
E-10: Line 407 East Wet-Season Sampling for Branchipod

2007-2008 Wet Season Branchiopod Survey Report

for

PG&E Line 407 East Natural Gas Transmission Pipeline

Sacramento, Placer, and Sutter Counties, California

**Ninety-Day Findings Report
USFWS Permit # TE-049693-1**

August 2008



Prepared for:

TRC

Attn: Benjamin Hart

80 Stone Pine Road, Suite 200

Half Moon Bay, CA 94019

Prepared by:



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Table of Contents

	<u>Page</u>
Summary of Findings and Conclusions	1
I. Introduction.....	2
Study Area	2
Purpose of the Survey	2
II. Study Methods.....	4
III. Project Description	4
IV. Habitat Description.....	5
Environmental Setting	5
Vernal Pools.....	5
Vernal Swales	6
Seasonal Wetlands	6
Seasonal Swales.....	6
V. Survey Results	6
Sampling Locations	6
Species Identified and Population Size.....	7
VI. Conclusions and Determinations.....	7
VII. References.....	13
Statement of Surveyors.....	14

List of Figures and Photos

	<u>Page</u>
Figures	
1 Project Location.....	3
Study Area Photographs	9

Attachments

Attachment A – Draft 2007 Delineation of Waters of the U.S. Maps

Attachment B – 2007-08 Wet Season Invertebrate Sampling Results Maps

Appendices

Appendix A – USFWS Approval to Conduct Surveys

Appendix B – USFWS Permit

Appendix C – USFWS Vernal Pool Data Sheets

Appendix D – Copy of CNDDDB Field Survey Forms

Appendix E – Copy of GCI Field Data Sheets

Summary of Findings and Conclusions

Gallaway Consulting, Inc. performed a second wet-season vernal pool branchiopod survey for the Pacific Gas & Electric (PG&E) Line 407 East Natural Gas Transmission Pipeline survey area. Wet and dry-season samplings were conducted in 2006-2007 due to the high potential for occurrence of federally listed vernal pool branchiopods, including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), and Conservancy fairy shrimp (*B. conservation*). However, low rainfall levels during the 2006-07 wet-season contributed to little or no ponding of the smaller and moderate sized vernal pools causing them to be devoid of invertebrates and basic taxa. Larger pools were able to pond water for sufficient periods of time to support invertebrate life history and several detections of *Lindieriella occidentalis* were recorded. The 2006 dry season sampling results reported 41 separate pools on-site containing several *Branchinecta sp.* eggs; however, the 2006-07 wet-season survey was unable to confirm the dry season findings. In the anticipation that the 2007-2008 wet-season would provide adequate rainfall and ideal conditions for hatching of the eggs, the U.S. Fish and Wildlife Service requested an additional wet-season survey be conducted to confirm the results of the dry-season survey for the presence of vernal pool invertebrates. Surveys for the 2007-08 wet-season were initiated on December 13, 2007 and continued until April 14, 2008 to determine the presence or absence of federally listed vernal pool branchiopods. Within the approximately 1811.2-acre site east of State Highway 99, vernal pools, vernal swales, seasonal wetlands and seasonal swales were sampled in efforts to determine the presence of federally listed vernal pool branchiopods. Surveys of the site found *B. lynchi* within two wetland features and California *Lindieriella* (*Lindieriella occidentalis*), a non-listed species, was found in seven features on-site.

A “complete” survey comprised of one dry-season survey and two consecutive wet-season survey for the PG&E Line 407 East Natural Gas Transmission Pipeline has been performed as outlined in the U.S. Fish and Wildlife Service’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*, 1996.

I. Introduction

Gallaway Consulting, Inc. (GCI) performed a second wet-season survey for federally listed large vernal pool branchiopods for the Pacific Gas and Electric Company (PG&E) Line 407 East Natural Gas Transmission Pipeline (Project) located in Sacramento, Placer and Sutter counties in California's Central Valley (**Figure 1**). GCI conducted a second wet-season survey under contract with TRC Essex (Prime). Surveys were initiated on December 13, 2007 and concluded on April 14, 2008.

Study Area

The survey area for the Project encompasses an approximately 1811.2-acre corridor of rural, urban, and developed land on portions of the Verona, Rio Linda, Roseville, Citrus Heights, Taylor Monument, and Pleasant Grove United States Geological Survey (USGS) 7.5' quadrangles. Urban, commercial, and agricultural structures, as well as agricultural fields and open space, occupy the extent of the survey area. The survey area is located just west of the City of Roseville and north of Sacramento (**Figure 1**). Topography is flat to gently undulating with Project elevation ranging from 15 to 125 feet above sea level. The portion of the Survey area east of the Natomas East Main Drainage is largely comprised of gently sloping grasslands with low-density residential and commercial development and was the focus of the study. The Survey area west of the Natomas East Main Drainage is almost entirely composed of active, irrigated agricultural land used for rice production and did not receive surveys for vernal pool branchiopods.

Purpose of the Survey

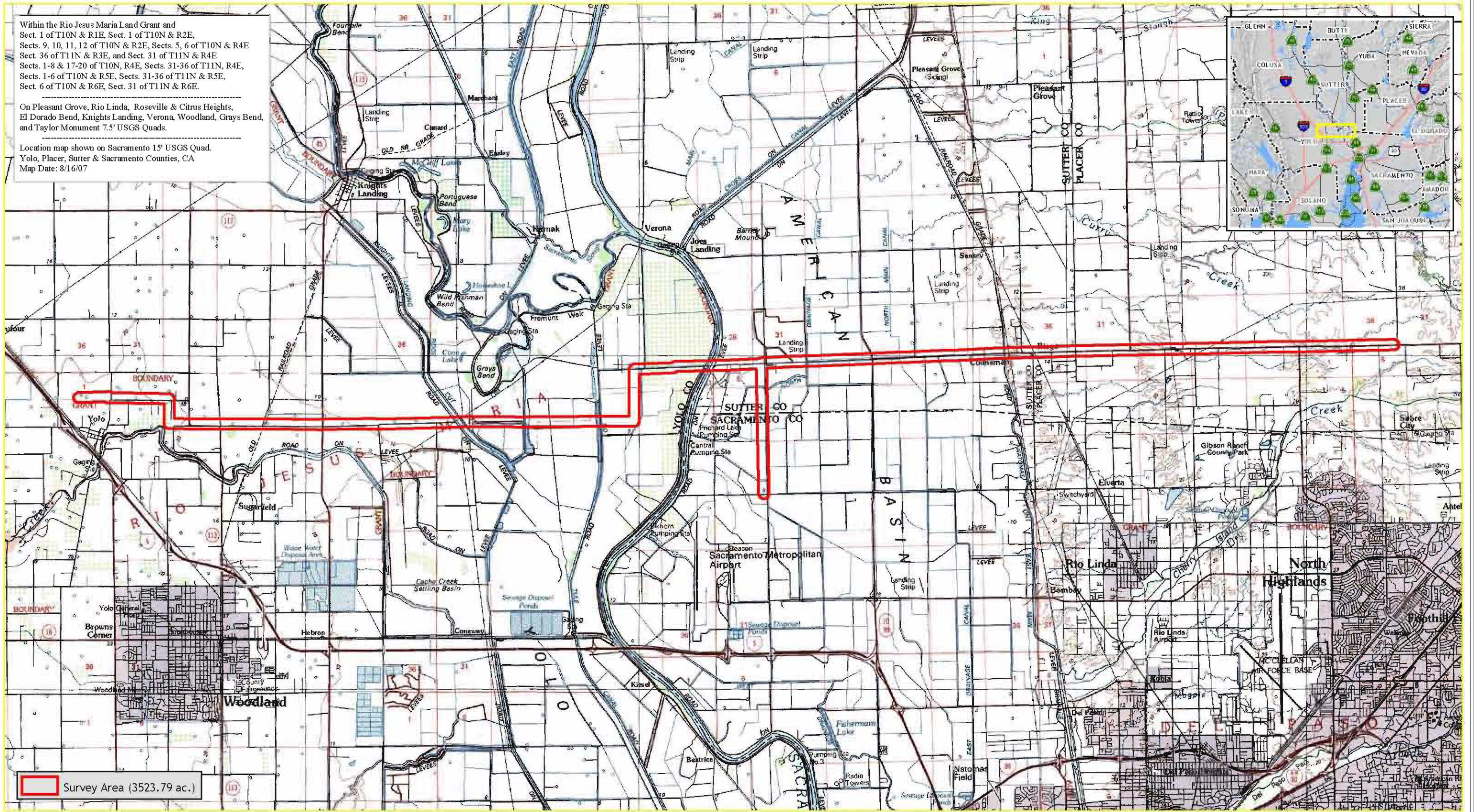
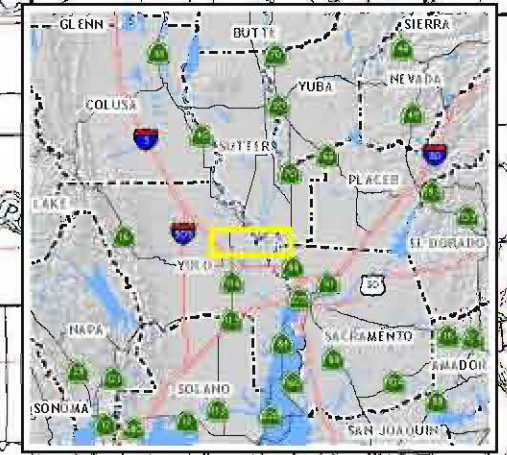
During the 2006-07 wet-season survey conducted for federally listed large vernal pool branchiopods, insufficient precipitation occurred during the season to facilitate ponding of several smaller features to confirm findings of the dry-season sampling performed during the summer of 2006 by Helm Biological Consulting (Brent Helm - TE-795930-4). Therefore, the U.S. Fish and Wildlife Service (USFWS) requested a second wet-season survey be performed to establish the presence/absence peddling of federally listed vernal pool branchiopods within the Project site. In conjunction with the dry-season and wet-season sampling for the 2006-07 year, the 2007-08 wet-season survey fulfills the 2-season minimum sampling requirements of the USFWS *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, 1996* (Guidelines).

Following receipt of appropriate state and federal permits to install a gas pipeline, the Project may impact jurisdictional wetland features constituting suitable branchiopod habitat within the study area. To determine avoidance measures and potential mitigation necessary to offset any adverse affects to listed species, it is required federally listed vernal pool branchiopod presence/absence be determined on a pool-by-pool basis.

Within the Rio Jesus Maria Land Grant and Sect. 1 of T10N & R1E, Sect. 1 of T10N & R2E, Sects. 9, 10, 11, 12 of T10N & R2E, Sects. 5, 6 of T10N & R4E Sect. 36 of T11N & R3E, and Sect. 31 of T11N & R4E Sects. 1-8 & 17-20 of T10N, R4E, Sects. 31-36 of T11N, R4E, Sects. 1-6 of T10N & R5E, Sects. 31-36 of T11N & R5E, Sect. 6 of T10N & R6E, Sect. 31 of T11N & R6E.

