WETLAND ASSESSMENT REPORT FOR THE PXP PRODUCED WATER RECLAMATION FACILITY SAN LUIS OBISPO, CALIFORNIA

Prepared for:

County of San Luis Obispo
Environmental and Resource Management Division
Department of Planning and Building
San Luis Obispo, California

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TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

1.1 Project Location……1

1.2 Physical Setting……1

1.3 Project Background……...1

2.0 VEGETATION 2

3.0 WETLAND ASSESSMENT 2

3.1 METHODOLOGY……... 2

3.1.1 Federal Jurisdiction Determination…….. 3

3.1.2 Hydrophytic Vegetation……..... 3

3.1.3 Hydric Soils…… 3

3.1.4 Wetland Hydrology……3

3.2 RESULTS **3**

3.2.1 Federal Jurisdiction Determination…… 3

3.2.2 Hydrophytic Vegetation……..... 4

3.2.3 Hydric Soils…… 4

3.2.4 Wetland Hydrology……5

3.2.5 Federal Wetland Determination…… 5

3.2.6 CDFG Wetlands……5

3.2.7 Wetland Functions and Values…….. 5

4.0 LITERATURE CITED 6

FIGURES

1 − Site Location Map

2 − Limits of Jurisdictional Waters

3 – Focused Jurisdictional Wetlands Map

APPENDICES

Appendix A – Site Photographs

Appendix B – Data Forms

1.0 INTRODUCTION

Padre Associates, Inc. (Padre) is pleased to present this report documenting the recent wetland delineation conducted for the Proposed Plains Exploration and Production Company (PXP), Arroyo Grande Oil Field Produced Water Reclamation Facility (Project). The objective of this report is to present the findings of a wetland assessment conducted within the proposed project area. Wetland features analyzed include a section of Pismo Creek, two unnamed tributaries to Pismo Creek, a proposed tempering pond, three man-made storm water conveyance structures, an ephemeral swale and roadside drainage. The field survey of the subject property was conducted on June 18, 2007. This report is intended to supplement the Subsequent Environmental Impact Report (SEIR) for the proposed Project.

1.1 PROJECT LOCATION

The PXP Arroyo Grande Oil Field is located in Price Canyon about three miles northeast of the City of Pismo Beach in San Luis Obispo County, California (Project Site). The Project Site is located at 1821 Price Canyon Road, east and west of Price Canyon Road near its intersection with Ormonde Road, between Highway 101 and Highway 227. The location is illustrated on the following Figure 1 – Site Location Map.

1.2 PHYSICAL SETTING

Several wetland features are present within the project area including the proposed tempering pond located within an isolated man-made storm water collection basin northeast of the existing facility, three man-made storm water conveyance structures, an ephemeral swale area and a roadside drainage along the existing roadway southeast of Tank 202 (see Figure 2 – Limits of Jurisdictional Waters). In addition, a small portion of the riparian corridor along Pismo Creek and two unnamed tributaries to Pismo Creek are within the proposed Project Impact Area (PIA). The Project Site is highly disturbed due to historical and ongoing activities within the existing oil field.

1.3 PROJECT BACKGROUND

Development of the proposed Project would include construction of a water treatment facility and various associated structures (i.e., water tanks, air-stripper, heat exchangers, etc.) to process the produced water resulting from increased oil recovery activities. New facilities would be constructed within the existing disturbed plant area, plus a two- to three-acre area of oak woodland habitat west of the existing plant. The proposed facility will also require construction of water transmission pipelines for re-use on/off-site, placement of a permanent reclaimed water outfall structure along Pismo Creek, and creation of a smooth-bottom tempering pond. Specifically, water transmission pipelines would be placed within existing facility roadways or in existing pipe racks to the north and south of the project area. The proposed water transmission pipeline along the southern disposal route would intersect two unnamed tributaries to Pismo Creek; however, installation of the pipeline would occur along previously existing roadways and pipe racks. Installation of the reclaimed water outfall structure would include placement of a

series of three to four, 25 to 30-foot long perforated pipes on the existing rip-rap bank area along Pismo Creek. Placement of the outfall structure would include clearing a portion of the vegetation along the bank and reinforcing the existing rip-rap slope protection with gunite. Prior to use as a tempering pond, the existing storm water collection basin would be cleared of all vegetation and the bottom would be smoothed and lined with a low-permeability material.

