October 3, 2013

Ms. Susie Tharratt
U.S. FISH AND WILDLIFE SERVICE
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: RESULTS OF FOCUSED DRY SEASON VERNAL POOL BRANCHIOPOD SURVEYS FOR THE PRESERVE PROJECT SITE, ORANGE AND RIVERSIDE COUNTIES, CALIFORNIA

Dear Ms. Tharratt:

This report is prepared in compliance with the conditions of authorized permit issued under Section 10(a)(1)(A) of the federal Endangered Species Act to **PCR Services Corporation (PCR)** Senior Biologist II Crysta Dickson (TE067347-4) to collect dry season soil samples for vernal pool branchiopods (fairy shrimp) for The Preserve Project Site ("project site") located in Orange and Riverside Counties, California (**Figure 1**, *Regional Map*, attached). A 15-day notification was sent to the U.S. Fish and Wildlife Service (USFWS) on August 5, 2013, with a follow up email on August 20, 2013 to USFWS representative Susie Tharratt that soil samples would be sent to D. Christopher Rogers at the University of Kansas for cyst identification. Authorization to commence with dry season surveys was received from USFWS representative Susie Tharratt on August 20, 2013.[1] Wet season surveys were conducted within the project site by PCR in 2012/2013.[2]

PROJECT SITE LOCATION

The project site is approximately 745 acres and straddles the Orange and Riverside County boundary within the Los Piños area of the Cleveland National Forest in the Santa Ana Mountains, located at the intersection of Ortega Highway and Main Divide Truck Trail. The project site includes five Seasonal Ponds contained within the Orange County portion of the northern parcel (within the approximately 203.8-acre "Nilson parcel" within the project site).

The Nilson parcel is located within the western half of Section 17, T. 6 S., R. 5 W. of the U.S. Geological Survey (USGS) 7.5' Alberhill Quadrangle Map (**Figure 2**, *Vicinity Map*, attached). The Nilson parcel consists of gently sloping terrain in the southern portion of the parcel to steep, rugged terrain in the northern portions. Elevations range from 2,449 to 3,360 feet above mean sea level (msl). The majority of the Nilson parcel is relatively undisturbed and supports dense chamise chaparral habitat, as well as scattered patches of scrub oak chaparral and oak woodland. Disturbance is limited to a network of dirt roads and trails, a dirt airstrip that is no longer in use, and one occupied residence.

[1] Email communication between PCR biologist Maile Tanaka and Susie Tharratt of USFWS, August 20, 2013.
[2] PCR Services Corporation. 2013. Results of Wet Season Vernal Pool Branchiopod Surveys for The Preserve Project Site, Orange and Riverside Counties, California. June 18.

PROJECT SITE DESCRIPTION

As noted above, the project site is mostly undisturbed and supports dense chamise chaparral habitat and gently sloping to steep, rugged terrain typical of the mid- to upper elevations of the Cleveland National Forest. **Table 1**, *Plant Communities – Nilson Parcel*, attached, lists the plant communities found and each of their acreages. **Figure 3**, *Plant Communities – Nilson Parcel*, attached depicts their location.

Table 1

Plant Communities - Nilson Parcel

Plant Community	Acreage
Black Sage Scrub	1.5
Buckwheat Scrub	0.8
Chamise Chaparral	158.2
Chamise Chaparral/Rock Outcrop	6.3
Scrub Oak Chaparral	13.6
Scrub Oak Chaparral/Ornamental	0.1
Scrub Oak Chaparral/Coast Live Oak Woodland	0.5
Coast Live Oak Woodland	1.5
Southern Willow Scrub	0.2
Mule Fat Scrub	0.1
Cattail Stand	<0.1
Non-Native Grassland	0.4
Non-Native Grassland/Black Sage Scrub	<0.1
Non-Native Grassland/Deerweed Series	0.4
Non-Native Grassland/Rock Outcrop	0.3
Ruderal	0.5
Ruderal/Chamise Chaparral	0.2
Ruderal/Deerweed Series	1.1
Ruderal/Non-Native Grassland	0.1
Disturbed	17.0
Disturbed/Non-Native Grassland	0.2
Disturbed/Coast Live Oak Woodland	0.1
Orchard	0.7
TOTAL	**203.8**

Source: PCR Services Corporation, 2013.

The five Seasonal Ponds surveyed were features mainly associated with the existing disturbances on the project site. **Figure 4**, *Location of Seasonal Ponds*, attached, depicts the locations of these features on the project site. **Figure 5**, *Seasonal Pond Photographs*, attached, include representative photos of each seasonal pond and a brief description is provided below.

