



TRINITY VALLEY
CONSULTING ENGINEERS, INC

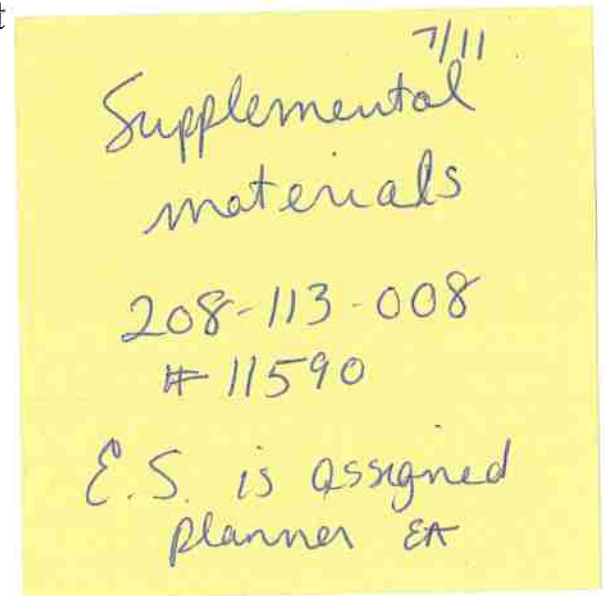
Joshua T. McKnight CE 60687



R2 Soils Report

A Portion of the NW 1/4 of Section 17, T1N, R4E H. B. & M.

Bridgeville
County of Humboldt
California
APN: 208-113-008



CLIENT:

Muddy Creek Farm, LLC
120 Larkin Place
Santa Monica, California 90402

MAY 2018
Job #1091



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Date:	May 29, 2018	Project Number:	1091
Owner:	Muddy Creek Farm, LLC	Project Name:	R2 Soils Report
Location:	Bridgeville, California	APN:	208-113-008

Introduction:

Trinity Valley Consulting Engineers, Inc. (TVCE) was secured by Muddy Creek Farm, LLC (client) to evaluate the existing conditions for the above referenced parcel. The client is seeking permitting for existing grading and a proposed rainwater impoundment structure. The following is an outline of our findings and recommendations.

Project Site Location:

The project site is located approximately 2.8 miles east of Bridgeville, California, where access is provided from California Highway 36 via private drive (see **Attachment 1** for Location Map and **Attachment 2** for Site Map). Latitude and Longitude of the project site is 40.4689° N and -123.7431° W. The parcel is approximately 40 acres in size (Parcel Map Book 208 and Page 11). The project parcel is largely thick deciduous/coniferous forest with three (3) graded openings. The parcel is zoned Timber Production Zone (TPZ) under the County of Humboldt zoning code. Surrounding the parcels are primarily agricultural and timberlands. The approximate site elevation of the project site is from approximately 1250' to 1,500' above mean sea level. Ingress/egress is provided from Private Drive via California Highway 36.

Project Site Geology:

The subject property is mostly undeveloped besides pre-existing access roads, landings, and agricultural structures. Slopes on site in general are slightly inclined (approximately less than 15% to greater than 50%) with a northerly aspect towards Little Larabee Creek. Geologically, the site lies within Central Belt of the Franciscan Complex apart of the greater Coast Range Physiographic Province (McLaughlin and others, 2000). The existing development primarily lies atop of early Tertiary to Late Cretaceous-age mélange of the Central Belt (cm2). The cm2 portion of the assemblage is described as predominately subequal amounts of metasandstone and meta-argillite. The geomorphology exhibited by this portion of the Franciscan assemblage is irregular topography that lacks well incised sidehill drainages, but is less lumpy than cm1 (mélange unit). No active sliding or faulting was observed during the site visit within and outside of the graded areas.

The project parcel is located approximately 4.3 miles from the well-constrained Yager Fault (Fault ID# 15) of the Little Salmon Fault Zone to the northwest



(<http://earthquake.usgs.gov/hazards/qfaults/map/>). This fault is considered active by the State of California, with the last surface rupture within the last 1,600,000 years.

Proposed Project:

The proposed project for this site is to perform a general soils investigation as needed to provide recommendations and evaluate existing grading. All anticipated grading and erosion control features will meet the grading requirements of the County of Humboldt. Improvements where necessary to existing access roads may be warranted and will be included in the grading plan in a separate report.