2.0 VEGETATION

Vegetation within the wetland features was identified to the extent feasible during the June 18, 2007 field survey. Plant specimens that were not positively identified in the field were further examined using a dissecting microscope and appropriate botanical keys, including *The Jepson Manual* (Hickman, 1993). Species diversity within the wetland features was low due to the high level of disturbance and ongoing activities within the existing oil field.

3.0 WETLAND ASSESSMENT

The U.S. Army Corps of Engineers (Corps) has jurisdiction over waters of the United States (U.S.). The limit of jurisdiction in non-tidal waters extends to the ordinary high water mark and includes all adjacent wetlands. Waters of the U.S. are defined as:

> "All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; including all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce."

The Corps and U.S. Environmental Protection Agency define wetlands as:

> "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

3.1 METHODOLOGY

The purpose of the wetland delineation was to determine the area of jurisdiction of the Corps under Section 404 of the Clean Water Act. The delineation was performed in accordance with the routine procedures for areas less than 2.02 ha (5 ac) detailed in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory, 2006). Data forms are provided as Appendix B.

Jurisdictional wetlands were determined to be present if evidence of all three Federal criteria were observed (hydrophytic vegetation, hydric soils, and wetland hydrology). However, the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) wetland definition requires that only one of the wetland criteria be present to define a wetland.

3.1.1 Federal Jurisdiction Determination

The limit of Corps jurisdiction in non-tidal waters extends to the ordinary high water mark and includes all adjacent wetlands. The ordinary high water (OHW) mark was established at Pismo Creek and the two unnamed tributaries to Pismo Creek using the presence of hydrophytic vegetation, drift lines, and bank shelving patterns as a boundary. Drift lines (organic materials deposited along the banks) are direct evidence of the highest water elevation of the most recent rain year. Bank shelving patterns (eroded benches) indicate long-term patterns in high water elevation. The width of waters of the U.S. (distance between OHW marks) was measured within the PIA at each of these locations. In addition, sample points were established within the proposed tempering pond, the ephemeral swale, and roadside drainage southeast of Tank 202.

3.1.2 Hydrophytic Vegetation

The predominance of hydrophytic (water-loving) vegetation was established by identifying dominant species within a 1.0-meter (m) (3.3-foot) radius circle (sample plot) at each sample point and determining the hydrophytic class (i.e., facultative, facultative-wetland or obligate wetland species) as listed in Reed (1988).

3.1.3 Hydric Soils

Soil pits were excavated within the proposed tempering pond, ephemeral swale, and roadside drainage. Soil pits were not excavated within the man-made storm water conveyance structures/ponds due to the presence of a concrete lining. Based the *Soil Survey of San Luis Obispo County, California, Coastal Part,* soils in the vicinity of the proposed impact areas have been designated as Briones loamy sand (Ernstrom, 1984).

Briones loamy sand is a moderately deep, somewhat excessively drained, moderately steep soil on foothills and mountains. It is formed in residual material weathered from soft sandstone. Typically, the surface layer is gray loamy sand approximately 91.44 centimeter (cm) (36 inches) thick. The subsoil is pale brown loamy sand to a depth of 81.28 cm (32 inches) with an underlying layer of soft, fractured sandstone (Ernstrom, 1984). Briones loamy sand is considered non-hydric by the Natural Resources Conservation Service (1992).

3.1.4 Wetland Hydrology

Observations were conducted at each sample plot to identify evidence of inundation or soil saturation, such as drift lines, sediment deposits, drainage patterns, and oxidized root channels.

