LINDBERG GEOLOGIC CONSULTING
David N. Lindberg, Certified Engineering Geologist

ENGINEERING GEOLOGIC SOILS EXPLORATION REPORT

Proposed New Processing Facility
Shadow Light Ranch, Clark Road
Garberville, Humboldt County, California

Assessor's Parcel Number: 223-073-005

Prepared for:
Mr. Joshua Sweet

____
David N. Lindberg, CEG 1895, Exp. 02/29/2020

October 3, 2019 LGC Project No. 0260.03

Post Office Box 306 Cutten, California 95534 (707) 442-6000

TABLE OF CONTENTS

1.0 INTRODUCTION ... 1
1.1 Site and Project Description ... 1
1.2 Scope of Work ... 1
1.3 Limitations ... 2
2.0 FIELD EXPLORATION AND LABORATORY TESTING ... 3
2.1 Field Exploration Program ... 3
2.2 Laboratory Testing ... 3
3.0 SITE AND SUBSURFACE CONDITIONS ... 3
3.1 Topography and Site Conditions ... 3
3.2 Geologic Setting ... 3
3.3 Seismicity ... 4
3.4 Regional Seismicity ... 4
3.5 Subsurface Conditions ... 5
3.6 Groundwater Conditions ... 5
4.0 GEOLOGIC HAZARDS ... 5
4.1 Seismic Ground Shaking and Surface Fault Rupture ... 5
4.2 Liquefaction ... 6
4.3 Settlement ... 6
4.4 Landsliding ... 6
4.5 Flooding ... 7
4.6 Tsunami ... 7
4.7 Soil Swelling or Shrinkage Potential ... 7
5.0 CONCLUSIONS AND DISCUSSION ... 7
6.0 RECOMMENDATIONS ... 7
6.1 Setback Recommendations ... 7
6.2 Site Preparation ... 8
6.3 Subgrade Preparation ... 8
6.4 Temporary Excavations ... 8
6.5 Cut and Fill Slopes ... 9
6.6 Fill Materials ... 9
6.7 Compaction Standard ... 9
6.8 Seismic Design Parameters ... 10
6.9 Foundation Design ... 10
6.10 Drainage ... 12
6.11 Erosion and Sediment Control Recommendations ... 12
6.12 Pavement Design Recommendations ... 13
7.0 ADDITIONAL SERVICES ... 13
7.1 Review of Grading and Foundation Plans and Excavations ... 13
7.2 Observation and Testing ... 13
8.0 REFERENCES ... 13
9.0 LIST OF FIGURES ... 14

ENGINEERING GEOLOGIC R-2 SOILS EXPLORATION REPORT
Proposed New Processing Facility
Report of Findings for Mr. Joshua Sweet
Shadow Light Ranch, Clark Road, APN: 223-073-005
Garberville, Humboldt County, California

1.0 INTRODUCTION

1.1 Site and Project Description

This report presents the results of the site-specific, engineering-geologic soils exploration conducted by Lindberg Geologic Consulting (LGC) at the location noted above (Figure 1), Assessor's parcel 223-073-005 (Figure 2), at the end of Clark Road, a short distance east of Garberville. Proposed new developments on this parcel consist of a 6,250-square foot, single-story, cannabis processing/warehouse building, with parking areas and driveway (Figure 3).

TABLE 1 – PROJECT LOCATION INFORMATION	
Latitude and Longitude*	40.0975° North and -123.7651° West
Legal Description	Ptn. of West ½ Sec. 20, T4S, R4E, HB&M
Parcel Size	136 Assessed Acres (127.14 GIS acres)
USGS Quadrangle	Garberville, Calif., 7.5-minute topographic quadrangle map (1970)

*Centroid of parcel per Humboldt County Web GIS

Lindberg Geologic Consulting (LGC) was retained by Mr. Joshua Sweet, who is proposing to construct a cannabis-processing building on this site. There is an existing (30' x 40') shop building on-site which will be expanded upon. Parking will be provided on-site, adjacent to the new building. Power will be made available to this site. Water is available on-site, and sewage disposal will be provided with an on-site wastewater treatment system. Ingress and egress will be via an existing ranch road off of Clark Road.

Included in this report are brief assessments of the potential geologic hazards associated with the proposed site developments. Recommendations are provided as necessary and appropriate (in our opinion) to mitigate potential negative effects of those identified geologic hazards on the proposed site developments. Recommendations are provided for design professionals such as architects and engineers to utilize for grading and foundation design, and planning the new building and associated developments.

1.2 Scope of Work

The Scope of Services for this investigation included identifying and assessing geologic and soil hazards with a potential to affect the proposed development, characterizing the subgrade soils, developing grading and foundation design recommendations, and preparation of this report. The following information, recommendations, and design criteria are presented in this report:

- Description of site terrain and local geology.
- Interpretation of subsurface soil and groundwater conditions based on our explorations.
- Logs of soil profile characteristics observed within backhoe test excavations.
- Assessment of potential earthquake-related geologic and geotechnical hazards including surface fault rupture, liquefaction, differential settlement, and site slope instability.

- Discussion of potential geologic hazard mitigation measures as necessary.
- Seismic design parameters per the 2016 California Building Code (CBC), including Seismic Design Category, Site Class, and Spectral Response Accelerations.
- Brief discussion of generally-appropriate foundation design options.
- Recommendations regarding foundation element design, including:
    - Allowable bearing pressures (dead, live, and seismic loads)
    - Evaluation of potential foundation settlement
    - Minimum foundation embedment
- Recommendations for earthwork; site and subgrade preparation; fill material; fill placement and compaction requirements; and criteria for temporary excavation support.
- Recommendations for construction materials observation and testing.

Excluded from our scope of work was any environmental assessment for the presence or absence of any hazardous waste, toxic, or corrosive materials. Although we have explored subsurface conditions as part of this investigation, we have not conducted any analytical laboratory testing of samples obtained for the presence of hazardous material(s). LGC prepared a wastewater disposal system design for an earlier, proposed but not implemented, project at this location.

1.3 Limitations

This report has been prepared for the exclusive use of our client, Mr. Joshua Sweet, his contractors and subcontractors, and appropriate public authorities for specific application to the proposed project. LGC strives to comply with the engineering-geologic standard of care common to the local area at the time this work was performed. LGC makes no other warranty, express or implied.

The analyses and recommendations presented in this report are based on data obtained from existing maps and reports, field observations and limited subsurface explorations. Methods used indicate subsurface conditions only at specific locations where our exploratory test excavations were made, only to the depths penetrated, and only at the time the exploratory test excavations were installed. Samples can not always be relied on to accurately reflect stratigraphic or lithologic variations that commonly exist between sampling locations, nor do they necessarily represent conditions at any other time. Any results of analyses of samples obtained during this project are on-file in our office.

The recommendations included in this report are based, in part, on assumptions about subsurface conditions that may only be tested during earthwork. Accordingly, the applicability and validity of these recommendations is contingent upon LGC being retained to provide a complete professional service. LGC assumes no responsibility or liability for the adequacy of the recommendations when they are applied in the field unless LGC is retained to observe construction earthwork. We are available to discuss a schedule of such observations as may be advisable to provide assurance of the validity of our recommendations.

Do not apply any of this report’s conclusions or recommendations if the nature, design, or location of the proposed development is changed. If changes are contemplated, it is important that LGC be contacted promptly, and consulted to review the impact of the changes on the applicability of the recommendations in this report. Note that LGC is not responsible for any claims, damages, or other liability associated with any other party's interpretation of the subsurface data, or our site-specific recommendations, or reuse of this report for other projects or locations without our express written authorization.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration Program

A Certified Engineering Geologist from our office visited the project site on March 30, 2018. A field investigation was performed to assess the in-situ soil and groundwater conditions, and to estimate the engineering characteristics and properties of the subsurface materials at the project site. Our explorations included exploratory backhoe test excavations located in the vicinity of the proposed new processing/warehouse development. Exploratory backhoe test excavations were located to provide insight into subsurface conditions at this building location. Soils observed in the test excavations were field-logged and classified in general accordance with ASTM D-2488 visual-manual procedures. Exploratory backhoe test excavation locations are shown on the site image (Figure 3). Soil profile logs are attached (Figures 6 & 7), as well.

We have also observed the soil profile in excavations at various locations on this parcel and in the greater Garberville area, where we have encountered similar soil profiles. Soil stratigraphy, as exposed in our test borings, was logged in the field in general accordance with ASTM standards.

2.2 Laboratory Testing

Soil samples were retained from the field exploration for textural analysis for leachfield suitability. Soils from 3-feet below grade were reported to be Sandy Clay Loam and Loamy Sand by the laboratory. Soil samples from the 5-foot depth were Sandy Loam. No other laboratory analyses were performed. Subsurface soils appeared to be uniformly-distributed across this site and, in stratigraphic order, consisted of undisturbed, in-place native topsoil (silt and fine sand), medium dense sand with silt, clay and gravel. Groundwater was not encountered to the depth of approximately 10 feet below the existing ground surface (bgs).

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Topography and Site Conditions

This subject property is gently- to steeply-sloping, approximately 136 acres in area, and is 1.5 miles east of downtown Garberville. The proposed building site elevation is approximately 1,400 feet above mean sea level, based on the USGS Garberville 7.5' topographic quadrangle map (Figure 1). The parcel slopes down to the west, with slope gradients of approximately 15 to 30 percent. On the north side of the parcel, mainly beyond the property line, the ground slopes more steeply to the northwest, into Bear Canyon Creek. The nearest mapped watercourses are Bear Canyon Creek, which flows east to west, approximately 700 feet northwest of the subject parcel, and South Fork Eel River, approximately 1.6 miles to the west (Figure 1).

3.2 Geologic Setting

This parcel is located within California's northern Coast Ranges Geomorphic Province, a seismically active region in which large earthquakes are expected to occur during the economic life span (50 years) of any developments on the subject property. Mapping by McLaughlin *et al*., (2000), shows that the site is located on a Quaternary landslide deposit underlain by older (late-Pleistocene to Miocene) non-marine deposits associated with the Wildcat Group, and by Cretaceous rocks of the Broken formation of the Central belt of the Franciscan Complex Figure 4). The site of this proposed new development, while mapped on a Quaternary landslide deposit, however, appeared stable in its present configuration; no evidence of active landsliding was observable at the proposed building location.

Earth materials encountered in the on-site exploratory backhoe test excavations, beneath approximately 1 foot of soft, dark brown topsoil; consisting of brown to yellowish-brown, medium soft to stiff silty sandy clay (CL), or Sandy Clay Loam/Loamy Sand by the USDA soil classification system. Silty sandy clay on-site was found to contain approximately 65 percent sand, 10 to 30 percent clay, 10 to 20 percent silt, and 26 to 46 percent gravel.

Free water was not encountered to a depth of approximately ten feet below grade in late March 30, 2108 in exploratory test excavations for the septic system nearby on-site. We have observed similar soil and groundwater conditions consisting of medium soft to stiff silty sandy clay at other sites around the Garberville area in borings and backhoe test pits. Underlying the material mapped as a Quaternary landslide deposit, at some undetermined depth at the subject property, are non-marine deposits associated with the Wildcat Group, and Cretaceous rocks of the Broken Formation of the Central Belt of the Franciscan Complex. Franciscan rocks are present in the subsurface at some depth much greater than our exploratory backhoe test excavations.

The near-surface soils are topsoil composed predominantly of silty fine sand with clay and gravel. Soils, based on our exploratory test excavations, are interpreted to be generally uniformly distributed across the site of the proposed developments. In the areas explored, the soil profile consisted of approximately 1 foot of soft and loose topsoil. Beneath this topsoil, we observed medium soft to stiff silty sandy clay to the total depth explored, six feet bgs. Groundwater, as mentioned, was not encountered in any of our exploratory backhoe test excavations.

3.3 Seismicity

This project site is located within a seismically active region in which large earthquakes from a variety of sources have the potential to occur during the economic life span (50 years) of a typical structure. North of Cape Mendocino and the Mendocino triple junction, the regional tectonic framework is controlled by the Cascadia subduction zone (CSZ), wherein the Gorda and Juan de Fuca oceanic plates are being actively subducted beneath the North American continental plate.

According to the geologic mapping by the state of California, the subject parcel is not within an area zoned for special earthquake fault studies. In other words, this site is not located within an area in proximity to any faults zoned as active by the State.

3.4 Regional Seismicity

Regionally, the project site is subject to ground motion from a number of seismic sources including the Little Salmon fault to the north and northeast, and the Cascadia subduction zone to the west, and the San Andreas fault to the west-southwest. The Cascadia subduction zone is considered capable of producing a great earthquake with an estimated magnitude (moment magnitude, M_w) of 9.0. The subducting Gorda plate is a common source of the historic earthquakes felt in the vicinity of Garberville. To the west, at Shelter Cove, the San Andreas fault moved during the 1906 San Francisco earthquake. Recent (since ~1850) Gorda plate earthquakes have ranged in magnitude up to 7.4 (in the earthquake of November, 1980).

3.5 Subsurface Conditions

On the days of our field investigations, to explore soil and groundwater conditions, exploratory backhoe test excavations were extended 10 feet bgs in the vicinity of the proposed building site. The soil profile, as exposed in the exploratory backhoe test excavations was described in general accordance with ASTM D 2488 standards. More detailed descriptions of the subsurface stratigraphy encountered within our exploratory backhoe test excavations are provided in the attached boring logs (Figures 6 and 7).

Within the uppermost, portion of the soil profile, we encountered in-place, undisturbed native topsoil. Below the topsoil our exploratory backhoe test excavations exposed an intact soil profile, consisting of native mineral soil. An intact soil profile, including the original sod and topsoil, was encountered in all of our excavations.

3.6 Groundwater Conditions

Groundwater was not encountered during our field exploration to a depth of 10 feet bgs in our exploratory backhoe test excavations. Secondary porosity appeared to be well-developed in the spoils retrieved from the excavations. No soil mottling, suggestive of transient elevated groundwater conditions, was observed in the excavations. Groundwater levels on this site will likely fluctuate with seasonal or long-term climatic variations, and changes in land use. Groundwater could conceivably rise to above six feet bgs for relatively-brief periods during extended mid- to late-winter precipitation events, but we consider this to be of low probability.

Due to the subject parcel being underlain by soil materials with well-developed secondary porosity, groundwater is not expected to be encountered at foundation depths during the dry-season (May through October). Wet-season (November through April) earthwork could be adversely affected by soils subject to temporary, seasonal saturation within anticipated foundation depths. Generally, groundwater conditions are not anticipated to negatively affect foundation performance or foundation construction. Seasonally-perched groundwater has some (probably low) potential to occur, making earthwork problematic during the wet-season months.

4.0 GEOLOGIC HAZARDS

The focus of our geologic hazard assessment for this project site primarily included seismic ground shaking due to near and far seismic sources, the potential for liquefaction of loose, near-surface saturated soils, tsunami, and differential settlement due to undocumented fill soils. Our assessment of these and other common potential hazards is presented below.

4.1 Seismic Ground Shaking and Surface Fault Rupture

As described, the project site is in a seismically active area proximal to multiple seismic sources capable of generating moderate to strong ground motions. Given the proximity of the San Andreas fault, the Mendocino fault, and the Cascadia subduction zone (offshore to the northwest), as well as other active faults within and offshore of northern California, the project site will doubtless experience strong ground shaking during the economic life span (50 years) of any proposed developments.

The San Andreas fault is the nearest recognized active fault (CDMG, 1998 and 2000). The subject parcel, however, is not located within any Alquist-Priolo earthquake fault zones, in which State law requires special studies for structures for human occupancy. Due to the distance from the project site to the nearest recognized active fault, and based on the information available, the potential for ground surface fault rupture to occur at the project site is considered minimal.

4.2 Liquefaction

Liquefaction is a loss of soil strength that results in fluid mobility through the soil. Liquefaction typically occurs when uniformly-sized, loose, saturated sands or silts that are subjected to strong shaking in areas where the groundwater is less than 50 feet below ground surface. In addition to the necessary soil and groundwater conditions, the ground acceleration must be high enough, and the duration of the shaking must be sufficient, for liquefaction to occur. Strong ground shaking is anticipated, but loose, well-sorted, saturated sands less than 50 feet bgs are appear at the site.

Based on the Planning Scenario (CDMG, 1995), the site is not located in an area of liquefaction potential. Within our exploratory backhoe test excavations, we encountered medium soft to stiff, materials at anticipated foundation load-bearing depths. Groundwater was not encountered in our exploratory backhoe test excavations, and loose saturated sands are unlikely to occur in the shallow subsurface deeper than our exploratory backhoe test excavations. Based on the geologic age, grain-size distribution, and relative density of the native soils, the potential for liquefaction-related settlement or other related phenomenon is considered low.

4.3 Settlement

Based on our exploratory backhoe test excavations, undocumented, non-engineered fill soils are not present at the subject property. Where (if) encountered, undocumented, non-engineered fill soils shall be considered unsuitable as foundation load bearing soils due to the potential for excessive total and differential settlement. The apparent lack of fill soils on this site suggests that foundation elements may be founded in suitable in-place undisturbed native soils, and designed for uniform settlement. For foundations designed in accordance with current building codes and our recommendations, and the standard of care for civil engineering, we estimate that total and differential settlement can be minimized through the design and construction process.

4.4 Landsliding

The proposed building site on the subject property is sloping (~15-30%), at an elevation of approximately 1,400 feet above mean sea level. There are no steep cut slopes associated with the proposed building site on this parcel. Based on the fact that the project location is within an area mapped as a Quaternary landslide, slope instability and landsliding are potential hazards to the project. The risk of instability may be mitigated through prudent grading design, and by setting back structures from steep (>30%) slopes. The State of California mapped the geology and geomorphic features related to landsliding on the Garberville 7.5' Quadrangle in 1983 and showed only areas of "patterned ground" on the parcel (Figure 5).

North of the project location, and beyond the property line, natural, native slopes descend more-steeply to the inner gorge of Bear Canyon Creek. Canyon side slopes are well covered with native vegetation, and appeared, generally, to be stable in their present configuration. Valley slopes in Bear Canyon Creek north of this parcel are predominantly approximately 40 percent, but in some areas are steeper than 50 percent. Given the distance from the proposed building site to any steep slopes, we anticipate a low potential for slope instability at the project site.

4.5 Flooding

In terms of elevation, this site is not close to either the South Fork Eel River, or Bear Canyon Creek. According to the Humboldt County Web GIS system, this parcel is well-above any 100-year flood zone. Consequently, the hazard of flooding at this site is low.

4.6 Tsunami

The hazard of tsunami inundation is low at this inland site 1,400 feet above sea level.

4.7 Soil Swelling or Shrinkage Potential

Subsurface soils at foundation load bearing depths consist predominantly of low plasticity silty clay with fine sand. Soils were soft and moist at the surface, becoming medium soft to stiff, and more sandy with increasing depth. Silty sandy clay soils appeared permeable and well-drained. Based on the generally moist and well-graded nature of the site soils at anticipated foundation load-bearing depths, they do not appear subject to detrimental shrink-swell associated with cyclic seasonal wetting and desiccation. Soils appeared unlikely to be subject to desiccation to depths sufficient to affect a typical foundation system of reinforced concrete, built according to current building codes. The hazard associated with shrink-swell soils is, in our opinion, low.

5.0 CONCLUSIONS AND DISCUSSION

Based on the results of our explorations, it is our opinion that the project site is suitable for its proposed use as described in this report. The subject parcel is developed for cannabis production, similar to several other parcels nearby. Our office was provided with preliminary design plans for the new processing/warehouse construction, but no “civil site plans” were available at the time. Our recommendations apply to construction of lightly-loaded, two-story, wood or steel framed structures, supported on foundation systems consisting of a reinforced (thickened edge) monolithic concrete slab on grade with continuous concrete perimeter footings, and interior spread footings and pads where required. We will recommend that the foundation loads bear in the stiff undisturbed native soils occurring at approximately two feet below the existing surface.

6.0 RECOMMENDATIONS

6.1 Setback Recommendations

There are no steep slopes and watercourses in the immediate vicinity of the proposed project. This site is at least 400 feet higher in elevation than the nearest mapped ephemeral watercourses. From an engineering geologic standpoint, the potential geologic hazard of potential slope instability has been suitably-mitigated by locating the proposed processing/warehouse away from any steep or potentially-unstable slopes. The subject parcel is surrounded by other, similar, privately-owned parcels. Residential and agricultural structures are the nearest developments to this site. Clark Road is paved to the driveway turnout to this property.

6.2 Site Preparation

All earthwork, including but not limited to, site clearing, grubbing, and stripping should be conducted during dry weather conditions. The uppermost one-foot of topsoil and sod should be removed from within the building footprint, and from the area within five feet of the building perimeter, from beneath all driveways, parking areas, and concrete flatwork areas. Topsoil removed should be stockpiled on-site for later use as landscaping fill, or other non-structural fill.

In footing excavations, any deeper, or thicker, native topsoil, or other unsuitable load bearing earth materials encountered at or below the existing ground surface should be removed to a depth sufficient to expose firm, undisturbed native mineral silty sandy clay soil material. Firm undisturbed material is estimated to occur at approximately one to two feet below existing grade.

Approved erosion and sediment controls appropriate for the season, and compliant with State and County regulations, must be in place. When the ground is wet, vehicle and equipment traffic should be restricted to the extent feasible, and care should be taken to avoid rutting and mixing of disturbed soils or topsoil with the underlying native bearing soils. Surfacing the driveway and parking areas with gravel should be a priority prior to any other preliminary earthwork.

6.3 Subgrade Preparation

The area of the building footprint, proposed paved areas and the area five feet beyond the perimeter of these developments, should be stripped of the uppermost one foot of topsoil and any other loose, disturbed material. The exposed ground surface should then be scarified to a depth of 8 inches; moisture conditioned as necessary and appropriate, and compacted in accordance with our compaction standards (below) to a firm and unyielding surface sufficient to support the anticipated building loads. If the exposed subgrade soil is soft or disturbed, or if it proves difficult to compact, it should be excavated additionally to expose more-competent native soil materials. The resulting subgrade should be scarified and conditioned as recommended above. Replace excavated material with engineered fill.

6.4 Temporary Excavations

While none are expected for this project, in general, all temporary construction slopes should be designed and excavated in strict compliance with all applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards.

Construction equipment, building materials, excavated soil, vehicular traffic, and other similar loads should never be allowed near the top of any unshored or unbraced excavation. Where the stability of adjoining buildings, walls, pavements, or other similar improvements is, or may be endangered by excavation operations, support systems (i.e., shoring, bracing, and underpinning) may be needed to provide structural stability and to protect personnel working in excavations.

Since excavation operations are dependent on construction methods and scheduling, the contractor should be solely responsible for the design installation, maintenance, and performance of all shoring, bracing, underpinning, and other similar systems. LGC assumes no responsibility for temporary excavations, the safety thereof, or the design, installation, maintenance, and performance of any shoring, bracing underpinning, or other similar systems.

6.5 Cut and Fill Slopes

No new cut or fill slopes taller than four feet are anticipated for this project. Structural fill on sloping ground (if any) should be placed on a suitably prepared subgrade surface with a slope of no greater than 4H:1V (four horizontal to one vertical) and should be compacted mechanically to reduce any potential for excessive differential settlement.

6.6 Fill Materials

Aggregate Base

Compacted aggregate base material may be used for pavement subgrade, placed beneath footings or floor slabs, or used as trench back-fill. This material should meet the requirements in the Caltrans Standard Specifications for Class 2 Aggregate Base (3/4-inch maximum particle size).

Select Fill

In the case of new construction requiring select fill, it should consist of granular material that may be used as non-expansive fill beneath floor slabs and for the upper portion of pavement subgrades. Select fill should be a soil/rock mixture free of organic material and other deleterious material; on-site native soils are likely not suitable for use as select fill. Select fill material should contain low plasticity clay, well-graded sand, and gravel. The material should contain no particles larger than 3 inches in greatest dimension, and no more than 15 percent larger than 2-inches. Additionally, the material should meet the following specifications:

Plasticity Index (PI):	<12
Liquid Limit (LL):	<30
Percent Passing No. 200 sieve:	50 maximum, 5 minimum

6.7 Compaction Standard

Structural fill and backfill material shall be compacted in accordance with the specifications listed in Table 2 below. Material should be placed in loose horizontal lifts that do not exceed 8-inches in loose thickness. A qualified field technician should be present to perform field density tests at random locations throughout each lift to verify that the specified compaction is being achieved by the contractor.

TABLE 2 – STRUCTURAL FILL PLACEMENT SPECIFICATIONS

Fill Placement Location	Compaction Recommendations (ASTM D 1557-Modified Proctor)	Moisture Content (Percent Optimum)
Granular cushion beneath Floor Slab	90%	-1 to +3 percent
Structural fill supporting Footings	90%	-1 to +3 percent
Structural fill within 5-feet of the building pad	90%	-1 to +3 percent
Roadway fill within 2-feet of pavement grade	95%	-1 to +3 percent
Roadway fill below 2-feet of pavement grade	90%	-1 to +3 percent
Utility trenches under buildings, & paved areas	95%	-1 to +3 percent
Utility trenches beneath landscaped areas	90%	-1 to +3 percent

Where (or if) utility trenches closely parallel a footing, and the trench bottom is within a two horizontal to one vertical plane, projected outward and downward from any below-grade structural element, grout slurry should be utilized to backfill that portion of the trench below this plane. The use of slurry backfill is not required where a narrow trench crosses a footing at or near a right angle.

6.8 Seismic Design Parameters

As noted above in Sections 3.3 and 4.1, the project site is situated within a seismically active area near multiple seismic sources capable of generating moderate to strong ground motions. Given the proximity of significant active faults, the Mad River fault zone, the Mendocino triple junction and the Cascadia subduction zone offshore to the west and northwest, as well as other active faults within and offshore of northern California, this project site will experience strong ground shaking during the economic life span (50 years) of the proposed developments.

Site-specific Seismic Spectral Response Accelerations, obtained from the SEA (Structural Engineers Society of California) and OSHPD (2018) are presented in Table 3. The on-line SEA ground motion parameter calculator provides spectral acceleration values (S_s and S_1) based on the site specific geographic coordinates, the latest available seismic database maintained by the USGS, the site classification, site coefficients, and adjusted maximum considered earthquake values (F_a, F_v, SM_s and SM_1).

Table 3. Spectral Response Accelerations, APN 223-073-005		
Site Information	Latitude / Longitude*	40.0975° / -123.7651°
	Occupancy Risk Category (2016 CBC, Sect. 1604.5)	II
	Seismic Design Category (2016 CBC, Sect. 1613.3.5)	E
	Site Class (2016 CBC, Sect. 1613.3.2)	D
Spectral Acceleration	S_s	1.884
	S_1	0.758
Site Coefficients	F_a / F_v	1.0 / 1.5
Response Accelerations	S_{MS}	1.884
	S_{M1}	1.137
	S_{DS}	1.256
	S_{D1}	0.758

* Latitude and longitude of Parcel centroid per Humboldt County WebGIS, September, 2019.

Based on the site conditions and an assumption of the soils within 100 feet of the ground surface, we conservatively classify the site as Site Class D consisting of a “Stiff soil” profile (Section 1613.3.2, 2016 CBC). The parameters in Table 3 are based on this classification and were determined using the 2010 ASCE Standard 7 (w/March 2013 errata), minimum design loads for buildings and other structures.

6.9 Foundation Design

No specific foundation plans were provided to us for the proposed developments, but it was evident from the architect’s drawings that the new building is intended to be supported by a slab on grade foundation. The following foundation recommendations assume that a typical, lightly-loaded, wood or steel framed, single-story warehouse-type structure will be constructed. In our opinion, such structures are best supported by foundations consisting of slab on grade with continuous concrete perimeter footings (thickened edge) in combination with isolated interior spread footings where necessary for column supports or other heavy point loads. A foundation of this type appears suitable for these site conditions. Foundations should be designed by an experienced, licensed civil engineer, in accordance with our recommendations, and the standards of the currently in-force edition of the CBC (2016).

Footings

Foundation systems for this site should be of reinforced concrete to limit potential structural damage due to differential settlement or seismic shaking.

- If necessary to mitigate soft or undocumented fill soils, excavate and replace with suitable engineered fill, placed and compacted as recommended, or CLSM (controlled low strength material) such as concrete sand slurry.
- Trenches backfilled with CLSM shall be 24 inches wide, at minimum.
- Footings should be embedded a minimum of two feet below existing grade.
- Minimum width of footings should be 12 inches, and the minimum thickness should be 6 inches, per 2016 CBC Section 1809 for single story structures.
- Embed drilled piers at least 30 inches into firm undisturbed native soil below any loose topsoil, sod and subsoils; approximately 42 inches below existing grade.

Floor Slab Design

- Concrete floor slabs should be constructed of reinforced concrete.
- Slabs should have a minimum thickness specified by the engineer sufficient to support all anticipated uses.
- Underlie the floor slab with at least 10-inches of compacted Class-1 Type A gravel, or Class-2 aggregate base.
- To reduce the possibility of moisture migration through the slab, a six-mil (minimum) plastic membrane (vapor retarder) should be placed on the prepared gravel subgrade.
- Joints between the membrane sheets and utility openings should be lapped and taped.
- Care should be taken during construction to protect the membrane against punctures.
- Protect the membrane during steel and concrete placement, cover the membrane within at least 1-inch of clean sand; this will also provide for a better concrete finish.

Any difference between the 10 inches of select fill under the floor slabs, and the depth to firm undisturbed native soil at approximately 12 inches bgs, may be made up with additional select fill, or engineered fill, placed and compacted as specified in this report.

Allowable Soil Bearing Pressures

- For design of foundation elements embedded into suitably-dense undisturbed firm granular soils, we recommend an allowable bearing pressure of 1,500 pounds per square foot (psf) for dead load plus long-term live load, in accordance with Table 1806.2 (CBC, 2016).

- Lateral bearing pressure is 100 psf per foot below native grade.
- The cohesion factor for lateral sliding resistance is 130 psf multiplied by the contact area.
- The allowable bearing pressure may be increased by one-third when using alternate load combinations in Section 1605.3.2 (CBC, 2016) that include wind or earthquake loads.
- At minimum, all footings should be designed and sized to be not less than 12 inches wide and 6 inches thick per Section 1809.7 (CBC, 2016).

6.10 Drainage

Grading should be designed with a gradient sufficient to provide for positive drainage by sheet flow. All finished ground surfaces near the proposed structure should be sloped away from the foundations. Per CBC 1804.4, slope ground surfaces around buildings at five percent (minimum) for at least 10 feet from the face of the foundation. Minimum slope for impervious (i.e., paved) surfaces is two percent for at least 10 feet from the face of the foundation of structures.

Landscaping design, grading and construction should be such that no water is allowed to pond anywhere onsite, nor to migrate beneath any structure foundations. Grading must not result in concentrated runoff flowing across the top of fill slopes. Runoff from site developments should be controlled and discharged to drain by sheet flow such that no erosion, sedimentation or discharge of turbid water to rivers or streams will occur. Building roof storm water runoff should be controlled with the installation of gutters and downspouts, or otherwise contained, collected and discharged at suitable outlet points by sheet flow such that no erosion, sedimentation, or ponding will occur.

6.11 Erosion and Sediment Control Recommendations

Adhere to the recommendations on the Grading, Drainage and Erosion Control Plan which we expect will be developed by the project engineer. Except in an emergency, perform no wet-season earthwork and grading. Wet weather conditions can occur any time, but may be expected predominantly from November through April. Storm water erosion and pollution prevention measures should be taken as soon as possible prior to the onset of the winter rains. To the extent feasible for this project, all applicable Humboldt County Erosion Control Standards should be incorporated into the project design and strictly adhered to during construction. We specifically recommend the following erosion and sedimentation control measures:

- Replace topsoil and revegetate disturbed areas immediately following earthwork.
- Mulch exposed flat soil areas with straw and a native grass seed mix.
- Exposed sloping ground, especially fill slopes taller than 10-feet, will not be protected adequately with only straw mulch and seed; use straw wattles, and silt fences as well.
- Cover all temporary soil stockpiles with plastic sheeting (6 mil min.) and anchor securely to prevent wind disturbance.
- Drive no vehicles on the site when soils are wet; at minimum use six inches of crushed rock or gravel to pave areas accessed by construction vehicles.
- Owner or his agent should monitor construction-site conditions before and after runoff-generating rainfall events to verify functioning of erosion control measures.
- Immediately repair all malfunctioning erosion control measures as necessary.

6.12 Pavement Design Recommendations

This proposed project includes graveled driveways and an off-street gravel parking area. Based on the soil excavations, pavement areas will be underlain by soils consisting of medium soft silty sandy clay. Based on our field explorations, we recommend design pavement sections consisting of 6-inches of Class 2 aggregate base rock, placed and compacted as recommended above.

Subgrade soils to support the new driveways and parking area should first be stripped of sod and turf, unsuitable surface materials (potentially including up to two feet of topsoil), and any other undocumented fill or other unsuitable materials. Soil subgrades should be compacted to resist deflection by a loaded, 10-yard dump truck, or equivalent.

Pavement subgrade soils should be proof-rolled with a minimum 10-ton vibratory steel drum roller, or with an approved equivalent (e.g., 10-yard dump truck). As outlined in Table 2 above, scarify, moisture condition, and compact the upper 6 to 8 inches of the native subgrade to a minimum of 95 percent of the maximum dry density (per ASTM D 698-91). Moisture content should be controlled to -1 to +3 percent of optimum. Filled subgrade surfaces should be tested, or observed and approved by this office, prior to placement of base rock or pavement.

7.0 ADDITIONAL SERVICES

7.1 Review of Grading and Foundation Plans and Excavations

The conclusions and recommendations provided in this report are based on the assumption that soil conditions encountered during grading will be essentially as exposed during our site exploration, and that the general nature of the grading and use of the property will be as described above. We recommend that final drafts of grading plans be reviewed by our office prior to their approval or implementation.

7.2 Observation and Testing

To assure conformance with the specific recommendations contained within this report, and to assure that the assumptions made in the preparation of this report are valid, LGC should be retained to review foundation design plans, and to observe site grading. We should also review and provide written approval of the exposed foundation and pavement subgrades prior to placement of structural fill, foundation forms, reinforcing steel, or concrete.

8.0 REFERENCES

CBC [California Building Code], 2016, California Code of Regulations, Title 24, Part 2, Volume 2. California Building Standards Commission.

CDMG, 1995, Planning Scenario in Humboldt and Del Norte Counties, California, for a Great Earthquake on the Cascadia Subduction Zone, Special Publication 115.

CDMG, 1996, Probabilistic Seismic Hazard Assessment for the State of California. Mark D. Petersen, William A. Bryant, Chris H. Cramer, Tianqing Cao, and Michael Reichle, California. Department of Conservation, Division of Mines and Geology, Arthur D. Frankel, U.S. Geological Survey, Denver, Colorado. James J. Lienkaemper, Patricia D. McCrory, and David P. Schwartz, U.S. Geological Survey, Menlo Park, California, Open-File Rpt. 96-08.

CDMG, 2000, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Northern and Eastern Region.

CGS [California Geological Survey], 2002, Note 36; California Geomorphic Provinces.

McLaughlin, R. J., S. D. Ellen, M. C. Blake Jr., A. S. Jayko, W. P. Irwin, K. R. Aalto, G. A. Carver, and S. H. Clarke, Jr., 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.

Satake, K., Wang, K., Atwater, B., 2003, Fault slip and seismic moment of the 1700 Cascadia earthquake inferred from Japanese tsunami descriptions. Journal of Geophysical Research, Vol. 108, No. B11, 2535.

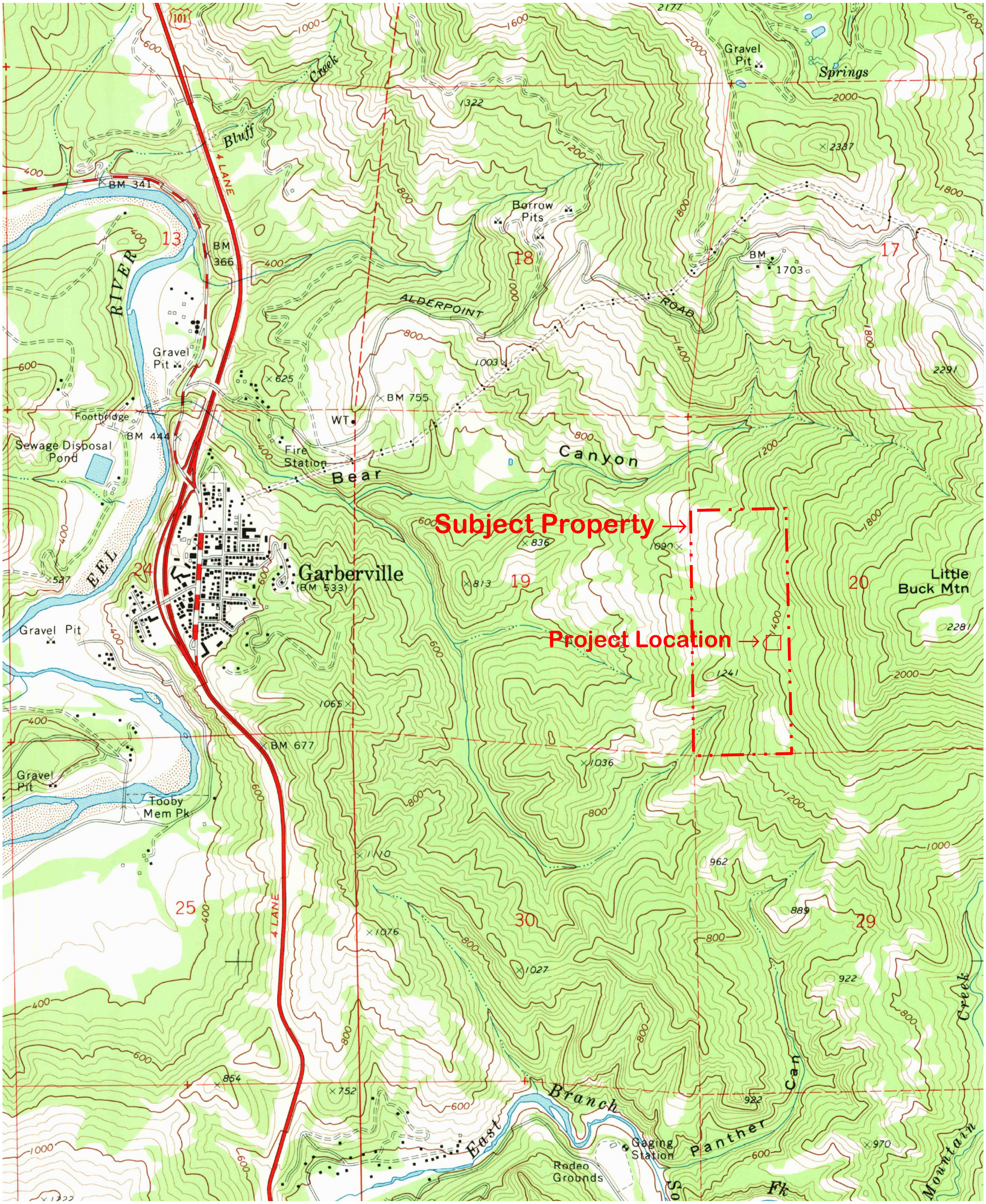
SEA (Structural Engineers Society of California) and OSHPD (*Office of Statewide Health Planning and Development)*, 2019, Seismic Design Maps. https://seismicmaps.org/

USGS, 1970, Garberville, Calif., 7.5' topographic quadrangle map.

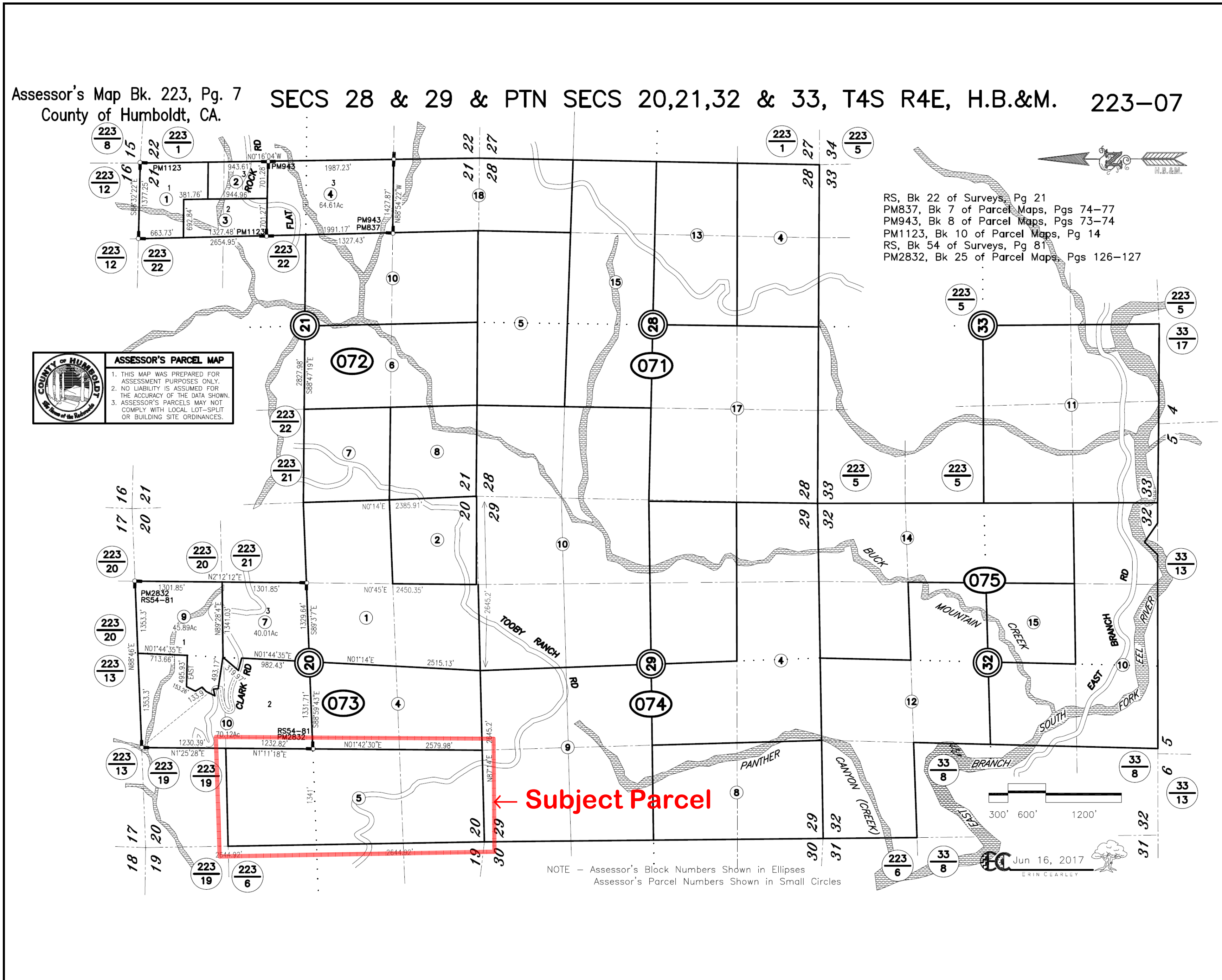
9.0 LIST OF FIGURES

Figure 1: Topographic Project Location Map
Figure 2: Humboldt County Assessor's Map 223-073-005
Figure 3: Satellite Image of Project Location
Figure 4: Geologic Map of the Project Region
Figure 4a: Geologic Map Explanation
Figure 5: Geomorphic Features related to landsliding Map
Figure 6: Log of Exploratory Backhoe Test Pit 1
Figure 7: Log of Exploratory Backhoe Test Pit 2

Lindberg Geologic Consulting	Engineering-Geologic R-2 Soils Exploration Report	Figure 1
Post Office Box 306	Shadow Light Ranch, Clark Road, Garberville, Humboldt County	October 3, 2019
Cutten, CA 95534	APN's 223-073-005, Mr. Joshua Sweet, Client	Project 0260.03
(707) 442-6000	Topographic Location Map (Locations Approximate)	1 inch ≅ 2,100 feet



Modified from: USGS "Garberville, Calif.", 7.5' Quadrangle, (1970). N ≅



Lindberg Geologic Consulting
Post Office Box 306
Cutten, CA 95534
(707) 442-6000

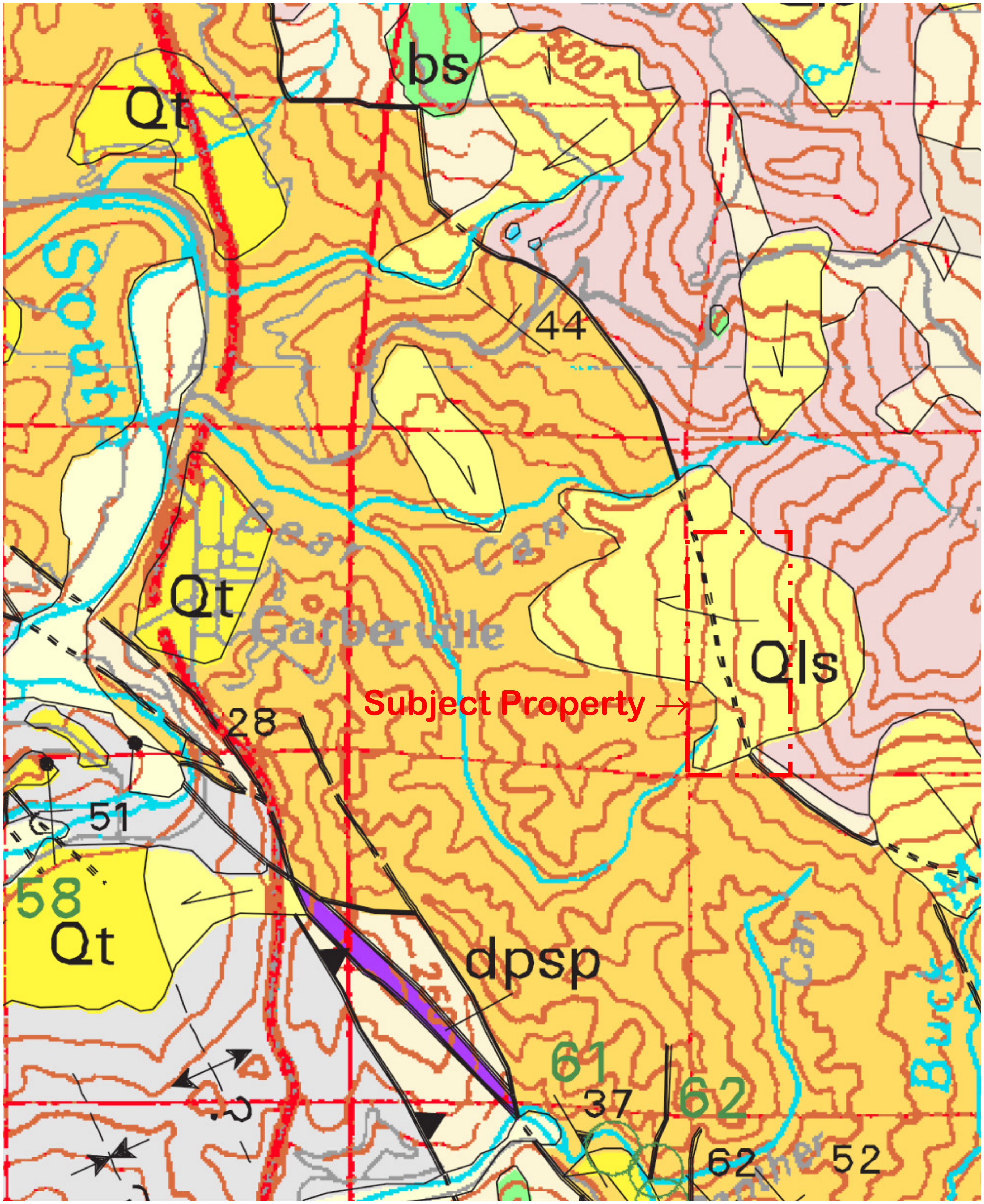
Engineering-Geologic R-2 Soils Exploration Report
Shadow Light Ranch, Clark Road, Garberville, Humboldt County
APN's 223-073-005, Mr. Joshua Sweet, Client
Assessor's Parcel Map; Book 223, Page 7. (Locations Approximate)

Figure 2
October 3, 2019
Project 0260.03
Scale as Shown

Lindberg Geologic Consulting	Engineering-Geologic R-2 Soils Exploration Report	Figure 3
Post Office Box 306	Shadow Light Ranch, Clark Road, Garberville, Humboldt County	October 3, 2019
Cutten, CA 95534	APN's 223-073-005, Mr. Joshua Sweet, Client	Project 0260.03
(707) 442-6000	Satellite Image of Project Location (locations approximate)	1" ≅ 110'

Modified from: Google Earth Imagery of April 21, 2019. N ≅

Lindberg Geologic Consulting	Engineering-Geologic R-2 Soils Exploration Report	Figure 4
Post Office Box 306	Shadow Light Ranch, Clark Road, Garberville, Humboldt County	October 3, 2019
Cutten, CA 95534	APN's 223-073-005, Mr. Joshua Sweet, Client	Project 0260.03
(707) 442-6000	Geologic Map of Project Region	1 inch ≅ 2,300 feet



Modified from: McLaughlin et al., 2000. N ≅

Lindberg Geologic Consulting	Engineering-Geologic R-2 Soils Exploration Report	Figure 4a
P. O. Box 306	Shadow Light Ranch, Clark Road, Garberville, Humboldt County	October 3, 2019
Cutten, CA 95534	APN's 223-073-005, Mr. Joshua Sweet, Client	Project 0260.03
(707) 442-6000	Geologic Map Explanation	No Scale

DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal — Alluvial deposits (Holocene and late Pleistocene?)
- Qm — Undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene)
- Qt — Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls — Landslide deposits (Holocene and Pleistocene)
- QTog — Older alluvium (Pleistocene and [or] Pliocene)
- QTw — Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- Ti — Volcanic rocks of Fickle Hill (Oligocene)

COAST RANGES PROVINCE

FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane(Pliocene to Late Cretaceous)

Sedimentary, igneous, and metamorphic rocks of the Coastal terrane (Pliocene to Late Cretaceous):

- co1 — Melange
- co2 — Melange
- co3 — Broken sandstone and argillite
- co4 — Intact sandstone and argillite
- cob — Basaltic Rocks (Late Cretaceous)
- cols — Limestone (Late Cretaceous)
- m — Undivided blueschist (Jurassic?)

King Range terrane (Miocene to Late Cretaceous)

- Krp — Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
- m — Undivided blueschist blocks (Jurassic?)

Sandstone and argillite of King Peak (middle Miocene to Paleocene[?]):

- krk1 — Melange and (or) folded argillite
- krk2 — Highly folded broken formation
- krk3 — Highly folded, largely unbroken rocks
- krl — Limestone
- krc — Chert
- krb — Basalt

False Cape terrane (Miocene? to Oligocene?)

- fc — Sedimentary rocks of the False Cape terrane (Miocene? to Oligocene?)

Yager terrane (Eocene to Paleocene?)

Sedimentary rocks of the Yager terrane (Eocene to Paleocene?):

- y1 — Sheared and highly folded mudstone
- y2 — Highly folded broken mudstone, sandstone, and conglomeratic sandstone
- y3 — Highly folded, little-broken sandstone, conglomerate, and mudstone
- Ycgl — Conglomerate

-- Central belt --

Melange of the Central belt (early Tertiary to Late Cretaceous):

Unnamed Metasandstone and meta-argillite (Late Cretaceous to Late Jurassic):

- cm1 — Melange
- cm2 — Melange
- cb1 — Broken formation
- cb2 — Broken formation
- cwr — White Rock metasandstone of Jayko and others (1989) (Paleogene and [or] Late Cretaceous)
- chr — Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs — Fort Seward metasandstone (age unknown)
- cls — Limestone (Late to Early Cretaceous)
- cc — Chert (Late Cretaceous to Early Jurassic)
- bs — Basaltic rocks (Cretaceous and Jurassic)
- m — Undivided blueschist blocks (Jurassic?)
- gs — Greenstone
- c — Metachert
- yb — Metasandstone of Yolla Bolly terrane, undivided
- b — Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm — South Fork Mountain Schist
- mb — Chinquapin Metabasalt Member (Irwin and others, 1974)
- ppv — Valentine Springs Formation
- mv — Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

Metasedimentary and metaigneous rocks of the Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?):

- ybt — Taliaferro Metamorphic Complex of Suppe and Armstrong (1972) (Early Cretaceous to Middle Jurassic?)
- ybc — Chicago Rock melange of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- gs — Greenstone
- c — Metachert
- ybh — Metagraywacke of Hammerhorn Ridge (Late Jurassic to Middle Jurassic)
- c — Metachert
- gs — Greenstone
- sp — Serpentinite
- ybd — Devils Hole Ridge broken formation of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- c — Radiolarian chert
- ybi — Little Indian Valley argillite of McLaughlin and Ohlin (1984) (Early Cretaceous to Late Jurassic)

Yolla Bolly terrane

- yb — Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elder Creek(?) terrane

- ecms — Mudstone (Early Cretaceous)

Coast Range ophiolite (Middle and Late Jurassic):

- ecg — Layered gabbro
- ecsp — Serpentinite melange

Del Puerto(?) terrane

Rocks of the Del Puerto(?) terrane:

- dpms — Mudstone (Late Jurassic)

Coast Range ophiolite (Middle and Late Jurassic):

- dpt — Tuffaceous chert (Late Jurassic)
- dpb — Basaltic flows and keratophyric tuff (Jurassic?)
- dpd — Diabase (Jurassic?)
- dpsp — Serpentinite melange (Jurassic?)
- sp — Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

Undivided Great Valley Sequence:

- Ks — Sedimentary rocks (Lower Cretaceous)

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

Hayfork terrane

Eastern Hayfork subterrane:

- eh — Melange and broken formation (early? Middle Jurassic)
- ehls — Limestone
- ehsp — Serpentinite

Western Hayfork subterrane:

- whu — Hayfork Bally Meta-andesite of Irwin (1985), undivided (Middle Jurassic)
- whwg — Wildwood (Chanchelulla Peak of Wright and Fahan, 1988) pluton (Middle Jurassic)
- whwp — Clinopyroxenite
- whji — Diorite and gabbro plutons (Middle? Jurassic)

Rattlesnake Creek terrane

- rcm — Melange (Jurassic and older)
- rcls — Limestone
- rcc — Radiolarian chert
- rcis — Volcanic Rocks (Jurassic or Triassic)
- rcic — Intrusive complex (Early Jurassic or Late Triassic)
- rcp — Plutonic rocks (Early Jurassic or Late Triassic)
- rcum — Ultramafic rocks (age uncertain)
- rcpd — Blocky peridotite

Western Klamath terrane

Smith River subterrane:

- srs — Galice? formation (Late Jurassic)
- srv — Pyroclastic andesite
- srgb — Glen Creek gabbro-ultramafic complex of Irwin and others (1974)
- srpd — Serpentinized peridotite

MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1906 earthquake rupture

Strike and dip of bedding:

- Inclined
- Vertical
- Horizontal
- Overturned
- Approximate
- Joint
- Strike and dip of cleavage

Shear foliation:

- Inclined
- Vertical

Folds:

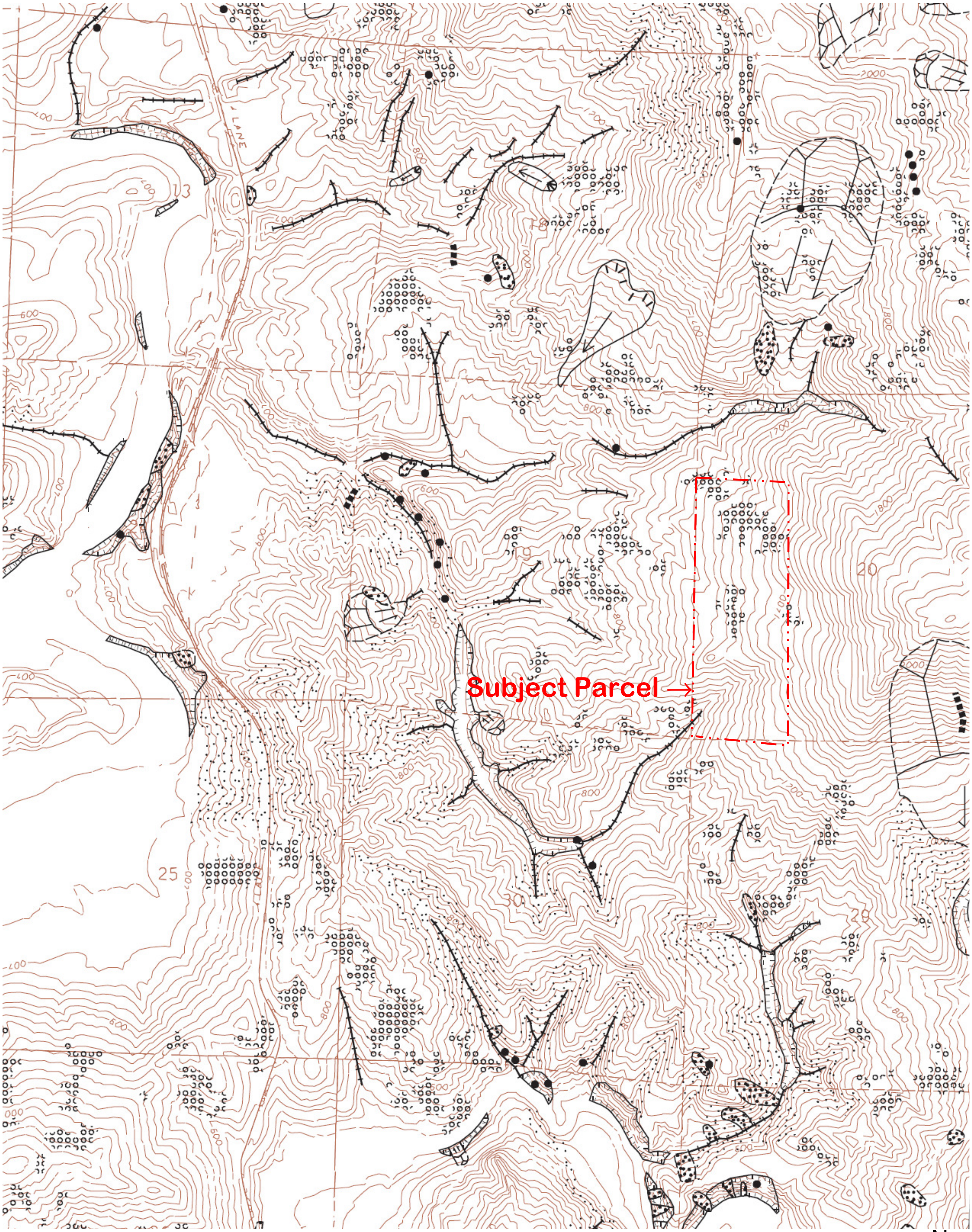
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide

Melange Blocks:

- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number

GEOLOGY OF THE CAPE MENDOCINO, EUREKA, GARBERVILLE, AND SOUTHWESTERN PART OF THE HAYFORK 30 X 60 MINUTE QUADRANGLES AND ADJACENT OFFSHORE AREA, NORTHERN CALIFORNIA (McLaughlin et al., 2000)

Lindberg Geologic Consulting	Engineering-Geologic R-2 Soils Exploration Report	Figure 5
Post Office Box 306	Shadow Light Ranch, Clark Road, Garberville, Humboldt County	October 3, 2019
Cutten, CA 95534	APN's 223-073-005, Mr. Joshua Sweet, Client	Project 0260.03
(707) 442-6000	Geomorphic Features Related to Landsliding Map	1 inch ≅ 2,300 feet



Modified from: CDMG (Spittler), 1983. N ≅ ↑

LABORATORY				FIELD					
Dry Density (pcf)	Moisture Content (%)	Cohesion; Friction Angle (psf; degrees)	Other Tests	Blows/foot*	Sample	Depth (feet)	Graphic Lithology	U.S.C.S. Designation	SOIL DESCRIPTION
								ML	Topsoil, fine sand and silt, dark brown, loose, moist, abundant fine roots, appears well-drained, rich in organic material.
						1			
						2			
						3			
			60% Sand, 9% Silt, 31% Clay						
						4			
						5			
			60% Sand, 21% Silt, 19% Clay					SM	Silty fine sand with clay and gravel, brown, medium dense, moist, friable, granular crumb to subangular blocky structure, well-developed secondary tubular on fracture porosity.
						6			
						7			
						8			
						9			
						10			No mottling or free groundwater. Test Pit-1 backfilled on completion.

* The blow counts have been converted to standard N-value blow counts

SURFACE ELEVATION: 1,400 Feet

TOTAL DEPTH: 10 Feet

GROUNDWATER DEPTH: >10 Feet

LOGGED BY: David N. Lindberg, CEG

BOREHOLE DIAMETER: 18 Inches

EQUIPMENT: Backhoe

HAMMER TYPE: None

LINDBERG GEOLOGIC CONSULTING		LOG OF TEST EXCAVATION / BORING		Figure No.
PROJECT NUMBER: 0260.03	DATE: March 30, 2018	**TP-1**	**Sweet Warehouse**	**6**

LABORATORY				FIELD					
Dry Density (pcf)	Moisture Content (%)	Cohesion; Friction Angle (psf; degrees)	Other Tests	Blows/foot*	Sample	Depth (feet)	Graphic Lithology	U.S.C.S. Designation	SOIL DESCRIPTION
						0–1		ML	Topsoil, silt with fine sand, dark brown, soft, abundant fine roots, organic-rich, appears well-drained.
			71% Sand, 18% Silt, 11% Clay		X (3–4)	1–10		SM	Silty fine sand with clay, brown, medium dense, moist, friable, subangular blocky structure, few roots, well-developed fracture and tube proosity.
			70% Sand, 18% Silt, 12% Clay		X (5–6)				
						10			No mottling or free groundwater. Test Pit TP-2 backfilled on completion.

* The blow counts have been converted to standard N-value blow counts

SURFACE ELEVATION: 1,400 Feet

TOTAL DEPTH: 10 Feet

GROUNDWATER DEPTH: >10 Feet

LOGGED BY: David N. Lindberg, CEG

BOREHOLE DIAMETER: 18 Inches

EQUIPMENT: Backhoe

HAMMER TYPE: None

LINDBERG GEOLOGIC CONSULTING

PROJECT NUMBER: 0260.03 DATE: March 30, 2018

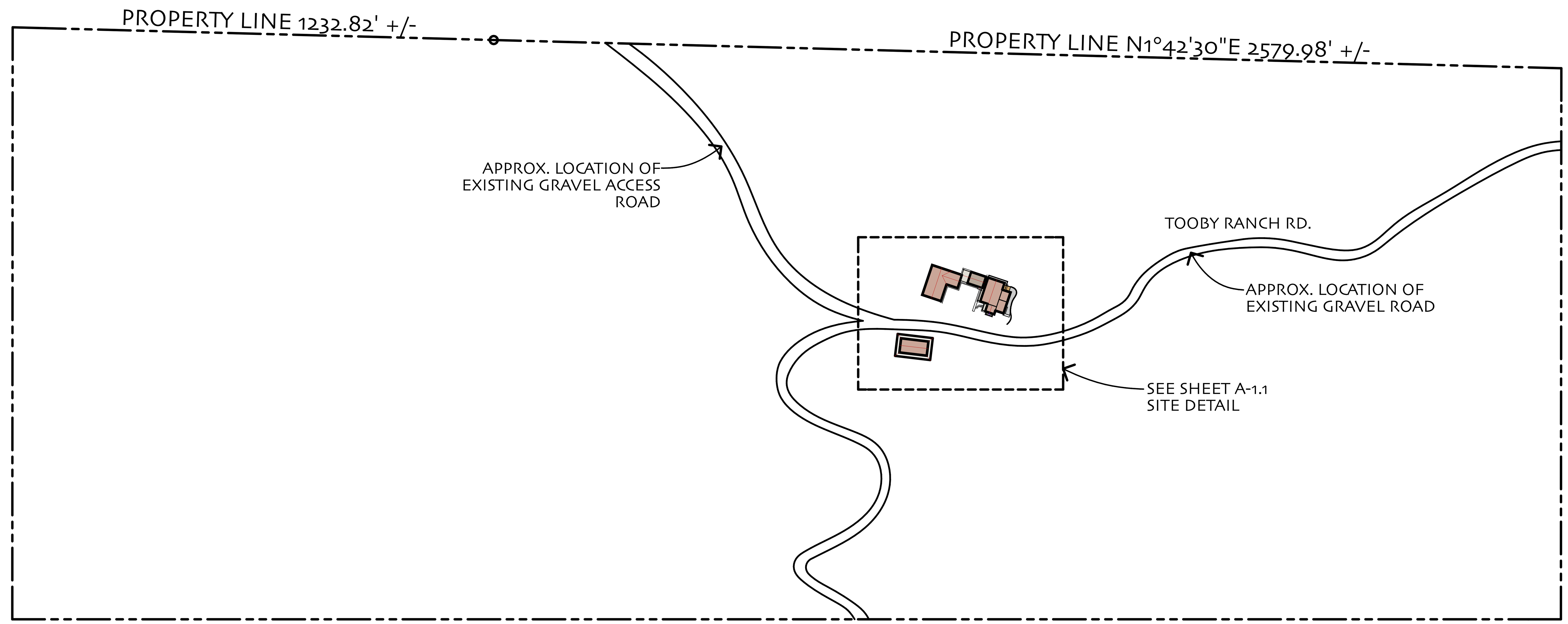
LOG OF TEST EXCAVATION / BORING

TP-2 **Sweet Warehouse**

Figure No. **7**

ABBREVIATIONS:

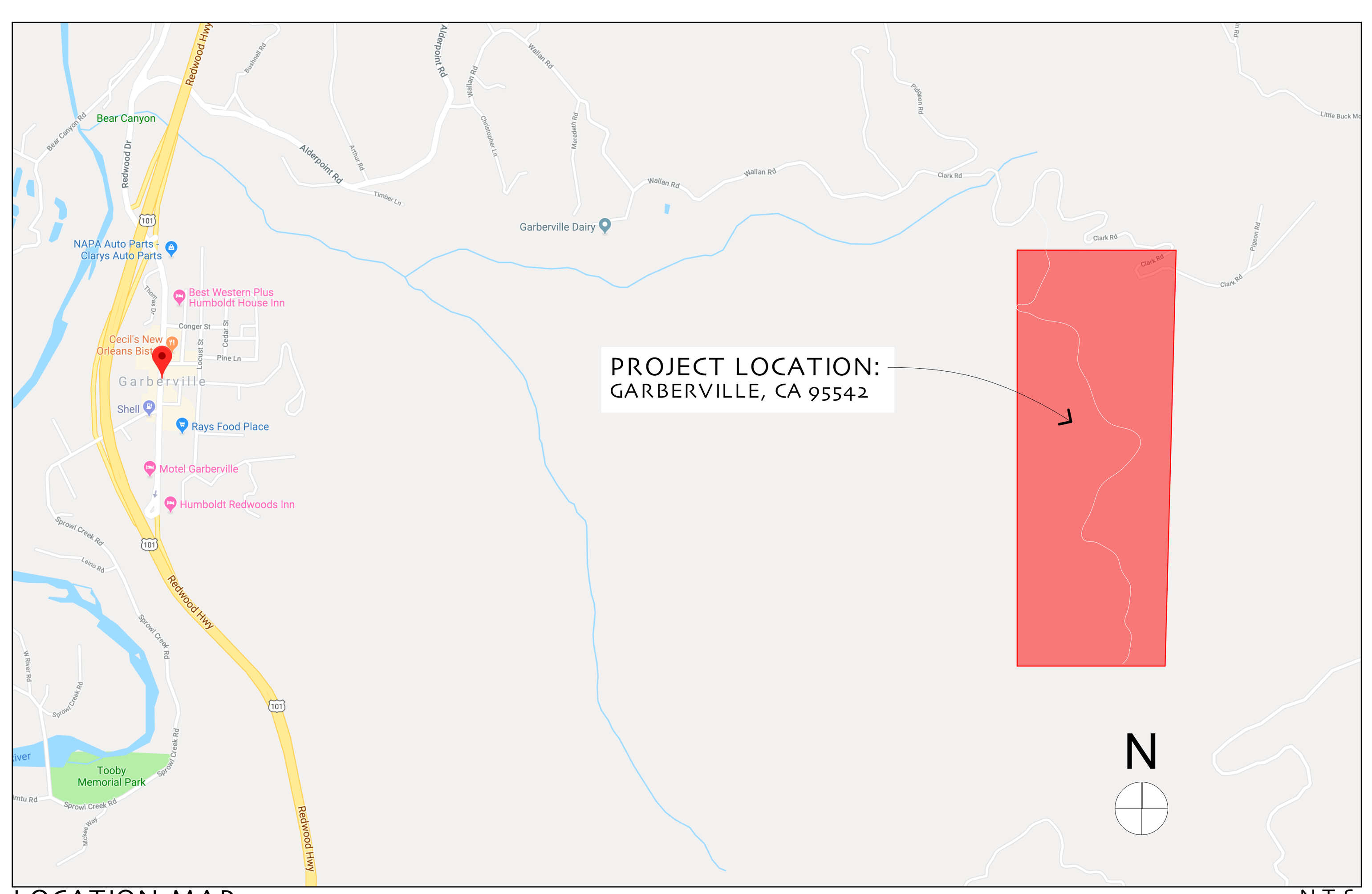
A.B.	ANCHOR BOLT
ACCESS.	ACCESSIBLE
ARCH.	ARCHITECTURAL
ASPH.	ASPHALT
@	AT
BM	BEAM
BLDG.	BUILDING
℄	CENTER LINE
CLR.	CLEAR
CONT.	CONTINUOUS
CONSTR.	CONSTRUCTION
CTR.	CENTER
DBL	DOUBLE
DIM.	DIMENSION
D.F.	DOUGLAS FIR
DN.	DOWN
D.S.	DOWN SPOUT
DWG	DRAWING(S)
(E)	EXISTING
EA	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
E.N.	EDGE NAIL
EQ.	EQUAL
EQUIP.	EQUIPMENT
EXH.	EXHAUST
EXIST.	EXISTING
EXT.	EXTERIOR
EXP.	EXPOSED
EXP. AGG.	EXPOSED AGGREGATE
FIN.	FINISH
FL.	FLOOR
F.O.S.	FACE OF STUD
FOUND.	FOUNDATION
FRMG.	FRAMING
F.R.P.	FIBERGLASS REINFORCED PLASTIC PANELS
GAL.	GALVANIZED
G.B.	GRAB BAR
G.D.	GARBAGE DISPOSAL
GLB	GLUE LAM BEAM
GYP. BD.	GYPSUM BOARD
G.R.	GRADE
H.B.	HOSE BIB
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
HOL. MTL.	HOLLOW METAL
HT.	HEIGHT
H.V.A.C.	HEATING, VENTILATION, AND AIR CONDITIONING
H.W.H.	HOT WATER HEATER
INCL.	INCLUDED
INFO.	INFORMATION
INSUL.	INSULATION
INT.	INTERIOR
JST.	JOIST
JUNC.	JUNCTION
LN.	LINEN
LOUV.	LOUVER (ED)
LTG.	LIGHTING
MANUF.	MANUFACTURER
MAS.	MASONRY
MAX.	MAXIMUM
M.B.	MACHINE BOLT
M.C.	MEDICINE CABINET
MECH.	MECHANICAL
MIN.	MINIMUM
MULL.	MULLION
(N)	NEW
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NON-COMB.	NON-COMBUSTIBLE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
PLY.	PLYWOOD
ℙ	PROPERTY LINE
REQD.	REQUIRED
REF.	REFRIGERATOR
REG.	REGISTER
REINF.	REINFORCED
RWD.	REDWOOD
SECT.	SECTION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STRUCT .	STRUCTURAL
TEMP.	TEMPERED
T&B	TOP & BOTTOM
T.S.	TUBE STEEL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
W.C	WATER CLOSET
W/	WITH
W.D.	WOOD



N

PHASE 1
OVERALL SITE PLAN

SCALE: 1" = 200'-0" (22" X34" PAPER SIZE)
1" = 400'-0" (11" X17" PAPER SIZE)



LOCATION MAP N.T.S.

NEW WAREHOUSE PROCESSING FACILITY FOR:
JOSH SWEET

CLIENT CONTACT:
JOSH SWEET
P.O. BOX 1126
REDWAY, CA 95560
(310) 710-7549

PROJECT SITE:

GARBERVILLE, CA 95542

APN: 223-073-005

PARCEL SIZE: 136 ACRES

PARCEL ZONING: AGRICULTURE

SHEET INDEX

A-0	LOCATION MAP, PROJECT INFO., INDEX
A-1	SITE PLAN
A-2	GENERAL NOTES & SPECIFICATIONS
A-3	GENERAL NOTES & SPECIFICATIONS
A-4	PROPOSED FLOOR PLAN
A-5	PROPOSED ROOF PLAN
A-6	EXTERIOR ELEVATIONS
A-7	EXTERIOR ELEVATIONS
A-8	SECTION A-A
A-9	SECTION B-B
E-1	ELECTRICAL PLAN
T24.1-T24.2	BUILDING ENERGY REPORT

DRAFT

CONSULTANTS:

STRUCTURAL ENGINEERING:
ATLAS ENGINEERING
MIKE TAYLOR, CA LIC. NO. C68893
252 G STREET
ARCATA, CA 95521
(707) 822-2822

ENERGY CALCULATIONS:
ABBAY TECHNICAL SERVICES
ANNY McQUEENEY, CEA
1125 16TH STREET, ROOM 216
ARCATA, CA 95521
(707) 826-1433

SOILS REPORT:
LINDBERG GEOLOGIC CONSULTING
DAVID N. LINDBERG, CEG
P.O. BOX 306
CUTTEN, CA 95534
(707) 442-6000

DRAFT

GRAPHIC SCALE BAR MEASURES 1 INCH ON FULL SIZE PLANS

DRAFT - PLAN CHECK & CONSTRUCTION SET
NOT FOR CONSTRUCTION

REVISIONS:

JULIAN BERG DESIGNS
ARCHITECTURE & PLANNING
846 A STREET
ARCATA, CALIFORNIA, 95521
TEL: (707) 407-8870
julianbergdesigns.com

LICENSED ARCHITECT JULIAN ALEX BERG C-35344 REN. 01/31/21 STATE OF CALIFORNIA

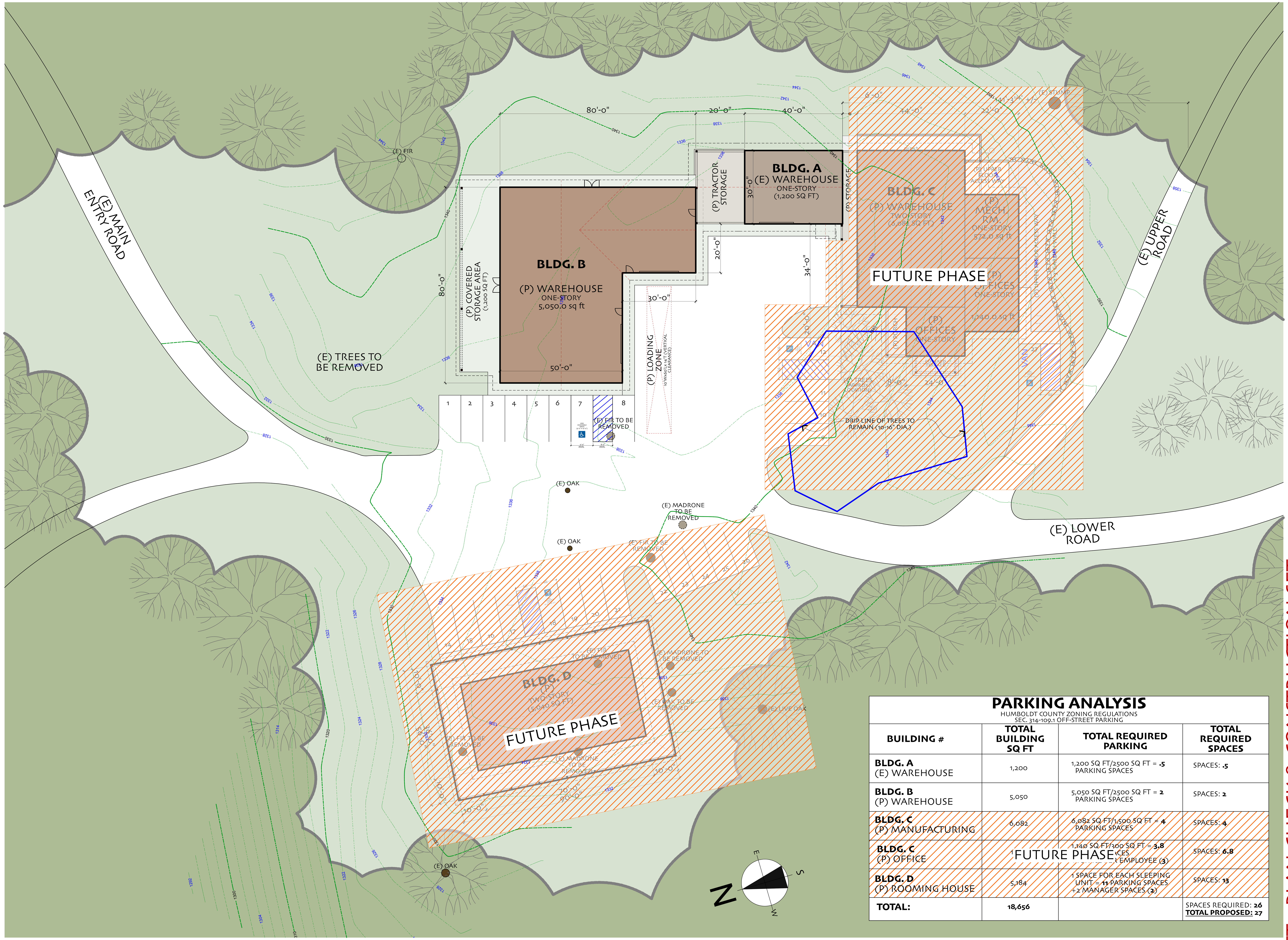
PROJECT TITLE: SHADOW LIGHT RANCH - PROCESSING FACILITY - GARBERVILLE, CA
JOSHUA SWEET • P.O. BOX 1126 • REDWAY, CA 95560 • TEL: (310) 710-7549
SHEET TITLE: OVERALL SITE PLAN
ASSESSOR'S PARCEL NUMBER : 223-073-005

PROJECT NO.: JS - 1732
DRAWN BY: JAB/DHV
DATE: 8/21/2019

SHEET # : A-1

ABBREVIATIONS:

A.B.	ANCHOR BOLT
ACCESS.	ACCESSIBLE
ARCH.	ARCHITECTURAL
ASPH.	ASPHALT
@	AT
BM	BEAM
BLDG.	BUILDING
℄	CENTER LINE
CLR.	CLEAR
CONT.	CONTINUOUS
CONSTR.	CONSTRUCTION
CTR.	CENTER
DBL	DOUBLE
DIM.	DIMENSION
D.F.	DOUGLAS FIR
DN.	DOWN
D.S.	DOWN SPOUT
DWG	DRAWING(S)
(E)	EXISTING
EA	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
E.N.	EDGE NAIL
EQ.	EQUAL
EQUIP.	EQUIPMENT
EXH.	EXHAUST
EXIST.	EXISTING
EXT.	EXTERIOR
EXP.	EXPOSED
EXP. AGG.	EXPOSED AGGREGATE
FIN.	FINISH
FL.	FLOOR
F.O.S.	FACE OF STUD
FOUND.	FOUNDATION
FRMG.	FRAMING
F.R.P.	FIBERGLASS REINFORCED PLASTIC PANELS
GAL.	GALVANIZED
G.B.	GRAB BAR
G.D.	GARBAGE DISPOSAL
GLB	GLUE LAM BEAM
GYP. BD.	GYPSUM BOARD
G.R.	GRADE
H.B.	HOSE BIB
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
HOL. MTL.	HOLLOW METAL
HT.	HEIGHT
H.V.A.C.	HEATING, VENTILATION, AND AIR CONDITIONING
H.W.H.	HOT WATER HEATER
INCL.	INCLUDED
INFO.	INFORMATION
INSUL.	INSULATION
INT.	INTERIOR
JST.	JOIST
JUNC.	JUNCTION
LN.	LINEN
LOUV.	LOUVER (ED)
LTG.	LIGHTING
MANUF.	MANUFACTURER
MAS.	MASONRY
MAX.	MAXIMUM
M.B.	MACHINE BOLT
M.C.	MEDICINE CABINET
MECH.	MECHANICAL
MIN.	MINIMUM
MULL.	MULLION
(N)	NEW
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NON-COMB.	NON-COMBUSTIBLE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
PLY.	PLYWOOD
ℙ	PROPERTY LINE
REQD.	REQUIRED
REF.	REFRIGERATOR
REG.	REGISTER
REINF.	REINFORCED
RWD.	REDWOOD
SECT.	SECTION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STRUCT.	STRUCTURAL
TEMP.	TEMPERED
T&B	TOP & BOTTOM
T.S.	TUBE STEEL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
W.C	WATER CLOSET
W/	WITH
W.D.	WOOD



PARKING ANALYSIS

HUMBOLDT COUNTY ZONING REGULATIONS
SEC. 314-109.1 OFF-STREET PARKING

BUILDING #	TOTAL BUILDING SQ FT	TOTAL REQUIRED PARKING	TOTAL REQUIRED SPACES
BLDG. A (E) WAREHOUSE	1,200	1,200 SQ FT/2500 SQ FT = **.5** PARKING SPACES	SPACES: **.5**
BLDG. B (P) WAREHOUSE	5,050	5,050 SQ FT/2500 SQ FT = **2** PARKING SPACES	SPACES: **2**
BLDG. C (P) MANUFACTURING	6,082	6,082 SQ FT/1,500 SQ FT = **4** PARKING SPACES	SPACES: **4**
BLDG. C (P) OFFICE	FUTURE PHASE	1,140 SQ FT/300 SQ FT = **3.8** ...CES ... EMPLOYEE (3)	SPACES: **6.8**
BLDG. D (P) ROOMING HOUSE	5,184	1 SPACE FOR EACH SLEEPING UNIT = **11** PARKING SPACES +2 MANAGER SPACES (**2**)	SPACES: **13**
TOTAL:	**18,656**		SPACES REQUIRED: **26** **TOTAL PROPOSED: 27**

PHASE 1
SITE PLAN DETAIL

SCALE: 1" = 20'-0" (22" X34" PAPER SIZE)
1" = 40'-0" (11" X17" PAPER SIZE)

GRAPHIC SCALE BAR MEASURES 1 INCH ON FULL SIZE PLANS

DRAFT - PLAN CHECK & CONSTRUCTION SET
NOT FOR CONSTRUCTION

REVISIONS:

JULIAN BERG DESIGNS
ARCHITECTURE & PLANNING
846 A STREET
ARCATA, CALIFORNIA, 95521
TEL: (707) 407-8870
julianbergdesigns.com

LICENSED ARCHITECT
JULIAN ALEX BERG
C-35344
REN. 01/31/21
STATE OF CALIFORNIA

PROJECT TITLE: SHADOW LIGHT RANCH - PROCESSING FACILITY - GARBERVILLE, CA
JOSHUA SWEET • P.O. BOX 1126 • REDWAY, CA 95560 • TEL: (310) 710-7549
SHEET TITLE: SITE PLAN DETAIL
ASSESSOR'S PARCEL NUMBER: 223-073-005

PROJECT NO.: JS - 1732
DRAWN BY: JAB/DHV
DATE: 8/21/2019

SHEET #: A-1.1