Soil Conditions:

A field investigation was conducted by TVCE at this site on March 3, 2017. This investigation consisted of site observations and general observations of the area of the existing development. Soil observations were field-logged and classified in general accordance with ASTM D-2488 visual-manual procedures. Cut walls and shallow hand dug excavations were utilized to infer soil and bedrock types. Soils observed within the area of the existing grading were silty gravels and silty sands (SM). Weathered bedrock was encountered throughout the site, primarily comprised of argillite and (meta) sandstone.



Site Locations

Site #1 – Landings and Proposed Rainwater Catchment Impoundment Structure (40.469452° N, -123.742316° W)

The location of the landings are approximately 600 feet from the site entrance. Presently, this clearing is occupied by three (3) excavated landings that utilized for agriculture and occupies approximately ± 1.02 acres. These landings approximately range from 5,000 to 13,000 square feet (SF). These landings are occupied with several temporary greenhouses, outdoor cultivation, two (2) agricultural outbuildings, and one (1) permanent greenhouse. For the development of these features, approximately 190 cubic feet (CF) of materials had been excavated. Site development based from historical imagery (Google Earth) began between 2006 and 2009, where the 2016 imagery set illustrates present-day conditions.

Adjoining slopes based from the County of Humboldt GIS data are approximately less than 15 to 30%.

During the site visit, the lowest landing (furthest east) had pooled surface water within the southern portion of the landing due to poor site drainage. In addition, the fillslope of this landing contained woody debris within the fill material and was not compacted to County of Humboldt Grading specifications. It is proposed that the landing be regraded and outsloped at two percent to accommodate surface runoff, where the outboard fillslope be recontoured and mechanically compacted. A bioswale will be installed to intercept any runoff from the landing.

In addition to existing site improvements, the client is proposing the construction of a 270,000-gallon (0.83 acre-feet) catchment structure that will be employed for agricultural and fire protection purposes. The footprint of the proposed structure will be approximately 100' x 150' with a depth of 10 feet. The existing slope within the footprint of proposed structure is less than 15% (as per County of Humboldt GIS). Compacted earth liner or a 24-mil reinforced polypropylene with non-woven fabric underlayment will be installed within the catchment structure. The proposed spillway will be a rock lined spillway with rock slope protection and will discharge into a vegetated bioswale adjacent to the proposed structure. There will be approximately 2 feet of freeboard.

All proposed inboard and outboard slopes will be 1.5:1, unless otherwise noted (refer to TVCE grading plan). All slopes will be mechanically compacted as outlined within the *Recommendations* section. The maximum fillslope will be approximately 12' height and will have a keyway. All fill will meet the standards outlined in the *Recommendations* section. There will be approximately $\pm 1,375$ cubic yards of materials excavated and ± 0.28 acres will be disturbed during grading activities.

Any new bare earth will be covered with straw and seeded, where perimeter and erosion controls measures will be utilized as needed.



Inspection of the keyway subgrade and engineered fill by a qualified professional will be required. At the project termination, the client shall contact a qualified professional to conduct a final inspection of the grading activities and approve erosion and sediment control installation.

Site #2 – Existing agricultural landing (40.469581° N, -123.743297° W)

The location of the existing agricultural landing is 900 feet from the site entrance. The existing clearing is comprised of a single-tiered landing that is occupied by two (2) greenhouses and outdoor cultivation and occupies approximately ± 0.48 acres. Site development based from historical imagery (Google Earth) began between 2006 and 2009, where the 2012 imagery set illustrates present-day conditions. The landing is approximately $\pm 12,000$ SF. For the development of the landing, approximately >100 CF of materials had been excavated. All fill and cut slopes appeared stable during the site visit, where all slopes are greater than 1.5:1.

Based on the County of Humboldt GIS (USGS Slopes) and TVCE topographic survey, slopes adjoining the agricultural landing areas range from less than 15 to 50%.

During the site visit, the fillslope of this landing contained woody debris within the fill material and was not compacted to County of Humboldt Grading specifications. It is proposed that the outboard fillslope be recontoured and mechanically compacted, removing all woody materials from the fill.