3.2 RESULTS

3.2.1 Federal Jurisdictional Determination

The area of waters of the U.S. located within the Project Site include the roadside drainage, a section of Pismo Creek, and the two unnamed tributaries to Pismo Creek intersected by the southern water transmission pipeline route. However, the two unnamed tributaries will not be impacted due to project activities. Therefore, the area of waters of the U.S. within the proposed PIA is limited to the roadside drainage, approximately 0.012 ha (0.03-

acre) and the portion of Pismo Creek affected by installation of the proposed reclaimed water outfall structure, approximately (0.006 ha) (0.014-acre).

The proposed tempering pond appears to qualify as waters of the U.S. based on the presence of all three wetland criteria; however, it is bermed on all sides with no apparent connectivity to the adjacent tributary to Pismo Creek. Due to the lack of connectivity to the adjacent tributary to Pismo Creek it is not considered a Federal wetland. The limits of jurisdictional waters within the proposed PIA are illustrated on the following Figure 2.

3.2.2 Hydrophytic Vegetation

The total area of hydrophytic vegetation found within the PIA is approximately 0.43 ha (1.07-acre). This value is based on the combined average areas of the proposed tempering pond, ephemeral swale, roadside drainage, and man-made storm conveyance structures, and the PIA along the bank of Pismo Creek. The tributaries intersected by the water transmission pipeline were not assessed because no vegetation will be impacted due to project implementation. Appendix A provides site photos of the wetland features.

The approximate areas of hydrophytic vegetation found within each of the wetland features are described below:

- Proposed Tempering Pond: 0.25 ha (0.62-acre), dominated by California bulrush (*Scirpus californicus*) and cattail (*Typha latifolia*);
- Ephemeral swale: 0.04 ha (0.09-acre), dominated by brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), cattail, Italian ryegrass (*Lolium multiflorum*), and western ragweed (*Ambrosia psilostachya*);
- Roadside Drainage: 0.012 ha (0.03-acre), dominated by cattail and California bulrush;
- Man-made Storm Water Conveyance Structures: 0.028 ha (0.07-acre), dominated by cattail, umbrella flatsedge (*Cyperus eragrostis*), western ragweed, and Italian ryegrass; and,
- Pismo Creek: 0.004 ha (0.01-acre), dominated by Arroyo (*Salix lasiolepis)* and yellow willows (*Salix lucida* ssp. *lasiandra)*.

3.2.3 Hydric Soils

Soil pits were excavated within the ephemeral swale, roadside drainage, and the proposed tempering pond. Hydric soils as indicated by dark soil color (10YR 2/1) and sandy gleyed matrix (Gley1 4/10 Y) were identified in the roadside drainage as well as reddish yellow (7.5YR 6/8) and black (10YR 2/1) concentrations. In addition, hydric soils were also identified in the proposed tempering pond as indicated by the presence of (7.5YR 5/6 – strong brown) concentrations. Two soil pits were excavated within the ephemeral swale area; however, this area contained dry sandy material and did not support hydric soil. Test pits were not excavated within the man-made conveyance structures due to the existing concrete lining. In addition, test pits were not excavated within the two unnamed tributaries because construction activities will remain within the existing roadways or pre-disturbed areas and will not result in fill activities.

Further, test pits were not excavated along the bank of Pismo Creek due to the presence of rip-rap slope protection.

3.2.4 Wetland Hydrology

Evidence of wetland hydrology was present within the roadside drainage and the proposed tempering pond. Specifically, saturated soil conditions exist within the roadside drainage and oxidized rhizopheres and surface soil cracks were present within the proposed tempering pond.. Additionally, two of the three man-made conveyance structures contained standing water. No wetland hydrology indicators were identified within the ephemeral swale area.

It was assumed that the entire area located between OHW marks within Pismo Creek, as well as within the two unnamed tributaries is inundated at a frequency to meet the wetland hydrology criterion of the Wetland Delineation Manual.

