

WETLANDS DELINEATION
ASSESSORS PARCEL NUMBERS
002-191-013 & 020
TYDD STREET
EUREKA, CALIFORNIA

February 2005

Prepared for:
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I. SUMMARY

On December 15, 2004, a wetland delineation was performed on assessor's parcel numbers (APNs) 002-191-013 & 020. The wetland delineation determined that wetland vegetation, hydric soils, and wetland hydrology are present on the parcels.

II. INTRODUCTION

The properties identified by APNs 002-191-013 & 020 are located east of Tydd Street, Eureka, California. The subject site is in the Coastal Zone. Figure 1 (back pocket) depicts the project location and delineation results (wetland/upland boundary).

III. DELINEATION PURPOSE

The purpose of this investigation was to determine the size and location of wetland(s) in accordance with the Army Corp of Engineers (COE) and California Coastal Commission (Coastal Commission) criteria on APNs 002-191-013 & 020 in preparation for a proposed development and lot split. This report also recommends development setbacks from the identified wetlands.

IV. WETLAND DELINEATION METHODOLOGY

The wetlands delineation was conducted by Gary Lester and Misha Schwarz of Winzler & Kelly Consulting Engineers, on December 15, 2004, following the COE criteria from the Corps of Engineers Wetlands Delineation Manual (1987). The delineation was conducted within the property boundaries defined by a survey completed by licensed surveyor Micheal O'Hern. To define a wetland, the COE (1987) requires that all three parameters (vegetation, soil, and hydrology) show wetland attributes. The California Coastal Commission requires only one parameter to be present in order to define the site as a wetland. Vegetation, soil, and hydrology data were collected at three separate wetlands from one transect with two plots (upland/wetland) per wetland (see Appendix A, Field Data Sheets). Other wetland/upland boundaries were determined and marked by an "intermediate" stake, i.e., W1T2-INT. The site was evaluated using the COE and Coastal Commission methodologies. Primary determination of the wetland boundary was made based on vegetation, soil characteristics, and direct observation of hydrology.

A. Botanical Methodology

Vegetation data collection consisted of listing the five dominant species at each plot if only one layer, or up to three species in each layer (herb, shrub, tree). The species were then classified as to whether or not they are wetlands indicators, using the standard reference for plant wetlands indicators, National List of Plant Species that Occur in Wetlands: California (Region O) (Department of the Interior 1988). That document classifies plants based on the probability that they would be found in wetlands, ranging from Obligate (almost always in wetlands), Facultative/wet (67% to 99% in wetlands), Facultative (34% to 66% in wetlands), Facultative/up (1% to 33% in wetlands) to Uplands (less than 1% in wetlands). Plants not listed are included in

the uplands category. If 50% or greater of the dominant plant species at each plot are classified Obligate (OBL), Facultative/wet (FACW), or Facultative (FAC), the vegetation is determined to be hydrophytic (wetland plants).

B. Soils Methodology

Soil test pits were dug to an approximate depth of 16 inches. The 1987 Manual's procedures were combined with the Natural Resources Conservation Service's (NRCS) definition of hydric soils presented in Changes in Hydric Soils of the United States and Field Indicators of Hydric Soils in the United States (United States Department of Agriculture (U.S.D.A.) 1995 and 1998 respectively). Care was taken to observe mottling (iron concentrations) and to distinguish between chromas of 1 and 2.

Soils/hydrology data sheets were prepared for use as supplements to the 1987 Manual's Data Sheet 1 (as modified by Winzler & Kelly, Consulting Engineers). Data sheets are attached (Appendix A). Color indicators of hydric soils were used in this delineation and are as follows:

1. Matrix chroma of 2 or less in mottled soils (1987 Manual)
2. Matrix chroma of 1 or less in unmottled soils (1987 Manual)
3. Colors (evidence of saturation) determined at 12 inches depth in poorly drained or very poorly drained soil (NRCS)

Colors were described for the entire depth of the test pit and were compared to the above parameters at a depth of 10 inches. Colors were determined on moist ped surfaces, which had not been crushed, using the Munsell Color Chart (GretagMacbeth 2000). A solution of α , α' -Dipyridyl was used to verify presence or absence of reduced soils at these plots.

C. Hydrology Methodology

The delineation was performed during late fall. Direct evidence of ground water (soil saturation, standing water, etc.) was present in most of the wetland plots when the delineation was performed. Wetland hydrologic conditions were based on direct observation of the water table within 12 inches of the surface or were assumed if hydric soils were found.

D. Wetland Determination

The wetland determination was made with an emphasis on redoximorphic soil features and the presence of wetland hydrology and wetlands vegetation. An area was determined to be a wetland when either soil, vegetation, or hydrology met the wetlands criteria defined above (one parameter approach). An area was determined to be uplands based on absence of wetland hydrology, hydrophytic vegetation, and wetland soil indicators. All wetland plots exhibited a predominance of FAC or wetter vegetation. All upland plots exhibited a predominance of FACU or drier vegetation, non-hydric soils and groundwater below 12 inches from the surface.

Once wetland characteristics were determined for each transect, a flag was placed to delineate the limits of the wetland/upland boundary. Plot numbers were written on each flag. Flag locations were surveyed by Micheal O'Hern, the results of which are attached as a Wetland Boundary Map (back pocket).

V. RESULTS OF WETLAND DELINEATION

The parameters used to identify a wetland are characteristics of the soil, hydrology, and vegetation. To define a wetland, the COE (1987) requires that all three parameters show wetland attributes. The California Coastal Commission jurisdiction defines a wetland based on the presence of any one parameter. A single wetland boundary line using the single parameter approach which satisfies all methodologies (COE and Coastal Commission) was marked with wooden stakes and flagging. Results of analysis of the three on-site parameters, vegetation, soils and hydrology, are described below and a wetland delineation map is presented on Figure 1 (back pocket).

Hydrophytic vegetation was dominant within the wetland area (see Appendix A, Data Sheets). Typical vegetation associated with Palustrine Persistent Emergent Seasonally Flooded wetlands on APN 002-191-020 include:

- lady fern (*Athyrium felix-femina*)
- creeping buttercup (*Ranunculus repens*)
- Himalayan blackberry (*Rubus discolor*)
- curly dock (*Rumex crispus*)

Typical vegetation associated with Estuarine Intertidal Persistent Emergent wetlands on APN 002-191-013 include:

- tufted hair grass (*Deschampsia cespitosa*)
- gum plant (*Grindelia stricta*)
- salt grass (*Distichlis spicata*)
- pickleweed (*Salicornia virginiana*)
- seaside arrow grass (*Triglochin maritimum*)

All the above aforementioned species except the gum plant, are FACW or FAC designated indicator species (U.S. Fish and Wildlife Services, 1988). Upland vegetation was dominant in all the upland plots. All upland plots were confirmed by upland soils, lack of wetland groundwater parameters, and lack of predominance of hydrophytic vegetation.

Soils in the wetland area delineated were predominantly loam and sandy in texture with some gravelly sandy loams textures as well. Wetland soils exhibited redoximorphic features typically found in hydric soils. These features included mottles (iron concentrations) at or above 10 inches from the soil surface. Wetland (hydric) soils had a matrix color of 10YR 3/2 and 10YR 3/1 at the surface underlain by soils with matrix colors of 10YR 3/2. Iron concentrations of 10YR 5/6 and 3/4 existed in all of the wetland plots within 10 inches of the surface. Upland soils had surface colors of 10YR 3/2 with no redoximorphic features within 10 inches of the surface (see Appendix A, Data Sheets).

Hydrologic conditions were present in all wetland plots to confirm the wetland/upland boundary. The primary indicator of hydrology was the direct observation of the water table. A secondary indicator noted was a pass on the FAC-neutral test in all wetland plots.

VI. CONCLUSIONS

The wetlands delineation of December 15, 2004, identified a wetlands on APNs 002-191-013 & 020. The areas with hydrophytic vegetation, hydric soil characteristics, or observable hydrology were classified as Palustrine Persistent Emergent Seasonally Flooded wetlands and Estuarine Intertidal Persistent Emergent wetlands. The wetland boundary line complies with the COE and Coastal Commission definition of a wetland. A "Wetland Boundary Map." is included in the back pocket of this report.

VII. RECOMMENDATIONS

Two types of wetland occur in the delineated area. On APN 002-191-013 estuarine wetlands exist. These wetlands are influenced by tidal conditions and saline water. Plants that are tolerant to these conditions exist here and are outlined in section V above. On AP 002-191-020 fresh water "palustrine" wetlands occur which are fed by fresh water through surfacing ground water and surface runoff. The primary function of these wetlands are flood control, as they attenuate flood waters, either high tides or surface runoff. During high tides or during high precipitation events these wetlands act like sponges reducing flooding impacts. A secondary function of these wetlands is biological. Both wetlands house invertebrates that are fed upon by birds and mammals. The species of invertebrates found in a saline environment would be different than those found in a fresh water system. In addition, the palustrine wetland has cover and breeding habitat for birds and small mammals, and may serve as a migratory corridor. The uplands and wetland edge of the palustrine wetland found on APN 002-191-020 have been impacted by non-native noxious plant species, primarily Himalayan blackberry. No special-status species were observed during the delineation on December 15, 2004. Based on the values of the onsite wetlands, the proposed development and breaks in slope, a setback of 25 to 60 feet is recommended, for an approximate average of 45 feet, from the wetlands on APNs 002-191-013 & 020. The buffer area, prior to development, shall be mowed and/or weed eaten, sprayed with an appropriate herbicide after one month of the mowing or after sufficient resprouting of the Himalayan blackberry has occurred. After the Himalayan blackberry has been killed or sufficiently knocked back then planting of native trees; red alder (*Alnus rubra*), willow (*Salix sp.*) wax myrtle (*Myrica californica*) and/or Sitka spruce (*Picea stichensis*) shall occur to act as a visual barrier to the existing wetlands.

VIII. SPECIAL TERMS AND CONDITIONS

To achieve the delineation objectives stated in this report, we based our conclusions on the information available during the period of the investigation, December 15, 2004. This report does not authorize any individuals to develop, fill or alter the wetlands delineated. Verification of the delineation by jurisdictional agencies is necessary prior to the use of this report for site development purposes. Permits to affect wetlands must be obtained from the involved

government agencies. If permits are obtained to develop the delineated wetlands after agency review, and written verification, the delineation is given a 5-year expiration period. If filling is used under permitted authority, care should be given to maintain and sufficient quantity of fill to prevent a reestablishment of wetlands. Land use practices and regulations can change thereby affecting current conditions and delineation results.

This report was prepared for the exclusive use of Strombeck Properties. Winzler & Kelly is not liable for any action arising out of the reliance of any third party on the information contained within this report.

IX. REFERENCES

Gretag Macbeth, Munsell Soil Color Charts, 2000.

Hickman, James, The Jepson Manual, University of California Press, Berkeley and Los Angeles, California, 1993.

Humboldt County Public Works, Natural Resources Division. 2004. Humboldt County Historic Aerial Photograph Collection, 1931-1981. Eureka, CA.

Soil Survey Staff, Keys to Soil Taxonomy, 5th Edition, SMSS Technical Monograph No. 19, Blacksburg, Virginia, 1992.

United States Department of Agriculture, Changes in Hydric Soils of the United States, Federal Register. Vol. 60, No. 37, February 24, 1995.

United States Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States, March 1998.

United States Department of the Army Corps of Engineers. Wetlands Delineation Manual, Tech. Rep 4-87-11987.

United States Department of the Interior, National List of Plant Species that Occur in Wetlands, California (Region O), Bio. Rep. 88 (26.20) 1988.

United States Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS 79/31, 1979.

Appendix A
Field Data Sheets

Date: 12/15/04
 Plot #: W-1 T-1 U
 County: Humboldt
 State: CA

DATA FORM 1

Proj. Name: Tydd st. Proj. Location: _____ Appl. Name: _____

Vegetation. List the three dominant species in each vegetation layer (5 if only 1 or 2 layers). Indicate species with observed morphological or known physiological adaptations with an asterisk.

