representative vegetation communities in the survey area. The target species generally inhabit more xeric habitats and a majority of the traplines were located in the drier southern portion of the study area where such habitats occur (see Figure D.1-15 of this appendix).

Small Mammal Survey Methodology

Table D.1-14 summarizes the dates and conditions when small mammal surveys were conducted during July and August 2007. Figure D.1-15 shows special-status small mammal survey locations. Fifty 9 in. long aluminum folding Sherman traps were placed along each trapline at approximately 10 to 15 m intervals. The traps were set and placed where small rodent captures were judged to be most probable on the basis of burrows, droppings, trails, and other signs of occupancy. Where rodent sign was not apparent, traps were placed near the base of shrubs or near downed woody material. The location of each trap was recorded using a Garmin eTrex handheld GPS unit (accurate to approximately 3 m). The GPS data were downloaded and imported into GIS. A mixture of birdseed and dried ferret food was used as bait. A small handful of the bait was placed inside the trap with a few seeds trailing out from the mouth of the trap, usually toward a game trail, burrow, or open area. All traps were modified with the addition of a binder clip on the lip of the trap body to prevent the doors from closing on the animals' tails. Each trapline was run for four consecutive nights. The traps were set and baited in late afternoon, left open all night, and checked and closed at dawn. The time and weather conditions were noted at the beginning and end of each trapline check. The sex and reproductive condition of each animal was recorded (i.e., testes scrotal or not scrotal, female reproductive or non-reproductive). Representative digital photos were taken of all species captured on each trapline. Once the data were recorded onto data sheets, each animal was released where it had been captured. Released animals were observed until they moved to the safety of a burrow or clump of vegetation. Table D.1-15 lists small mammal survey biologists.



*Survey areas outside the TMV Specific Plan boundary area shown in a lighter shade.

SOURCES: J&S 2006, 2008a. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Special-Status Small Mammal Survey Locations

FIGURE D.1-15

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Table D.1-14. Locations, Survey Date and Time, and Weather Conditions for Small Mammal Surveys

Trap Line	Date and Time	Weather Conditions
7A	06/12/07, 0415–0441	53°F, winds 2–7 mph, clear skies
7B	06/12/07, 0450–0528	53°F, calm, clear skies
5A	06/12/07, 0553–0631	62°F, winds 1–2 mph, clear skies
5B	06/12/07, 0645–0658	55°F, winds 0–2 mph, clear skies
7A	06/13/07, 0415–0436	60°F, winds 4–7mph, clear skies
7B	06/13/07, 0452–0513	60°F, winds 1–4 mph, clear skies
5A	06/13/07, 0538–0610	58.5°F, winds 1–2 mph, clear skies
5B	06/13/07, 0623–0640	58°F, winds 1–3 mph, clear skies
7A	06/14/07, 0410–0440	63°F, winds 4–10 mph, clear skies
7B	06/14/07, 0445–0515	66°F, winds 1–4 mph, clear skies
5A	06/14/07, 0538–0606	57°F, winds 0–2 mph, clear skies
5B	06/14/07, 0622–0635	58°F, calm, clear skies
7A	06/15/07, 0410–0450	66°F, winds 5–10 mph, clear skies
7B	06/15/07, 0505–0540	65°F, winds 1–5 mph, clear skies
5A	06/15/07, 0604–0643	60.5°F, calm, clear skies
5B	06/15/07, 0659–0722	62°F, calm, clear skies
1A	6/26/07	63 F, winds 10-14 mph, clear skies
1B	6/26/07	63 F, winds 10-14 mph, clear skies
2A	6/26/07	62.5 F, winds 5-9 mph, clear skies
2B	6/26/07	63 F, winds 3-12 mph, clear skies
1A	6/27/07	61 F, winds 7-14 mph, clear skies
1B	6/27/07	61 F, winds 5-14 mph, clear skies
2A	6/27/07	64 F, winds 1-8 mph, clear skies
2B	6/27/07	61 F, winds 5-14 mph, clear skies
1A	6/28/07	57 F, winds 10-25 mph, clear skies
1B	6/28/07	57 F, winds 15-25 mph, clear skies
2A	6/28/07	60 F, winds 5-15 mph, clear skies
2B	6/28/07	58 F, winds 10-20 mph, clear skies
1A	6/29/07	56 F, winds 10-25 mph, clear skies
1B	6/29/07	56 F, winds 8-15 mph, clear skies
2A	6/29/07	59 F, winds 8-12 mph, clear skies
2B	6/29/07	55 F, winds 5-17 mph, clear skies
10A	07/10/07, 0400–0438	71°F, winds 1 mph, cloudy
6A	07/10/07, 0515–0540	62°F, calm, partly cloudy
6B	07/10/07, 0550–0615	67°F, calm, partly cloudy
10A	07/11/07, 0352–0428	67°F, winds 1 mph, clear skies
6A	07/11/07, 0510–0538	58°F, winds 2 mph, clear skies
6B	07/11/07, 0548–0620	63°F, calm, clear skies
10A	07/12/07, 0341–0418	66°F, winds 1.5 mph, clear skies
6A	07/12/07, 0452–0522	54°F, winds 2 mph, clear skies
6B	07/12/07, 0533–0558	51°F, winds 1.5 mph, clear skies
10A	07/13/07, 0350–0449	60°F, winds 1.5 mph, clear skies

Table D.1-14 (Continued)

Trap Line	Date and Time	Weather Conditions
6A	07/13/07, 0521–0612	54°F, winds 1 mph, clear skies
6B	07/13/07, 0622–0702	55°F, winds 2 mph, clear skies
3A	07/17/07	58 F, winds 6-7 mph, clear skies
3B	07/17/07	59 F, winds 6 mph, clear skies
4A	07/17/07, 0543–0607	59°F, winds 1 mph, clear skies
4B	07/17/07, 0608–0630	61°F, winds 0.5 mph, clear skies
3A	07/18/07	60 F, winds 5-8 mph, clear skies
3B	07/18/07	60 F, winds 3-5 mph, clear skies
4A	07/18/07, 0529–0547	53°F, winds 1.5 mph, clear skies
4B	07/18/07, 0550–0615	57°F, winds 0.5 mph, clear skies
3A	07/19/07	58 F, winds 5 mph, cloudy
3B	07/19/07	58.5 F, winds 5 mph, cloudy
4A	07/19/07, 0540–0600	54°F, winds 1.5 mph, cloudy
4B	07/19/07, 0516–0540	55°F, winds 1.5 mph, cloudy
3A	07/20/07	61 F, winds 2-5 mph, clear skies
3B	07/20/07	57 F, winds 2-5 mph, clear skies
4A	07/20/07, 0634–0702	56.5°F, winds 0.5 mph, clear skies
4B	07/20/07, 0550–0630	54°F, winds 3–6 mph, clear skies
11A	07/24/07, 0328–0352	67°F, winds 2.5 mph, clear skies
11B	07/24/07, 0400–0418	67°F, winds 2 mph, clear skies
12A	07/24/07, 0427–0508	66°F, winds 0.5 mph, clear skies
12B	07/24/07, 0513–0539	66°F, winds 0.5 mph, clear skies
11A	07/25/07, 0345–0359	71°F, winds 1 mph, clear skies
11B	07/25/07, 0404–0425	64°F, calm, clear skies
12A	07/25/07, 0434–0511	60°F, winds 1 mph, clear skies
12B	07/25/07, 0512–0534	60°F, winds 0.5 mph, clear skies
11A	07/26/07, 0340–0359	59°F, calm, clear skies
11B	07/26/07, 0411–0437	55°F, winds 0.8 mph, clear skies
12A	07/26/07, 0448–0549	54°F, winds 0.3 mph, clear skies
12B	07/26/07, 0550–0615	54°F, calm, clear skies
11A	07/27/07, 0346–0416	61.5°F, winds 1–2.8 mph, clear skies
11B	07/27/07, 0432–0508	58°F, calm, clear skies
12A	07/27/07, 0521–0612	61°F, calm, clear skies
12B	07/27/07, 0615–0656	61°F, calm, clear skies
8A	07/31/07, 0413–0443	66°F , winds 1.5 mph, clear skies
8B	07/31/07, 0502–0537	67°F, winds 0.6 mph, clear skies
9A	07/31/07, 0338–0401	66°F, winds 0.8 mph, clear skies
9B	07/31/07, 0600–0630	64°F, winds 0.8 mph, clear skies
8A	08/01/07, 0420–0450	58°F, winds 3–4 mph, clear skies
8B	08/01/07, 0509–0530	66°F, winds 2–3 mph, clear skies
9A	08/01/07, 0340–0405	59°F, winds 0.9 mph, clear skies
9B	08/01/07, 0546–0632	63°F, wind 0.9–1.6 mph, clear skies
8A	08/02/07, 0420–0450	58°F, winds 1–4 mph, clear skies
8B	08/02/07, 0512–0527	61.3°F, winds 0–1 mph, clear skies