3.2.5 Federal Wetland Determination

Corps-defined wetlands are present where hydrophytic vegetation, wetland hydrology and hydric soils co-occur. Based on the information presented above all three wetland criteria, wetland hydrology, hydrophytic vegetation, and hydric soil, were evident within the roadside drainage and the proposed tempering pond. However, due to the lack of connectivity between the proposed tempering pond and the adjacent tributary to Pismo Creek it is not considered a Federal wetland. Therefore, within the proposed PIA only the roadside drainage, consisting of 0.012 ha (0.03-acre), is considered Corps-defined wetlands (see Figure 3 – Focused Jurisdictional Wetlands Map).

3.2.6 CDFG Wetlands

Both USFWS and CDFG consider an area to be a wetland if it meets only one of the three Federal criteria (hydric soils, hydrology and hydrophytic vegetation). As such, the presence of hydrophytic vegetation was used to define CDFG wetlands. Therefore, the total area of CDFG wetlands within the PIA includes all of the wetland features described above and is approximately 0.33 ha (0.82-acre).

3.2.7 Wetland Functions and Values

Functions are physical, chemical and biological attributes of a wetland without regard to their importance to society. The term “values” is used to describe those functions generally regarded as beneficial to society. Functions and values assessed in this document are described in the Wetland Evaluation Technique by Adamus et al. (1987), including:

- Groundwater recharge;
- Groundwater discharge;
- Flood flow alteration;
- Sediment stabilization;
- Sediment/toxicant retention;
- Nutrient removal/transformation;

- Production export;
- Wildlife habitat (aquatic and terrestrial);
- Uniqueness/heritage; and,
- Recreation.

The wetlands of the PIA, excluding the concrete-lined storm water conveyance structures, facilitate groundwater recharge by reducing current velocity and increasing residence time. These wetlands also alter flood flows, and stabilize and retain sediment. The riparian vegetation of Pismo Creek and associated tributaries may remove and transform nutrients, and may export production in terms of the downstream movement of organic matter and organisms. These wetlands provide habitat for fish, and resident and migratory wildlife.

4.0 LITERATURE CITED

Adamus, P.R., E.J. Clarain Jr., R.D. Smith and R.E. Young. 1987. Wetland Evaluation Technique (WET). U.S. Army Engineers Waterway Experiment Station.

Ernstrom, Daniel J. 1984. *Soil Survey of San Luis Obispo County, California, Coastal Part*. Prepared for the U.S. Department of Agriculture, Soil Conservation Service.