On Pleasant Grove, Rio Linda, Roseville & Citrus Heights, El Dorado Bend, Knights Landing, Verona, Woodland, Grays Bend, and Taylor Monument 7.5' USGS Quads.

Location map shown on Sacramento 15' USGS Quad. Yolo, Placer, Sutter & Sacramento Counties, CA Map Date: 8/16/07



Survey Area (3523.79 ac.)

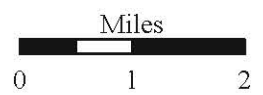


Figure 1

For the purpose of this report, the term branchiopod strictly refers to the three federally listed vernal pool branchiopod species that have the potential to occur within the site: vernal pool fairy shrimp (*Branchinecta lynchi*), Conservancy fairy shrimp (*B. conservatio*), and vernal pool tadpole shrimp (*Lepidurus packardii*). Although other branchiopods were found within the site they were not a target species of this study. Approval to conduct the survey was received from various landowners along the linear Project area upon being contacted by PG&E representative months prior to the survey. Written authorization to conduct wet-season surveys was received November 19, 2007 via e-mail from Michelle Tovar, USFWS (**Appendix A**). The following wet-season report is being submitted in accordance with the conditions of the USFWS Permit TE-049693-1 (**Appendix B**). This document follows the reporting format outlined in the Guidelines (1996).

II. Study Methods

Surveys were conducted according to the Guidelines. Upon receipt of USFWS approval to survey the site (**Appendix A**), surveys were initiated after the first seasonal storm events to determine when pools/swales were inundated over 3 cm. The study period began December 13, 2007 (although pools had not begun ponding over 3 cm) and was completed on April 14, 2007. Once inundated, pools and swales were sampled every two weeks unless no longer inundated. The site contained varying sizes of pools, some of which remained inundated for prolonged periods and others that dried down relatively quickly, or never ponded at all. Pools were evaluated during the site visits and sampled if they contained greater than 3 cm of water. At each site visit, the survey area was traversed on foot at various pullouts along the roadway. Sampling was done with a 0.5-mm mesh, long-handled D-net. A representative sample of each pool/swale's micro-habitats, including the bottom, edges and vertical water column was collected; and netted contents were either examined within the bag of the net, or transferred to a bucket and examined by portions in a 20 cm round white sorting pan. If necessary, a voucher sample of the federally listed branchiopods identified during the survey, were collected and preserved in ethanol. Only sexually mature, identifiable branchiopods were used to make positive observations regarding presence. Jody Gallaway (TE-049693-1), Trish Ladd (TE-049693-1) and Christy Dawson (TE-049693-1) performed the field surveys.

III. Project Description

Introduction

The PG&E Line 407 is part of a project to provide natural gas to communities in the Sacramento River Valley, which is an area of rapid growth. The survey area is composed of a 500-foot buffer on either side of the Project alignment. Due to the large size of the project, it will be distinguished as PG&E Line 407 West (approximately 14 miles in length) and PG&E Line 407 East (approximately 12 miles in length). The PG&E Line 407 West (West Project) will run from a tie-in point with the proposed PG&E Line 406 and existing PG&E Line 172A near Interstate 5 north of the City of Woodland to a tie-in point with the proposed PG&E Line 407 East (East Project) at the corner of Powerline and Riego roads. The East Project then splits, running south

along Powerline Road to West Elverta Road, and east along Riego Road/Baseline Road to Fiddymment Avenue. From the western tie-in, the line will run along the edges of fields and parallel a series of county roads and irrigation canals, crossing Knights Landing Ridge Cut, the Yolo Bypass, the Sacramento River, Natomas East Main Drainage, and Curry Creek before reaching the eastern tie-in (**Figure 1**). This document only pertains to the East Project survey area as the western section is composed of active agricultural fields and does not support potential branchiopod habitat.

IV. Habitat Description

Environmental Setting

A Delineation of Waters of the United States prepared by Gallaway Consulting, Inc. (GCI) in 2006 and was revised on May 3, 8, and 14, and June 21, 2007 by GCI biologists following the Supreme Court ruling in the case of *Rapanos vs. United States*, May 2007 (**Attachment A**). Within the survey area, vernal pools, vernal swales, seasonal wetlands, seasonal swales and roadside ditches were delineated that represent potential habitat for federally listed vernal pool branchiopods. In addition to the delineated wetland features, Helm Biological Consulting also sampled several areas during dry-season sampling that could potentially support branchiopods. Most wetland features occur in annual grasslands, some of which are grazed by cattle, and others are fallow or ungrazed. Man-made ditches are another common feature throughout the survey area, pooling and conveying precipitation along roadsides that were not sampled due to the constant flow of water. Active rice fields and agricultural ditches also occur within the survey area, but were not sampled as they typically hold water during the summer months which are the typical dry down periods necessary to complete the branchiopod life cycle. Following the delineation prepared by GCI, it was discovered during the 2007-08 wet-season sampling that several features on private lands were altered by the landowners either by development or grading activities and were unable to be sampled (see Results section below). One landowner refused access to several features (WF# 83-89), thus preventing sampling from occurring within that area. During the dry season sampling in 2006, several features identified as potential branchiopod habitat by Helm Biological Consulting were found to occur in the floodplain of a drainage where several fish were observed swimming in the potential features. As vernal pool branchiopods have adapted to environments absent of predatory fish, sampling of these features ceased.

Vernal Pools

Within the survey area vernal pools comprise the majority of potential branchiopod habitat. Pools vary considerably in size and depth, which greatly affected the inundation period of the pools. All vernal pools occurred in annual grasslands and typically had grass covered bottoms. Due to a low rainfall year in 2006-07 and the limited amount of precipitation during the later months of the 2007-08 wet-season, smaller pools were either dry upon inspection or only briefly ponded. Larger, deeper pools ponded water for sufficient periods to support vernal pool shrimp life history and *B. lynchi* was identified in two vernal pools (WF# 91 and 92) that were

connected during high ponding events (**Attachment B3**). *L. occidentalis* was also detected in WF# 91 and 92 as well as in vernal pools WF# 44 and 45 (**Attachments B1 & B2**).

Vernal Swales

Vernal swales within the survey area were typically shallow depressions conveying water to lower-lying areas forming standing pools. Swales were often dry at survey visits, though at times did support basic taxa; however, no vernal swales ponded water for a long enough period to support vernal pool branchiopod life cycle.

Seasonal Wetlands

Seasonal wetlands within the survey area varied greatly in size and depth. These features differed from vernal pools in the fact they typically would pond water for longer periods of time inducing the growth of plant species typical of seasonal wetlands. One large seasonal wetland (WF# 48) was conveying water via culverts to the south side of Riego Road where the majority of the water pooled in WF # 44 and 45 (found to contain *L. occidentalis*) or entered an intermittent drainage (OW# 088). *Lindieriella occidentalis* was also found to occur within three seasonal wetlands: WF# 22, HBC4 and HBC6A.

Seasonal Swales

These features varied in size throughout the study area. Seasonal swales are depressions on a slope that typically convey water to seasonal wetlands where water pools for longer periods of time. Seasonal swales contain wetland plants but often do not contain standing water for significant periods of time.

V. Survey Results

Sampling Locations

All sampling was conducted within the approximately 1811.2-acre survey site illustrated in **Attachment A**. **Attachment B** depicts the 2007-08 wet-season sampling results by displaying the features found to contain *B. lynchi* and/or *L. occidentalis*. Please refer to **Attachment A** and **Appendix E** for the maps and corresponding data sheets prepared for the 45 features sampled. As previously mentioned sampling discontinued or was not initiated for several of the features due to restricted access and/or altered features. During the 2007-08 wet-season survey, the following delineated wetland features were not sampled:

- Restricted or denied access: WF# 68, 69, 70, 71, 73, 74, 75, 77, 83-89, 106;
- Did not pond sufficiently: WF# 28, 32, 33, 63, 81;
- Recently tilled or disturbed by development: WF# 1, 3-14, 16, 29/30, 58, 77, 79, 80;
- Flowing water: WF# 33, 48/49, 55, 56, 111, 114, and all “other waters”;
- HBC 1, 2, 2A, 3 are in floodplain of WF18 that supported predatory fish, discontinued sampling;

- Seasonal wetlands in recently disked fallow agricultural fields (WF# 95-105) and all of the irrigation ditches as they contained water during the summer months and were not inundated at the time of the wet-season survey;

Species Identified and Population Size

One species of federally listed vernal pool branchiopods was detected within the survey area. *Branchinecta lynchi* was identified in two vernal pools (WF# 91 and 92) that connected during high ponding events with population numbers in the 10's. *Linderiella occidentalis* was also found swimming with *B. lynchi* in WF #91 and 92 as well as in WF# 44, 45, 22, HBC4, HBC6A with population numbers ranging from the 10's to 100's. *Branchinecta conservatio* was not identified within the Project site during the two consecutive wet-season sampling.

Non special status invertebrate species encountered in wetland features on the site included copepods, ostracods, corixids, notonectids, dytoid adults and larvae, hydrophilid adults and larvae, ephemoptera, trichoptera, gastropods, zygopterans, and several types of dipteran larvae.

VI. Conclusions and Determinations

The majority of the precipitation events during the 2007-08 wet-season occurred in the months of January and February. March and April contributed very little precipitation late in the season thus accelerating the drying of most wetland features. The majority of on-site features ponded sufficient amounts of water to support basic vernal pool taxa life cycles; however, only one species of federally listed vernal pool branchiopod was detected. *Branchinecta lynchi* was identified with population numbers estimated in the 10's within two adjoining wetland features. *Linderiella occidentalis* was also found swimming with *B. lynchi* in the two pools, as well as five other pools and had population numbers ranging from the 10's to 100's.

Though previously conducted dry-season sampling found *Branchinecta* eggs in 41 features within the site and *L. occidentalis* in 21 features, a second wet-season survey was unable to confirm *Branchinecta* sp. presence in all of the features identified in the dry-season sampling. The majority of the *Branchinecta* eggs found during the dry-season sampling occurred in active rice fields that are continuously cultivated and were not inundated during the wet-season survey period. In addition to the active rice fields, dry-season sampling also found high occurrences of *Branchinecta* eggs in irrigation ditches, roadside ditches and large wetland features all of which contained flowing water. During the 2007-08 wet-season survey several of the wetland features had been recently disked by landowners and did not support the hydrology previously present on-site and were not sampled.

