Septic Site Suitability Analysis

For

Redwood Valley Farms

Willow Creek, CA

APN 316-174-010

APPS #12310

By:

DTN Engineering

2731 K Street Unit A

Eureka, CA 95501

dnicoletti@dtnengineering.com

ENGINEERING, CONSULTING, & PERMITTING

REGISTERED PROFESSIONAL ENGINEER
DAVID T. NICOLETTI
No. 76814
12/31/18
CIVIL
STATE OF CALIFORNIA

RECEIVED
SEP 14 2018
Humboldt County
Building Division

Introduction:

DTN Engineering (Engineer) has contracted with Redwood Valley Farms (Client) to perform a Site Septic Suitability Analysis for the Client as part of the Humboldt County Commercial Medical Marijuana Land Use Ordinance (APPS #12310). A Referral from Health and Human Services, Environmental Health Division has been issued to complete a site suitability report to establish the potential for an onsite waste treatment system.

The project location for APN 316-174-010, (Appendix A) is off Saber Tooth Rd. approximately 3.5 miles south of Highway 299 The parcel is a portion of the SE ¼ of Section 24, T. 6 N., R. 3 E. (Appendix B) and the Longitude and the Latitude for the project is 40.8877,-123.7784. The Owner is planning on connecting shower, sink, and a gravity water closet to the septic systems at the 20'X50' Ag Building as shown on the Plot Plan. The Septic System will serve up to 12 employees at peak use.

The existing site conditions for the evaluated roadways in this Technical Memorandum consists of hilly terrain, with two Streamside Management Areas Class I creeks that are tributary to the Windy Creek, high seismic instability, there are no mapped historic landslides and there are no grades exceeding 15%.

Evaluation:

This Septic Site Suitability Analysis is being conducted in accordance with the Humboldt County Onsite Wastewater Treatment System (OWTS) Regulations and Technical Manual. The locations of the test pits are shown on the Site Plan (Appendix C). Laboratory results show that the site soils are of Zone 2 (Appendix D). The soil types for TP-1 is Sandy Loam, TP-2 is Sandy Clay Loam, and TP-3 is Loam. Based on the site investigation it is recommended that the bottom of the septic field be installed at 5 feet of depth with 3 feet of drain rock under the pipe.

This evaluation will size the proposed Cannabis processing facility as a Construction Campsite (semi-permanent) of the Humboldt County Onsite Wastewater Treatment System (OWTS) Regulations and Technical Manual, which is 50 gallons per day per person. The number of people loading the septic system during peak season will be 12 people. An effluent demand of 600 gallons per day will be assigned for leachfield sizing and a 1500 gallon septic tank will be used. The onsite wastewater treatment system will have one proposed leachfield and one proposed reserve leachfield.

The leachfield locations and septic tank location will not be within a 100 year flood plain, not be within 100 feet of a private water well, not be within 100 feet of any streams and the septic tank will be a minimum of 50 feet from any streams.

The loading rate for a Sandy Loam in Zone 2 as shown (Appendix D) .389 gallons per day (GPD) per square feet (Ft^2). Dividing the effluent demand of 600 GPD divided by .389 GPD/Ft^2 equals 1542 Ft^2 of absorption area. Assuming 3 feet of sidewall on each side of the leachfield trench would create 6 Ft^2 per linear foot of absorption area. Dividing 413 Ft^2 of required absorption area by 6 Ft^2 of absorption area per foot equals a total of 257 feet of leachfield.

Conclusion:

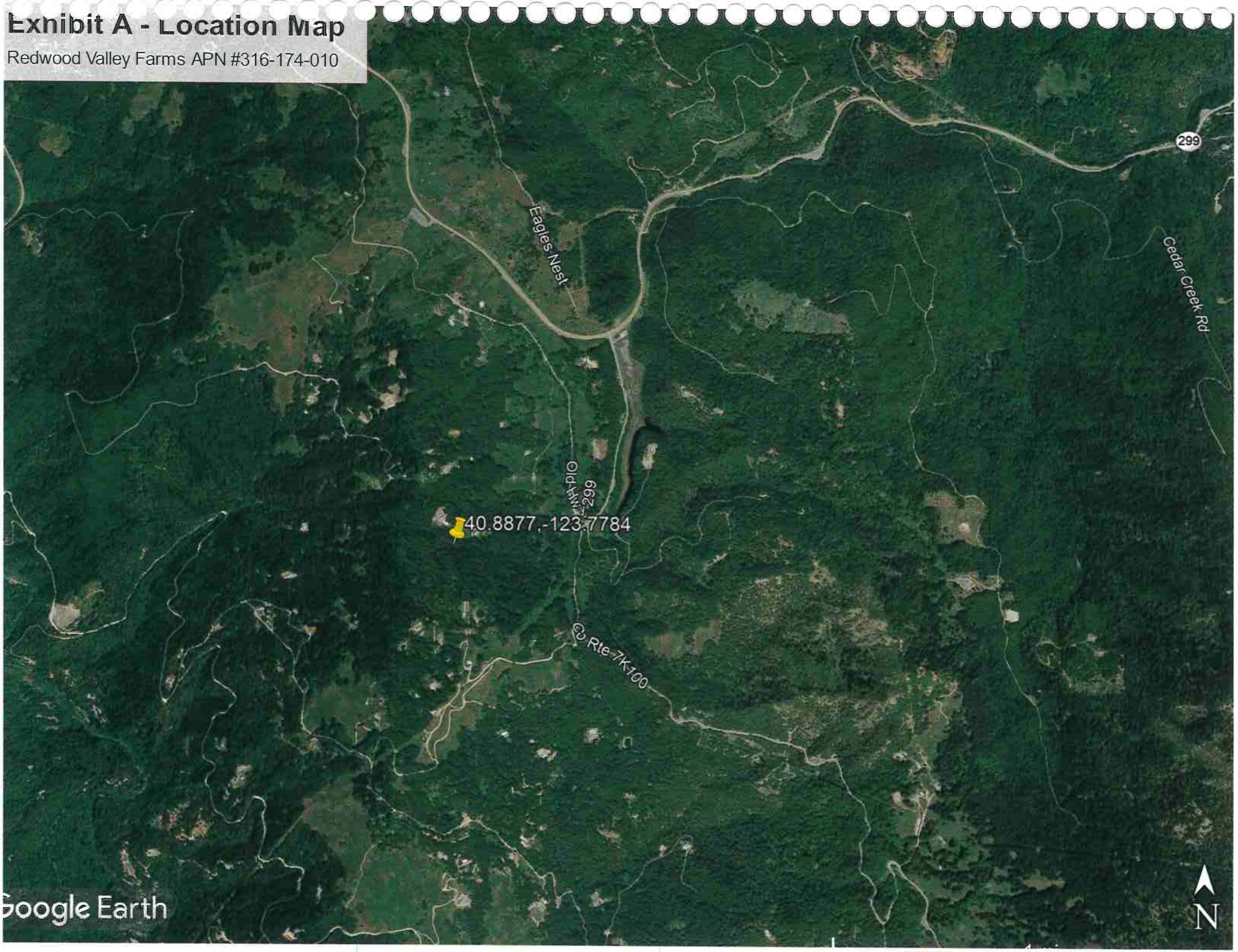
Based on the calculations from soil type, percolation testing and the proposed project approximately 257 feet of leachfield trench would be required for the project and a 1500 gallon septic tank.