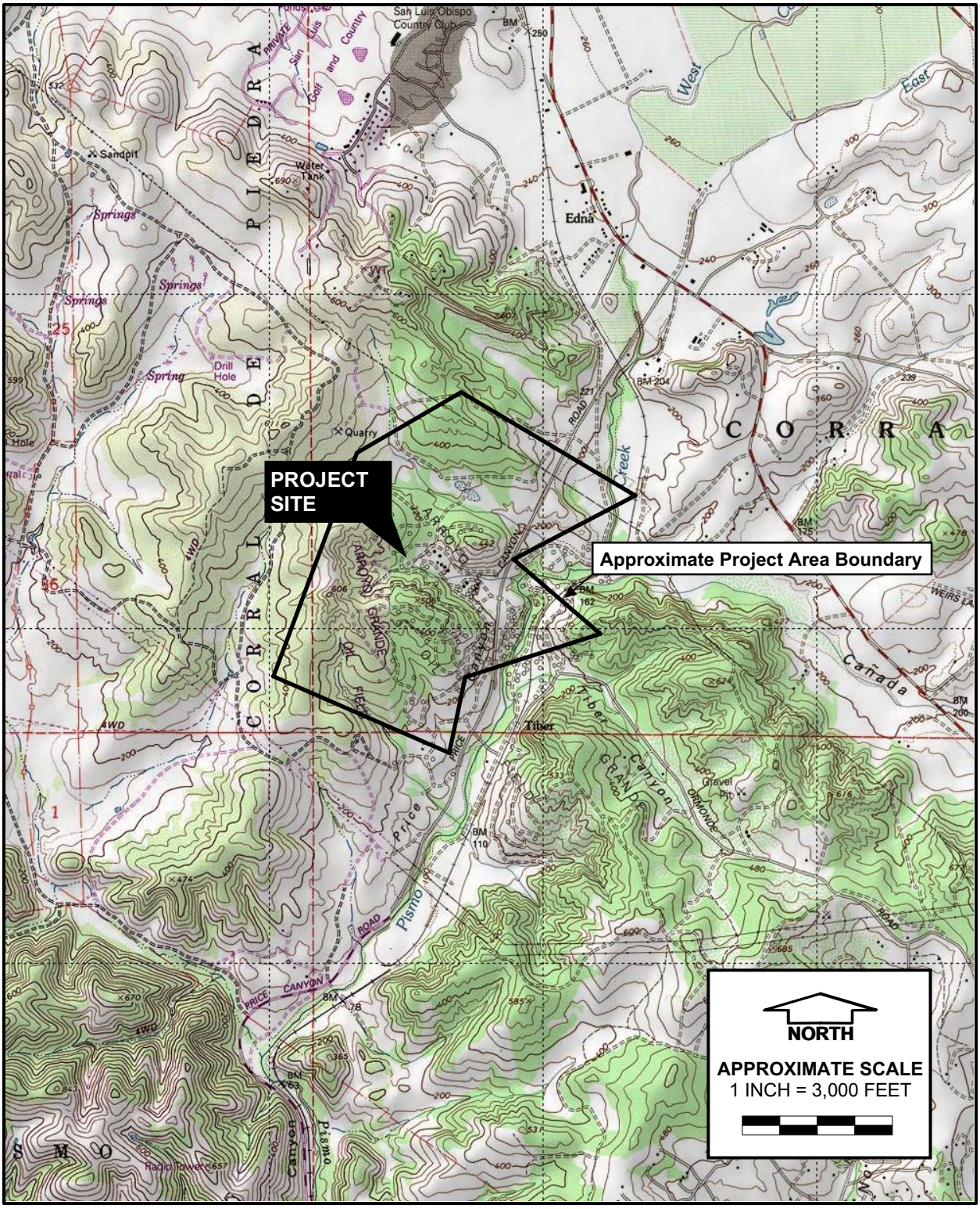
Hickman, James C. 1993. *The Jepson Manual, Higher Plants of California*. University of California Press. Berkeley, CA.

Natural Resources Conservation Service. 1992. Field Office Official List of Hydric Soil Map Units for San Luis Obispo County, California, Coastal Part.

Reed, P.B. Jr. 1988. *National List of Plant Species that occur in Wetlands*: *California (Region 0).* (U.S. Fish and Wildl. Serv. Biol. Rep. 88(26.10)). St. Petersburg, FL.

FIGURES

July 2007
Project No.0702-0291



Source: TOPO! c 2001 National Geographic Holdings (www.topo.com)