Seasonal Pond 1

Seasonal Pond 1 is located east of the airstrip within a moderately deep depressional area. A 12-inch plastic corrugated pipe leads to this feature from the airstrip and it is assumed that this feature receives runoff from the airstrip as well as the pond's watershed during rain events. Soils within and around the pond consist of coarse sandy and gravelly loam with the slopes surrounding the pond showing evidence of erosion. Vegetation surrounding the perimeter of the pond included California buckwheat (*Eriogonum fasciculatum*), mule fat (*Baccharis salicifolia*), black mustard (*Brassica nigra*), and deerweed (*Acmispon glaber* var. *glaber*). Little to no vegetation occurs within the pond. Seasonal Pond 1 did not inundate enough (i.e., did not retain more than 3 cm of standing water during the sampling effort) to commence wet season surveys during the 2012/2013 wet season. However, dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

Seasonal Pond 2

Seasonal Pond 2 is located east of the airstrip and Seasonal Pond 1 in a deep depression that is located between two dirt roads. The pond is fed from a plastic corrugated pipe that was assumed to receive run off from the airstrip and adjacent dirt roads. A vertical rock outcrop is located along one of the pond's sidewalls and bottom, which acts in part as the pond's hardpan. Vegetation surrounding and within the pond included mule fat, bulrush (*Scripus* sp.), black willow (*Salix gooddingii*), sedge (*Cyperus* sp.), willowherb (*Epilobium* sp.), heliotrope (*Heliotropium* sp.), saltcedar (*Tamarix ramosissima*), black sage (*Salvia mellifera*), California buckwheat, rabbit's foot grass (*Polypogon monspeliensis*), cattail (*Typha* sp.), and black mustard. It should be noted that the inundation of Seasonal Pond 2 was not believed to be a result of precipitation events. Rather, information received from a resident on-site following initiation of 2012/2013 wet season surveys indicated that Seasonal Pond 2 was filled as a result of vandalism to an adjacent water tank in September 2012, which caused the tank to empty and fill the pond. Because Seasonal Pond 2 remained ponded and did not dry up in the dry season, this pond is presumed to be a perennially ponded feature. The USFWS was consulted for guidance and the USFWS did not recommend that dry season surveys be conducted for Seasonal Pond 2 because this perennially ponded feature did not dry up during the 2013 dry season. Authorization from Susie Tharratt of USFWS was provided on August 1, 2013 to exclude this pond from dry season surveys.[3]

[3] Email communication between PCR biologist Maile Tanaka and Susie Tharratt of USFWS, August 1, 2013.

Seasonal Pond 3

Seasonal Pond 3 is located east of the airstrip and south of Seasonal Ponds 1 and 2. Seasonal Pond 3 appears to be a man-made pond that is fed by runoff through a spicket-controlled corrugated pipe. Vegetation within and around the pond included California buckwheat, scrub oak (*Quercus berberidifolia*), cattail, sedge, black mustard, common sow thistle (*Sonchus oleraceus*), rip gut grass (*Bromus diandrus*), Mexican rush (*Juncus mexicanus*), and red-stemmed filaree (*Erodium cicutarium*). It should be noted that the inundation of Seasonal Pond 3 was not believed to be a result of precipitation events. Seasonal Pond 3, which was being fed through a spicket-controlled corrugated pipe, had been inundated for several months, or possibly longer, during the 2012/2013 wet season surveys. It is unclear when Seasonal Pond 3 was last allowed to dry up. Because Seasonal Pond 3 remained ponded and did not dry up in the dry season, this pond is presumed to be a perennially ponded feature. The USFWS was consulted for guidance and the USFWS did not recommend that dry season surveys be conducted for Seasonal Pond 3 because this perennially ponded feature did not dry up during the 2013 dry season. Authorization from Susie Tharratt of USFWS was provided on August 1, 2013 to exclude this pond from dry season surveys.[4]

Seasonal Pond 4

Seasonal Pond 4 is located north of the airstrip and occurs as a result of an impoundment to a drainage feature created by a dirt road. Vegetation within and around this feature included scrub oak, coast live oak (*Quercus agrifolia*), black sage, black mustard, California buckwheat and California sage (*Artemisia californica*). Seasonal Pond 4 did not inundate enough (i.e., did not retain more than 3 cm of standing water during the sampling effort) to commence wet season surveys during the 2012/2013 wet season. However, dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

Seasonal Pond 5

Seasonal Pond 5 occurs along the western edge of the airstrip. The pond is fed by runoff from the airstrip as well as the surrounding hills. Vegetation surrounding the pond includes mule fat, California buckwheat, horseweed (*Conyza canadensis*), black mustard, arroyo willow (*Salix lasiolepis*), and black willow. Seasonal Pond 5 did not inundate enough (i.e., did not retain more than 3 cm of standing water during the sampling effort) to commence wet season surveys during the 2012/2013 wet season. However, dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

METHODOLOGY

Because Seasonal Ponds 2 and 3 did not dry up during the dry season, and because Seasonal Ponds 1, 4, and 5 never inundated enough (i.e., did not retain more than 3 cm of standing water

[4] Email communication between PCR biologist Maile Tanaka and Susie Tharratt of USFWS, August 1, 2013.

during the sampling effort) to commence wet season surveys during the 2012/2013 wet season, the USFWS was consulted for guidance on completing focused dry season surveys in accordance with the USFWS's *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*.[5]