Table D.1-14 (Continued)

Trap Line	Date and Time	Weather Conditions
9A	08/02/07, 0343–0415	59.7°F, winds 0–1 mph, clear skies
9B	08/02/07, 0544–0618	65°F, calm, clear skies
8A	08/03/07, 0440–0518	59°F, winds 1–3 mph, clear skies
8B	08/03/07, 0540–0558	64°F, winds 0–1 mph, clear skies
9A	08/03/07, 0344–0430	63°F, winds 1–3 mph, clear skies
9B	08/03/07, 0612–0718	67°F, winds 1–2 mph, clear skies
13A	08/07/07, 0639–0707	52°F, winds 0–2 mph, clear skies
13B	08/07/07	52.5 F, winds 5-15 mph, clear skies
14A	08/07/07	51.7 F, winds 4-8 mph, clear skies
14B	08/07/07, 0600–0613	52°F, winds 1–3 mph, clear skies
13A	08/08/07, 0710–0727	55.8°F, winds 1–3 mph, clear skies
13B	08/08/07	55 F, winds 9-16 mph, clear skies
14A	08/08/07	53.8 F, winds 6-10 mph, clear skies
14B	08/08/07, 0624–0701	55.9°F, winds 1–2 mph, clear skies
13A	08/09/07, 0655–0714	59.5°F, winds 0–1 mph, clear skies
13B	08/09/07	59.5 F, winds 1-5 mph, clear skies
14A	08/09/07	57.5 F, winds 3-5 mph, clear skies
14B	08/09/07, 0609–0648	57.2°F, winds 0–2 mph, clear skies
13A	08/10/07, 0647–0707	60°F, calm, clear skies
13B	08/10/07	63.7 F, winds 9-12 mph, clear skies
14A	08/10/07	62 F, winds 5-7 mph, clear skies
14B	08/10/07, 0548–0636	63°F, winds 1–3 mph, clear skies

Table D.1-15. Small Mammal Survey Biologists

Biologist
Will Kohn
Phil Richards
Erin Hitchcock
Kara Martinusen

1.7 SURVEY ANALYSIS FACTORS

Diurnal and Nocturnal Survey Factors. The majority of the surveys were conducted during the daytime to maximize the detection of most animals. Birds represent the largest component of the vertebrate fauna, and, because most birds are active in the daytime, diurnal surveys maximize the number of observations of this portion of the fauna. Daytime surveys may result in fewer observations of animals that are more active at night. To address this potential factor, nocturnal focused surveys were conducted for nocturnally active special-status species that potentially occur on site, including ringtail and Tehachapi pocket mouse.

Reptiles and Amphibian Survey Factors. Reptiles and amphibians are secretive in their habits and are difficult to observe using standard meandering transects. Trapping was not considered to be effective for the Covered Species reptiles or amphibians. To account for survey difficulties, the Covered Species reptiles that could occur, based on pertinent distribution and habitat preference literature and recorded observations, are assumed to be present on the Covered Lands within modeled suitable habitat.

Roadway Access and Special-Status Breeding Raptor Survey Factors. Due to weather-related dirt roadway access limitations, the special-status breeding raptor surveys did not begin until March. Some of the target species may have begun nesting at an earlier time. Most trees in survey areas had not leafed out when raptor surveys began, and raptor nests were very visible to the surveyors. The second combined road and walking survey focused on areas that could not be covered thoroughly during the first pass, did not have roads within adequate detection distance, or for which an observation was made but no nest was found. The two surveys collectively provide an adequate assessment of special-status breeding raptors within the TMV Planning Area.

2.0 SPECIAL-STATUS PLANTS

Special-status plant surveys were conducted to determine the presence or absence of plant species that are considered endangered, rare, or threatened under California Environmental Quality Act (CEQA) Guideline 15380 (14 CCR 15000 et seq.). Endangered and threatened plant species are recognized in the context of CESA and FESA. Endangered, rare, or threatened plants, as defined in CEQA Guideline 15380(b) (14 CCR 15000 et seq.), are referred to as "special-status plant species" in this report. Special-status plants, in the context of CEQA (California Public Resources Code, Section 21000 et seq.), are defined and described in terms of local, state, and Federal plans, regulations, or policies.

CDFG recognizes that plants on Lists 1A, 1B, and 2, as well as some on List 3, of the *California Native Plant Society* (*CNPS*) *Inventory of Rare and Endangered Plants in California* (CNPS 2008), may meet the criteria for listing as threatened or endangered and should be considered as special-status plants under CEQA (CDFG 2008c).

The primary goal of the special-status plant surveys was to determine the presence or absence of Federally or state-listed species and the California Rare Plant Rank (CRPR; formerly the "CNPS List") 1A, 1B, 2, and 3 species. The presence of all CRPR 4 species was documented even if the species were not considered locally rare. A previously undescribed species, Tehachapi buckwheat (*Eriogonum callistum*), was included during the focused special-status plant surveys because this species is known only from a few scattered locations in the Tehachapi Mountains in Kern County (Reveal 2006).

The following sections describe the methods used to survey for special-status plant species within the TMV Planning Area.

2.1 PREVIOUS ON-SITE BOTANICAL SURVEYS

Vollmar Consulting conducted floristic surveys in 2003 and 2004. The surveys covered approximately 4,500 ac. within the TMV Planning Area. J&S conducted floristic surveys in 2005 and 2006 that included the previously surveyed areas and additional portions of the TMV Planning Area. Data collected prior to 2007 were used to prepare a target list of special-status plant species that could potentially occur within the TMV Planning Area for comprehensive, sitewide surveys conducted in 2007. The data collected from these earlier surveys were also mapped on field maps used during the 2007 survey, as described below.

2.2 LITERATURE REVIEW

Dudek identified special-status botanical resources present or potentially present within the TMV Planning Area through a literature review using print and digital sources and through consultation with botanists at J&S, Dudek, and staff at TRC.