	Species	% Cover	Ind. Status
Trees			
1			
2			
3			
4			
5			
Saplings/Shrubs			
1	<i>Baccharis pilularis</i>	20	NI
2			
3			
4			
5			
Herbs			
1	<i>Rubus discolor</i>	60	FACW
2	<i>Polystichum munitum</i>	10	NI
3	<i>Bromus hordeaceus</i>	2.5	FACW
4	<i>Ranunculus repens</i>	2.5	FACW
5	<i>Hypochaeris radicata</i>	5.0	NI
Woody Vines			
1			
2			
3			
4			
5			

% of species that are OBL, FACW, and/or FAC: 33

Hydrophytic vegetation: Yes _____ No

Basis: 0/p < 50

Atypical Situation: Yes _____ No

Normal Circumstances: Yes No _____

Wetland Determination: Wetland _____ Non-Wetland

Comments: _____

Determined by: Schwarz / Lester

SOIL/HYDROLOGY DATA SHEET

Transect and Plot # W11-U Date 12/15/01 Investigator Schwartz
 Job # _____ Site Tyad

SOILS

General Data

Profile Description:

Depth Inches	Horizon	Texture	Matrix Color	Record: percent, size, color, contrast (Fe or Fe/Mn, Nodules, Concretions)		
				Redox Masses	Redox Depletions	Pore Linings
0-4		Sandy loam	10YR3/2	⊖	⊖	⊖
4-16		G.S.L.	2.5Y4/3	⊖	⊖	⊖

Comments: _____

- | | | |
|------------|-----------|--|
| <u>Yes</u> | <u>No</u> | |
| _____ | <u>Y</u> | NRCS soil survey mapping unit? _____ |
| _____ | <u>Y</u> | On NRCS Hydric Soil list? If yes, name _____ |
| _____ | <u>Y</u> | Field Observation to confirm mapping unit? _____ |

Hydric Soil Determination

Corp Indicators:

- | | | |
|------------|-----------|--|
| <u>Yes</u> | <u>No</u> | |
| _____ | <u>Y</u> | Histosol, Organic soil material is >50% (volume) in upper 32" (excludes folists)? |
| _____ | <u>Y</u> | Sulfidic odor @ ≤ 12"? If yes, depth _____ |
| _____ | <u>Y</u> | Histic Epipedon: >30% O.M. in 8-16" layer near soil surface (>20% in sand)? |
| _____ | <u>Y</u> | Soil saturated at or near soil surface all of the year (Peraquic)? |
| _____ | <u>Y</u> | Matrix chroma ≤2 with Iron concentrations or depletions @ 10" or under A? |
| _____ | <u>Y</u> | Matrix chroma ≤1 with or without Iron concentrations or depletions @ 10" or under A? |
| _____ | <u>Y</u> | Reaction to α-α dipyridyl (Reducing conditions)? |
| _____ | <u>Y</u> | Gleyed Soil matrix @ 10" or under A? |
| _____ | <u>Y</u> | Iron and Manganese concretions @ 10" or under A? |
| _____ | <u>Y</u> | High organic content in surface layer of sandy soil? |
| _____ | <u>Y</u> | Organic streaking in sandy soils? |
| _____ | <u>Y</u> | Organic pans in sandy soil? |
| _____ | <u>Y</u> | Other? (Explain) _____ |
| _____ | <u>Y</u> | Aquic conditions (saturation, reduction & redoximorphic features)? |

Field Indicators of Hydric Soils (NRCS Ver 5.0) (Circle) [LRR-A only]:

- | | | |
|------------|-----------|---|
| <u>Yes</u> | <u>No</u> | |
| _____ | <u>Y</u> | A1, A2, A3, A4, A10, S1, S4, S5, S6, F1, F2, F3, F4, F5, F6, F7, F8 |

Criteria for Hydric Soils (NCRS, Federal Reg. 2-24-1995):

- | | | |
|------------|-----------|--|
| <u>Yes</u> | <u>No</u> | |
| _____ | <u>Y</u> | Is soil frequently ponded (>50 x in 100 yrs) for long duration (≥7 days) or very long duration during growing season? |
| _____ | <u>Y</u> | If soil frequently flooded (>50 x in 100 yrs) for long duration (≥7 days) or very long duration during growing season? |
| _____ | <u>Y</u> | Summary: Hydric Soil? |

Notes: _____

Date: 12/15/02
 Plot #: W-1 T-1 W
 County: Humboldt
 State: CA

DATA FORM 1

Proj. Name: Tydel St Proj. Location: _____ Appl. Name: _____

Vegetation. List the three dominant species in each vegetation layer (5 if only 1 or 2 layers). Indicate species with observed morphological or known physiological adaptations with an asterisk.