Appendix A

Location Map

Exhibit A - Location Map

Redwood Valley Farms APN #316-174-010



Appendix B

Parcel Map

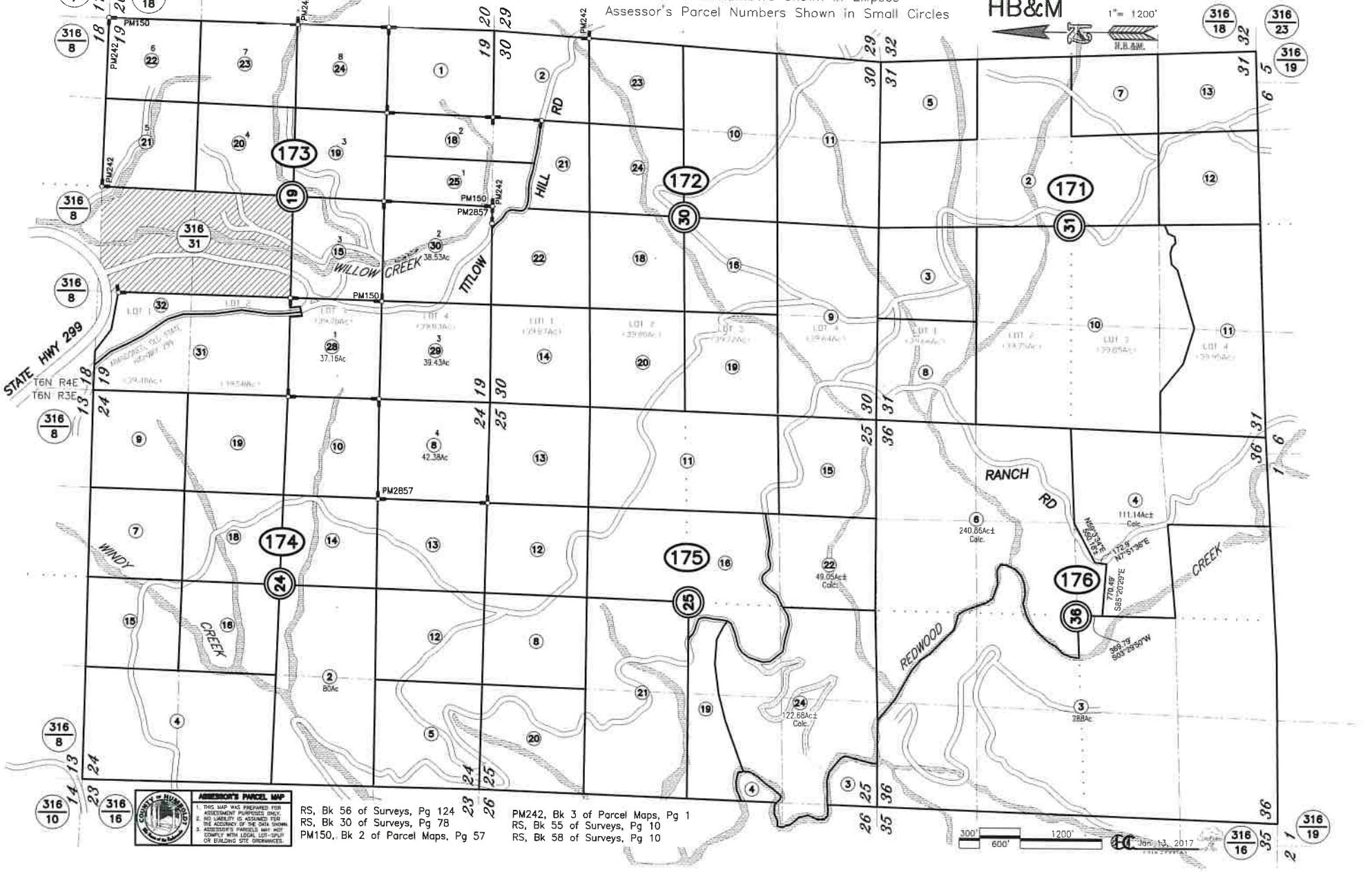
Assessor's Map Bk. 316, Pg. 17
County of Humboldt, CA.

SEC 19,30 & 31, T6N R4E & SEC 24,25 & 36, T6N R3E, HB&M

316-17

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

1"= 1200'



ASSESSOR'S PARCEL MAP

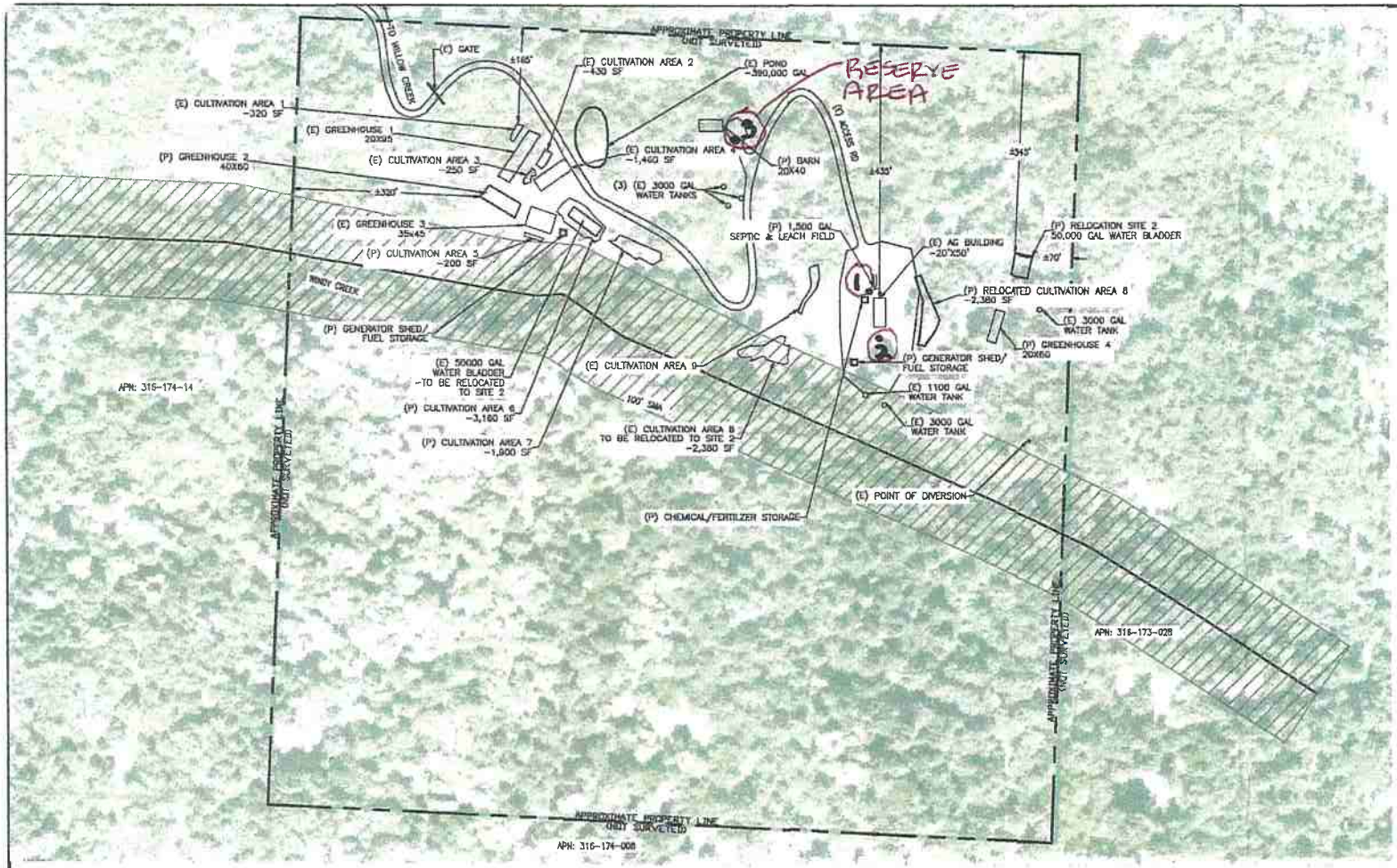
1. THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY.
2. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN.
3. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES.