As branchiopod eggs are highly resilient and disperse via several methods including flowing water and waterfowl, it's expected that the largest density of eggs will accumulate at the lowest point of a flowing water body or in areas where waterfowl tend to amass (i.e. rice fields). Though it is practicable for *Branchinecta* eggs to be present on-site, eggs will not typically hatch until the appropriate environmental conditions (water temperature, depth, salinity, sufficient oxygen, etc) exist to successfully complete the species life cycle (Eriksen & Belk, 1999).

Therefore, it is likely the environmental stimuli necessary to terminate the egg's dormancy period may not be present within this portion of the survey area.

A "complete" survey of the site has been performed due to the completion of two consecutive wet-season surveys, one dry-season survey, and the identification of one of the five federally listed branchiopods during the wet-season survey, per the USFWS Guidelines.

Study Area Photographs



Seasonal wetland (WF# 59). Photo taken by TL on 3/16/08 facing north.



Vernal Pool (WF # 39). Photo taken by JG on 1/28/09 facing southwest.



Potential branchiopod habitat (HBC12). Photo taken by TL on 3/6/08 facing northeast.



Vernal pool (WF# 41). Photo taken by JG on 1/11/08 facing southeast.



Vernal pool (WF# 82). Photo taken by JG on 1/11/08 facing north.



Seasonal wetland area in the vicinity of HBCB. Photo taken by TL on 1/11/08 facing south.
Water is flowing south into WF# 018.



Vernal pool (WF# 45) contains *L. occidentalis*. Photo taken by TL on 1/28/08 facing southeast.
Other water #88 is located just beyond vernal pool.

VII. References

- Eriksen, C.H. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Eureka, CA.
- Gallaway Consulting, Inc. August 2007. 2006-2007 Wet Season Branchiopod Survey Report for PG&E Line 407 Natural Gas Transmission Pipeline, Sacramento, Placer and Sutter Counties, California.
- Helm, B. 1998. The biogeography of eight large branchiopods endemic to California. Pages 124-139 *in* C.W. Witham, E. Bauder, D. Belk, W. Ferren, and R. Ornduff (eds.), Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference. California Native Plant Society, Sacramento, California.
- Helm Biological Consulting. April 2007. Dry-season sampling for federally listed large branchiopods at the PG&E line 123 extension/line 407 (phase 1)/metro air park distribution feeder main project.
- Merritt, R.W., and K.W. Cummins (eds.). 1996. An introduction to the aquatic insects of North America (3rd ed.). Kendall/Hunt Publishers, Dubuque, IA.
- Smith, D.G. 2001. Pennak's freshwater invertebrates of the United States: porifera to crustacea. 4th Edition. John Wiley and Sons, Inc., New York, NY.
- Thorp, J.H. and A.P. Covich (eds). 2001. Ecology and classification of North American freshwater invertebrates (2nd ed.). Academic Press. San Diego, CA.
- 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. USFWS Sacramento Field Office, Sacramento, CA.

Statement of Surveyors

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

_____ Jody Gallaway (#TE-049693-1)

_____ Trish Ladd (#TE-049693-1)

_____ Christy Dawson (#TE-049693-1)

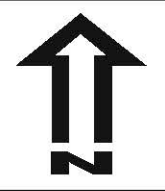
Attachment A

Draft 2007 Delineation of Waters of the U.S. Maps



Survey Extent	Soil Sample Sites	Other Waters of the U.S. - OW#	Wetland Features - WF#	Seasonal Wetland
No Access	Data Point - DP#	Culvert	Fresh Emergent Wetland	Vernal Pool
1ft. Contour	Upland - U#	Ephemeral	Riparian	Vernal Swale
Matchline	Wet - W#	Intermittent	Seasonal Swale	Open Water
				Potential Branchiopod Habitat (determined by HBC)

Type	Length (ft.)	Area (sq.ft.)	Acres
Fresh Emergent Wetland Total =	n/a	178119.5	4.089
Riparian Total =	n/a	9462.2	0.217
Seasonal Swale Total =	n/a	84953.9	1.950
Seasonal Wetland Total =	n/a	948946.9	21.785
Vernal Pool Total =	n/a	189878.0	4.359
Vernal Swale Total =	n/a	58319.3	1.339
Total of All Wetland Features =	n/a	1469679.8	33.739
Culvert Total =	4948.2	11641.3	0.267
Ephemeral Total =	44866.6	77247.7	1.773
Intermittent Total =	57818.0	805028.9	18.481
Open Water Total =	n/a	2786.4	0.064
Total of All OWOTUS =	107632.8	896704.4	20.586
Total of All Features =	107632.8	2366384.2	54.325



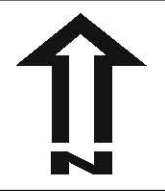
The information contained in this figure shall be considered preliminary until written verification by the USACE. Survey Extent derived from 500 ft. buffer of roadway. Features that fall within No Access areas were derived from roadside delineation and aerial photo interpretation. Survey Dates: July 21, 24 - 28, Aug. 10 & 25 2006/Surveyors: JG, SI, EA. Date of Aerial: Feb. 2005 (NAIP)/Contours derived from USGS DEM. Map Date: Aug. 29, 2006/Revisions:





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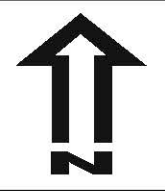
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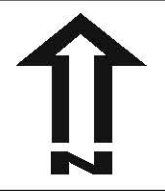
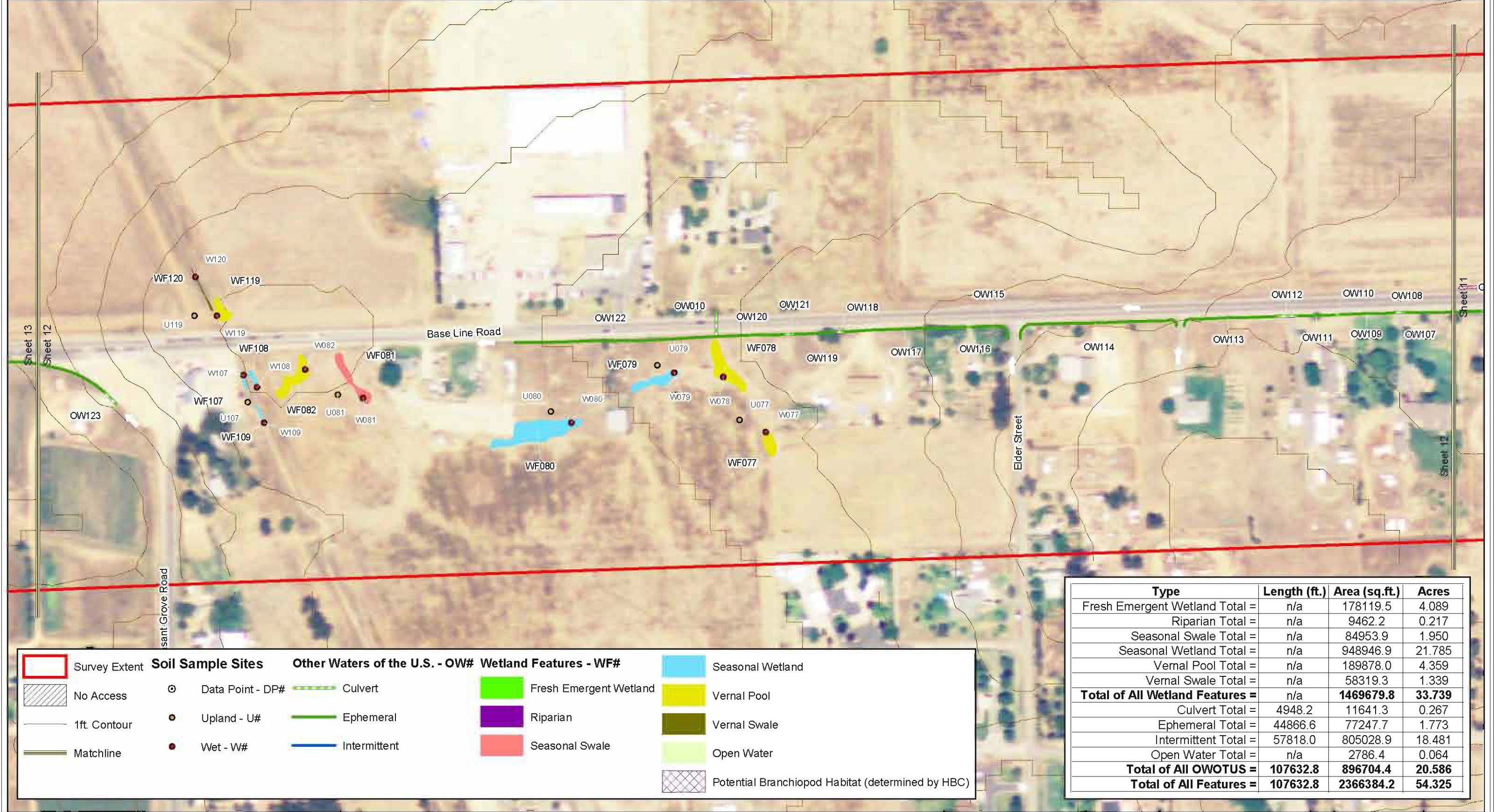
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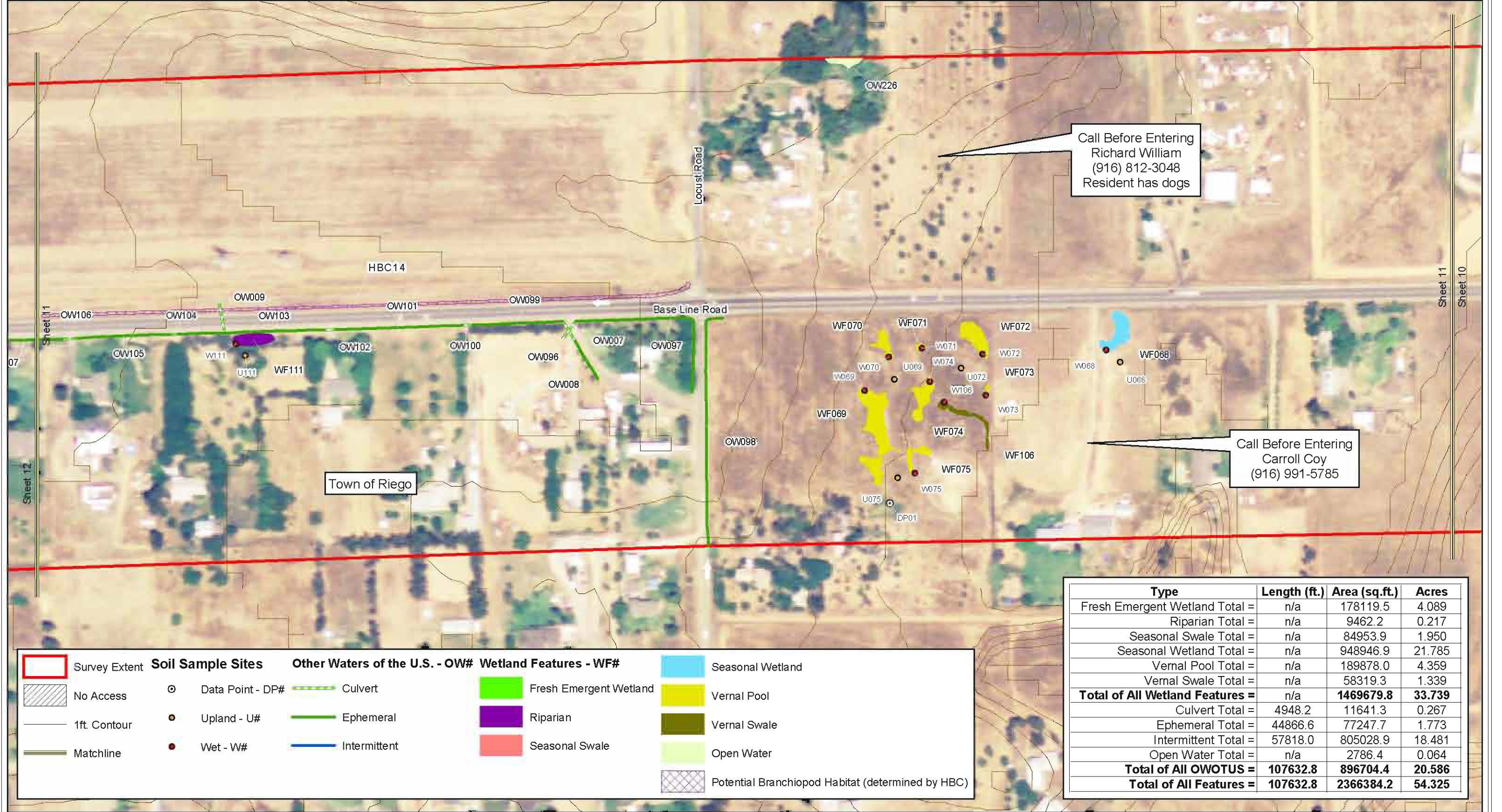
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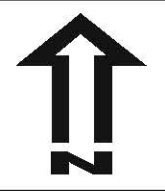