Dudek botanists also reviewed the species lists compiled by J&S and Vollmar Consulting (Vollmar Consulting 2004; J&S 2006) during a 4-year period from 2003 to 2006 to develop the project-specific list of special-status plants to address during surveys and evaluate in this technical report. Dudek also mapped and evaluated special-status plant species from the CNDDB (CDFG 2008b) and their potential to occur on the TMV Planning Area.

Dudek reviewed the online version of the *CNPS Inventory of Rare and Endangered Plants* (CNPS 2008) and conducted a CNPS nine-quad search. Dudek conducted the search for the six USGS 7.5-minute quadrangle (quad) maps in which TMV is located: Lebec, Pastoria Creek, Frazier Mountain, Grapevine, Winters Ridge, and La Liebre Ranch. Each of these quads was used to run the CNPS nine-quad search and results were combined into one comprehensive list. The nine-quad search provides special-status plant species, as defined by CNPS, which are known to occur in the focus quad and the eight quads surrounding the focus quad. Only CRPR 1, 2, and 3 plant species are included in this nine-quad search. Dudek then conducted a search for CRPR 4 species listed for Kern County that may occur within the TMV Planning Area, based on habitat, soil, and elevation preferences.

Dudek also reviewed *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999), which lists special-status species occurring in the Liebre Mountains, located approximately 25 mi. south of the TMV Planning Area. The plant species listed in this flora (Boyd 1999) were addressed during surveys and are evaluated in this technical report. Dudek determined the species' potential to occur within the TMV Planning Area, based on their known distribution, habitat preference, and/or elevation range.

This research resulted in a project-specific list of special-status plants that could occur within the TMV Planning Area. The list was used to conduct the special-status plant surveys. All field biologists had a copy of the potential occurrence list of target species during surveys in 2007. Three additional species were added to the CNPS inventory after surveys began.

Dudek determined the potential for an individual species to occur within the TMV Planning Area based on a review of habitat, soils, and elevation preferences, as well as geographic distribution of the species. The *Soil Survey of Kern County, California, Southeastern Part* (Valverde and Hill 1981) was reviewed to determine the location of soils that indicate potential habitat for some special-status plant species, particularly those that are edaphically restricted. Elevation ranges within the TMV Planning Area were calculated from the DTM created in 2006 (Intermap Technologies 2005) and were compared to known elevation ranges for the potentially occurring special-status plant species.

A species was not expected to occur when there was a convergence of the aforementioned factors indicating that the species would not occur on site. For example, if a plant occurs at elevations significantly below 2,600 ft above mean sea level (amsl) or significantly above 5,400 ft amsl, which is the elevation range of the TMV Planning Area, and suitable habitat for the species is not

present within the TMV Planning Area, the species was considered unlikely to occur on the site. Also, species were not expected to occur when the known distribution is clearly outside the TMV Planning Area's geographic range, such as Mexican flannelbush (*Fremontodendron mexicanum*), which is restricted to a few sites in San Diego County and Baja California.

2.3 SURVEY PREPARATION

Because the special-status plant surveys involved a concerted effort on the part of a large team of botanists over the course of several months, Dudek created detailed documentation on the survey protocol for staff to use during surveys. Information in the protocol packet included:

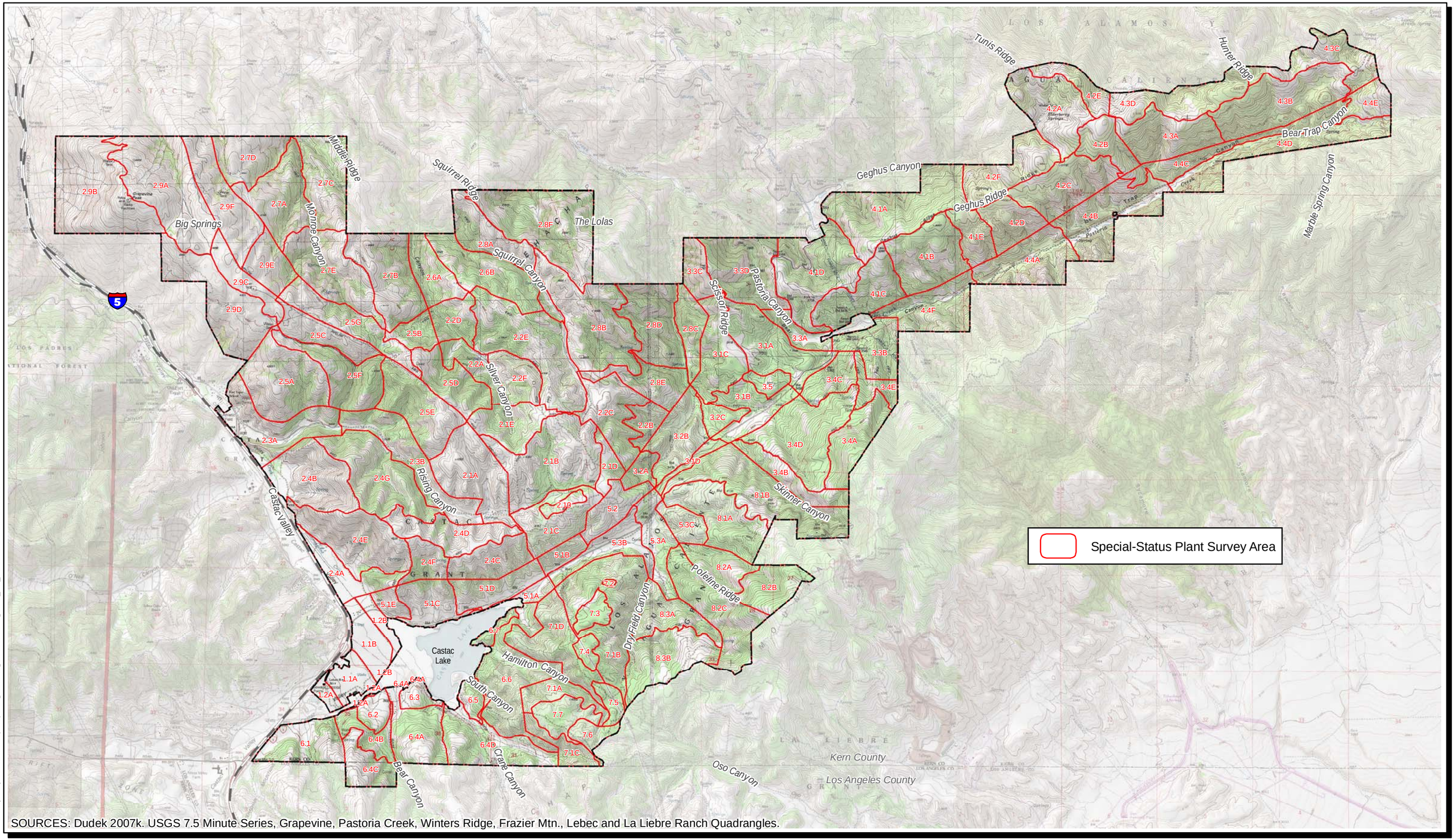
- Special-status species information (e.g., photos, Jepson pages)
- Survey protocols (e.g., GPS procedures, population sampling methods)
- Species lists from prior surveys
- Maps showing soils, geology, slopes, roads, fire history, and potential suitable habitat for potentially occurring plant species to provide botanists with appropriate environmental information that could affect species abundance and distribution (see below).

To ensure consistency among surveying botanists, Dudek organized and conducted an orientation meeting for botanists conducting special-status plant surveys. Botanists from J&S, Harmsworth and Associates, FL*x*, the University of California Riverside Herbarium, and Dudek formed the botanical team. Generally, teams were divided into groups of two, with one lead botanist and one support botanist working together.