The USFWS did not recommend that dry season surveys be conducted for Seasonal Ponds 2 and 3 because these perennially ponded features did not dry up during the 2013 dry season. However, the USFWS recommended that 2013 dry season sampling by conducted for Seasonal Ponds 1, 4, and 5 even though these ponds did not inundate enough to commence wet season surveys during the 2012/2013 wet season.[6]

As recommended, the dry season sampling effort for Seasonal Ponds 1, 4, and 5 was conducted by Crysta Dickson (TE067347-4) on August 25, 2013. The dry season sampling effort included collecting soil samples and documenting empirical observations from the three Seasonal Ponds (**Appendix A**, *USFWS Vernal Pool Dry Season Data Sheets*, attached). In accordance with the USFWS's *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*,[7] two transects were established across the widest portions of each seasonal pond in north-south and east-west orientations ensuring that samples were collected from the deepest portions of the features. Soil samples were collected from the top centimeter (cm) or one cm below overburden. The ten soil samples were collected from each pond. Each soil sample was placed in a bag and labeled with the locality number.

Soil samples were submitted to the Kansas Biological Survey laboratory at the University of Kansas for analysis by D. Christopher Rogers to identify any collected cysts to genus (refer to **Appendix B**, *Results of Analyses of Soil Samples*, attached). Soil samples were prepared for examination in the laboratory by dissolving the clumps of soil in water and sieving the material through 300- and 150- µm pore sized screens. The small size of the screens ensured that the any eggs from the shrimp species would be retained. The portion of each sample retained in the screens was dissolved in a brine solution to separate the organic material from the inorganic material. The organic fraction was then examined under a microscope.

RESULTS

No special status shrimp eggs were recovered from the soil samples. No anostracan eggs of any kind were found in any of the samples; however, Pool 1 contained cladoceran ephippia and copepod eggs, and Pool 5 contained large numbers of copepod eggs.

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[5] USFWS. 1996. Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods. April 19.

[6] Email communication between PCR biologist Maile Tanaka and Susie Tharratt of USFWS, August 1, 2013.

[7] USFWS. 1996. Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods. April 19.

Since no special status fairy shrimp (e.g., San Diego fairy shrimp and Riverside fairy shrimp) were found during the wet season surveys,[8] and no special status shrimp eggs were recovered from the soil samples from the dry season surveys, special status fairy shrimp are not expected to occur within the project site, and no impacts will occur to these species.

I certify that the information contained in this survey report and attached exhibits fully and accurately represents my work.

Should you have any questions regarding the information presented in this letter report please contact Maile Tanaka at m.tanaka@pcrnet.com or (949) 753-7001 ext. 2120.

Sincerely,
PCR SERVICES CORPORATION

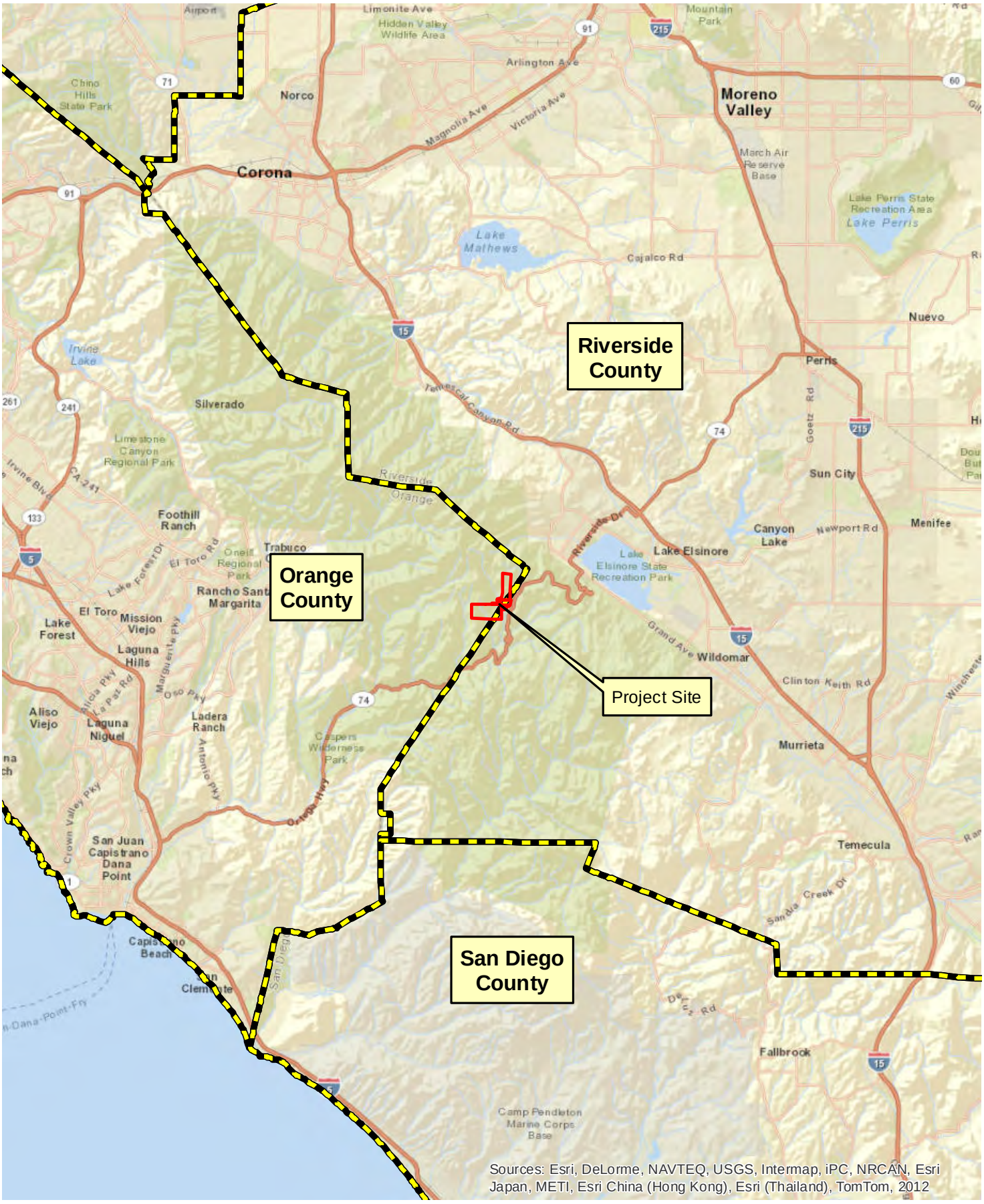
Crysta Dickson
Senior Biologist II
Permit # TE067347-4