Call Before Entering
Richard William
(916) 812-3048
Resident has dogs

Call Before Entering
Carroll Coy
(916) 991-5785

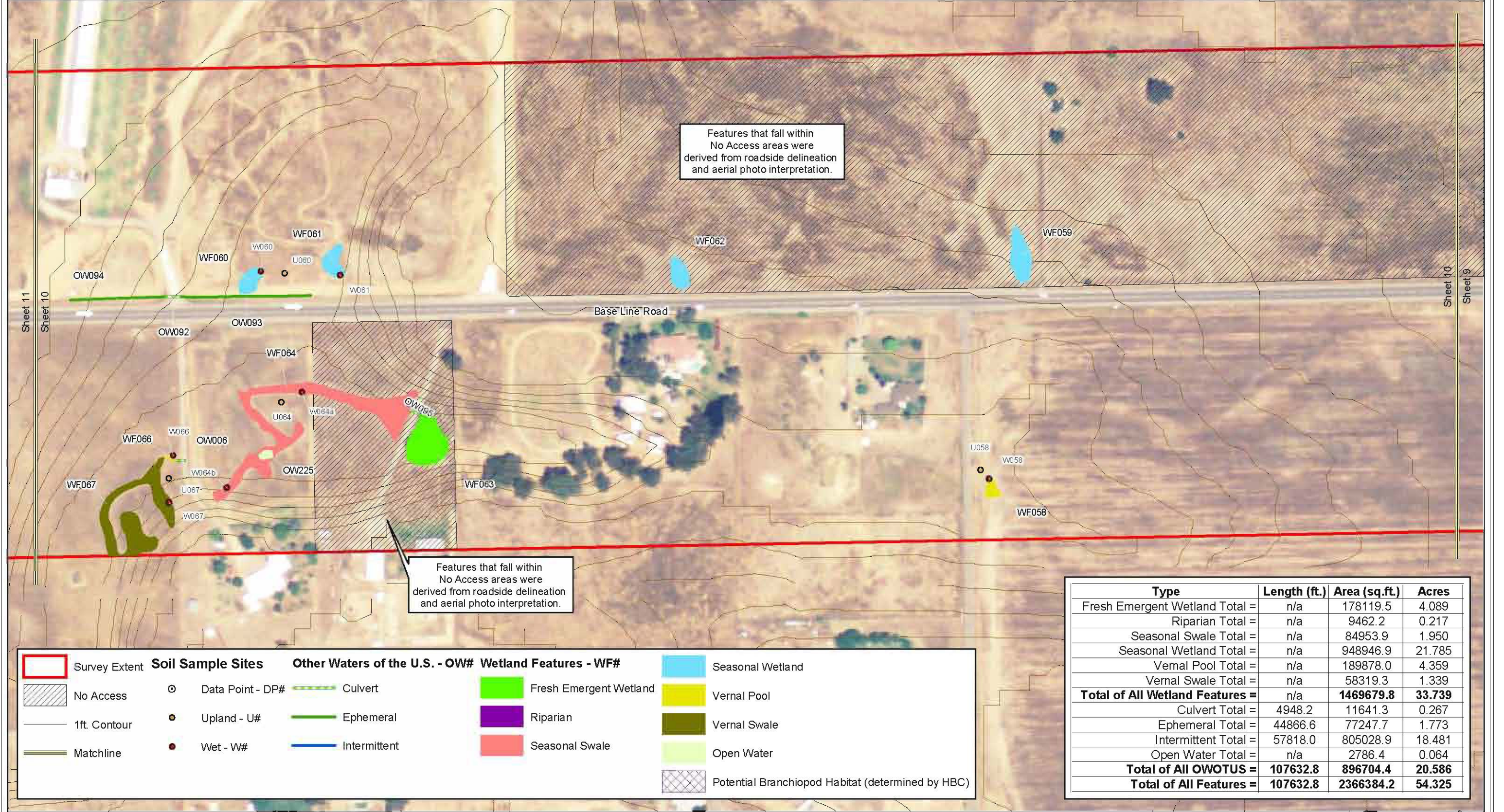
Survey Extent	Soil Sample Sites	Other Waters of the U.S. - OW#	Wetland Features - WF#	Seasonal Wetland
No Access	Data Point - DP#	Culvert	Fresh Emergent Wetland	Vernal Pool
1ft. Contour	Upland - U#	Ephemeral	Riparian	Vernal Swale
Matchline	Wet - W#	Intermittent	Seasonal Swale	Open Water
				Potential Branchiopod Habitat (determined by HBC)

Type	Length (ft.)	Area (sq.ft.)	Acres
Fresh Emergent Wetland Total =	n/a	178119.5	4.089
Riparian Total =	n/a	9462.2	0.217
Seasonal Swale Total =	n/a	84953.9	1.950
Seasonal Wetland Total =	n/a	948946.9	21.785
Vernal Pool Total =	n/a	189878.0	4.359
Vernal Swale Total =	n/a	58319.3	1.339
Total of All Wetland Features =	n/a	1469679.8	33.739
Culvert Total =	4948.2	11641.3	0.267
Ephemeral Total =	44866.6	77247.7	1.773
Intermittent Total =	57818.0	805028.9	18.481
Open Water Total =	n/a	2786.4	0.064
Total of All OWOTUS =	107632.8	896704.4	20.586
Total of All Features =	107632.8	2366384.2	54.325



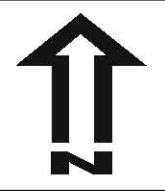
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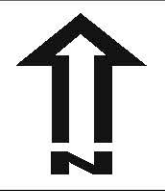




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	Data Point - DP#		Culvert		Seasonal Wetland
	Upland - U#		Ephemeral		Vernal Pool
	Wet - W#		Intermittent		Vernal Swale
	Survey Extent		Seasonal Swale		Open Water
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	1ft. Contour				
	Matchline				