	Species	% Cover	Ind. Status
Trees			
1			
2			
3			
4			
5			
Saplings/Shrubs			
1			
2			
3			
4			
5			
Herbs			
1	<i>Deschampsia cespitosa</i>	40	FACW
2	<i>Grindelia stricta</i>	10	NI
3	<i>Distichlis spicata</i>	25	FACW
4	<i>Salicornia virginiana</i>	15	OBI
5	<i>Triplachin maritimum</i>	10	OBI
Woody Vines			
1			
2			
3			
4			
5			

% of species that are OBL, FACW, and/or FAC: 80

Hydrophytic vegetation: Yes No

Basis: 0% > 50

Atypical Situation: Yes No

Normal Circumstances: Yes No

Wetland Determination: Wetland Non-Wetland

Comments: _____

Determined by: Lester, Schwarz

SOIL/HYDROLOGY DATA SHEET

Transect and Plot # W171-W Date 12/15/04 Investigator Schwarz
 Job # _____ Site Tydd Street

SOILS

General Data

Profile Description:

Depth Inches	Horizon	Texture	Matrix Color	Record: percent, size, color, contrast (Fe or Fe/Mn, Nodules, Concretions)		
				Redox Masses	Redox Depletions	Pore Linings
0-6		Gravelly Sal.	10YR3/1	0	0	0
6-16		G. loam	10YR3/2	20, m, 10YR5/6	0	0

Comments: _____

Yes

No

- NRCS soil survey mapping unit? _____
- On NRCS Hydric Soil list? If yes, name _____
- Field Observation to confirm mapping unit?

Hydric Soil Determination

Corp Indicators:

Yes

No

- Histosol, Organic soil material is >50% (volume) in upper 32" (excludes folists)?
- Sulfidic odor @ ≤ 12"? If yes, depth _____
- Histic Epipedon: >30% O.M. in 8-16" layer near soil surface (>20% in sand)?
- Soil saturated at or near soil surface all of the year (Peraquic)?
- Matrix chroma ≤2 with Iron concentrations or depletions @ 10" or under A?
- Matrix chroma ≤1 with or without Iron concentrations or depletions @ 10" or under A?
- Reaction to α -α dipyridyl (Reducing conditions)?
- Gleyed Soil matrix @ 10" or under A?
- Iron and Manganese concretions @ 10" or under A?
- High organic content in surface layer of sandy soil?
- Organic streaking in sandy soils?
- Organic pans in sandy soil?
- Other? (Explain) _____
- Aquic conditions (saturation, reduction & redoximorphic features)?

Field Indicators of Hydric Soils (NRCS Ver 5.0) (Circle) [LRR-A only]:

Yes

No

- A1, A2, A3, A4, A10, S1, S4, S5, S6, F1, F2, F3, F4, F5, F6, F7, F8

Criteria for Hydric Soils (NCRS, Federal Reg. 2-24-1995):

Yes

No

- Is soil frequently ponded (>50 x in 100 yrs) for long duration (≥7 days) or very long duration during growing season?
- If soil frequently flooded (>50 x in 100 yrs) for long duration (≥7 days) or very long duration during growing season?

Summary: Hydric Soil?

Notes: _____

Appendix B
Survey Data

Survey: SALVATION ARMY PARCEL - TYDD STREET

Pt	#	Northing	Easting	Elevati	Description
207	1	19789.6033	10397.4525	9.081	WI-T101INT
208	1	19763.1881	10362.3636	8.971	WI-T100INT
209	1	19754.9053	10339.6662	9.217	WI-T1
210	1	19734.6955	10309.0729	8.971	WI-T2INT
211	1	19757.8863	10272.9125	9.578	WI-T3INT
212	1	19757.3783	10220.9425	11.128	WI-T4INT
213	1	19739.0201	10120.4040	13.195	WI-T5INT
214	1	19748.7399	10064.2856	14.467	WI-T6INT
215	1	19743.9813	9966.7735	15.355	WI-T7INT
216	1	19722.5534	9919.1484	11.944	WI-T8INT
218	1	19721.7008	9792.4477	13.381	WI-T9INT