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SITE LOCATION MAP

PXP Produced Water Reclamation Facility

FIGURE 1

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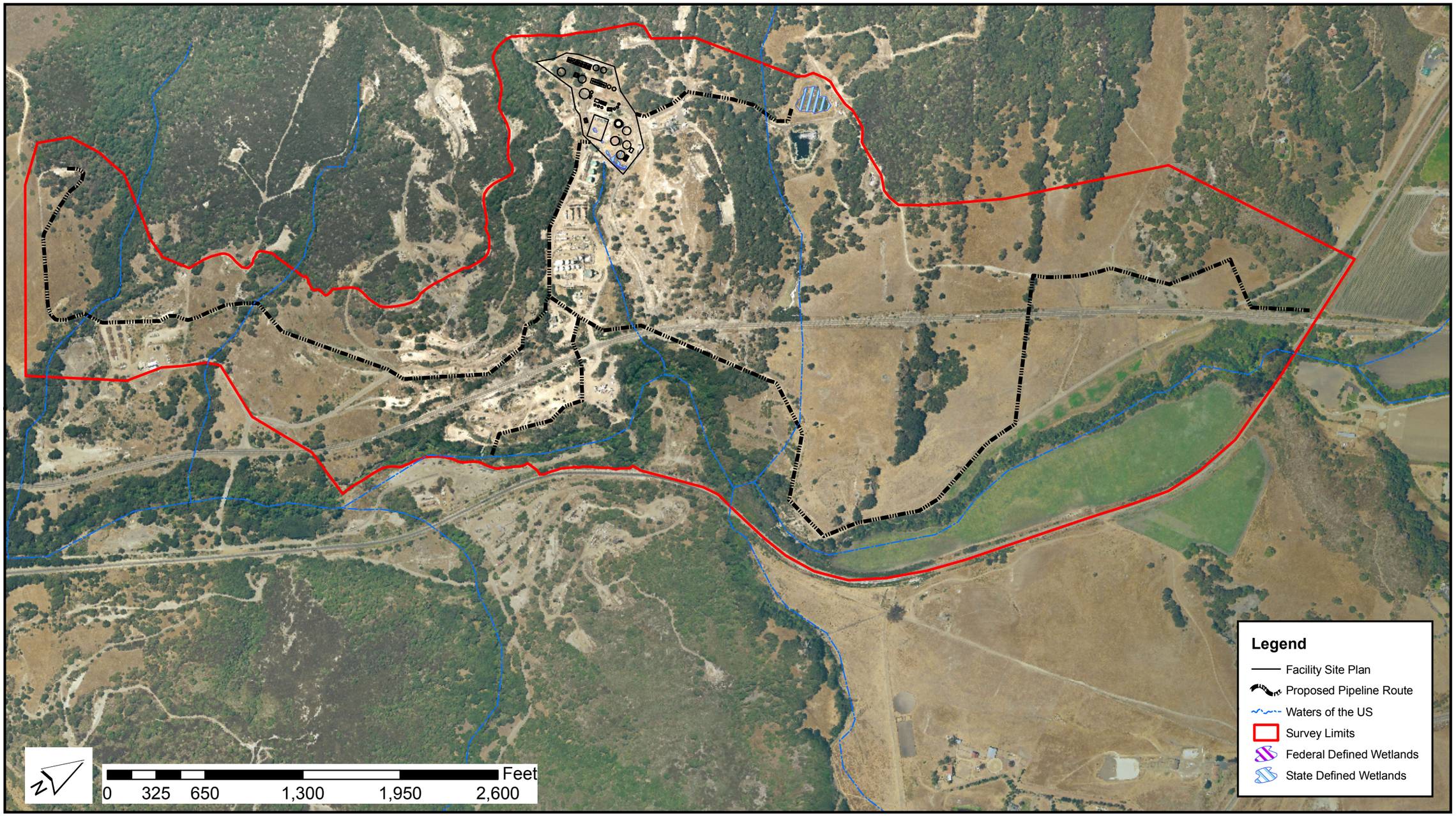
Project No. 0702-0291



Source: ADAIR

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PXP Produced Water Reclamation Facility SEIR

LIMITS OF JURISDICTIONAL WATERS
FIGURE 2

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Source: ADAIR

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PXP Produced Water Reclamation Facility SEIR

FOCUSED JURISDICTIONAL WETLANDS MAP
FIGURE 3

APPENDIX A

SITE PHOTOGRAPHS

PHOTO 1: View of proposed tempering pond (Aspect: East).

PHOTO 2: View of gradual swale area (Aspect: Northeast).

PHOTO 3: View of roadside drainage (Aspect: East).

PHOTO 4: View of man-made storm water conveyance structures (Aspect: East).

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SITE PHOTOGRAPHS

PLATE 1

PXP Produced Water Reclamation Facility

PHOTO 5: View of stormwater conveyance structures (Aspect: East).

PHOTO 3: View of roadside drainage (Aspect: East).

PHOTO 6: View of proposed imapact area along Pismo Creek (Aspect: Northeast).

PHOTO 8: View of second tributary intersected by south bound pipeline route (Aspect: Southeast).