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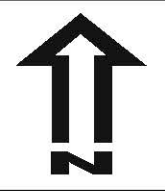
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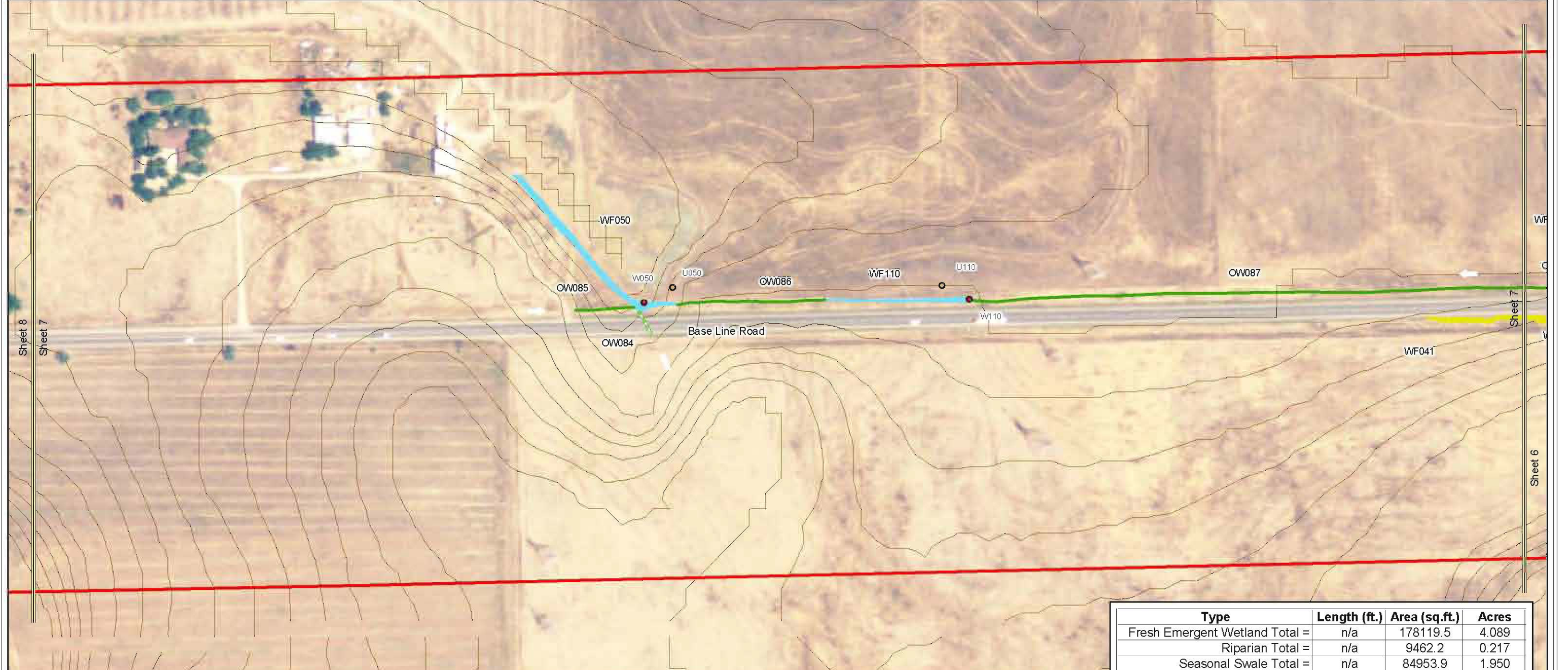
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No Access	Data Point - DP#	Culvert	Fresh Emergent Wetland	Vernal Pool
1ft. Contour	Upland - U#	Ephemeral	Riparian	Vernal Swale
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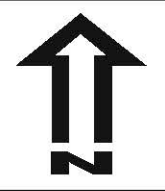
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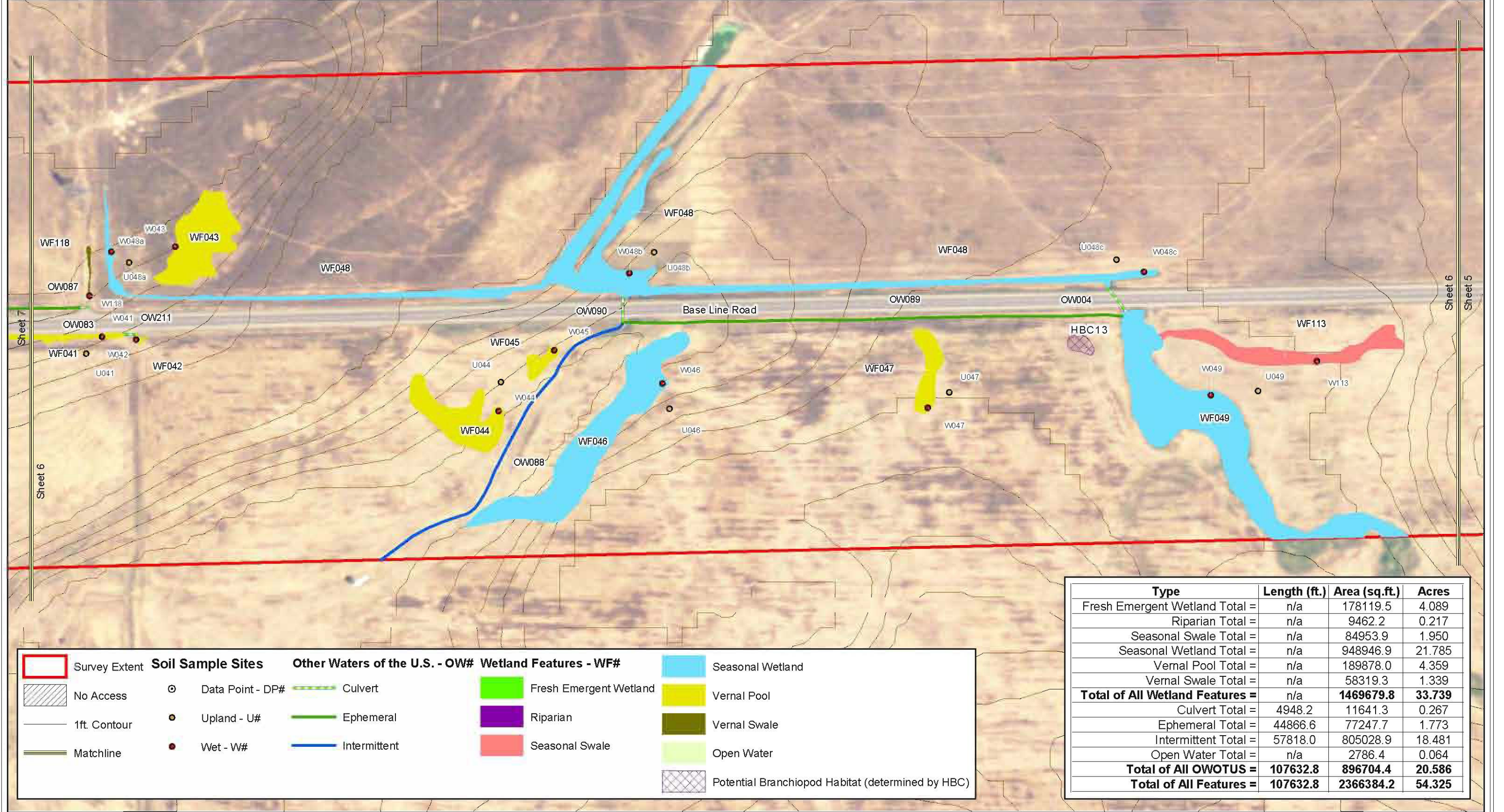
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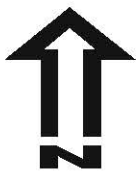
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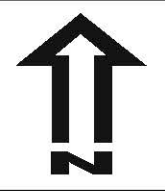
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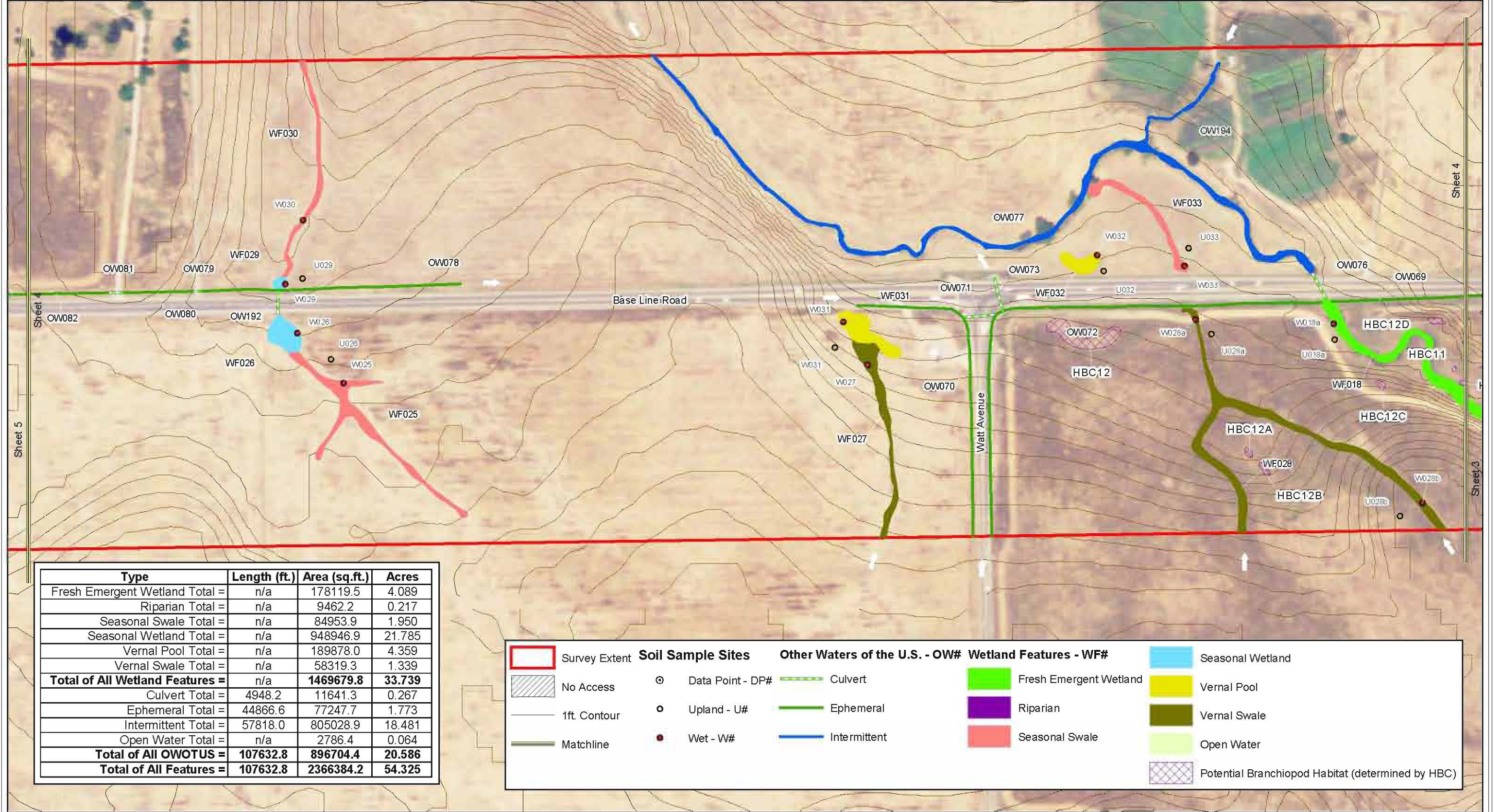
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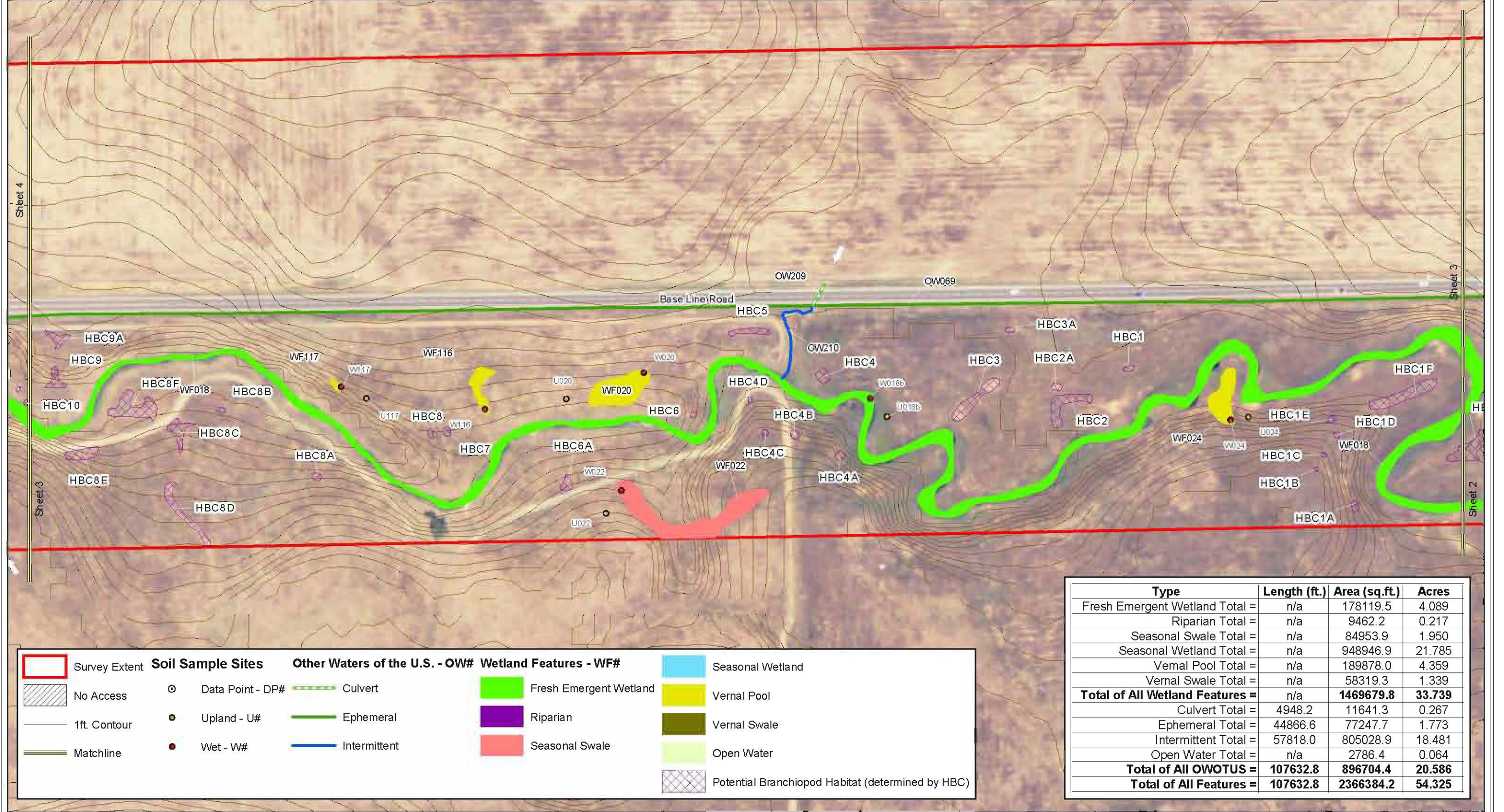
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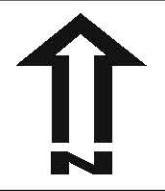
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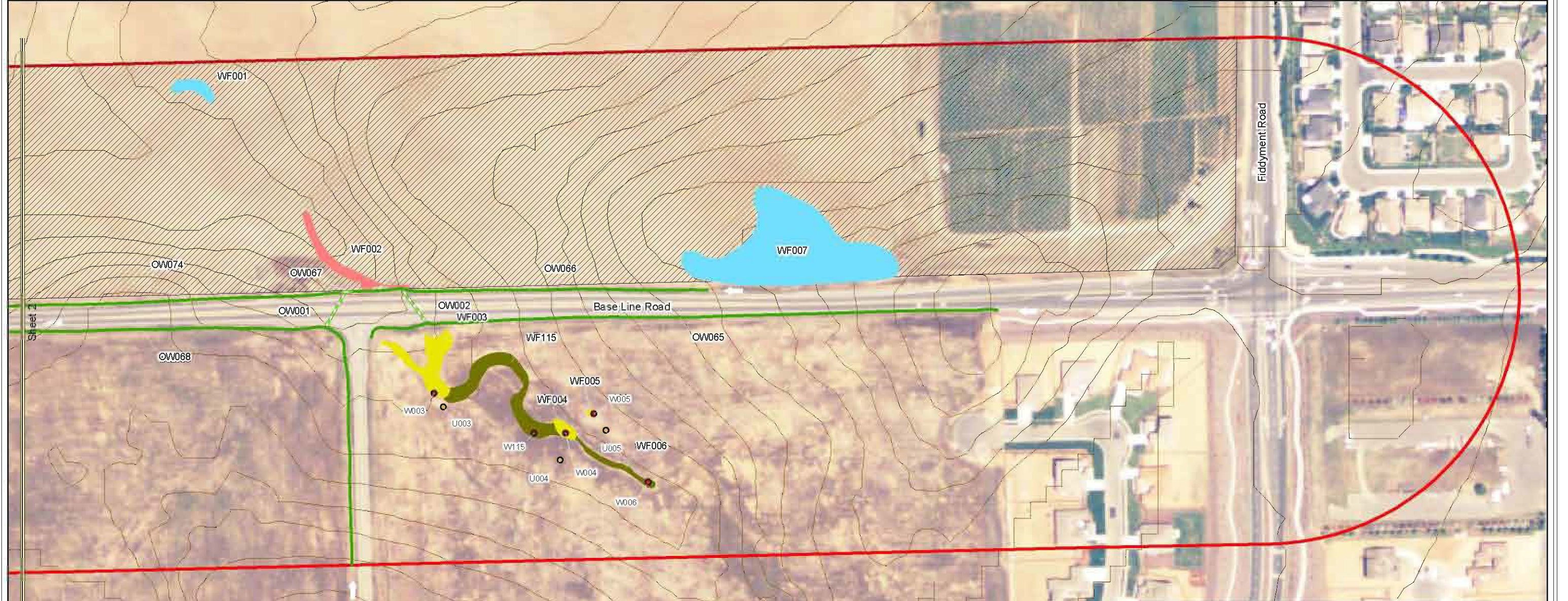
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No Access	Data Point - DP#	Culvert	Fresh Emergent Wetland	Vernal Pool
1ft. Contour	Upland - U#	Ephemeral	Riparian	Vernal Swale
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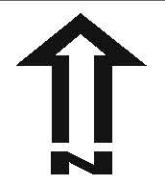
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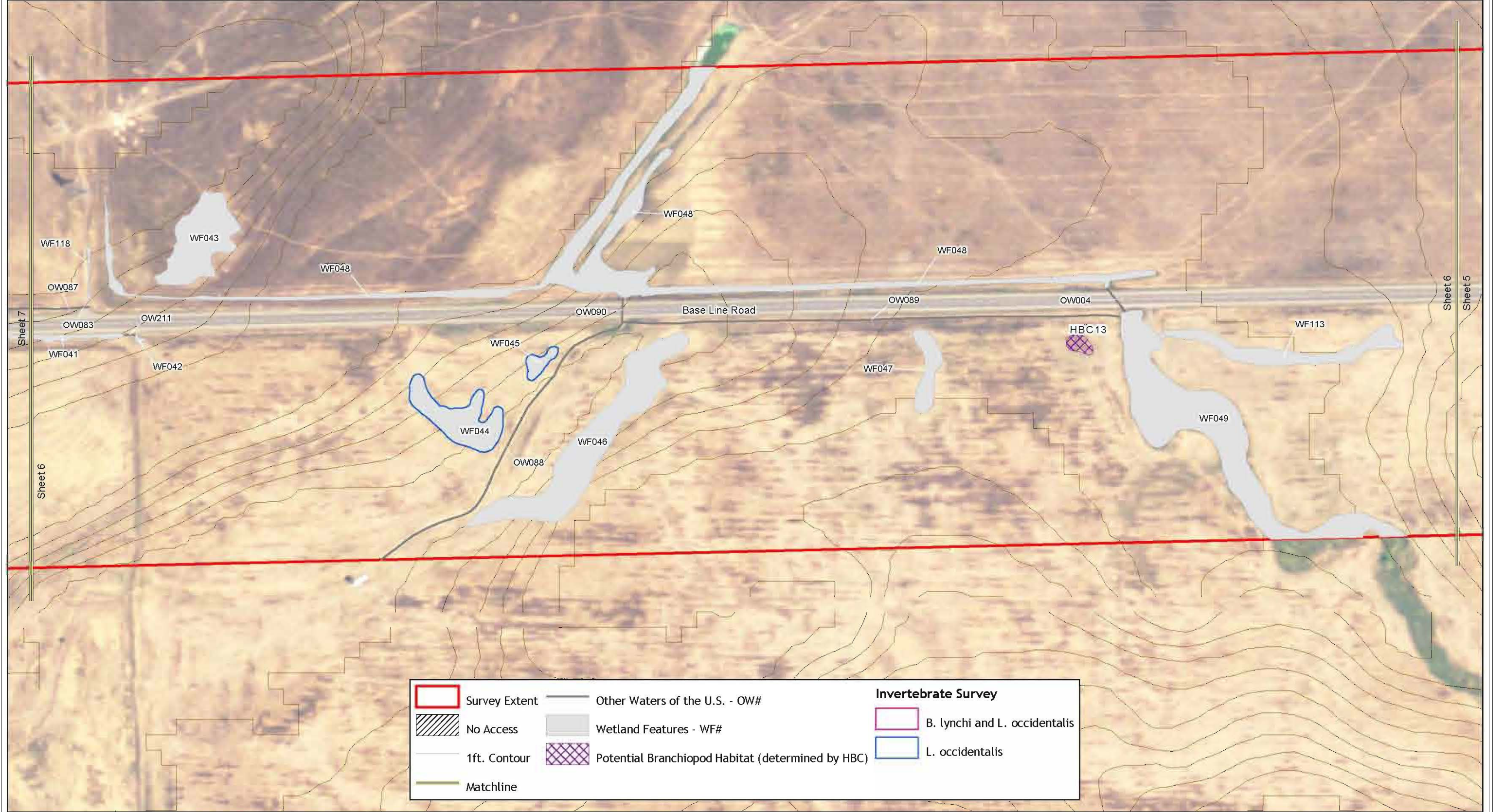
Attachment B
2007-08 Wet Season Invertebrate Sampling Results Maps