Each group was assigned survey areas to cover. Survey areas were based on the phasing plan boundaries developed for the TMV project in early 2007. Some of these phasing plan boundaries were more than 1,000 ac. To provide a manageable tracking system and ensure adequate coverage for all areas within the TMV Planning Area, larger phasing areas were further divided, generating survey areas of between 5 and 530 ac. in size; the majority of the survey areas were between 100 and 200 ac. A total of 132 survey areas were created to efficiently manage botanists and data. Figure D.1-16 of this appendix shows the survey areas used for the special-status plant surveys in 2007.

Dudek reviewed Twisselmann (1967), Boyd (1999), Hickman (1996), CDFG (2008b), CNPS (2008), and relevant scientific articles about the special-status plant species potentially occurring in the TMV Planning Area to better understand their vegetation, soil, microhabitat (e.g., slope and aspect), and elevation range requirements. Dudek used this information to determine which species were expected to occur on site and to map the location of the most suitable habitat for species that were expected to occur on site and that are CRPR 1 or 2 species.

Field biologists used these data during surveys in much the same way as aerial photos or other map products to determine where there is the highest probability of encountering these CRPR 1 and 2 special-status plants. Comprehensive special-status plant surveys were conducted across the entire TMV Planning Area and were not limited by the habitat suitability maps to ensure that the potential occurrence of CRPR 3 and 4 species was adequately covered during surveys.



SOURCES: Dudek 2007k. USGS 7.5 Minute Series, Grapevine, Pastoria Creek, Winters Ridge, Frazier Mtn., Lebec and La Liebre Ranch Quadrangles.

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0 5,000 Feet

DUDEK

Tehachapi Upland MSHCP

Special-Status Plant Survey Areas

FIGURE D.1-16

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2.4 REFERENCE POPULATION CHECKS

Plant species bloom at slightly different times each year depending on temperature, rainfall patterns, elevation, and other environmental factors. Reference population checks involve locating known populations of special-status plant species during a time frame when they are known to be blooming or exhibit other phenological characteristics that allow for species identification. Observations of reference populations during peak phenology provide assurance that these species would be identifiable if they were within the TMV Planning Area.

In early April 2006, Dudek staff conducted reference population checks for all potential Federally or state-listed species and many of the CRPR 1B species that could occur on the site and that were at peak phenology. Reference populations for other species were also noted during this analysis. Data gathered from the reference population checks were used to determine the appropriate time to begin field surveys.

2.5 FIELD SURVEY SCHEDULE

The botanical team conducted two passes of field surveys on the TMV Planning Area, plus a focused species survey in July and September for San Bernardino aster (Symphyotrichum defoliatum) and Greata's aster (S. [Aster] greatae), which are late-blooming species in the aster family (Asteraceae). The target plant species were grouped based on their blooming period to determine which groups of plants could be observed at the same time. This analysis concluded that all target species could be surveyed from mid-April through May (Pass 1) and in June (Pass 2). The asters bloom from July to November; therefore, Dudek surveyed for these species in mid-July and mid-September within the suitable habitat for San Bernardino aster and Greata's aster. Table D.1-16 lists survey dates, personnel, times, and weather conditions. The botanical survey team spent a total of 748 person-days (approximately 7,476 hours) conducting focused surveys for special-status plants.