It is recommended that any exposed slopes or surfaces be seeded and strawed (soil stabilization) to encourage revegetation.

Site #3 – Existing agricultural landing (40.468791° N, -123.743709° W)

The location of the existing agricultural landing is 120 feet from the secondary site entrance (where secondary road reconvenes with the primary road). The existing clearing is comprised of a single-tiered landing that is occupied by an outdoor cultivation site that is approximately ± 0.16 acres. Site development based from historical imagery (Google Earth/Terraserver) began between 2006 and 2009, where timber had been cleared from the site and cultivation activities begin in 2014 imagery set that illustrates present-day conditions. The landing utilized for cultivation activities is approximately 2,600 SF. For the development of the landing, approximately >100 CF of materials had been excavated. All fill and cut slopes appeared stable during the site visit, where all slopes are greater than 1:1 and cut/fill slope elevation of approximately three (3) feet.

Based on the County of Humboldt GIS (USGS Slopes) and TVCE observations, slopes adjoining the agricultural landing areas range from less than 15 to 30%.

It is recommended that any exposed slopes or surfaces be seeded and strawed (soil stabilization) to encourage revegetation.



Site Soil Evaluation:

Conservatively, site soils will yield a bearing pressure of two thousand (2000) psf for vertical bearing and one hundred and fifty (150) psf for lateral bearing (2016 California Building Code, Table 1806.2).

Total settlement will be less than 1 inch, and anticipated differential settlement will be less than ¼ inch.

Seismic Considerations and Flood Considerations:

The Yager fault passes within 4.3 miles of the project site to the northwest. The site does not lie within an Alquist-Priolo zone.

The following coefficients shall be used for seismic design (See **Attachment 3** for USGS Seismic Hazard Data):

Site Class	C
Mapped Spectral Response Acceleration (short), S_s :	1.500 g
Mapped Spectral Response Acceleration (1-sec), S_1 :	0.731 g
Site Coefficient, F_a :	1.0
Site Coefficient, F_v :	1.3
Acceleration Spectral Response (short), S_{DS} :	1.000 g
Acceleration Spectral Response (1-sec), S_{D1} :	0.633 g
Seismic Design Category:	D
Occupancy Category:	I
Importance Factor:	1.0

The project site is listed to be in an area that is *highly instable* by the County of Humboldt GIS mapping.

Based on the location and geographical setting, the project site lies outside any flood prone areas.

Due to the site soils, depth to groundwater, distance to the nearest known quaternary fault, and distance to descending slopes, the potential for liquefaction, surface rupture, soil strength loss, or faulting at this site is Low, and no special mitigation hazards are necessary.

Conclusion:

This report documents the history, present conditions and subsurface materials, as well as the geologic hazards associated with the site. Included in this report are design and construction recommendations based on the site conditions encountered, the requirements of the 2016 CBC and County of Humboldt grading ordinance. Based on our review of historical data, site exploration and observations, it is in our opinion that if our site-specific recommendations are implemented as intended, then no further actions will be necessary.



Recommendations:

The following recommendations are general recommendations for any future grading activities to be performed:

Site Preparation

- All earthwork, including but not limited to, site clearing, grubbing, and stripping should be conducted during dry weather conditions, generally mid-April through mid-October;
- Strip and remove all topsoil and vegetation from the project area, and for a minimum of three feet to the outside of the working area
- Any undocumented fill soils, fine-grained residual soils, and any other debris encountered at or below the existing ground surface shall be removed at the locations receiving any potential fills

Grading

Grading must meet compliance with the County of Humboldt grading ordinance and ASTM regulations.

All cuts and fills shall be setback at a minimum of ten (10) feet from all ascending and descending slopes greater than 30%.

Any grading or structures shall be in conformance with the most recent version of the California Building Code (CBC).

Compaction Standards

Fills shall be compacted in 8-inch loose lifts with clean native materials at optimum moisture content as determined by testing and approved by the engineer. Non-structural fills shall be compacted to a firm unyielding surface as approved by engineer.

Fills

- Fills shall be constructed as controlled and compacted engineered fills and fillslopes graded to no steeper than 2:1 (h:v) without written approval of a qualified design professional.
- Fills should be free of: 1) organics, 2) rocks larger than 3-inches in diameter, and 3) other deleterious materials.
- Fill material should be placed in loose lifts no more than 8-inches thick, at uniform moisture content at or near optimum, and compacted mechanically.
- Sufficient testing and inspection should be performed to monitor the suitability of fill materials and assure compliance with the recommended compaction standards.
- Aggregate base material may be used for pavement subgrade, placed beneath footings or floor slabs, or used as trench backfill. This material should meet the



requirements in the Caltrans Standard Specifications for Class 2 Aggregate Base (3/4-inch maximum particle size).

Drainage and Landscaping

The site should be graded to provide drainage such that no water is allowed to: 1) pond anywhere on the site, 2) migrate beneath the proposed developments, or 3) pond at the base of cuts.

Erosion Control

Site-specific erosion/sediment control and stabilization recommendations are presented in the bulleted list below. As used herein, *exposed soil areas* and *disturbed areas* include all grading and excavation work performed in connection with the proposed project.

- Storm water erosion and pollution prevention measures should be taken as soon as possible prior to the onset of the winter rains.
- Humboldt County Erosion Control Standards should be viewed as *minimum* standards for erosion and sediment control at this site.
- Revegetate all disturbed areas immediately by seeding with Caltrans erosion control mix (or equivalent).
- To protect against erosion, heavily mulch all exposed soil areas with straw, or an approved alternate material.
- Poke the straw mulch into the upper 2 inches of the soil to limit loss of straw.
- Stake straw wattles parallel to slope contours into any side cast fills.
- Install silt fencing at toes of any new side cast fill slopes.
- Replant the site with trees and shrubs native to the area.
- Cover any soil stockpiles with 6-mil (min) plastic sheeting, securely anchored to prevent wind disturbance.
- Native gravel-surfaced roadways to the proposed ponds and other areas where vehicle traffic may occur; should be maintained in good condition.
- Drive and park vehicles only on gravel-paved areas during wet weather.
- Monitor the site before and after runoff-generating rainfall events to verify suitable and appropriate functioning of all erosion-control measures.
- Promptly repair all erosion-control measures as needed.

Limitations

This report, recommendations, and conclusions are solely intended for the site discussed above. The information contained in this report is only intended for use at the stated site using the stated uses. This report should not be used as justification for any other project or site, and only be used for information purposes if referenced and reviewed for other projects. TVCE recognize that the site is in a dynamically active area and conditions can and will change. TVCE has used the best professional judgment to assess the present and future risks and assist the landowner in proposing development that does not increase the



risk to the resources present in the project area or subject the landowner to untenable hazards. If conditions different from those described in this report are encountered during construction, the project engineer/builder/owner should contact this office to review the new conditions and evaluate their bearing on the validity of any recommendations provided herein.

The opinions presented herein have been developed using a degree of care and skill ordinarily exercised, under similar circumstances, by reputable civil engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

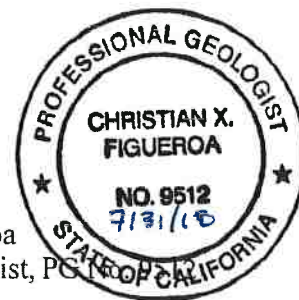
The analyses and recommendations contained in this reports are based on the data obtained from subsurface exploration. The methods used indicate subsurface conditions only at the specific locations where soils were observed, and only to the depths penetrated, and cannot always be relied on to accurately reflect stratigraphic heterogeneity that commonly exist between sampling locations.

Do not apply any of this report's conclusions or recommendations if the nature, design, or location of the project changes. If changes are contemplated, the author of this report should be consulted to review the impact on the applicability of the recommendations in this report. The author of this report is not responsible for any claims, damages, or liability associated with any other party's interpretation or the subsurface data or reuse this report for other projects or at other locations without written consent.

Please contact TVCE at (530) 629-3000 if any questions may arise.

Joshua T. McKnight
Professional Engineer, PE No. 60687

Christian X. Figueroa
Professional Geologist, PG No. 9512



References:

County of Humboldt GIS Mapping (<http://gis.co.humboldt.ca.us/>)

McLaughlin, R.J., Ellen, S.D., Blake, M.C., Jayko, A.S., Irwin, W.P., Aalto, K.R., Carver, G.A., Clarke, S.H., Barnes, J.B., Cecil, J.D., and Cyr, K.A., 2000, Geology of the Cape Mendocino, Eureka, Garberville, and southwestern part of the Hayfork 30 X 60 minute quadrangles and adjacent offshore area, northern California, with digital database, U.S. Geological Survey, Miscellaneous Field Studies Map MF-2336, scale: 1:100,000.

U.S. Geological Survey and California Geological Survey, 2018, Quaternary fault and fold database for the United States, accessed 5/28/2018, from website: <http://earthquake.usgs.gov/hazards/qfaults/>.

U.S. Geological Survey Earthquake Hazard Program, 2018, US Seismic Design Maps, accessed 5/28/2018, from USGS website: <http://earthquake.usgs.gov/hazards/designmaps/>.

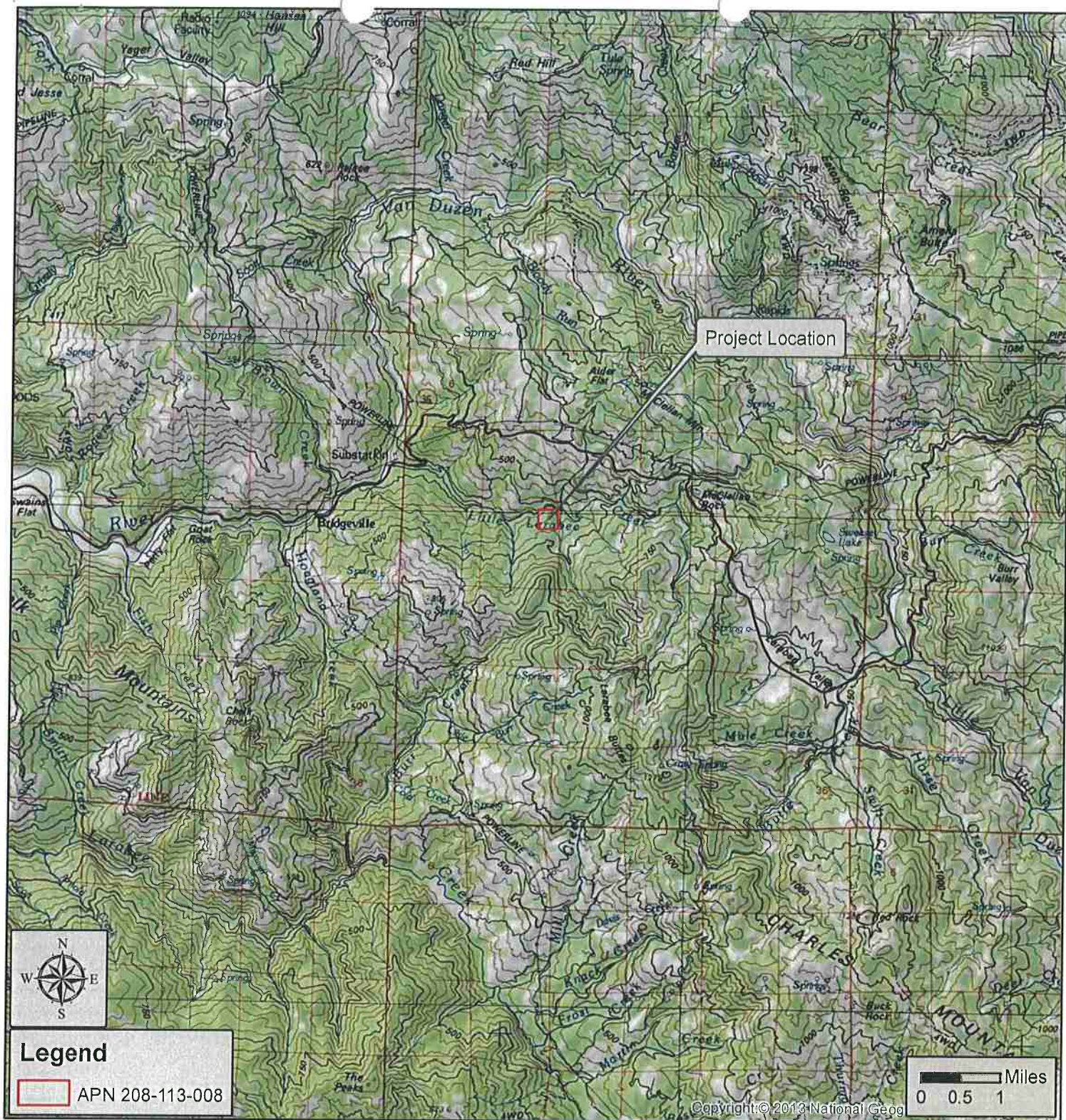




ATTACHMENT 1:

Location Map





SEAMLESS TOPOGRAPHIC MAP
FOR
COUNTY OF HUMBOLDT

Parcel Information from Humboldt County GIS
 Does not reflect exact location of property lines

Soil Report
Mika Cook
APN: 208-113-008
Little Larabee Creek Vicinity
Bridgeville CA

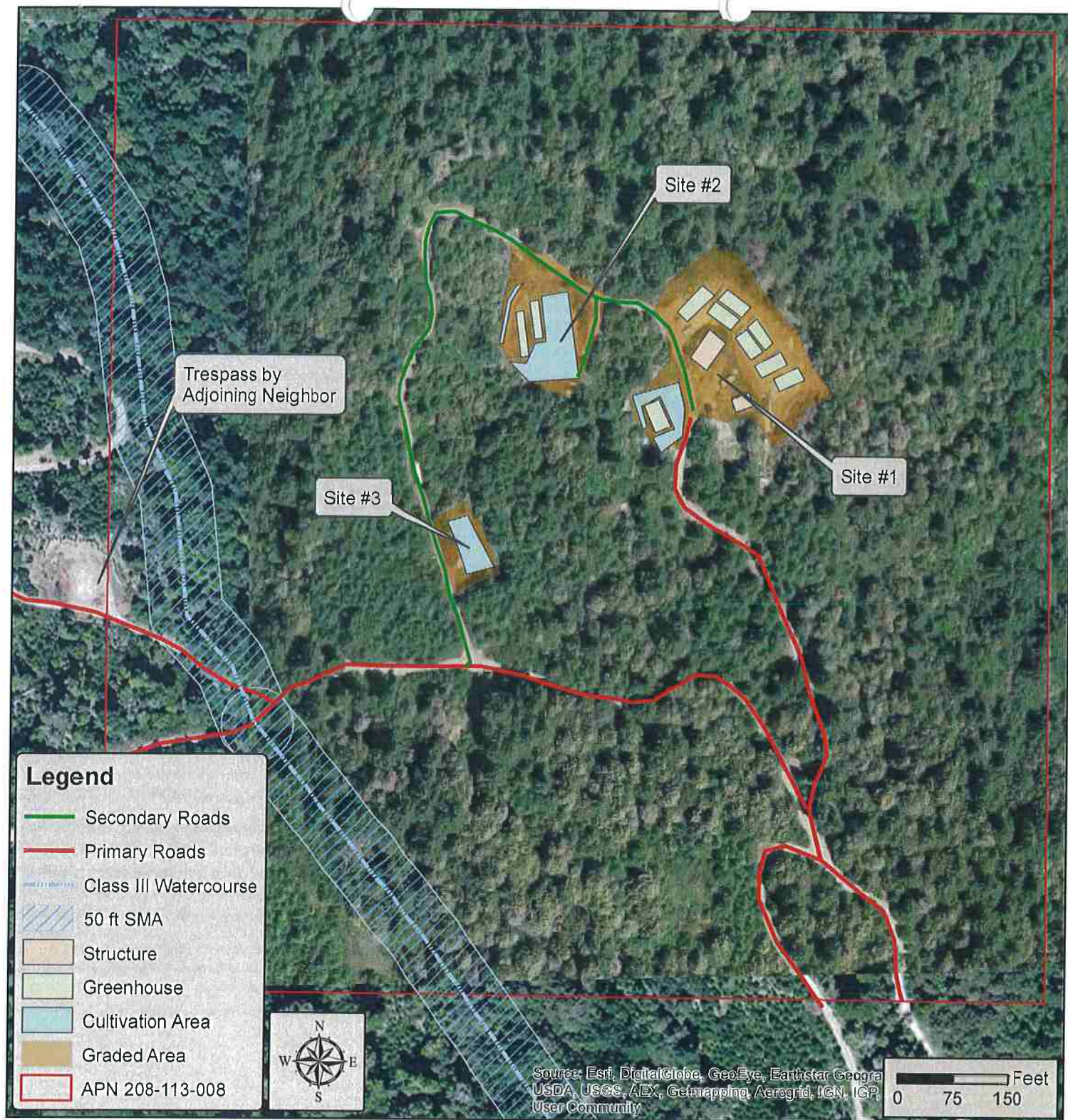
Location Map



ATTACHMENT 2:

Site Map





USDA NAIP IMAGERY

FOR

COUNTY OF HUMBOLDT

AND

GOOGLE EARTH IMAGERY

Parcel Information from Humboldt County GIS
Does not reflect exact location of property lines

Soil Report
Mika Cook
APN: 208-113-008
Little Larabee Creek Vicinity
Bridgeville, CA

Site Map



Design Maps Detailed Report

ASCE 7-10 Standard (40.4689°N, 123.7431°W)

Site Class C – “Very Dense Soil and Soft Rock”, Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From [Figure 22-1](#) ^[1]

$$S_s = 1.500 \text{ g}$$

From [Figure 22-2](#) ^[2]

$$S_1 = 0.731 \text{ g}$$

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class C, based on the site soil properties in accordance with Chapter 20.

Table 20.3-1 Site Classification

Site Class	\bar{v}_s	\bar{N} or \bar{N}_{ch}	\bar{s}_u
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics:			
<ul style="list-style-type: none"> • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf 			
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

$$\text{For SI: } 1 \text{ ft/s} = 0.3048 \text{ m/s } 1 \text{ lb/ft}^2 = 0.0479 \text{ kN/m}^2$$

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_s

For Site Class = C and $S_s = 1.500$ g, $F_a = 1.000$

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = C and $S_1 = 0.731$ g, $F_v = 1.300$

Equation (11.4-1):

$$S_{MS} = F_a S_s = 1.000 \times 1.500 = 1.500 \text{ g}$$

Equation (11.4-2):

$$S_{M1} = F_v S_1 = 1.300 \times 0.731 = 0.950 \text{ g}$$

Section 11.4.4 — Design Spectral Acceleration Parameters

Equation (11.4-3):

$$S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.500 = 1.000 \text{ g}$$

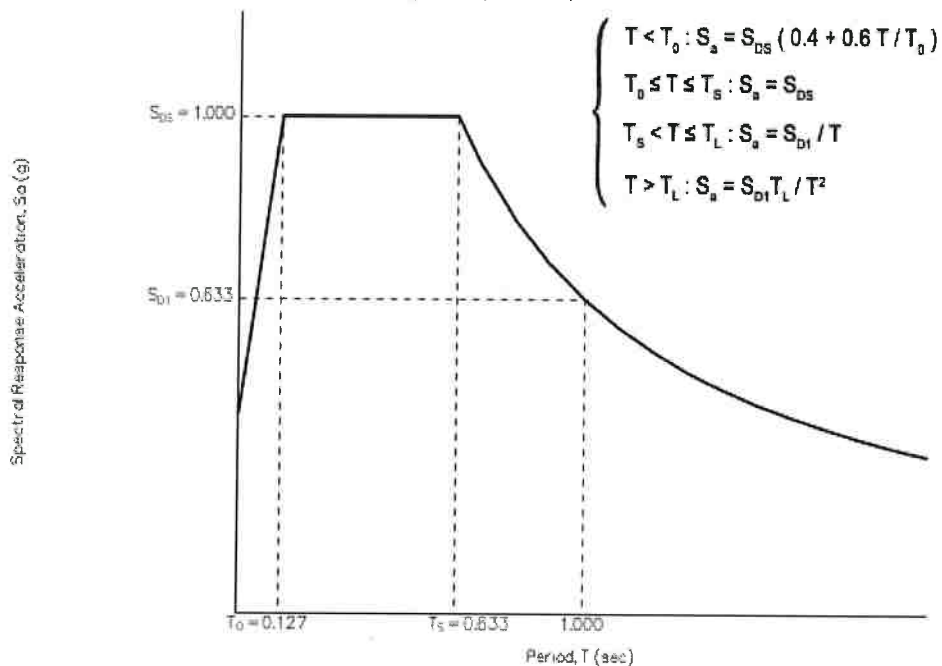
Equation (11.4-4):