Maile Tanaka
Senior Biologist I

Attachments

Figure 1 – Regional Map
Figure 2 – Vicinity Map
Figure 3 – Plant Communities – Nilson Parcel
Figure 4 – Location of Seasonal Ponds
Figure 5 – Seasonal Pond Photographs
Appendix A – USFWS Vernal Pool Dry Season Data Sheets
Appendix B – Results of Analyses of Soil Samples

[8] PCR Services Corporation. 2013. Results of Wet Season Vernal Pool Branchiopod Surveys for The Preserve Project Site, Orange and Riverside Counties, California. June 18.



PCR

N

0 5 10 Miles

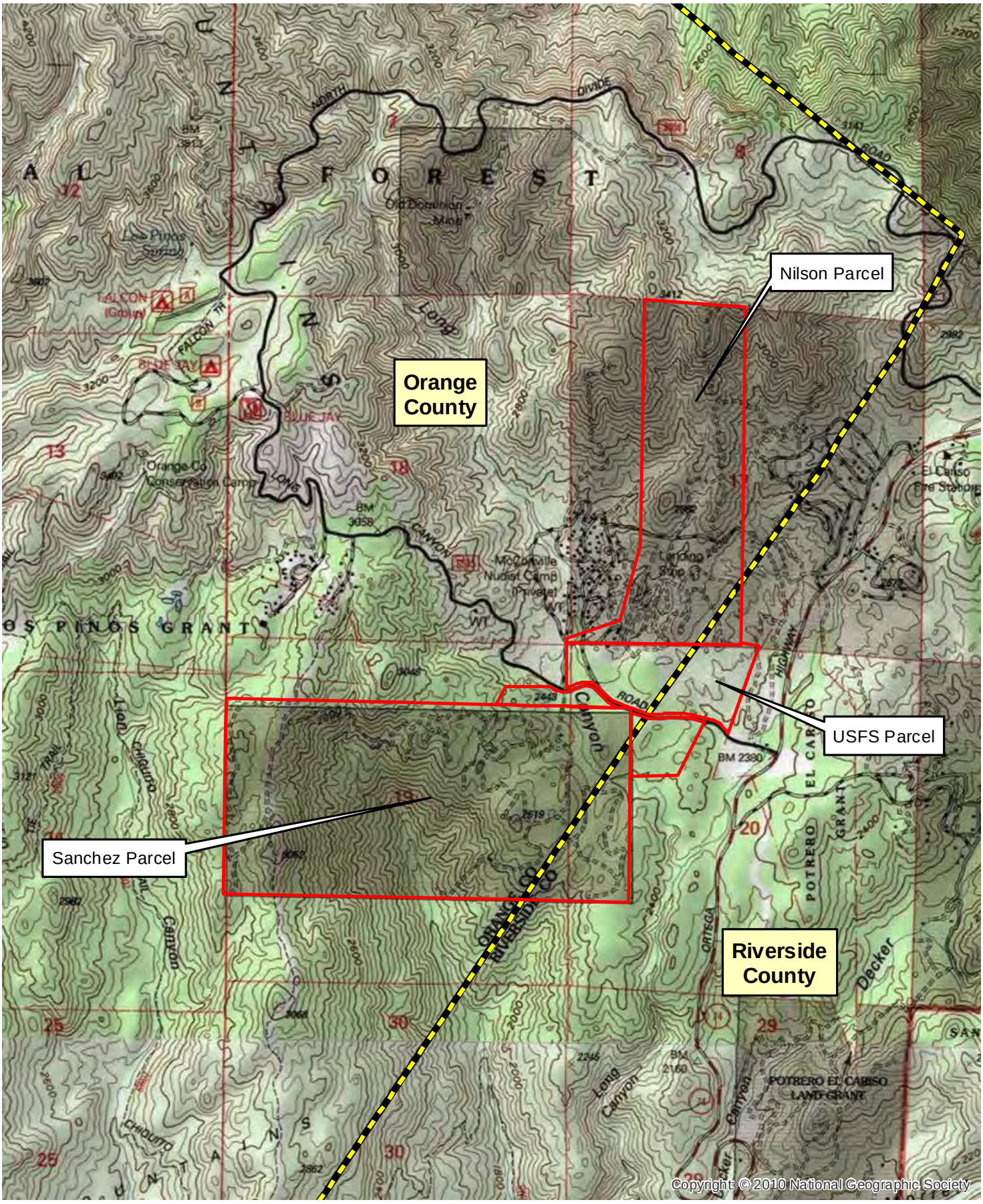
Regional Map

The Preserve

Source: ESRI Street Map, 2009; PCR Services Corporation, 2013.

FIGURE

1



PCR

N

0 2,000 4,000 Feet

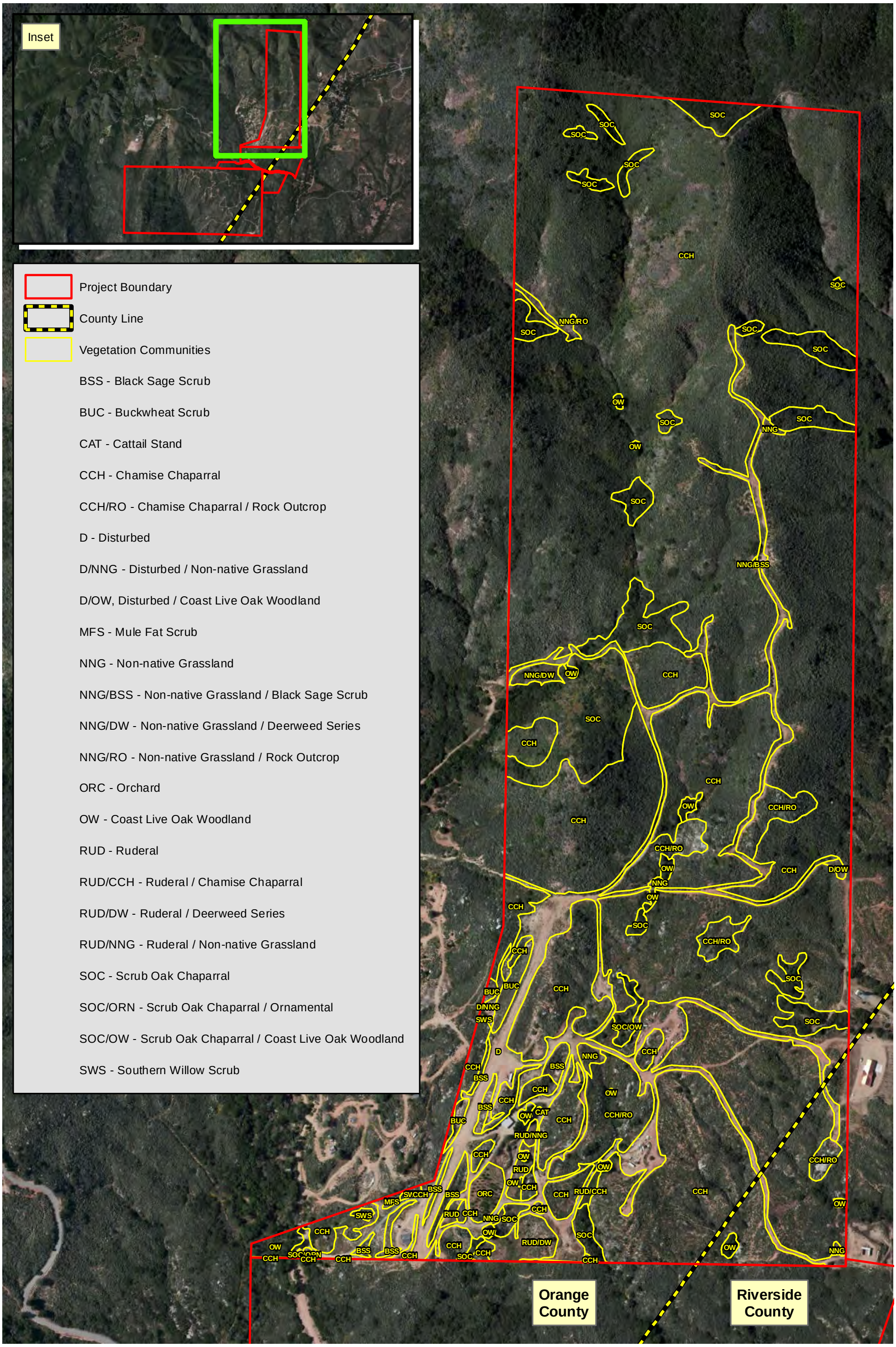
Vicinity Map

The Preserve

Source: USGS Topographic Series (Alberhill, Sitton Peak, CA); PCR Services Corporation, 2013.

FIGURE

2



N

0 400 800 Feet

PCR

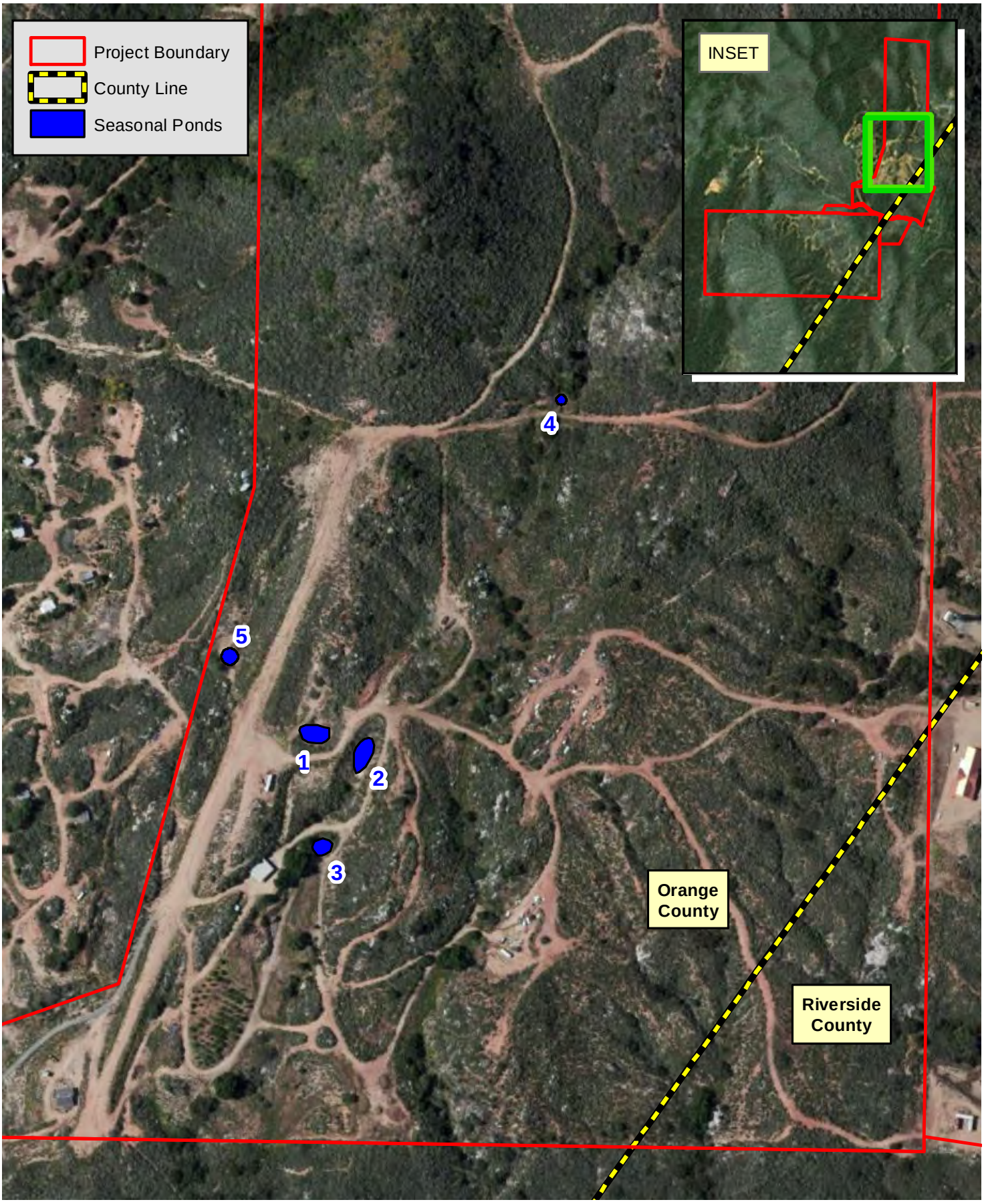
Plant Communities - Nilson Parcel

The Preserve

Source: Microsoft, 2010 (Aerial); PCR Services Corporation, 2013.

FIGURE

3



N

0 300 600 Feet

Location of Seasonal Ponds

The Preserve

Source: Microsoft, 2010 (Aerial); PCR Services Corporation, 2013.

FIGURE

4

PCR

Photograph 1: View of Seasonal Pond 1. Dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

Photograph 2: View of Seasonal Pond 4. Dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

Photograph 3: View of Seasonal Pond 5. Dry season samples were collected and analyzed for this Seasonal Pond as part of this survey effort.

PCR

Seasonal Pond Photographs

The Preserve

Source: PCR Services Corporation, 2013.

FIGURE

5

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no ___✓___ yes

Required color slides and/or photographs for the project site are included: _____ no ___✓___ yes

Date: 8/31/13 Time: 01100 County: ORANGE Quad: ALBERHILL

Collector(s): DICKSON Permit #: 1

Site/Project Name: THE PRESERVE Pool #: _____

Township: 6S Range: 5W Section: 17 _____ lat. _____ long.

Habitat Condition: (circle where appropriate)

- undisturbed — disturbed: tire tracks garbage discing/plowing
- ungrazed — grazed: cattle horses sheep other_____ light moderate heavy

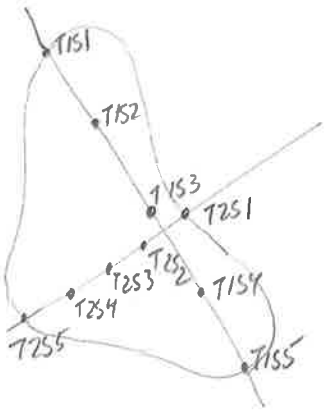
- predominant land use (e.g., pasture, crop): RURAL RESIDENTIAL

Pool Bottom Surface: (circle where appropriate)
hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: 8" ~~cm~~ (estimated maximum) Surface Area: 1571.25 ft² (estimated maximum)

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations

TRANSECT 1 = 465'
TRANSECT 2 = 325'



NA

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no ___✓___ yes

Required color slides and/or photographs for the project site are included: _____ no ___✓___ yes

Date: 8 / 31 / 13 Time: 1340 County: ORANGE Quad: ALBERHILL

Collector(s): DICKSON Permit #: TE067347-4

Site/Project Name: THE PRESERVE Pool #: 4

Township: 6S Range: 5W Section: 17 _____lat. _____ long.

Habitat Condition: (circle where appropriate)

- undisturbed — disturbed: tire tracks garbage discing/plowing

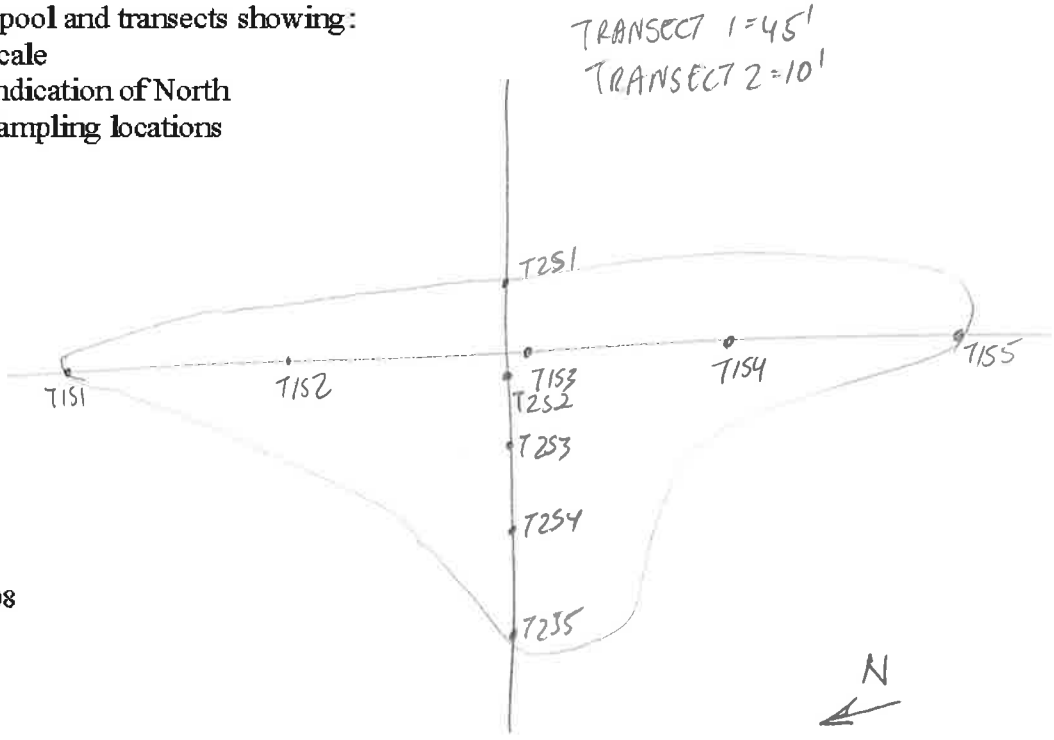
- ungrazed — grazed: cattle horses sheep other_____ light moderate heavy

- predominant land use (e.g., pasture, crop): RURAL RESIDENTIAL

Pool Bottom Surface: (circle where appropriate)
hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: 10" ~~cm~~ (estimated maximum) Surface Area: 450 ~~ft²~~ ~~m²~~ (estimated maximum)

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations



U.S. Fish and Wildlife Service Vernal Pool Data Sheet Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no ✓ yes

Required color slides and/or photographs for the project site are included: _____ no ✓ yes

Date: 8 / 31 / 13 Time: 1248 County: ORANGE Quad: ALBERHILL

Collector(s): DICKSON Permit #: TE 067347-4

Site/Project Name: THE PRESERVE Pool #: 5

Township: 6S Range: 5W Section: 17 _____ lat. _____ long.