Table D.1-16. Special-Status Plant Survey Schedule

Date	Personnel	Specific Task	Hours	Weather
04/09/07	Dudek: MSE, MLB, MNM	Reference population checks	0830–1800	Sunny, strong winds. 10% cloud cover.
04/10/07	Dudek: MSE, MLB	Reference population checks	0815–1615	Sunny, 60°F to 65°F. Light winds.
04/16/07	Dudek: MSE, MNM	Reference population checks	0745–1200	Sunny, clear skies, 60°F–75°F. 0–3 mph winds.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
04/16/07	Dudek: MSE, MLB, MNM, PCS, CJF, JSH, DWS Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, JPG, MML	Reference population checks, Pass 1	0745–1800	Sunny, clear skies, 60°F–75°F. 0–3 mph winds.
04/17/07	Dudek: MLB, DWS, JSH, PCS, CJF Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, JPG, MML, BDH	Pass 1	0730–1800	Sunny, 60°F–70°F. Winds 10–15 mph.
04/18/07	Dudek: MLB, DWS, JSH, PCS, CJF Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP, DLK, JGD	Pass 1	0730–1630	Cold, 20°F–40°F. Windy, 10–40 mph.
04/19/07	Dudek: DWS, JSH, MLB Subs: KAB, RAR, MJW, KWD, BDS, CJS, NDG, AKP	Pass 1	0930–1700	Cool, mostly sunny. 50°F to 70°F. Overcast and windy at end of day.
04/22/07	Subs: BDH, FEC	Pass 1	1015–1600	Rainy, cold. Medium visibility.
04/23/07	Dudek: SMB, MLB, DWS, JRJ Subs: NDG, AKP, FEC, BDH	Pass 1	0830–1830	Slightly rainy and foggy in the morning, 50°F. Variable cloud cover throughout the day.
04/24/07	Dudek: SMB, DWS, JRJ, MLB Subs: BAP, REP, JLC, KMK, CJS, NDG, AKP, FEC, BDH	Pass 1	0800–1725	Sunny and clear, 58°F–70°F. Light breeze.
04/25/07	Dudek: SMB, DWS, JRJ, MLB Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, FEC, BDH	Pass 1	0815–1900	Clear, sunny, 60°F–75°F. Light breeze.
04/26/07	Dudek: SMB, DWS, JRJ Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0800–1830	Clear, sunny, cool, 55°F–70°F. Light winds.
04/27/07	Subs: BAP, REP, JLC, KMK, KWD, CJS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0730–1945	Clear, sunny, calm. 55°F–75°F.
04/28/07	Subs: NDG, AKP	Pass 1	0830–1630	Clear, sunny, calm. 65°F–75°F.
04/30/07	Dudek: JSH, MLB, DWS, ELL, TBS	Pass 1	0800–2000	Mostly sunny, 70°F–77°F. Slight wind.
04/30/07	Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML	Pass 1	0800–1700	Mostly sunny, 70°F–77°F. Slight wind.
05/01/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0730–1845	Sunny, 50°F–70°F. Gusty winds, 10–20 mph.
05/02/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, RBH, JGD, DLK, FEC, MML	Pass 1	0700–1930	Sunny, becoming cloudy at end of day, 50°F–65°F. Windy, 10–30 mph.
05/03/07	Dudek: JSH, DWS, ELL, TBS, MLB Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML, ACS, MCP	Pass 1	0745–1830	Variable cloud cover, 35°F–50°F. Windy, 20–40 mph.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
05/04/07	Dudek: ACS, MCP, ELL Subs: LAD, MJW, RAR, BDS, NDG, AKP, FEC, MML	Pass 1	0730–1730	Cloudy, windy, cold.
05/05/07	Subs: NDG, AKP	Pass 1	0830–1630	Cloudy, windy, cold.
05/07/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP	Pass 1	0900–1830	Clear, warm. 70°F–80°F. No wind.
05/08/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP, RBH, JGD	Pass 1	0800–1930	Clear, warm. 67°F–80°F.
05/09/07	Dudek: JRJ, SMB, DWS, ELL, TBS, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP	Pass 1	0815–1730	Clear, warm. 70°F–80°F.
05/09/07	Subs: MML, FEC	Pass 1	1200–2000	Clear, warm. 70°F–80°F.
05/10/07	Dudek: JRJ, SMB, DWS, ELL, TBS, ACS, MCP, MLB Subs: CJS, KMK, MJW, JLC, JBG, JHN, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0800–1830	Clear, warm. 70°F–80°F. Breezy in the afternoon.
05/11/07	Dudek: ELL, TBS, ACS, MCP Subs: CJS, KMK, JLC, JBG, JHN, NDG, AKP, FEC	Pass 1	0800–1700	Clear, warm. 62°F–80°F.
05/12/07	Subs: NDG, AKP	Pass 1	0830–1630	Clear, sunny, mild. High clouds, breezy.
05/14/07	Dudek: PCS, DWS, ELL, TBS, MLB Subs: KAB, CJS, KWD, REP, NDG, AKP, RBH, JGD, FEC	Pass 1	1230–1930	Clear, warm. 10°F–85°F. Slight breeze.
05/15/07	Dudek: PCS, MLB, DWS, ELL, TBS, ACS, MCP, MLB Subs: KAB, CJS, KWD, REP, NDG, AKP, RBH, JGD	Pass 1	0930–1915	Clear, warm, dry. 70°F–85°F. Sunny, gentle breeze.
05/16/07	Dudek: PCS, MLB, DWS, ELL, TBS, ACS, MCP Subs: KAB, CJS, KWD, REP, NDG, AKP, FEC	Pass 1	0800–1850	Sunny, warm, clear. 70°F–80°F.
05/17/07	Dudek: PCS, MLB, DWS, ELL, TBS Subs: KAB, CJS, KWD, REP, NDG, AKP, FEC	Pass 1	0900–1830	Clear, warm. 65°F–85°F.
05/21/07	Dudek: ELL, DAG, DWS, MLB Subs: JLC, BAP, BDS, JHN, NDG, AKP, RBH, JGD, FEC	Pass 1	0800–1800	Variable cloud cover. Windy, cool, 65°F.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
05/22/07	Dudek: ELL, DAG, DWS, MLB, PCS, TBS Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, RBH, JGD, FEC, MML	Pass 1	0830–1700	Windy, variable cloud cover. 65°F–75°F.
05/23/07	Dudek: ELL, DAG, DWS, MLB, PCS, ACS, TBS Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, FEC, MML	Pass 1	0900–2030	Clear, 63°F–70°F. Light wind from northeast.
05/24/07	Dudek: ELL, DAG, DWS, MLB, ACS, MCP Subs: JLC, BAP, BDS, KWD, JHN, RAR, NDG, AKP, FEC, MML, BDH	Pass 1	0940–1915	Clear, sunny, warm. 60°F–80°F. Calm.
05/25/07	Dudek: ACS, MCP Subs: JLC, BAP, KWD, JHN, RAR, NDG, AKP, MML	Pass 1	0910–1725	Clear, warm, sunny.
05/26/07	Subs: NDG, AKP, MML	Pass 1	0945–1800	Clear, sunny, mild. Light breeze.
05/28/07	Subs: NDG, AKP	Pass 1	0800–1200	Clear, warm, sunny.
05/29/07	Dudek: KJM, JSH, MLB, PCS, ELL Subs: CJS, JLC, NDG, AKP, RBH, JGD, MML	Pass 1	1015–1930	Sunny and warm, 68°F–85°F. Winds 3–7 mph from the west.
05/30/07	Dudek: KJM, JSH, ELL, FMO, MLB, PCS, MNM Subs: CJS, JLC, NDG, AKP, MML, BDH, FEC, JPG	Pass 1	0745–1930	Sunny and warm, 70°F–85°F. Excellent visibility. North, northwest winds.
05/31/07	Dudek: KJM, JSH, ELL, FMO, MLB, MNM, ACS, MCP Subs: CJS, JLC, NDG, AKP, MML, BDH, FEC	Pass 1	0730–1630	Sunny and warm, 70°F–85°F.
06/01/07	Dudek: ACS, MCP Subs: NDG, AKP	Pass 1	0800–1800	Partly cloudy, warm, humid.
06/02/07	Subs: NDG, AKP	Pass 1	0800–1700	Clear, sunny, warm.
06/04/07	Dudek: JSH, FMO, DWS, ELL, MLB Subs: NDG, AKP, MML	Pass 2	0900–1830	Some clouds, breezy. 65°F–75°F, 5–10 mph.
06/05/07	Dudek: JSH, FMO, DWS, ELL, MLB Subs: NDG, AKP, RBH, JGD, MML	Pass 2	0730–1830	Mostly cloudy, breezy. 60°F–75°F, 5–15 mph. Poor visibility.
06/06/07	Dudek: JSH, FMO, DWS, ELL, ACS, MCP, TBS Subs: NDG, AKP, MML	Pass 2	0745–1845	Cold, windy, and cloudy. 50°F–60°F, 15–30 mph. Clearing and warming up late morning.
06/07/07	Dudek: DWS, ELL, ACS, MCP, TBS Subs: NDG, AKP, MML	Pass 2	0600–1400	Sunny and mild, 60°F–72°F.
06/08/07	Subs: RBH, JGD	Pass 2	0800–1800	Still, clear, mid-70s.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
06/11/07	Dudek: ELL, DWS, KJM, JSH, ACT, CJF, TAC, PCS, MLB Subs: KMK, KWD, BAP, MJW, JLC, NDG, AKP, MML	Pass 2	0930–1930	Sunny and clear, slight breeze. 70°F–85°F, 5–10 mph.
06/12/07	Dudek: ELL, DWS, KJM, JSH, ACT, CJF, TAC, ACS, PCS, MLB Subs: KMK, KWD, BAP, JLC, MJW, CJS, NDG, AKP, MML	Pass 2	0745–1930	Sunny and clear, 70°F–85°F.
06/13/07	Dudek: ELL, DWS, KJM, ACT, TAC, ACS, JSH, MLB Subs: KMK, KWD, MJW, BAP, JLC, CJS, NDG, AKP, RHB, JGD, MML	Pass 2	0745–1900	Clear and warm, 75°F–85°F.
06/14/07	Dudek: ELL, DWS, KJM, TAC, JSH, MLB, ACT Subs: KMK, KWD, BAP, MJW, CJS, JLC, NDG, AKP, RBH, JGD, MML	Pass 2	0730–1900	Clear and warm, 75°F –85°F. Breezy in the afternoon, 5–10 mph.
06/15/07	Subs: KMK, KWD, BAP, CJS, JLC, MJW, NDG, AKP, MML	Pass 2	0800–1900	Sunny, warm, clear. Around 72°F.
06/16/07	Subs: NDG, AKP	Pass 2	0800–1600	Clear, sunny, warm.
06/18/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, JGD	Pass 2	0830–1615	Clear, hot, mid-80s. Winds 5 mph.
06/19/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, RBH, JGD, MML	Pass 2	0730–1845	Breezy and clear, 63°F–90°F.
06/20/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, MML	Pass 2	0600–1800	Clear, hot. 70°F–90°F.
06/21/07	Dudek: ELL, DAG, JRJ, DWS, MLB Subs: MJW, RAR, CJS, KAB, BDS, LAD, NDG, AKP, MML	Pass 2	0730–1800	Sunny and warm. Very little wind.
06/22/07	Dudek: ELL Subs: CJS, LAD, NDG, AKP	Pass 2	0800–1700	Mostly sunny, mild. High clouds. 70°F–88°F.
06/22/07	Subs: MML, ALW	Pass 2	1800–2100	Mostly sunny, mild. High clouds. 70°F–88°F.
06/23/07	Subs: NDG, AKP, MML, ALW	Pass 2	0845–1915	Mostly sunny, clear, hot.
06/25/07	Dudek: TAC, ELL, JSH, MLB Subs: CJS, BAP, BDS, JHN, MJW, JLC, NDG, AKP, RBH, JGD, MML, ALW	Pass 2	0930–1800	Sunny and clear, mild. Breezy.
06/26/07	Dudek: MLB, JSH, ELL, TAC Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0830–1900	Sunny and clear, warm.
06/27/07	Dudek: TAC, ELL, JSH, MLB, ACS Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0815–1830	Sunny and clear, 70°F–80°F.

Table D.1-16 (Continued)

Date	Personnel	Specific Task	Hours	Weather
06/28/07	Dudek: MLB, ACS, MCP, ELL, TAC, JSH, FMO Subs: CJS, JHN, JLC, BDS, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0710–1730	Sunny and clear, 75°F–80°F. Breezy.
06/29/07	Dudek: JSH, FMO, MCP, ACS Subs: CJS, JHN, JLC, KWD, MJW, BAP, NDG, AKP, MML, ALW	Pass 2	0750–1330	Sunny and clear. 70°F–80°F.
06/30/07	Subs: NDG, AKP, ALW, MML	Pass 2	0830–1630	Sunny and clear, warm.
07/02/07	Dudek: FMO Subs: REP, MJW, KWD, BDS, JLC, CJS	Pass 2	0700–1400	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/03/07	Dudek: FMO Subs: REP, MJW, KWD, BDS, JLC, CJS	Pass 2	0700–1730	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/09/07	Dudek: JRJ, FMO	Pass 2	0700–1845	Clear and hot. 78°F–94°F. Wind from the north, 5–10 mph.
07/10/07	Dudek: JRJ, FMO, MLB, TAC	Pass 3	1030–1800	Hazy sun, 79°F, winds 3–0mph.
07/11/07	Dudek: JSH, JRJ, FMO, MLB, TAC	Pass 3	0730–1830	Sunny and clear, 80°F–95°F.
07/12/07	Dudek: JSH, JRJ, FMO, MLB, TAC	Pass 3	0730–1730	Mostly sunny, 85°F–95°F.
09/18/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/19/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/20/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1800	Not recorded.
09/21/07	Dudek: JSH, FMO, MLB	Pass 3	0800–1200	Not recorded.

Personnel key:

Dudek: MSE: Megan Enright; MLB: Michelle Balk; MNM: Makela Mangrich; DWS: Daniel Simon; JSH: Joanna Hsu; PCS: Patricia Schuyler; CJF: Callie Ford; SMB: Scott Boczkiewicz; JRJ: Jon Jones; ELL: Eve Laeger; TBS: Teresa Salvato; ACS: Andy Sanders; MCP: Mitch Provance; DAG: Doug Gettinger; KJM: Kam Muri; FMO: F. Marcus Obregon; ACT: Andy Thomson; TAC: Traci Caddy.

Subconsultants: KAB: Katherine Bode; RAR: Ramona (Mona) Robison; MJW: Margaret Widdowson; KWD: Kevin Downing; BDS: Brad Schafer; CJS: Cristian Singer; NDG: Nathan Gale; AKP: Anuja Parikh; JPG: Paul Galvin; MML: Melissa Lippincott; DLK: Daryl Koutnik; JGD: Joe Decruyenaere; BDH: Barrett Holland; FEC: Florence Caplow; BAP: Brant Primrose; REP: Rob Preston; JLC: Jessica Cook; KMK: Korey Klutz; LAD: Lily Douglas; JHN: Joy Nishida; ALW: Adrian Wolf.

2.6 SAMPLING METHODS

Field survey methods conformed to CNPS botanical survey guidelines (CNPS 2001) and *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG 2000). All plant species encountered during the field surveys were identified to subspecies or variety, if applicable, to determine sensitivity status. All plant species encountered in the field within the TMV Specific Plan Area are listed in Appendix A to Appendix I to Appendix E-1 of the Tejon Mountain Village EIR (Kern County 2009). Latin and common names follow *The Jepson Manual* (Hickman 1996). When not listed in Hickman (1996), common names were taken from Twisselmann (1967). A variety of sources (e.g., Boyd 1999) were used to name species that are not included in either Hickman (1996) or Twisselmann (1967).

Coverage Rates and Transects

On average, coverage rates varied from 50 to 75 ac. per botanist per day. Coverage rates varied depending on presence of special-status species, topography, and suitability of habitat being surveyed. Meandering transects were walked and transect paths were recorded on field maps.

If a rare plant species was encountered, biologists recorded the center of the polygon in which it was observed as a point using GPS coordinates. Generally, observations of small- to medium-size plants were considered distinct if they were more than 3 m apart. For larger species, such as aromatic canyon gooseberry, observations were considered distinct if they were greater than 10 m apart. Field staff used sub-meter accuracy Trimble GPS units to record both the spatial data (the location) and data about the metapopulation including a count of individuals (recorded as a whole number if the metapopulation was less than 100 individuals or a range if the metapopulation was more than 100 individuals), slope, aspect, survey area, data, percent cover of native and non-native vegetation and bare ground, and any comments about the population. Where Trimble units were not available, this information was recorded on hard copy mapping field forms and spatial data was captured using GPS coordinate data and/or mapped on the 200 ft scale field maps.

2.7 DIGITIZATION PROCESS AND QUALITY ASSURANCE CHECKS

Once the survey was complete, the GPS data and mapping field form data for approximately 580 observations of special-status plant species were combined to generate comprehensive survey maps of the site. The mapping field form data were digitized from field maps or handwritten coordinate data (taken from GPS units) were converted into spatial data. Dudek GIS staff completed post-processing for GPS data by correcting the raw files to further increase the positional accuracy of the data. The population data (i.e., count of individuals, slope, aspect) from the GPS units was converted from these corrected files into GIS shapefiles. These data were then reviewed by lead botanists and modified if necessary to conform to field maps or data forms.

2.8 HYDROLOGIC FACTORS

Surveys were conducted on the entire study area in 2007, which was a below-average rainfall year for the state and for the hydrologic regions adjacent to the TMV Planning Area (DWR 2007). Temperatures were slightly higher than normal during the first 3 months of the surveys. Precipitation statewide was still 65% of the long-term average between October 2006 and July 2007, when the most substantial special-status plant surveys were conducted (DWR 2007).

The special-status plant surveys during 2007 were also comprehensive sitewide, were conducted at the peak phenology for all plant species expected to occur on site, and complemented surveys conducted in 2003 to 2005, when rainfall was normal to above normal. These factors indicate that the multiple-year survey effort was sufficient to identify the special-status plant species that occur within the TMV Planning Area.

3.0 REFERENCES CITED

14 CCR 15000 et seq. CEQA (California Environmental Quality Act) Guidelines.

Banks, R.C., R.T. Chesser, C. Cicero, J.L. Dunn, A.W. Kratter, I.J. Lovette, P.C. Rasmussen, J.V. Remsen, Jr., J.D. Rising, and D.F. Stotz. 2007. "Forty-Eighth Supplement to the American Ornithologists' Union Check-List of North American Birds." *Auk* 124:1109–1115.

Belluomini, L. 1980. *Status of the Ringtail in California*. California Department of Fish and Game, Nongame Wildlife Investigations. Progress Report: Project W-54-R-12, Job I-8. June 1980.

BioResource Consultants. 2008. *California Spotted Owl Surveys in 2007 at the Tejon Mountain Village Proposed Development*. Submitted to Dudek. Ojai, California: BioResource Consultants. January 14, 2008.

Bloom Biological (Bloom Biological, Inc.). 2008. *Tejon Ranch California Condor Conservation and Management Plan*. Santa Ana, California: Bloom Biological Inc. October 21, 2008.

Boyd, S. 1999. *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California*. Rancho Santa Ana Botanic Garden occasional publications.

Bruyea Biological Consulting. 2003. *Sensitive Butterfly Survey on Phase 1 Portion of Tejon Mountain Village Specific Plan, Kern County, California*.

Burt, W.H., and R.P. Grossenheider. 1976. *A Field Guide to the Mammals: North America, North of Mexico*. Third edition. The Peterson Field Guide Series. New York, New York: Houghton Mifflin Company.

California Public Resources Code, Section 21000 et seq. CEQA (California Environmental Quality Act).

CaliforniaHerps. 2008. *California Reptiles and Amphibians*. Accessed April 2008. http://www.californiaherps.com/index.html

Campbell, L.A. 2004. Distribution of habitat associations of mammalian carnivores in the central and southern Sierra Nevada. Dissertation, University of California, Davis.

CDFG (California Department of Fish and Game). 1980. *At the Crossroads: A Report on the Status of California's Endangered and Rare Fish and Wildlife*. Amended 1983. Sacramento, California: California Department of Fish and Game.

CDFG. 1995. *Staff Report on Burrowing Owl Mitigation.* Memorandum from Department of Fish and Game to Division Chiefs and Regional Managers.

CDFG. 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities*. State of California, The Resources Agency. December 9, 1983. Revised May 8, 2000.

CDFG. 2006a. CWHR version 8.1 [personal computer program]. Sacramento, California: California Interagency Wildlife Task Group.

CDFG. 2006b. *Complete List of Amphibian, Reptile, Bird and Mammal Species in California*. California Department of Fish and Game. March 2006.

CDFG. 2008a. *Special Animals List*. CNDDB. February 2008.

CDFG. 2008b. *Rarefind*. Version 3.1.0. CNDDB. March 2008.

CDFG. 2008c. *Special Vascular Plants, Bryophytes, and Lichens List*. CNDDB. Quarterly publication. July 2008. http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf

Chapman, J.A., and G.A. Feldhamer, ed. 1982. *Wild Mammals of North America: Biology, Management, and Economics*. Baltimore, Maryland and London, England: The Johns Hopkins University Press.

CNPS (California Native Plant Society). 2001. *CNPS Botanical Survey Guidelines*. December 9, 1983. Revised June 2, 2001.

CNPS. 2008. *CNPS Inventory of Rare and Endangered Plants* (online edition, v7-08b). Sacramento, California: California Native Plant Society. Accessed April 2008. http://www.cnps.org/inventory

Compliance Biology. 2003. *Tejon Mountain Village Phase I Small Mammal Trapping Study*. Prepared for Impact Sciences, Inc. Oakland, California: Compliance Biology. September 30, 2003.

Dudek. 2007a. Field identification of elderberry shrub locations for preparation of *Tejon Mountain Village Biological Resources Technical Report*. April 23, 2007, through May 3, 2007.

Dudek. 2007b. Focused surveys for valley elderberry longhorn beetle for preparation of *Tejon Mountain Village Biological Resources Technical Report*. April 30, 2007, through May 1, 2007.

Dudek. 2007c. Habitat assessment and focused surveys for western spadefoot toad for preparation of *Tejon Mountain Village Biological Resources Technical Report*. February 12, 2007, through August 23, 2007.

Dudek. 2007d. Riparian bird surveys focused on least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo for preparation of *Tejon Mountain Village Biological Resources Technical Report*. April 23, 2007, through August 17, 2007.

Dudek. 2007e. Focused surveys for American peregrine falcon for preparation of *Tejon Mountain Village Biological Resources Technical Report*. May 1, 2007, and July 7, 2007.

Dudek. 2007f. Wintering and breeding bald eagle surveys for preparation of *Tejon Mountain Village Biological Resources Technical Report*. December 29, 2006, through June 18, 2007.

Dudek. 2007g. Surveys for burrowing owl for preparation of *Tejon Mountain Village Biological Resources Technical Report*. April 23, 2007, through June 27, 2007.

Dudek. 2007h. Surveys for special-status raptors focused on Cooper's hawk, sharp-shinned hawk, prairie falcon, golden eagle, white-tailed kite, and short-eared owl for preparation of *Tejon Mountain Village Biological Resources Technical Report*. March 6, 2007, through March 30, 2007, and June 4, 2007, through July 6, 2007.

Dudek. 2007i. Surveys for aquatic and marsh-dwelling bird species for preparation of *Tejon Mountain Village Biological Resources Technical Report*. May 22, 2007, through June 20, 2007.

Dudek. 2007j. Baited camera surveys for ringtail for preparation of *Tejon Mountain Village Biological Resources Technical Report*. March 12, 2007, through November 3, 2007.

Dudek. 2007k. Botanical surveys focused on special-status plants for preparation of *Tejon Mountain Village Biological Resources Technical Report*. April 9, 2007, through September 21, 2007.

Dudek and Associates, Inc. 2006. Wintering bird surveys for preparation of Tejon Mountain Village Biological Resources Technical Report. November 14, 2006, through November 16, 2006.

DWR (Department of Water Resources). 2007. Bulletin 118.

Emmel, T.C., ed. 1998. *Systematics of Western North American Butterflies*. Gainesville, Florida: Mariposa Press.

Emmel, T.C., and J.F. Emmel. 1973. "The Butterflies of Southern California." *Natural History Museum of Los Angeles County Science Series* 26:1–148.

Ethier, T. n.d. *Survey Methods for Raptors in British Columbia.* Resource Inventory Committee. Victoria, British Columbia: Ministry of Environment, Lands and Parks.

Fish and Game Code. California Fish and Game Commission. http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=fgc&codebody=&hits=20

Fuller, M.R., and J.A. Mosher. 1987. "Raptor Survey Techniques." In *Raptor Management Techniques Manual*, ed. B.A Geron Pendleton, B.A. Millsap, K.W. Cline, and D.M. Bird, 39–65. National Wildlife Federation, Washington, D.C.

Garrett, K., and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, California: Los Angeles Audubon Society.

Halfpenny, J.C. 1986. *A Field Guide to Mammal Tracking in North America*. Boulder, Colorado: Johnson Printing Company.

Halterman, M.D., and M. Johnson. 2003. *Draft Yellow-Billed Cuckoo Natural History Summary and Survey Methodology*.

Harris, J.E., and C.V. Ogan, ed. 1997. *Mesocarnivores of Northern California: Biology, Management, and Survey Techniques, Workshop Manual*. August 12–15, 1997, Humboldt State University, Arcata, California. Arcata, California: The Wildlife Society, California North Coast Chapter.

Hawbaker, S.S. 1974. *Trapping North American Furbearers*. Fifteenth edition. Fort Loudon, Pennsylvania: S. Stanley Hawbaker & Sons.

Hickman, J.C., ed. 1996. *The Jepson Manual: Higher Plants of California*. Third printing with corrections. Berkeley and Los Angeles, California: University of California Press.

Hogue, C.L. 1974. *Insects of the Los Angeles Basin*. Los Angeles, California: Natural History Museum Foundation.