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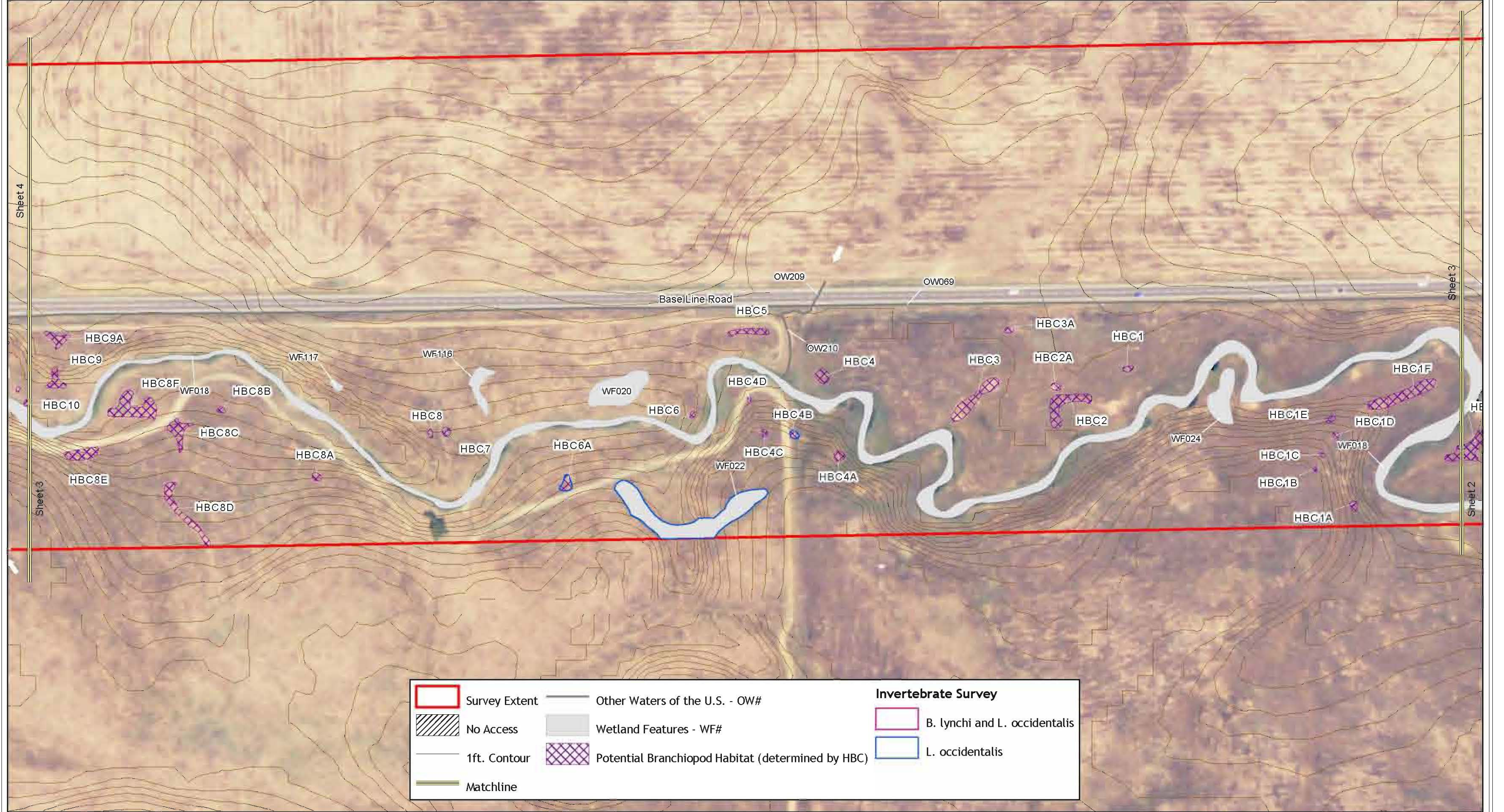


GALLAWAY
CONSULTING, INC.



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Appendix A

USFWS Approval to Conduct Surveys

Trish Ladd

From: Christy Dawson
Sent: Tuesday, November 20, 2007 10:43 AM
To: Jody Gallaway; Trish Ladd
Subject: FW: Wet season brachiopod authorization for [REDACTED] and the PG&E 123 site

Christy Dawson
Project Manager/Senior Biologist
Gallaway Consulting, Inc.
117 Meyers Street, Suite 110
Chico, CA 95928
Phone: 530.343.8327
Cell: 530.864.4874
Fax: 530.343.8312
christy@gallawayconsulting.net

From: Michelle_Tovar@fws.gov [mailto:Michelle_Tovar@fws.gov]
Sent: Monday, November 19, 2007 4:46 PM
To: Christy Dawson
Cc: Jana_Milliken@fws.gov; David_Kelly@fws.gov [REDACTED]
Subject: Wet season brachiopod authorization for [REDACTED] and the PG&E 123 site

Ms. Christy Dawson,

By this email message, you are authorized to conduct wet-season surveys of listed vernal pool crustaceans per the conditions of permit TE-049693-0, at the [REDACTED] and the PG&E site located in Butte, Sacramento, Placer and Sutter Counties, California, as specified in your November 15, 2007 electronic message to our office. **Please note:** that the wet season is fast approaching and we recommend surveyors be out to the site during the first inundation of pools to ensure surveys are done according to the guidelines.

[REDACTED]

by rural residential, agricultural buildings, agricultural fields, and open land. Sampling is proposed in approximately 140 pools/swales mainly occurring along the western portion of the site in which the property owners have proposed to establish a mitigation bank.

[REDACTED] The proposed project involves development of the northern portion of the property and the southern portion of the property will be preserved and utilized for on-site mitigation. Sampling is proposed for approximately 400 vernal pools/swales and 46 seasonal wetlands/swales.

The PG&E Line 123 / Line 407 (phase 1) / Metro Air Park Distribution Feeder Main site located in Sacramento, Sutter and Placer counties. The survey area for the project encompasses an approximately 1811.2 acres corridor of rural, urban, and developed land in portions of Verona, Rio Linda, Roseville, Citrus Heights, Taylor Monument, and Pleasant Grove. Sampling is proposed for approximately 91 wetland features.

Please remember to have all biologists carry a copy of their permit while doing the work, and to follow the terms and conditions of the permit and the survey protocol, including the reporting requirements. Please include the recovery permit numbers and all persons involved in the reports of the results of surveys, and the date of this

authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization.

We appreciate that you send separate copies of the report(s) at the time of any formal or informal consultation under section 7 of the Endangered Species Act with the Fish and Wildlife Service. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. Also include a summary of what surveys were authorized, who was authorized, when the surveys were done, and who did the surveys in your annual report for each recovery permit involved with this survey authorization.

Sincerely,
Michelle Tovar

Michelle Tovar
Fish & Wildlife Biologist
Endangered Species Division
U.S. Fish & Wildlife Service
2800 Cottage Way, Suite W2605
Sacramento, Ca 95825-3901
(916)-414-6646

Appendix B

USFWS Permit



DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

JODY M. GALLAWAY
115 MEYERS STREET SUITE 120
CHICO, CA 95928
U.S.A.

2. AUTHORITY-STATUTES

16 USC 1539(a)
16 USC 1533(d)

REGULATIONS (Attached)

50 CFR 17.22
50 CFR 17.32

50 CFR 13

3. NUMBER

TE049693-1

AMENDMENT

4. RENEWABLE

YES
 NO

5. MAY COPY

YES
 NO

6. EFFECTIVE

12/11/2006

7. EXPIRES

08/17/2009

8. NAME AND TITLE OF PRINCIPAL OFFICER (if #1 is a business)

9. TYPE OF PERMIT

THREATENED AND ENDANGERED SPECIES

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED

ON LANDS SPECIFIED WITHIN THE ATTACHED SPECIAL TERMS AND CONDITIONS

11. CONDITIONS AND AUTHORIZATIONS:

- A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.
- B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.
- C. VALID FOR USE BY PERMITTEE NAMED ABOVE.
- D. Further conditions of authorization are contained in the attached Special Terms and Conditions.

ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS

ANNUAL REPORT DUE: 1/31

ISSUED BY

Lydia Belluomini

TITLE

ENDANGERED SPECIES PROGRAM MANAGER

DATE

12/11/2006

Page 1 of 6
TE-049693-1

SPECIAL TERMS AND CONDITIONS

Jody M. Gallaway

1. This permit was previously issued on August 18, 2005. The terms and conditions set forth in that permit are hereby superseded by this amendment.
2. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the General Conditions for Native Endangered and Threatened Wildlife Species Permits," 50 CFR Part 13, 50 CFR 17.22 (endangered wildlife), and/or 50 CFR 17.32 (threatened wildlife), as applicable (copies attached). In addition, the permittee must have all other applicable State and Federal permits prior to the commencement of activities authorized by this permit.
3. The permittee is authorized to take (harass by survey and collect and sacrifice) the Conservancy fairy shrimp (*Branchinecta conservatio*), the longhorn fairy shrimp (*Branchinecta longiantenna*), the vernal pool fairy shrimp (*Branchinecta lynchi*), and the vernal pool tadpole shrimp (*Lepidurus packardii*) in conjunction with surveys for the purpose of enhancing their survival, as specified in the permittee's October 4, 2006, permit request, in accordance with the conditions stated below.
4. Permitted activities are restricted to the following geographic areas in California:

Butte, Glenn, Tehama, Shasta, Sacramento, Placer, and Sutter Counties.

Proposals to conduct sampling activities for the above listed species shall be submitted in writing to the Recovery Permit Coordinator at the U.S. Fish and Wildlife Service's (Service) Sacramento Fish and Wildlife Office (SFWO), 2800 Cottage Way, W-2605, Sacramento, California 95825 (telephone: 916-414-6600; fax: 916-414-6710).

The proposals shall include, as appropriate: (a) an explanation of the purpose of the study and a clear description of methods, including the names of field personnel and the number and dates of surveys; (b) the number of vernal pools or number of acres proposed to be surveyed; (c) the number of individuals proposed to be collected; (d) the name of the individual who will be completing the soil processing and/or preliminary vernal pool branchiopod cyst identification; (e) a map (at a minimum, a 1:24,000 scale U.S. Geological Survey (USGS) topographical map) depicting the location of the survey site(s); (f) the assessor's parcel number (APN) for the site (if possible); and (g) geographic information system (GIS) data depicting the survey site or global positioning system (GPS) coordinates (if possible). Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.

The permittee shall not commence activities authorized by this permit in a new area or in a previously authorized site at a new time until permission is received from the SFWO. If the permittee is denied authorization to survey at the requested location(s), including previously authorized sites, a request for reconsideration may be submitted to the

Page 2 of 6
TE-049693-1

Endangered Species Program Manager, at the Service's California/Nevada Operations Office (CNO), 2800 Cottage Way, Room W-2606, Sacramento California, as provided in 50 CFR 13.29. The procedures specified in 50 CFR 13.29(b) must be followed.

5. Authorized individuals:

Only individuals on the attached List of Authorized Individuals (List) are authorized to conduct activities pursuant to this permit. The List, printed on Service letterhead, may identify special conditions or circumstances under which individuals are authorized to conduct activities and must be retained with these Special Terms and Conditions. Each named individual shall be responsible for compliance with the terms and conditions of this permit.

To request changes to the List, the permittee shall submit written requests to the Recovery Permit Coordinator at the SFWO. Two copies of the request shall be submitted at least 30 days prior to the requested effective date. The request shall be signed and dated by the permittee and include:

- a. The name of each individual to be appended to the List;
- b. The resume/qualifications statement of each person to be appended to the List, detailing their experience with each species and type of activity for which authorization is requested;
- c. The names and phone numbers of a minimum of two references; and
- d. The names of the individuals to be deleted from the List.

Note: This procedure is for personnel changes only. For requests to renew/amend this permit, a complete application must be submitted to the Endangered Species Program Manager, at the CNO.

6. Taking of the Conservancy fairy shrimp, the longhorn fairy shrimp, the vernal pool fairy shrimp, and the vernal pool tadpole shrimp (hereafter collectively referred to as vernal pool branchiopods):

The permittee is authorized to harass by survey and collect voucher specimens of the vernal pool branchiopods (both hatched individuals and eggs) within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

- a. The permittee must implement all of the actions included in the attached *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* (Guidelines), dated April 19, 1996. The Guidelines will be updated periodically and the permittee must follow the most recent Guidelines after receipt of such.

Page 3 of 6
TE-049693-1

Any deviation from these Guidelines shall first be approved verbally or in writing by the SFWO.

- b. As specified in the Guidelines, sampling/collecting of hatched individuals or eggs is not authorized at any specific location until the permittee obtains approval from the SFWO.

Note: The sampling and preservation of voucher specimens from locations that have been previously surveyed will not be authorized, except in cases where the adequacy of the earlier survey work is in doubt or otherwise should be repeated as determined by the Service.

- c. The number of voucher specimens authorized to be collected and preserved is limited as follows:

No more than 20 hatched individuals of each species from each vernal pool (or swale) per sampling visit or less than 10 percent of the subpopulation in the vernal pool (or swale) during the sampling visit, whichever is the lesser amount.

- d. The permittee is authorized to collect an unquantifiable number of vernal pool branchiopod eggs contained within soil samples taken following the most recent Guidelines. The total amount of soil samples each calendar year shall not exceed a ratio of 1 liter per each 10 square meters (approximately 1 percent at 1 centimeter deep) of estimated vernal pool surface area surveyed.
- e. The permittee shall provide the Recovery Permit Coordinator at the SFWO with a 90-day report containing all of the survey information specified in the Guidelines no more than 90 calendar days after completing the last field visit of the season at each project site. Use the appropriate Vernal Pool Data Sheet, where applicable, as the reporting form. The following statement shall be signed by all surveyors: "I certify that the information in this survey report and attached exhibits fully and accurately represents my work." The date of signature and the surveyor's permit number shall be included. Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.
- f. The permittee shall disinfect sampling and field gear as follows:
 - i. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each survey site.
 - ii. Boots, nets, traps, etc. must be scrubbed with 70 percent alcohol (i.e., isopropyl or ethanol) or 3 to 6 percent sodium hypochlorite solution and

Page 4 of 6
TE-049693-1

thoroughly rinsed with clean tap water between survey sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.

- iii. In remote locations, clean all equipment as described above upon return to the lab or base camp. Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on the delicates cycle, within a protective mesh laundry bag.
 - iv. Used cleaning materials (liquids, etc.) shall be disposed of safely at the lab. Used disposable gloves shall be retained for safe disposal in sealed bags.
 - g. If the permittee observes California tiger salamanders (*Ambystoma californiense*) during the course of field surveys, the locations shall be listed as UTM coordinates in the 90-day report referenced under condition number 5(e) above. Any salamander adults, larvae, and eggs accidentally netted shall be released immediately to minimize stress to the organism, and numbers of each life stage netted shall be in all survey reports.
7. The number of individuals allowed to be incidentally injured or killed during permitted activities is 10 individuals of each vernal pool branchiopod species (and an unquantifiable number of eggs) in any calendar year.
- a. Any incidental injury or killing must be reported within 3 working days to the CNO and the SFWO.
 - b. In the event that the number of individuals allowed to be incidentally injured or killed is exceeded during the performance of permitted activities, the permittee must:
 - i. Immediately cease the activity resulting in injury or death until reauthorized by the CNO, which may, after analysis of the circumstances of mortality or injury, revoke or amend this permit.
 - ii. Immediately notify the CNO (telephone: 916-414-6464; fax: 916-414-6486) and the SFWO. The permittee must follow-up such verbal notification in writing to each office.
 - iii. With the written notification, the permittee is to provide a report of the circumstances that led to the injury or mortality. A description of the changes in protocols that will be implemented to reduce the likelihood of such injury or mortality from happening again should be included, if appropriate. A copy of this report shall also be sent to the California Department of Fish and Game (CDFG), Habitat Conservation Planning

Page 5 of 6
TE-049693-1

Branch, 1416 Ninth Street, Sacramento, California 95814 (telephone: 916-653-4875).

- c. The appropriate parts of any dead specimen shall be preserved in accordance with standard museum practices. Before expiration of the permit, all preserved specimens will be properly labeled and deposited with one of the designated depositories. The permittee shall supply the depository with a copy of this permit to validate that the specimens supplied to the museum were taken pursuant to a permit.
 8. The permittee is authorized to salvage all vernal pool branchiopod carcasses to be provided to one of the designated depositories.
 9. Designated depositories:

The California Academy of Sciences, Golden Gate Park, San Francisco, California; the Los Angeles County Museum of Natural History, Los Angeles, California; the Bohart Museum, University of California, Davis, California; the SFWO; or any other institution designated in writing by the SFWO.
 10. California Natural Diversity Database forms shall be completed, as appropriate, for each listed species addressed herein and submitted to the Wildlife Habitat Data Analysis Branch, CDFG - WHDAB, 1807 13th Street, Suite 202, Sacramento, California 95814 (also accessible online at: <http://www.dfg.ca.gov/whdab/html/animals.html>), with copies submitted to the SFWO. Copies of the form can be obtained from the CDFG at the above address (telephone: 916-324-3812). Each form sent to the CDFG shall have an accompanying 1:24,000 scale USGS map of the site (or an exact scale photocopy of the appropriate portion(s) of the map).
- All reports or other documents that include information gathered under the authority of this permit (e.g., reports prepared by consulting firms for their clients) shall reference this permit. Copies of such documents shall be provided to the SFWO upon their completion. Draft documents, raw/field data, and other information resulting from work conducted under the authority of this permit shall be submitted to the Service upon request.
11. Annual reports:
 - a. An annual report of activities shall be submitted to the Recovery Permit Coordinator at the SFWO by January 31, following each year this permit is in effect. The report shall be in the following format: (i) an introduction section addressing reasons and objectives for taking the species; (ii) a methodology section addressing data collection and analysis procedures; (iii) a results section that provides the data collected, including the number of individuals incidentally killed (include dates, locations, circumstances of take, and depository receiving the preserved specimens), and information on any other federally listed species

detected while conducting activities authorized under this permit; and (iv) a conclusion section that specifically provides recommendations for recovery of the species. If no activities took place over the course of a year, indication of such shall be submitted as an annual report. Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.

- b. The 90-day survey reports prepared in accordance with the Guidelines may be submitted as the annual report, and any recovery recommendations can be attached. If the 90-day reports have been previously submitted to meet the required 90-day deadline for submission of reports for each project site, the permittee shall submit as an annual report a letter that includes any recovery recommendations, the date that the 90-day report was submitted, and its exact title.

- 12. Failure to comply with reporting requirements may result in the non-renewal or suspension/revocation of this permit.

12/11/06
Date

Linda Belluomini
for Endangered Species Program Manager



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1888



LIST OF AUTHORIZED INDIVIDUALS TE-049693-1.1

1. Individual authorized to independently conduct activities pursuant to this permit:

Jody M. Gallaway, Christy Dawson, and Trish Ladd.

Supervised individuals may conduct activities pursuant to this permit only under the direct, on-site supervision of an independently authorized individual listed above.

03 March 2008
Date

E. Tattersall
Eric Tattersall, Acting Division Chief
Endangered Species Program

This List is only valid if it is dated on or after the permit issuance date.

Appendix C

USFWS Vernal Pool Data Sheets

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet 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: 2/8/08 Time: 13:00 County: Sutter Quad: Pleasant Grove

Collector(s): J. Gallaway, T. Ladd Permit #: TE-049693-1

Site/Project Name: PG&E Line 407 Pool #: 91

Township: 10N Range: 5E Section: 1

38°45'03.75"N lat. / 121°29'33.8"W long.

Temperature: Water: 13 °C Air: 18 °C

Pool Depth:	Surface Area:
at time of sampling: <u>32</u> cm	at time of sampling: <u>15</u> m x <u>6</u> m
estimated maximum: <u>32</u> cm	estimated maximum: <u>15</u> m x <u>6</u> m

Habitat Condition: (circle where appropriate)

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

- land use of habitat: *Vacant area. Located between raised gravel road and railroad track.*

Notes:

WF 92 had surface connection to WF 91 along Riego Road. Both WF 91 and 92 were completely dry during sampling on 2/22/08.

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

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

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: *Branchinecta lynchi*- reproductive males and females (10's),
Lindleriella occidentalis- reproductive males and females (100's)
 (note reproductive status)

Notostracans: N/A
 (note reproductive status)

Species Observations (Optional):

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify) _____		

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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N/A

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet 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

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estimated maximum: <u>32</u> cm	estimated maximum: <u>15</u> m x <u>6</u> m

Habitat Condition: (circle where appropriate)

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

- land use of habitat: *Vacant area. Located between raised gravel road and railroad track.*

Notes:

WF 92 had surface connection to WF 91 along Riego Road. Both WF 91 and 92 were completely dry during sampling on 2/22/08.

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

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

Species Observations: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: *Branchinecta lynchi*- reproductive males and females (10's),
Lindleriella occidentalis- reproductive males and females (100's)
(note reproductive status)

Notostracans: N/A
(note reproductive status)

Species Observations (Optional):

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify) _____		

Insects: (adult or larvae)		
Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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N/A

Appendix D

Copy of CNDDDB Field Survey Forms

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 02/08/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Branchinecta lynchi

Common Name: Vernal pool fairy shrimp

Species Found? Yes No _____ If not, why? _____

Total No. Individuals 10's Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: N/A _____
Number _____ Museum / Herbarium _____

Reporter: Galloway Consulting, Inc.

Address: 117 Meyers Street Suite 110
Chico, CA 95928

E-mail Address: trish@gallowayconsulting.net

Phone: (530) 343-8327

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

100 50 _____
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Sutter Landowner / Mgr.: unknown- permission acquired by Caltrans

Quad Name: Pleasant Grove Elevation: 40

T 10N R 5E Sec 1, _____ ¼ of _____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): USGS topo

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model _____

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: 38degrees 45'03.75"N lat / 121degrees 29'33.8"W long

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Vacant area located between a raised gravel road with Steelhead Creek to the west, railroad tracks to the east and Riego Road bordering the north.

Plant species in wetland features: Eryngium castrense, Plagiobothrys stipitatus var. micranthus and Blennosperma nanum

Other rare taxa seen at THIS site on THIS date: Lindieriella occidentalis
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Railroad tracks, canal, residential housing with agricultural fields

Visible disturbances: Roadside trash in vernal pools

Threats: N/A

Comments: Found in two pools that connected during high precipitation events. Heavily vegetated with water depths averaging 32 cm, dried quickly following two weeks without rain in February 2008.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): Erickson & Belk
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Appendix E
Copy of GCI Field Data Sheets
Only Available in Hard Copy