Habitat Condition: (circle where appropriate)

- undisturbed — disturbed: tire tracks garbage discing/plowing

- ungrazed — grazed: cattle horses sheep other_____ light moderate heavy

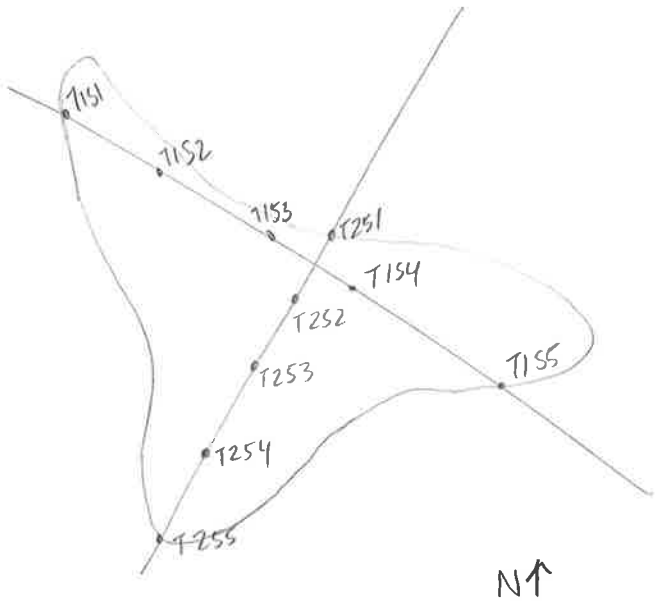
- predominant land use (e.g., pasture, crop): RURAL RESIDENTIAL

Pool Bottom Surface: (circle where appropriate)
hardpan claypan cobbly/rocky lava flow other_____

Pool Depth: 12" ~~cm~~ (estimated maximum) Surface Area: 3001 5 ~~m~~ ft^2 (estimated maximum)

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations

TRANSECT 1 = 69.0ft
TRANSECT 2 = 43.5ft



The University of Kansas

Kansas Biological Survey

9 September 2013

Maile Tanaka
PCR Services
One Venture,
Suite 150,
Irvine, California 92618

SUBJECT: Results of Analyses of Soil Samples Collected for Dry Season Surveys from The Preserve Project Site, Orange County, California.

Dear Ms. Tanaka,

PCR Services conducted a dry season survey of potential special status shrimp habitats at The Preserve project site, located in Orange County, California. Soil samples were collected from three previously identified habitats judged to be suitable for special status shrimp species. No special status shrimp eggs were collected from the soil samples analyzed.

Kansas Biological Survey understands that PCR Services will submit this report and all other pertinent materials and information to the US Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (DFW), as required by the USFWS guidelines for a protocol level survey.

Definitions

For the purpose of this report, special status shrimp are defined to include shrimp species listed as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR 17.11 for listed animals and various Federal Register notices for proposed species). Three special status fairy shrimp species (*Branchinecta lynchi*, *B. sandiegonensis*, and *Streptocephalus woottoni*) have the potential to occur at the proposed project site. In addition, two nonlisted fairy shrimp species (*Linderiella occidentalis* and *Branchinecta lindahli*) are known from the proposed project vicinity.

Methods

PCR Services collected soil samples from three potential special status shrimp habitats at the proposed project site. Each soil sample was placed in a bag, labeled with the locality number, and submitted to the Kansas Biological Survey laboratory for analysis. All potential habitats sampled were identified according to the numbers assigned to them by PCR Services.

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The University of Kansas

Laboratory Analysis

Soil samples were prepared for examination in the laboratory by dissolving the clumps of soil in water and sieving the material through 300- and 150- μm pore size screens. The small size of these screens ensures that the eggs from the shrimp species will be retained. The portion of each sample retained in the screens was dissolved in a brine solution to separate the organic material from the inorganic material. The organic fraction was then examined under a microscope.

Results

No special status shrimp eggs were recovered from the soil samples. No anostracan eggs of any kind were found in any of the samples, however Pool 1 contained cladoceran ephippia and copepod eggs, and Pool 5 contained large numbers of copepod eggs. These analyses are insufficient by themselves to determine that special status shrimp are absent from the other habitat on this site. The results of this survey must be combined with a protocol wet season survey, and concurrence must be sought from the USFWS before any additional determinations can be made.

If you have any questions please call me.

Sincerely,

D. Christopher Rogers
785.864.1714
Crustacean Taxonomist and Ecologist
Kansas Biological Survey
Central Plains Center for Bioassessment
Kansas University, Higuchi Hall
2101 Constant Avenue, Lawrence, KS 66047-3759 USA