Howard, W.E. 1957. "Amount of Food Eaten by Small Carnivores: *Bassariscus Astutus*." *Journal of Mammalogy* 38(4):516–517.

Howe, W.H. 1975. *The Butterflies of North America*. Garden City, New York: Doubleday & Company, Inc.

Impact Sciences, Inc. 2004. *Special-Status Amphibian, Reptile, and Bird Biological Evaluation for TMV*. Camarillo, California: Impact Sciences, Inc.

Impact Sciences, Inc. 2008. *Jurisdictional Delineation Report for Tejon Mountain Village*. Prepared for Tejon Mountain Village, LLC. Camarillo, California: Impact Sciences, Inc. August 2008.

Ingles, L.G. 1965. *Mammals of the Pacific States: California, Oregon, and Washington*. Stanford, California: Stanford University Press.

Intermap Technologies. 2005. Bald earth view taken with 5-meter postings. Digital Terrain Model (DTM). Aerial data capture from February through April 2005. Supplied by Tejon Ranch Company. http://www.intermap.com

J&S. (Jones and Stokes). 2006. *Tejon Mountain Village Biological Resources Technical Report*. Draft. Prepared for Tejon Ranch Company. January 2006.

J&S. 2008a. *Final Draft Tejon Mountain Village 2007 Small Mammal Trapping Report*. Prepared by Jones & Stokes for Dudek. January 2008.

J&S. 2008b. *Final Draft Results of Focused Salamander Surveys and Habitat Assessment at Tejon Mountain Village*. Prepared by Jones & Stokes for Dudek.

Jaeger, E.C. 1961. *Desert Wildlife*. Stanford, California: Stanford University Press.

Jameson, E.W., and Peeters, H.J. 1988. *California Mammals*. Berkeley and Los Angeles, California and London, England: University of California Press.

Jennings, M.R., and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California.

Kavanau, J.L. 1971. "Locomotion and Activity Phasing of Some Medium-Sized Mammals." *Journal of Mammalogy* 52(2):386–403.

Kern County (Kern County Planning Department. 2009. *Final Environmental Impact Report for Tejon Mountain Village by TMV, LLC*. Bakersfield, California. August 2009.

Lannoo, M., ed. 2005. *Amphibian Declines: The Conservation Status of United States Species*. Berkeley and Los Angeles, California and London, England: University of California Press. Modified accounts accessed on AmphibiaWeb: Information on amphibian biology

and conservation (web application). 2008. Berkeley, California: AmphibiaWeb. Accessed December 28, 2006. http://www.amphibiaweb.org

Lindstedt, S.T., B.J. Miller, and S.W. Buskirk. 1986. "Home Range, Time, and Body Size in Mammals." *Ecology* 67(2):413–418.

Moyle, P.B., R.M. Yoshiyama, and J.E. Williams. 1995. *Fish Species of Special Concern in California*. Second edition. Prepared by the Department of Wildlife and Fisheries Biology, University of California, Davis, for the State of California, Department of Fish and Game, Inland Fisheries Division, Rancho Cordova. Final Report for Contract No. 2128IF. June 1995.

Nelson, J.S., E.J. Crossman, H. Espinosa-Pérez, L.T. Findley, C.R. Gilbert, R.N. Lea, and J.D. Williams. 2004. *Common and Scientific Names of Fishes from the United States Canada and Mexico*. Sixth edition. Special Publication 29. Bethesda, Maryland: American Fisheries Society Publications.

Opler, P.A., H. Pavulaan, R.E. Stanford, and M. Pogue, coord. 2006. *Butterflies and Moths of North America* [online database]. Bozeman, Montana: Mountain Prairie Information Node. http://www.butterfliesandmoths.org/

Orloff, S. 1980. *Ringtail Distribution Study*. California Department of Fish and Game, Nongame Wildlife Investigations. Final Report: Project W-54-R-12, Job I-4. November 10, 1980.

PG&E (Pacific Gas and Electric). 2004. *Protocol for Evaluating Bald Eagle Habitat and Populations in California*. Prepared for the U.S. Fish and Wildlife Service.

Poole, A., ed. 2005. *The Birds of North America Online*. Ithaca, New York: Cornell Laboratory of Ornithology. Accessed April 2008. http://bna.birds.cornell.edu/BNA/

Reveal, J.L. 2006. "*Eriogonum callistum* (Polygonaceae): A New Species from the Tehachapi Mountains of California." *SIDA* 22(2):857–861.

Scott, J.A. 1986. *The Butterflies of North America: A Natural History and Field Guide*. Stanford, California: Stanford University Press.

Sogge, M.K., T.J. Tibbitts, and J.R. Petterson. 1997. "Status and Breeding Ecology of the Southwestern Willow Flycatcher in the Grand Canyon." *Western Birds* 28:142–157.

Stebbins, R.C. 2003. *A Field Guide to Western Reptiles and Amphibians*. 3rd edition. New York, New York: Houghton Mifflin Company.

Squires, J. R. and R. T. Reynolds. 1997. Northern Goshawk (*Accipiter gentilis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/298

Taylor, W.P. 1954. "Food Habits and Notes on Life History of the Ring-Tailed Cat in Texas." *Journal of Mammalogy* 35:55–63.

Trapp, G.R. 1972. "Some Anatomical and Behavioral Adaptations of Ringtails, *Bassariscus astutus*." *Journal of Mammalogy* 53(3):549–557.

Twisselmann, E.C. 1967. *A Flora of Kern County, California*. San Francisco, California: University of San Francisco.

USFS (U.S. Forest Service). 1993. *Protocol for Surveying for Spotted Owls in Proposed Management Activity Areas and Habitat Conservation Areas*. Revised February 1993.

USFS. 2000. *Survey Methodology for Northern Goshawks in the Pacific Southwestern Region*. U.S. Department of Agriculture, Forest Service.

USFWS (U.S. Fish and Wildlife Service). 1982. *Recovery Plan for Peregrine Falcon (Pacific Population)*. Prepared by the Pacific Coast American Peregrine Falcon Recovery Team.

USFWS. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. Sacramento, California: U.S. Fish and Wildlife Service Sacramento Field Office. July 9, 1999.

USFWS. 2000. *Southwestern Willow Flycatcher Protocol Revision 2000*.

USFWS. 2001. *Least Bell's Vireo Survey Guidelines*. January 19, 2001.

Valverde, M.A., and H.L. Hill. 1981. *Soil Survey of Kern County, California, Southeastern Part*. USDA, Soil Conservation Service, Washington, DC.

Vollmar Consulting. 2004. *2003/2004 Botanical Survey Report: Tejon Mountain Village Project, Tejon Ranch, Kern County, California*. Final. Prepared for Impact Sciences, Inc. September 15, 2004.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, ed. 1990a. *California's Wildlife, Volume 2: Birds*. Sacramento, California: California Department of Fish and Game.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, ed. 1990b. *California's Wildlife, Volume 3: Mammals*. Sacramento, California: California Department of Fish and Game.

Zielinski, W.J., R.L. Truex, L.A. Campbell, C.R. Carroll, and F.V. Schlexer. 2000. *Systematic Surveys as a Basis for the Conservation of Carnivores in California Forests—Progress Report II: 1996–1999*. October 4, 2000.

Zielinski, W.J., R.L. Truex, F.V. Schlexer, L.A. Campbell, and C.R. Carroll. 2005. "Historical and Contemporary Distributions of Carnivores in Forests of the Sierra Nevada, California, USA." *Journal of Biogeography* 32:1385–1407.