$$S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.950 = 0.633 \text{ g}$$

Section 11.4.5 — Design Response Spectrum

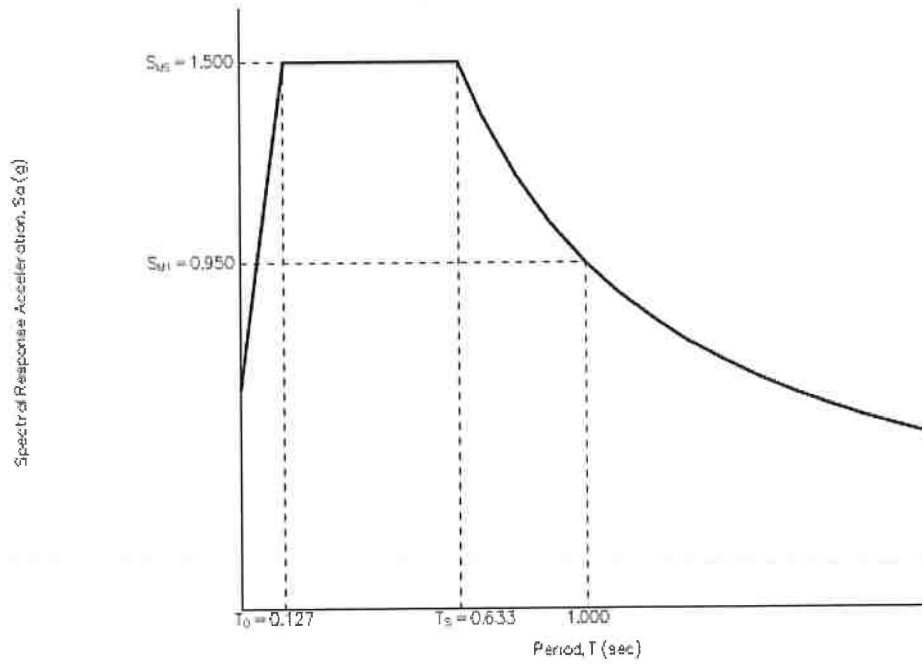
From **Figure 22-12** ^[3] $T_L = 16 \text{ seconds}$

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From **Figure 22-7** ^[4]

$$PGA = 0.577$$

Equation (11.8-1):

$$PGA_M = F_{PGA} PGA = 1.000 \times 0.577 = 0.577 \text{ g}$$

Table 11.8-1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = C and PGA = 0.577 g, $F_{PGA} = 1.000$

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From **Figure 22-17** ^[5]

$$C_{RS} = 0.983$$

From **Figure 22-18** ^[6]

$$C_{R1} = 0.937$$

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \leq S_{DS} < 0.33g$	B	B	C
$0.33g \leq S_{DS} < 0.50g$	C	C	D
$0.50g \leq S_{DS}$	D	D	D

For Risk Category = I and $S_{DS} = 1.000g$, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \leq S_{D1} < 0.133g$	B	B	C
$0.133g \leq S_{D1} < 0.20g$	C	C	D
$0.20g \leq S_{D1}$	D	D	D

For Risk Category = I and $S_{D1} = 0.633g$, Seismic Design Category = D

Note: When S_1 is greater than or equal to $0.75g$, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category \equiv "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. Figure 22-1: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. Figure 22-2: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. Figure 22-12: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. Figure 22-7: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. Figure 22-17: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. Figure 22-18: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf



5/16/18

Re: Notice Of intent

To the reviewing body,

Mika Cook is contracted with Natural Resources Management Corporation. We will be completing a Biological survey and report for Ms. Cook. The survey and the report will be completed in the county allotted time.

Sincerely,

A handwritten signature in cursive script that reads "Prairie Moore".

Prairie Moore

Environmental Division Manager
Vice President