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SITE PHOTOGRAPHS

PLATE 2

APPENDIX B

DATA FORMS

-PXP-

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (Ag Oil Field) State: CA Sampling Point: 1

Investigator(s): JPeak / BDugas Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: site highly disturbed, sampling point adjacent to perennial wetland/drainage feature & man-made drainage conveyance structures/ponds; area grazed (gradual swale area)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. n/a			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Ambrosia psilostachya	30	yes	FAC
2. Lolium multiflorum	15	yes	FAC
3. Juncus phaeocephalus	30	yes	OBL
4. Avena barbata	2	no	UPL
5. Rumex salicifolius	3	no	OBL
6. Trifolium arvense	2	no	UPL
7. Vicia sativa ssp. nigra	1	no	FACU
8.			
Total Cover: 93			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: area highly disturbed, grazed.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12"	10YR 3/2	100%					CSL	coarse sandy material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks: Reached impenetrable material @ 12", very dry sandy soils area highly disturbed, grazed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no visible hydrologic features present

- PXP -

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (AG Oil Field) State: CA Sampling Point: 2

Investigator(s): JPeale / BDugas Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR): LRR C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____
Hydric Soil Present?	Yes _____	No X
Wetland Hydrology Present?	Yes _____	No X

Is the Sampled Area within a Wetland? Yes _____ No X

Remarks: Site highly disturbed, area grazed; Sampling point adjacent to perennial wetland drainage feature & man-made drainage conveyance structures/ponds. (gradual swale area)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Baccharis pilularis	3	No	UPL
2.			
3.			
4.			
5.			
Total Cover:	3		
Herb Stratum			
1. Ambrosia psilostachya	2	No	FAC
2. Typha latifolia	20	Yes	OBL
3. Juncus phaeocephalus	50	Yes	OBL
4. Olokium multiflorum	10	No	FAC
5. Juncus effusus	5	No	OBL
6.			
7.			
8.			
Total Cover:	87		
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: area disturbed, grazed

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
12"	10YR 3/2	100%					FSL	fine sandy material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks: reached impenetrable material @ 12", dry sandy soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrologic features present

- PXP -

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Reduced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (AG oil field) State: CA Sampling Point: 3

Investigator(s): JPeak / BDuggs Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR): LRR C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____
Hydric Soil Present?	Yes X	No _____
Wetland Hydrology Present?	Yes X	No _____

Is the Sampled Area within a Wetland? Yes X No _____

Remarks: site highly disturbed; along existing roadway, adjacent to perennial drainage feature (roadside drainage)

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Baccharis pilularis	2	No	UPL
2.			
3.			
4.			
5.			
Total Cover: 2			
Herb Stratum			
1. Typha latifolia	90	Yes	OBL
2. Juncus effusus	3	No	OBL
3. Ambrosia psilostachya	2	No	FAC
4. Cyperus niger	1	No	FACW
5. Cirsium vulgare	1	No	FACU
6. Epilobium ciliatum	1	No	FACW
7.			
8.			
Total Cover: 98			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: sampling point adjacent to existing roadway – swale along road

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
5"	10YR 3/4	90%	10YR 2/1	10%	C	RC	loamy sand	
5"	10YR 2/1	100%					loamy sand	
7"-16"	Gley1 4/10Y	99%	7.5YR 4/6	1%	C	M	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): <1"

Water Table Present? Yes X No ___ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): >16"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

-PXP-

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Produced Water Reclamation Facility City/County: SLO County Sampling Date: 6/18/07

Applicant/Owner: PXP (AEG Oil Field) State: CA Sampling Point: 4

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR): LRR C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Isolated man-made storm water collection basin (Proposed tempering pond); No apparent connectivity to adjacent drainage

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. n/a			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Typha latifolia	20	Yes	OBL
2. Scirpus californicus	80	Yes	OBL
3. Polypogon monspeliensis	1	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover: 101%			
Woody Vine Stratum			
1. n/a			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
2"-8"	10YR 3/2	95%	7.5YR 5/6	5%	C	RC	Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Reached impenetrable material @ 8"; man-made feature, storm water ~~detention~~ collection basin

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: