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September 12, 2017

Engineering Geologic Prime Agricultural Soils Exploration

APN 223-071-018 &amp; 223-071-005, Mr. Sherrod Levin, LGC Project No. 0226.03

laboratory in Eureka for textural analysis by United States Department of Agriculture (USDA) methodology. Laboratory analytical results are attached and show that both Sample 1 and Sample 2 consist of **Loam**; per the USDA soil classification system.

The Storie Index (University of California, 1948), as revised in 1978, is a method of soil rating based on soil characteristics that govern the land's potential utilization and productive capacity. To calculate the Storie Index, percentage values are assigned to the various characteristics of the soil, including the soil profile (Factor A), the texture of the surface soil (Factor B), and the slopes (Factor C). Other conditions of the soil including drainage, nutrient level, erosion and microrelief are combined as a fourth factor (Factor X). Percentage value ratings for each of the four factors are multiplied to obtain the Storie Index. Based on the Storie Index, soils in California have been divided into six soil grades, Grade 1 being excellent, with a range of Storie Index from 80 to 100 percent. Thus Grade 1 excellent soils are, by the definition in Ordinance 2559, Prime Agricultural Soils.

### **Sample 1**

Storie Index Factor A was assigned a value of 95 percent because the area sampled and characterized on this part of parcel 223-071-018 is located on upland areas underlain by softly consolidated material at four to six feet (Factor A: IX). Based on the laboratory textural analysis (attached) the soil at the Sample 1 location is **Loam**, a medium-textured soil. For Loam soils, the Storie Index assigns Factor B a value of 100 percent. Factor C was assigned a value of 95 percent because the site, as outlined on Figure 3, is nearly level to moderately sloping, and gently undulating (C: A-C, AA), as estimated by field observation, clinometer measurements, and USGS slope mapping.

Soil Factor X is calculated based on the product of six factors. Soil drainage was rated at 100 percent because the site soils in our sampling hole were observed to be well-drained. Alkalinity was rated at 100 percent because alkaline soils are uncommon in the region. Nutrient, or fertility, level was assigned a value of 100 percent due to the fact that this area has been used for decades to graze livestock. Acidity was assigned a value of 95 percent because the soils were estimated to have a near-neutral pH and thus a low degree of acidity. No erosion was observable, so the erosion factor is 100 percent. Microrelief is smooth and was rated 100 percent.

The Storie Index is the product of the four Factors (A, B, C and X), with Factor X itself the product of the six additional soil conditions outlined above. In mathematical terms, the Storie Index for this parcel equals A times B times C times X, as shown:

$$[95\% \times 100\% \times 95\% \times (100\% \times 100\% \times 100\% \times 95\% \times 100\% \times 100\%)], \text{ or} \\ (0.90 \times 0.95) = 0.86, \text{ or } 86\%$$

With a Storie Index of 86 percent, the site soil is a Grade 1 (excellent) soil, which is defined as suitable for a wide range of crops, including alfalfa, orchard, truck, and field crops (University of California, 1948). Because these soils have a Storie Index greater than 80 percent, they meet the definition of "Prime Agricultural Soils" in the Ordinance (Humboldt County, California - Ordinance No. 2559). Additionally, based on our site-specific fieldwork, certified laboratory analysis, and our professional experience, in our opinion these site soils qualify as, and therefore may be recognized as, prime agricultural soils for the purposes of the medicinal cannabis cultivation ordinance.

### **Sample 2**

Storie Index Factor A was assigned a value of 95 percent, because the area sampled and characterized on this part of parcel 223-071-005 is located on upland areas underlain by softly consolidated material at four to six feet (Factor A: IX). Based on the laboratory textural analysis (attached) the Sample 2 soil is **Loam**, a medium-textured soil. For Loam soil such as at the Sample 2 location, the Storie Index assigns Factor B a value of 100 percent. Factor C was assigned a value of 95 percent because the site (Figure 3), is nearly level to moderately sloping, and gently undulating (C: A-C, AA), as estimated by field observation, clinometer measurements, and USGS slope mapping.

Soil Factor X is the product of six factors. Soil drainage was rated at 100 percent because the site soils in our sampling hole were observed to be well-drained. Alkalinity was rated at 100 percent because alkaline soils are uncommon in the region. Nutrient, or fertility, level was assigned a value of 100 percent due to the fact that this area has long been used for grazing livestock. Acidity was assigned a value of 95 percent because the soils were estimated to have a near-neutral pH and thus a low degree of acidity. No erosion was observable; the erosion factor was determined to be 100 percent. Microrelief is smooth and was rated 100 percent.

In mathematical terms, the Storie Index for this parcel equals A times B times C times X, as shown:

$$[95\% \times 100\% \times 95\% \times (100\% \times 100\% \times 100\% \times 95\% \times 100\% \times 100\%)], \text{ or} \\ (0.90 \times 0.95) = 0.86, \text{ or } 86\%$$

With a Storie Index of 86 percent, the site soil is a Grade 1 (excellent) soil, which is defined as suitable for a wide range of crops, including alfalfa, orchard, truck, and field crops (University of California, 1948). Because these soils have a Storie Index greater than 80 percent, they meet the definition of "Prime Agricultural Soils" in the Ordinance (Humboldt County, California - Ordinance No. 2559). Additionally, based on our site-specific fieldwork, certified laboratory analysis, and our professional experience, it is our opinion that the site soils do qualify as, and therefore could be recognized as, prime agricultural soils for the purposes of the medicinal cannabis cultivation ordinance.

**LINDBERG GEOLOGIC CONSULTING**

**David N. Lindberg, CEG**

**Post Office Box 306**

**Cutten California 95534**

**(707) 442-6000**

September 12, 2017

Project: 0226.03

Mr. Sherrod Levin  
Post Office Box 2547  
Redway, CA 95560

Subject: Engineering-Geologic Prime Agricultural Soils Exploration Report  
Tooby Ranch Road, APNs 223-071-018 and 223-071-005

Dear Mr. Levin:

As agreed, we have conducted an engineering-geologic reconnaissance of the above-noted parcels (Figure 1), and we have reviewed information available from the Humboldt County Community Development Department and the Humboldt County Assessor regarding them. An annotated copy of the Humboldt County Assessor's parcel map is included in this report (Figure 2). While on the property, we collected two soil samples for analysis at a local, certified materials testing laboratory. Our explorations were focused on determining if the soils at your cultivation locations may be classified as "Prime Agricultural Soils" for medical (or future recreational) cannabis cultivation. Prime Agricultural Soils are defined in Humboldt County Ordinance No. 2559 as follows:

*"Prime Agricultural Soils" means all lands which qualify for rating as Class I or Class II in the Soil Conservation Service land use capability classifications or qualify for rating 80 through 100 in the Storie Index Rating. Additionally, where determined through site-specific fieldwork prepared by a qualified professional, soils meeting these characteristics may be recognized as prime."*

Site-specific fieldwork, including excavation of two test holes and collection of two samples of the surface soils, was conducted by a Professional Geologist from our office on August 10, 2017. Textural Analysis was conducted on both soil samples taken from undisturbed locations in the upland areas of parcel 223-071-018 and 223-071-005. Sample locations were determined in the field by GPS. Approximate parcel boundaries and sample collection locations are presented in Figure 1.

- Sample 1, was collected at 40.09211° north latitude, and 123.72961° west longitude, in the northeast ¼ of the northeast ¼ of Section 28, T4S, R4E, Humboldt Baseline and Meridian.
- Sample 2, was collected at 40.09144° north latitude, and 123.73611° west longitude, in portions of the northwest ¼ of the northeast ¼ of Section 28, T4S, R4E, (H.B. & M.).

Our composite soil samples were collected from the upper two feet of the profile, minus approximately 2-inches of vegetation and roots, and were delivered to a certified, materials testing

LINDBERG GEOLOGIC CONSULTING  
(707) 442-6000

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September 12, 2017  
Engineering Geologic Prime Agricultural Soils Exploration  
APN 223-071-018 & 223-071-005, Mr. Sherrod Levin, LGC Project No. 0226.03

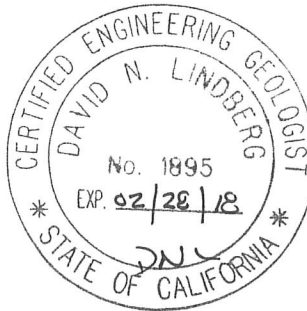
We estimate that the Sample 1 site has an area of Prime Agricultural Soils which encompasses approximately five acres of the total 81.1 GIS acres of parcel 223-071-18. Similarly, the Sample 2 site, has an estimated five-acre area of Prime Agricultural Soils of the total 82.1 GIS acres of parcel 223-071-005. The areas reported herein do not account for any property line setbacks, easements, or portions of the parcels that may be within designated streamside management areas. Other regulatory-exclusionary areas could exist, and it is likely that other areas of suitable prime soil exist on both parcels. Note that our estimates of area are not based on any formal surveying. LGC is available to delineate our interpretation of the extents of prime agricultural soils on these parcels.

Please contact me at the number above if you have any concerns or questions.

Thank you.  
Sincerely,

*David N. Lindberg*

David N. Lindberg, CEG 1895  
Lindberg Geologic Consulting

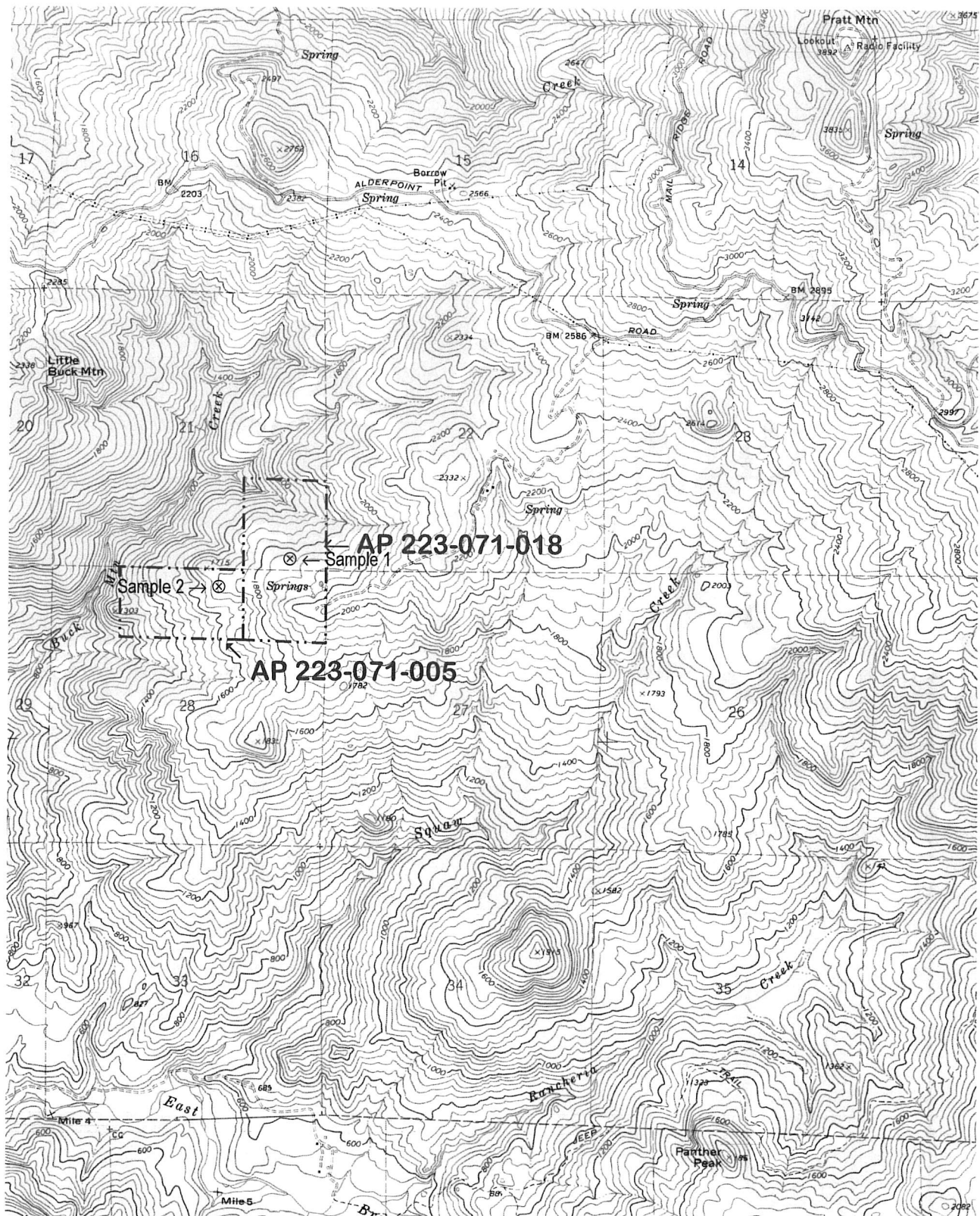


DNL:sll

University of California, 1948, Storie, R., Earl, and Walter W. Weir, Manual for Identifying and Classifying California Soil Series, with Supplement, 1958, and revised December 1978, (Special Publication 3203), Published by the Associated Students' Store, University of California, Berkeley.

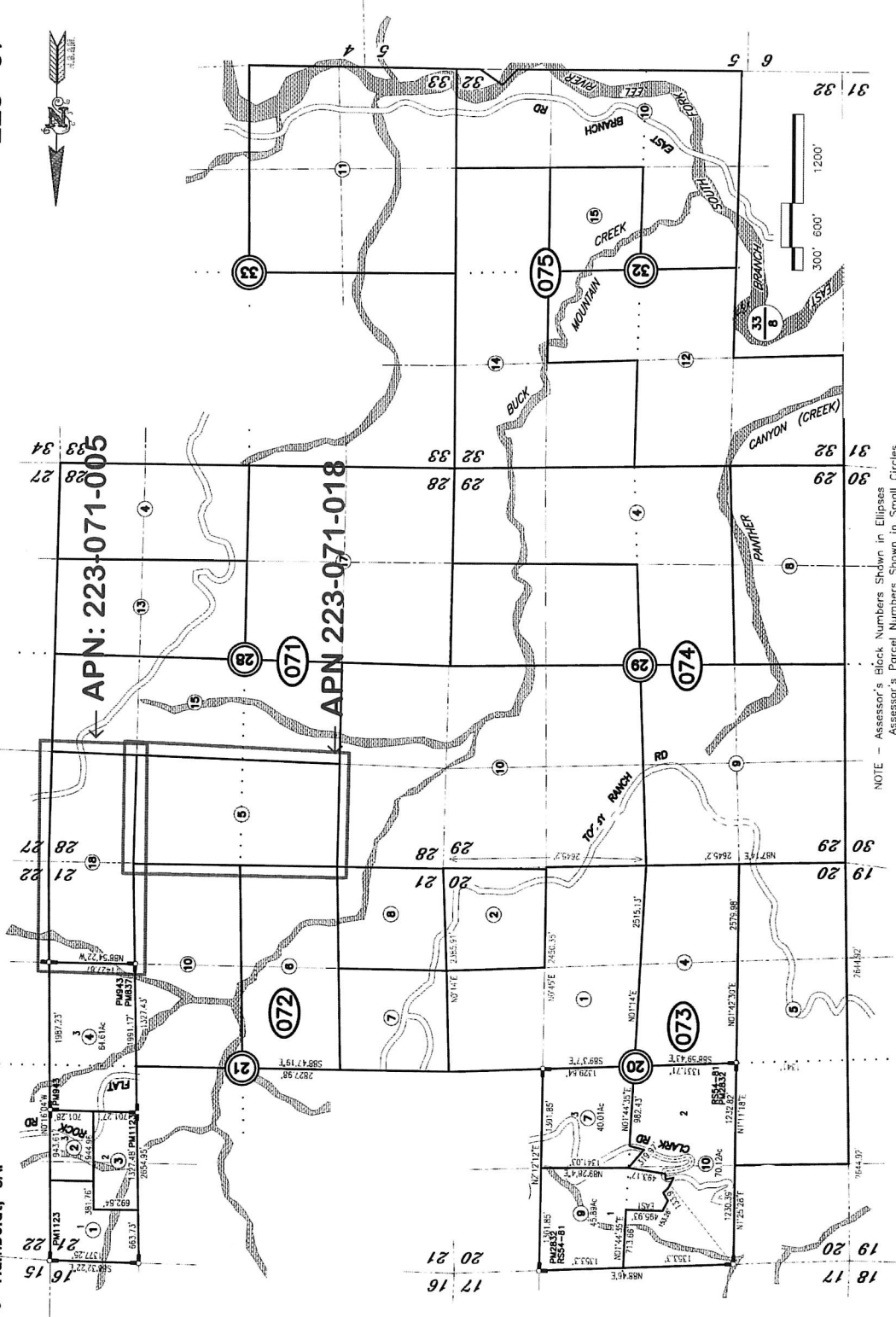


Lindberg Geologic Consulting	Engineering-Geologic Prime Agricultural Soils Exploration Report	Figure 1
Post Office Box 306	Tooby Ranch Road, Garberville, Humboldt County	September 12, 2017
Cutten, CA 95534	AP's 223-071-018 & -005, Mr. Sherrod Levin, Client	Project 0226.03
(707) 442-6000	Prime Soil Area and Sample Location Map. All Locations Approximate.	1 inch $\approx$ 2,750 feet



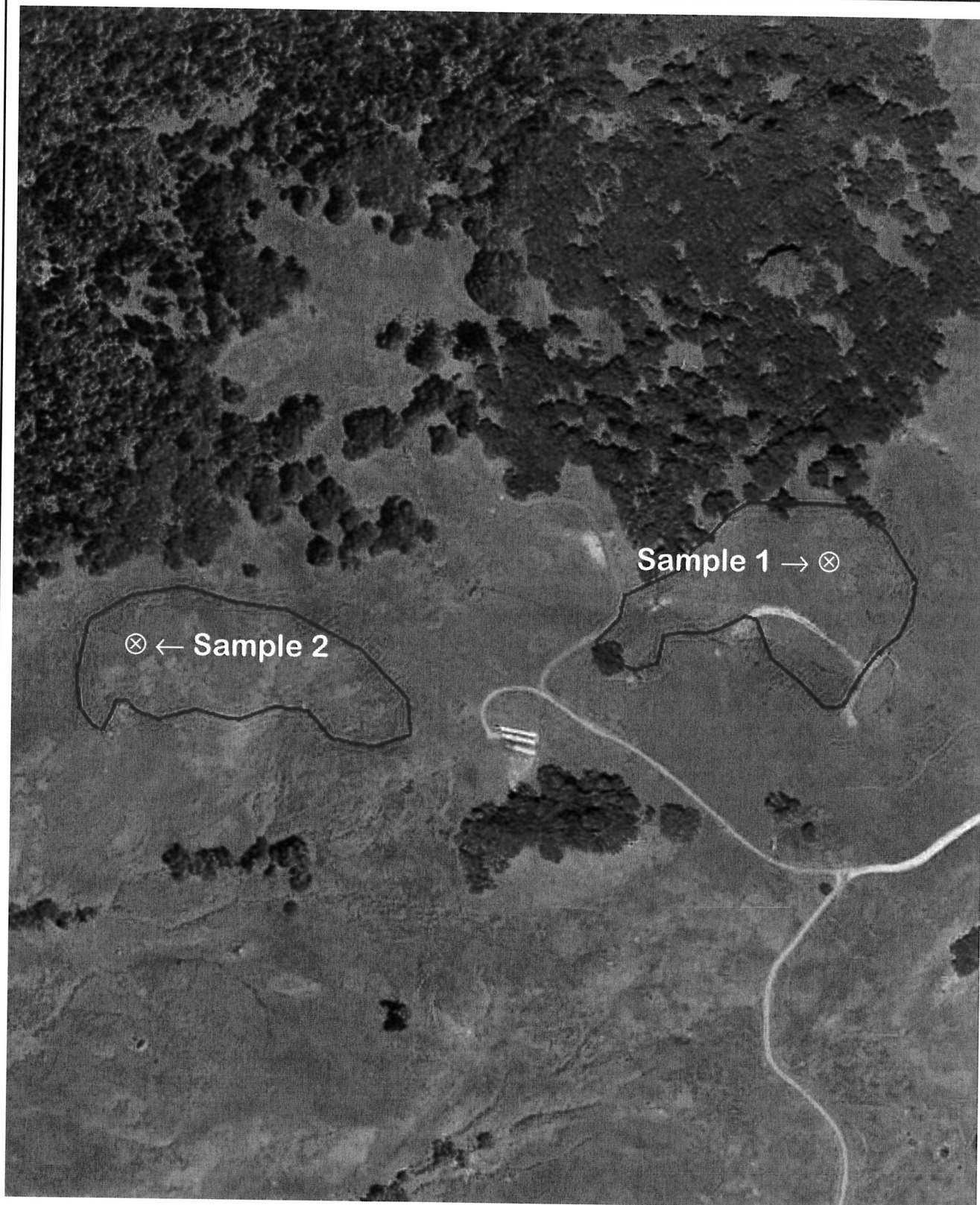
Lindberg Geologic Consulting	Engineering-Geologic Prime Agricultural Soils Exploration Report	Figure 2
Post Office Box 306	Tooby Ranch Road, Garberville, Humboldt County	September 12, 2017
Cutten, CA 95534	AP's 223-071-018 & -005, Mr. Sherrod Levin, Client	Project 0226.03
(707) 442-6000	Assessor's Parcel Map 223-07. All Locations Approximate.	Scale as Shown

Assessor's Map Bk. 223, Pg. 7 SECS 28 & 29 & PTN SECS 20,21,32 & 33, T4S R4E, H.B.&M. 223-07  
County of Humboldt, CA.



NOTE - Assessor's Block Numbers Shown in Ellipses  
Assessor's Parcel Numbers Shown in Small Circles

Lindberg Geologic Consulting	Engineering-Geologic Prime Agricultural Soils Exploration Report	Figure 3
Post Office Box 306	Tooby Ranch Road, Garberville, Humboldt County	September 12, 2017
Cutten, CA 95534	AP's 223-071-018 & -005, Mr. Sherrod Levin, Client	Project 0226.03
(707) 442-6000	Prime Soil Area and Sample Location Map. All Locations Approximate.	1 inch $\approx$ 350 feet





# CONSULTING ENGINEERS & GEOLOGISTS, INC.

812 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-8855 FAX: 707/441-8877 E-mail: shninfo@shn-engr.com

Reference: 013034

August 28, 2017

Lindberg Geologic Consulting  
P.O. Box 306  
Cutten, CA 95534

## SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: S Levin Sample 1  
Date Sampled: 08/10/17  
Date Received: 08/15/17

Sampled By: DNL-CEG  
Date Tested: 08/28/17  
AP Number: 223-071-018

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by		Zone	Bulk Density
					Volume			
Levin 1		45.1	20.1	34.8	8.1		2	*
Material: Loam								

\* = no peds provided

### Regional Water Quality Control Board Zone Descriptions:

**Zone 1** - Soils in this zone are very high in sand content. They readily accept effluent, but because of their low silt and clay content they provide minimal filtration. These soils demand greater separation distances from groundwater.

**Zone 2** - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

**Zone 3** - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

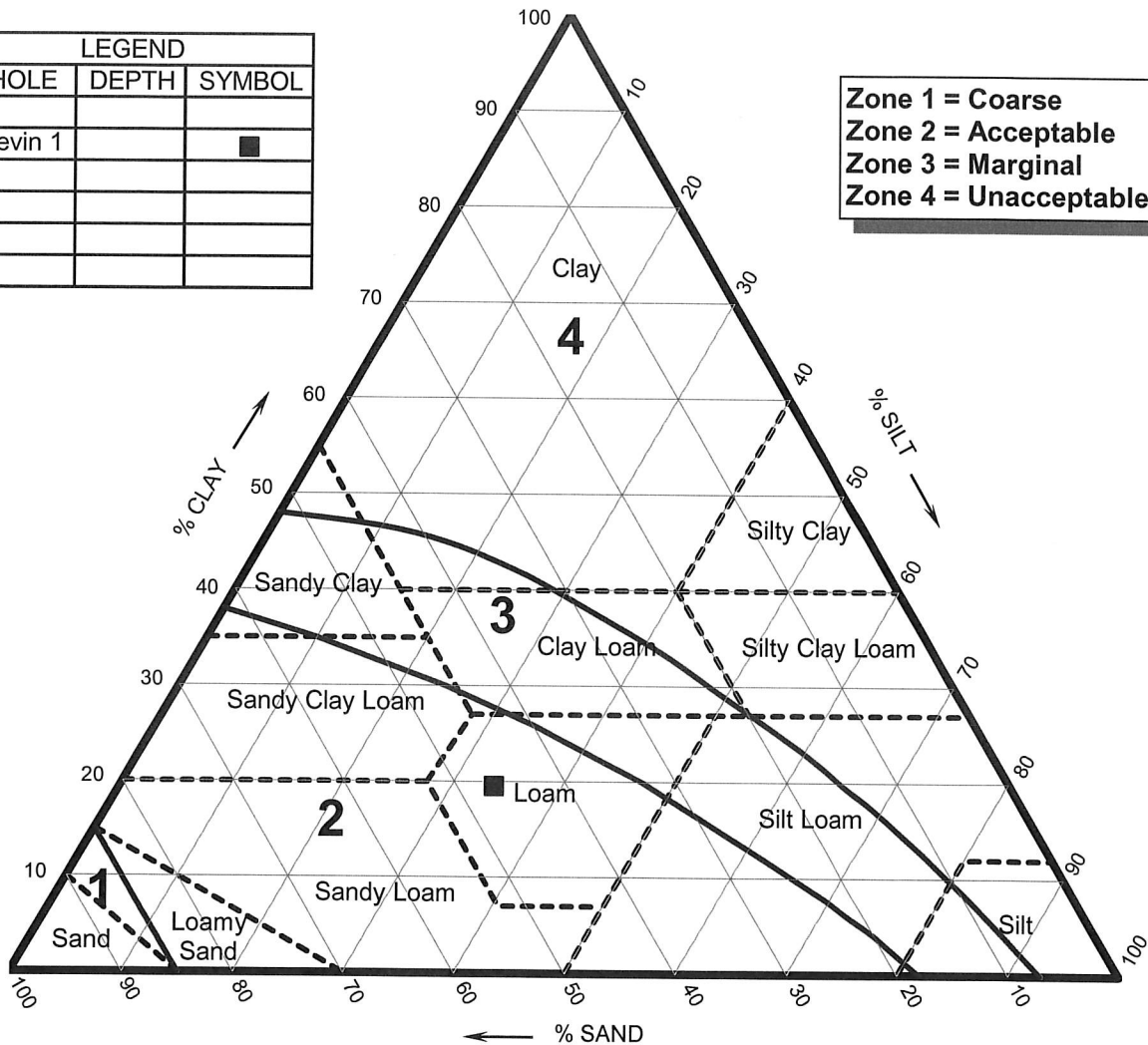
**Zone 4** - Soils in this zone are unsuitable for a conventional leachfield because of their severe limitations for accepting effluent.



# SOIL PERCOLATION SUITABILITY CHART

LEGEND		
HOLE	DEPTH	SYMBOL
Levin 1		■

**Zone 1 = Coarse**  
**Zone 2 = Acceptable**  
**Zone 3 = Marginal**  
**Zone 4 = Unacceptable**



## NOTES

1. Soil texture is plotted on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjustment for coarse fragments has been made by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjustment for compactness of soil has been made by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc, when analyzed.
4. For soils falling in sand, loamy sand, or sandy loam, classification adjustment for bulk density will generally not affect suitability and a bulk-density analysis was not necessary.

JOB NUMBER: 013034

DATE: 08/28/17

JOB NAME: Lindberg

APN: 223-071-018

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 Eureka, CA 95501-2138  
 (707) 441-8855



# CONSULTING ENGINEERS & GEOLOGISTS, INC.

812 W. Wabash Eureka, CA 95501-2138 Tel: 707/441-8855 FAX: 707/441-8877 E-mail: shninfo@shn-engr.com

Reference: 013034

August 28, 2017

Lindberg Geologic Consulting  
P.O. Box 306  
Cutten, CA 95534

## SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: S Levin Sample 2  
Date Sampled: 08/10/17  
Date Received: 08/15/17

Sampled By: DNL-CEG  
Date Tested: 08/28/17  
AP Number: 223-071-005

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by		Zone	Bulk Density
					Volume			
Levin 2		47.4	9.0	43.6	6.4		2	*

Material: Loam

\* = no peds provided

### Regional Water Quality Control Board Zone Descriptions:

**Zone 1** - Soils in this zone are very high in sand content. They readily accept effluent, but because of their low silt and clay content they provide minimal filtration. These soils demand greater separation distances from groundwater.

**Zone 2** - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

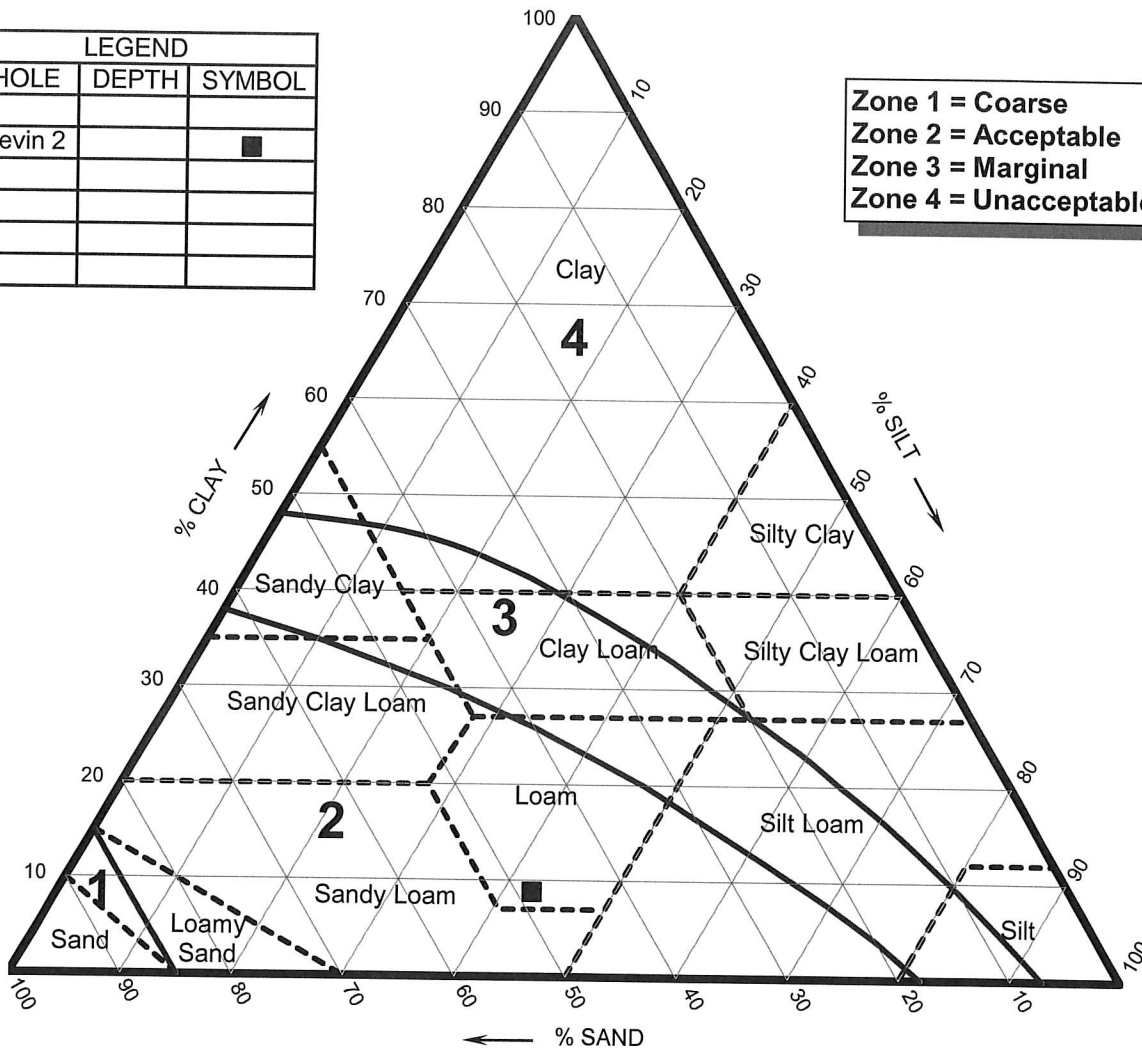
**Zone 3** - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

**Zone 4** - Soils in this zone are unsuitable for a conventional leachfield because of their severe limitations for accepting effluent.

# SOIL PERCOLATION SUITABILITY CHART

LEGEND		
HOLE	DEPTH	SYMBOL
Levin 2		■

**Zone 1 = Coarse**  
**Zone 2 = Acceptable**  
**Zone 3 = Marginal**  
**Zone 4 = Unacceptable**



## NOTES

1. Soil texture is plotted on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjustment for coarse fragments has been made by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjustment for compactness of soil has been made by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc, when analyzed.
4. For soils falling in sand, loamy sand, or sandy loam, classification adjustment for bulk density will generally not affect suitability and a bulk-density analysis was not necessary.

JOB NUMBER: 013034

DATE: 08/28/17

JOB NAME: Lindberg

APN: 223-071-005

**SH** Consulting Engineers & Geologists, Inc.

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 Eureka, CA 95501-2138  
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LINDBERG GEOLOGIC CONSULTING

David N. Lindberg, CEG

Post Office Box 306

Cutten California 95534

(707) 442-6000

March 7, 2017

Project: 0226.00

Mr. Sherrod Levin

Post Office Box 2547

Redway, California 95560

Subject: Engineering-Geologic Prime Soils Explorations and Letter-Report  
Tooby Ranch Road, APN 223-015-011 and 223-016-003

Dear Mr. Levin:

In accordance with our agreement, we have conducted an engineering-geologic reconnaissance of the above-noted parcels, and we have reviewed information available from the Humboldt County Community Development Department and the Humboldt County Assessor regarding the subject property. While on-site we collected two soil samples for analysis at a local, certified materials testing laboratory. Our explorations were focused on determining if the soils at your location could be classified as "Prime Soils" for potential medicinal cannabis cultivation. Prime soils are defined in Humboldt County Ordinance No. 2544 as follows:

*"Prime Soils" means all lands which qualify for rating as Class I or Class II in the Soil Conservation Service land use capability classifications or qualify for rating 80 through 100 in the Storie Index Rating. Additionally, where determined through site-specific fieldwork prepared by a qualified professional, soils meeting these characteristics may be recognized as prime."*

Site-specific fieldwork, including excavation of a test hole and collection of a sample of the surface soils, was conducted by a Certified Engineering Geologist from our office on February 7, 2017. This subject parcel includes portions of the SE ¼ of Section 22, and most of the East ½ of Section 27, T4S, R4E, (Figure 1). An annotated copy of the Humboldt County Assessor's parcel map is appended to this report. Textural Analysis was conducted on two soil samples taken from undisturbed locations on the upland areas of parcels APN 223-015-011 and 223-016-003. Sample locations, as noted on Figure 2, were determined by GPS.

- Sample #1, from Parcel 223-015-011, was collected at 40.09386° north latitude, 123.1226° west longitude.
- Sample #2, from Parcel 223-016-013, was collected at 40.09011° north latitude, 123.71135° west longitude.

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March 7, 2017  
Engineering Geologic Prime Soils Exploration  
APN 223-015-011 and 223-016-003, Sherrod Levin, LGC Project No. 0226.00

Our composite soil samples from the upper two feet of the profile were delivered to an independent, certified materials testing laboratory in Eureka for Textural Analysis. Laboratory analytical results are attached and show that both Samples consist of **Loam**, per the United States Department of Agriculture classification system.

The Storie Index (University of California, 1948), as revised in 1978, is a method of soil rating based on soil characteristics that govern the land's potential utilization and productive capacity. To calculate the Storie Index, percentage values are assigned to the various characteristics of the soil, including the soil profile (Factor A), the texture of the surface soil (Factor B), the slope (Factor C). Other conditions of the soil including drainage, nutrient level, erosion and microrelief are combined as a fourth factor (Factor X). Percentage values for each of the four factors are multiplied to obtain the Storie Index. Based on the index, soils in California have been divided into six soil grades, with Grade 1 being excellent, with a range of Storie Index from 80 to 100 percent. Thus Grade 1 excellent soils are, by the definition in Ordinance 2544, Prime Soils.

#### **Sample #1**

Factor A was assigned a value of 100 percent because the area sampled and characterized on this part of parcel 223-015-011 is located on upland areas underlain by softly consolidated material (Factor A, IX). Based on the laboratory textural analysis (attached) the soil at the Sample #1 location is **Loam**, a medium-textured soil. For Loam soil, the Storie Index assigns Factor B a value of 100 percent. Factor C was assigned a value of 85 percent because the site, as outlined on Figure 2, is nearly level to moderately sloping (<10%), and undulating (AC, BB), as estimated by field observation and clinometer measurements.

Soil Factor X is calculated based on the product of six factors. Soil drainage was rated at 100 percent because the site soils in our sampling hole were observed to be well-drained. Alkalinity was rated at 100 percent because alkaline soils are uncommon in the region. Nutrient, or fertility, level was assigned a value of 100 percent due to the fact that this area has been used as hay fields and for grazing livestock. Acidity was assigned a value of 95 percent because the soils were estimated to have a near-neutral pH and thus a low degree of acidity. No erosion was observable, so the erosion factor is 100 percent. Microrelief is smooth and was rated 100 percent.

The Storie Index is the product of the four Factors (A, B, C and X), with Factor X itself the product of the six additional soil conditions outlined above. In mathematical terms, the Storie Index for this parcel equals A times B times C times X, as shown:

$$[100\% \times 100\% \times 85\% \times (100\% \times 100\% \times 100\% \times 95\% \times 100\% \times 100\%)], \text{ or} \\ (0.85 \times 0.95) = 0.81, \text{ or } 81\%$$

With a Storie Index of 81 percent, the site soil is a Grade 1 (excellent) soil, which is defined as suitable for a wide range of crops, including alfalfa, orchard, truck, and field crops (University of California, 1948). Because these soils have a Storie Index greater than 80 percent, they meet the definition of “Prime Soils” in the Ordinance (Humboldt County, California - Ordinance No. 2544). Based on our site-specific fieldwork, certified laboratory analysis, and our professional experience, it is our opinion that the site soils qualify as, and therefore may be recognized as, prime agricultural soils for the purposes of the medicinal cannabis cultivation ordinance.

### **Sample #2**

Factor A was assigned a value of 100 percent, because the area sampled and characterized on this part of parcel 223-016-003 is located on upland areas underlain by softly consolidated material (Factor A, IX). Based on the laboratory textural analysis (attached) the Sample #2 soil is **Loam**, a medium-textured soil. For Loam soil such as at the Sample #2 location, the Storie Index assigns Factor B a value of 100 percent. Factor C was assigned a value of 90 percent because the site, as outlined on Figure 2, is nearly level to gently sloping and undulating (A, BB), as estimated by field observation and clinometer measurements.

Soil Factor X is the product of six factors. Soil drainage was rated at 100 percent because the site soils in our sampling hole were observed to be well-drained. Alkalinity was rated at 100 percent because alkaline soils are uncommon in the region. Nutrient, or fertility, level was assigned a value of 100 percent due to the fact that this area has long been used as hay fields and for grazing livestock. Acidity was assigned a value of 95 percent because the soils were estimated to have a near-neutral pH and thus a low degree of acidity. No erosion was observable; the erosion factor was determined to be 100 percent. Microrelief is smooth and was rated 100 percent.

The Storie Index is the product of the four Factors (A, B, C and X), with Factor X itself the product of the six additional soil conditions outlined above. In mathematical terms, the Storie Index for this parcel equals A times B times C times X, as shown:

$$[100\% \times 100\% \times 90\% \times (100\% \times 100\% \times 100\% \times 95\% \times 100\% \times 100\%)], \text{ or} \\ (0.90 \times 0.95) = 0.86, \text{ or } 86\%$$

With a Storie Index of 86 percent, the site soil is a Grade 1 (excellent) soil, which is defined as suitable for a wide range of crops, including alfalfa, orchard, truck, and field crops (University of California, 1948). Because these soils have a Storie Index greater than 80 percent, they meet the definition of “Prime Soils” in the Ordinance (Humboldt County, California - Ordinance No. 2544). Additionally, based on our site-specific fieldwork, certified laboratory analysis, and our

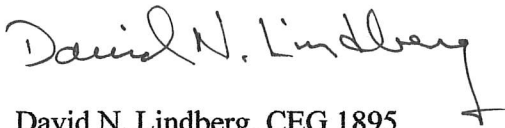
professional experience, it is our opinion that the site soils do qualify as, and therefore may be recognized as, prime agricultural soils for the purposes of the ordinance.

Soils are, in our opinion, uniform and consistent across those areas of the subject parcels outlined in Figure 2. Our opinion is based on our site-specific field explorations, observation of 19 years of Google Earth satellite imagery, and review of the USGS Harris, California, 7.5' topographic quadrangle map (1969), and Humboldt County Assessor's parcel map.

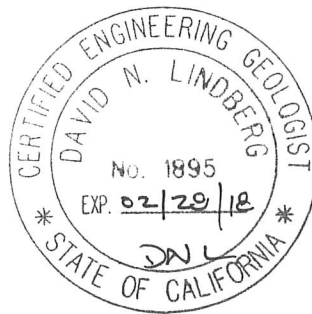
We estimate that Sample #1 represents an area of Prime Soils that encompasses approximately 16.4 of the 83.0 acres of parcel 223-015-011. Based on Sample #2, there are more than 23.8 acres of prime soils on the 195.0 acre total area of parcel 223-016-003. These areas do not account for any property line setbacks, or of any portions of the parcels that might be within designated wetlands or streamside management areas, for example. Note that our estimates of area are not based on formal surveying. We are available to delineate in the field our interpretation of the extents of prime soils on these parcels.

Please contact me at the number above if you have any concerns or questions.

Thank you.  
Sincerely,



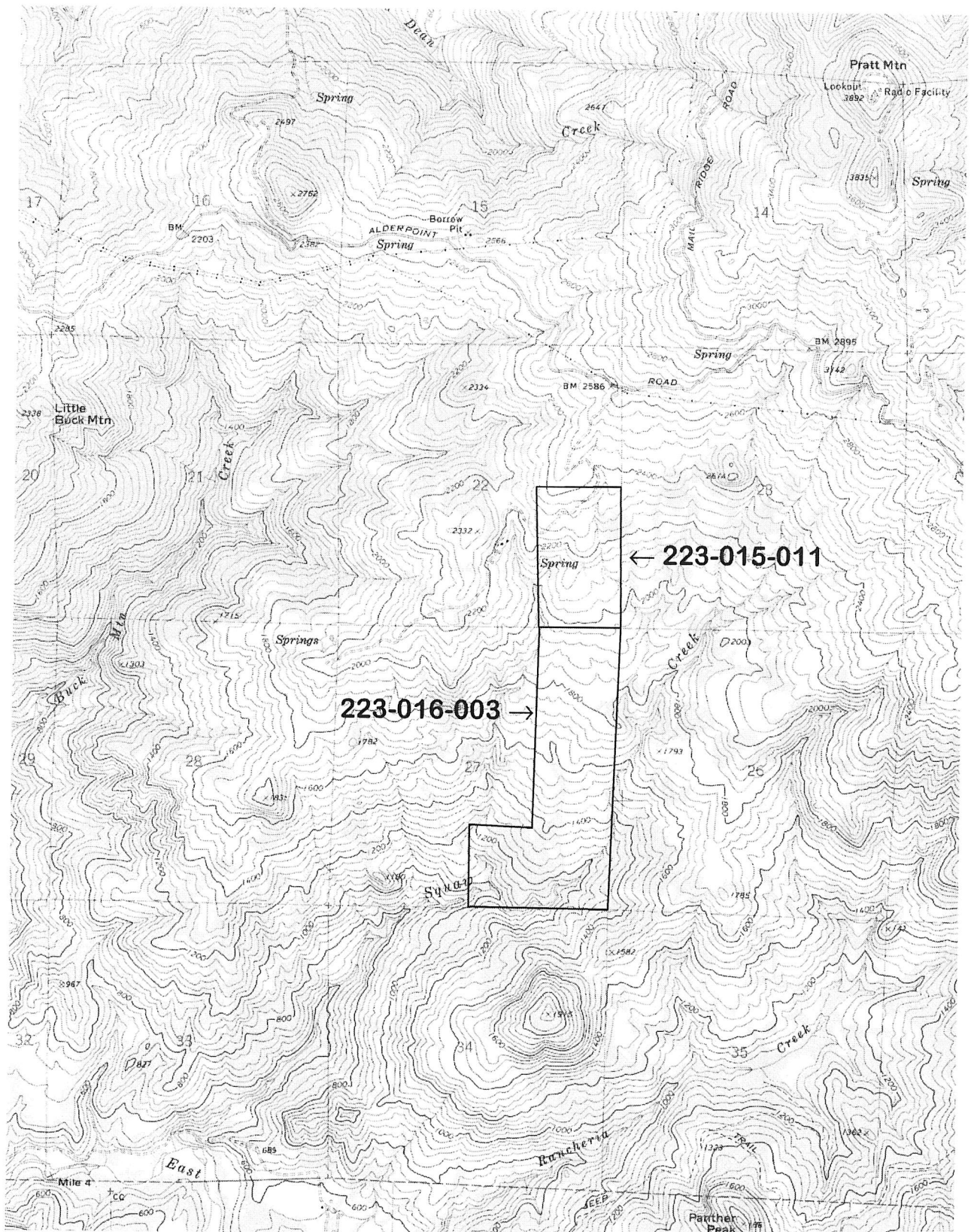
David N. Lindberg, CEG 1895  
Lindberg Geologic Consulting



DNL:sll

University of California, 1948, Storie, R., Earl, and Walter W. Weir, Manual for Identifying and Classifying California Soil Series, with Supplement, 1958, and revised December 1978, (Special Publication 3203), Published by the Associated Students' Store, University of California, Berkeley.

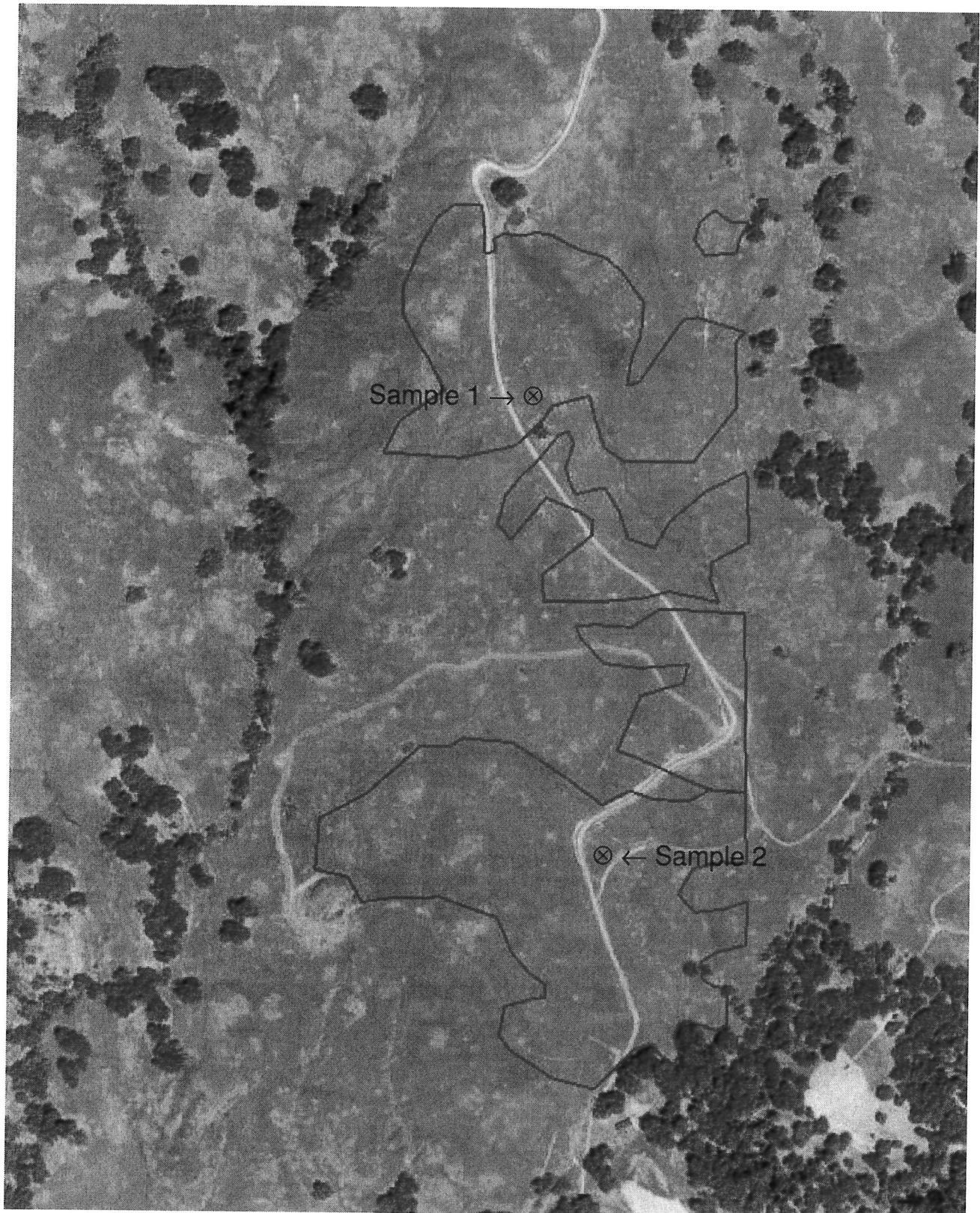
Lindberg Geologic Consulting	Engineering-Geologic Prime Soil Exploration Report	Figure 1
P. O. Box 306	Tooby Ranch Road, Carr Ranch, near Garberville	March 7, 2017
Cutten, CA 95534	APN's: 223-015-011 & 223-016-003, Mr. S. Levin, Client	Project 0226.00
(707) 442-6000	Topographic Location Map	1 inch $\cong$ 1/2 mile



Modified from: USGS Harris Calif., 7.5' Quadrangle Map, 1969. N  $\equiv$



Lindberg Geologic Consulting	Engineering-Geologic Prime Soil Exploration Report	Figure 2
P. O. Box 306	Tooby Ranch Road, Carr Ranch, near Garberville	March 7, 2017
Cutten, CA 95534	Portions of APN's: 223-015-011& 223-016-003, Mr. S. Levin, Client	Project 0226.00
(707) 442-6000	Sample Points and Approximate Area of Prime Soil on Subject Parcels	1 inch $\cong$ 450 feet





## CONSULTING ENGINEERS & GEOLOGISTS, INC.

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Reference: 013034

February 22, 2017

David Lindberg  
Lindberg Geologic Consulting  
PO Box 306  
Cutten, CA 95534

### SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: Lindberg (Levin)  
Date Sampled: 2/7/17  
Date Received: 02/08/17

Sampled By: DL  
Date Tested: 2/22/17  
AP Number: 223-015-011

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by		Zone	Bulk Density
					Volume			
Sample #1	--	47.8	18.3	33.9	2.9		2	*
Material: Loam								

\* = no peds provided

#### Regional Water Quality Control Board Zone Descriptions:

**Zone 1** - Soils in this zone are very high in sand content. They readily accept effluent, but because of their low silt and clay content they provide minimal filtration. These soils demand greater separation distances from groundwater.

**Zone 2** - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

**Zone 3** - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

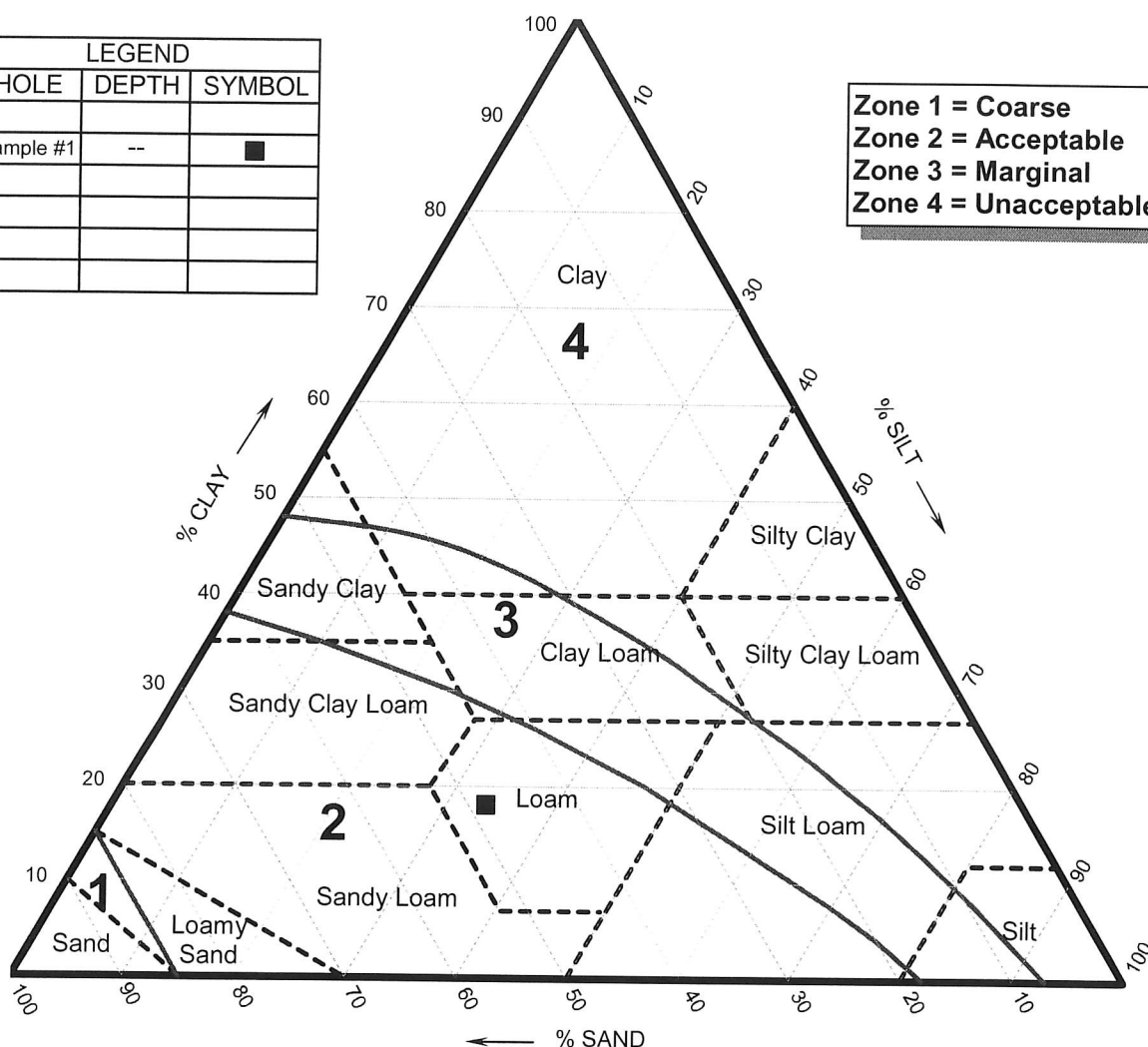
**Zone 4** - Soils in this zone are unsuitable for a conventional leachfield because of their severe limitations for accepting effluent.



# SOIL PERCOLATION SUITABILITY CHART

LEGEND		
HOLE	DEPTH	SYMBOL
Sample #1	--	■

**Zone 1 = Coarse**  
**Zone 2 = Acceptable**  
**Zone 3 = Marginal**  
**Zone 4 = Unacceptable**



## NOTES

1. Soil texture is plotted on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjustment for coarse fragments has been made by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjustment for compactness of soil has been made by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc, when analyzed.
4. For soils falling in sand, loamy sand, or sandy loam, classification adjustment for bulk density will generally not affect suitability and a bulk-density analysis was not necessary.

JOB NUMBER: 013034

DATE: 2/22/17

JOB NAME: Lindberg (Levin)

APN: 223-015-011

**SEW** Consulting Engineers & Geologists, Inc.

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 Eureka, CA 95501-2138  
 (707) 441-8855



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Reference: 013034

February 22, 2017

David Lindberg  
Lindberg Geologic Consulting  
PO Box 306  
Cutten, CA 95534

## SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: Lindberg (Levin)  
Date Sampled: 2/7/17  
Date Received: 2/8/17

Sampled By: DL  
Date Tested: 2/22/17  
AP Number: 223-016-013

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by		Bulk Density
					Volume	Zone	
Sample #2	--	40.1	26.1	33.8	3.5	2	*
Material: Loam							

\* = no peds provided

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**Zone 2** - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

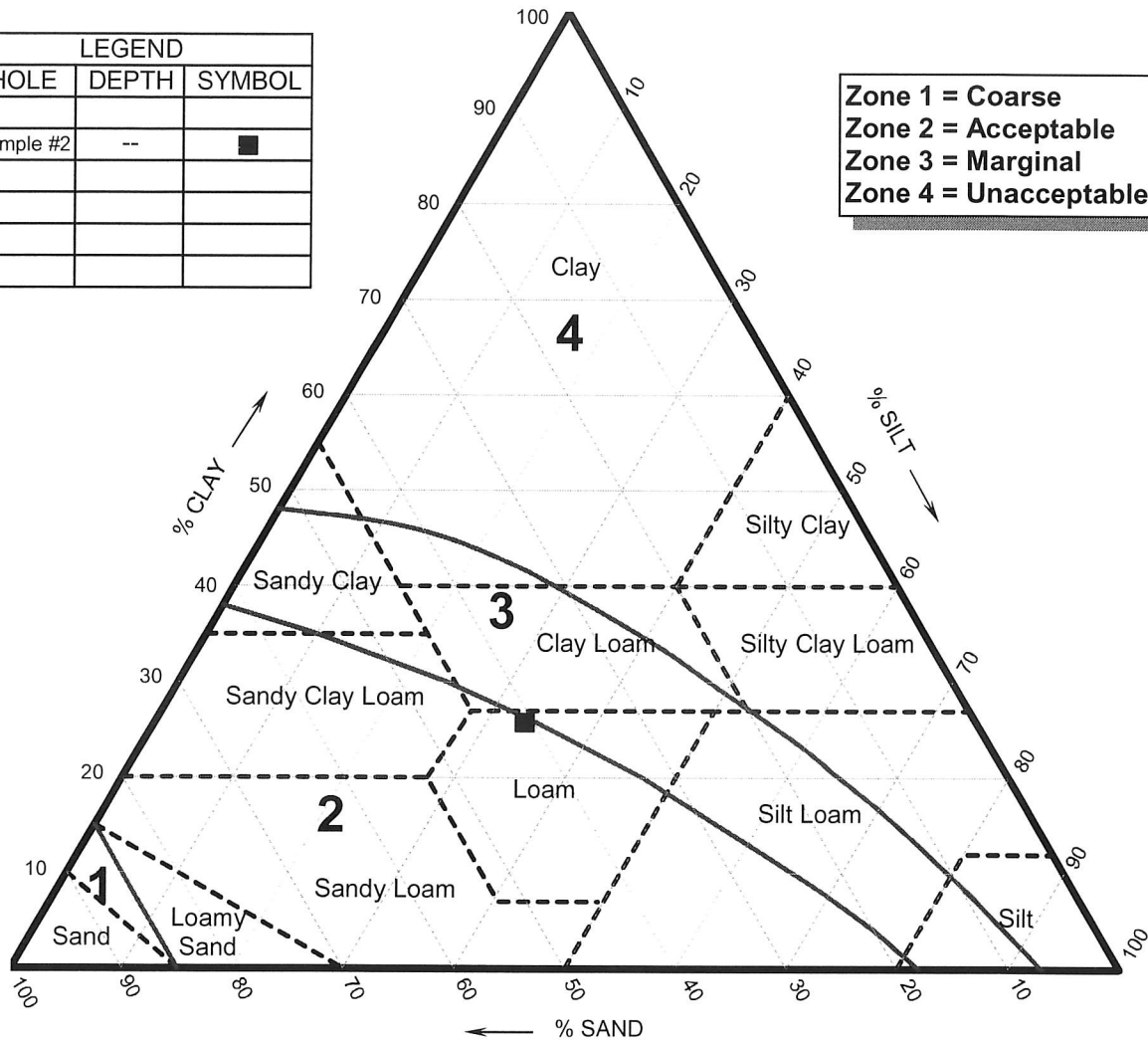
**Zone 3** - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

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## SOIL PERCOLATION SUITABILITY CHART

LEGEND		
HOLE	DEPTH	SYMBOL
Sample #2	--	■

**Zone 1 = Coarse**  
**Zone 2 = Acceptable**  
**Zone 3 = Marginal**  
**Zone 4 = Unacceptable**



### NOTES

1. Soil texture is plotted on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjustment for coarse fragments has been made by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
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4. For soils falling in sand, loamy sand, or sandy loam, classification adjustment for bulk density will generally not affect suitability and a bulk-density analysis was not necessary.

JOB NUMBER: 013034

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Assessor's Map Bk. 223, Pg. 1  
County of Humboldt, CA.

SEC 22,23,26,27 & PTN 14 & 15, T4S R4E, H.B.&M.

NOTE - Assessor's Block Numbers Shown in Ellipses  
Assessor's Parcel Numbers Shown in Small Circles

223-01