RS, Bk 56 of Surveys, Pg 124
RS, Bk 30 of Surveys, Pg 78
PM150, Bk 2 of Parcel Maps, Pg 57

PM242, Bk 3 of Parcel Maps, Pg 1
RS, Bk 55 of Surveys, Pg 10
RS, Bk 58 of Surveys, Pg 10

Appendix C

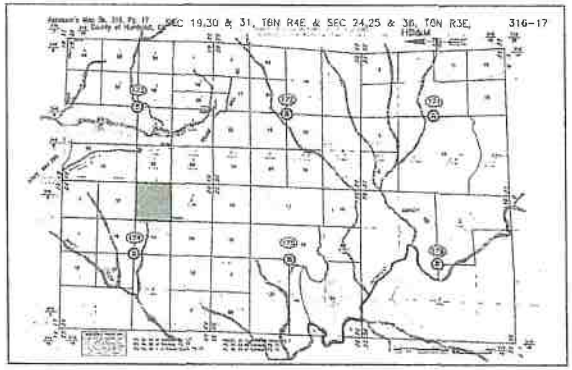
Plot Plan and Test Pit Locations



APN

(E) WATER STORAGE	456,000 GAL

(E) CULTIVATION AREA	11,130 SF
(P) CULTIVATION AREA	7,075 SF
TOTAL CULTIVATION AREA (E + P)	18,205 SF



ASSESSOR'S PARCEL MAP
NTS

PLAN VIEW
1"=100'
0 100 200
SCALE IN FEET

A FIELD SURVEY FOR TOPOGR
CONSULTING ENGINEERS (TVCE
CONDUCTED). ALL PROPERTY LI
LOCATIONS BASED ON COUNTY

WATER: DIVERSION (PERMITTED
WASTEWATER: NONE
POWER: NONE
PHONE: NONE
CREEKS/STREAMS: WINDY CRE
TREES TO BE REMOVED: NONE
GRADING: NONE

PROVIDE ADEQUATE WATER STO
ORDINANCE AND CALFIRE REQ

PROVIDE ADEQUATE TURN ARO
ORDINACE REQUIREMENTS AND

Appendix D

Laboratory Soil Test Results

TRINITY VALLEY
CONSULTING ENGINEERS, INC
Joshua T. McKnight CE 60687

Date: 10/13/2017

Report to: Jason Kidd
2100 Golf Course Road
Bayside CA 95524

RE: Sabertooth Road
Blue Lake, California

APN: 316-174-010 Hole #s: 1A, 1B, & 1C Depth: 3', 6', & 9' Sample Description: Soil

Sampled By: J. McKnight Date Tested: 10/13/2017 Date Sampled: 09/27/2017

SOILS EXAMINATION FOR SOIL PERCOLATION SUITABILITY

Textural Analysis

	TP-1A	TP-1B	TP-1C
Sand:	58%	72%	69%
Clay:	18%	13%	16%
Silt:	24%	15%	15%
Zone Classification:	**2**	**2**	**2**

Bulk Density: N/A

Comments:

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 ground water.

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

Zone 3 - Soils in this zone are expected to provide filtration of effluent, but their ability 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.

Josh McKnight, P.E.

Soil Texture Analysis Worksheet

Job Name: Jason Kidd
APN: 316-174-010
Job No.: 0917.02
Performed By: J. McKnight

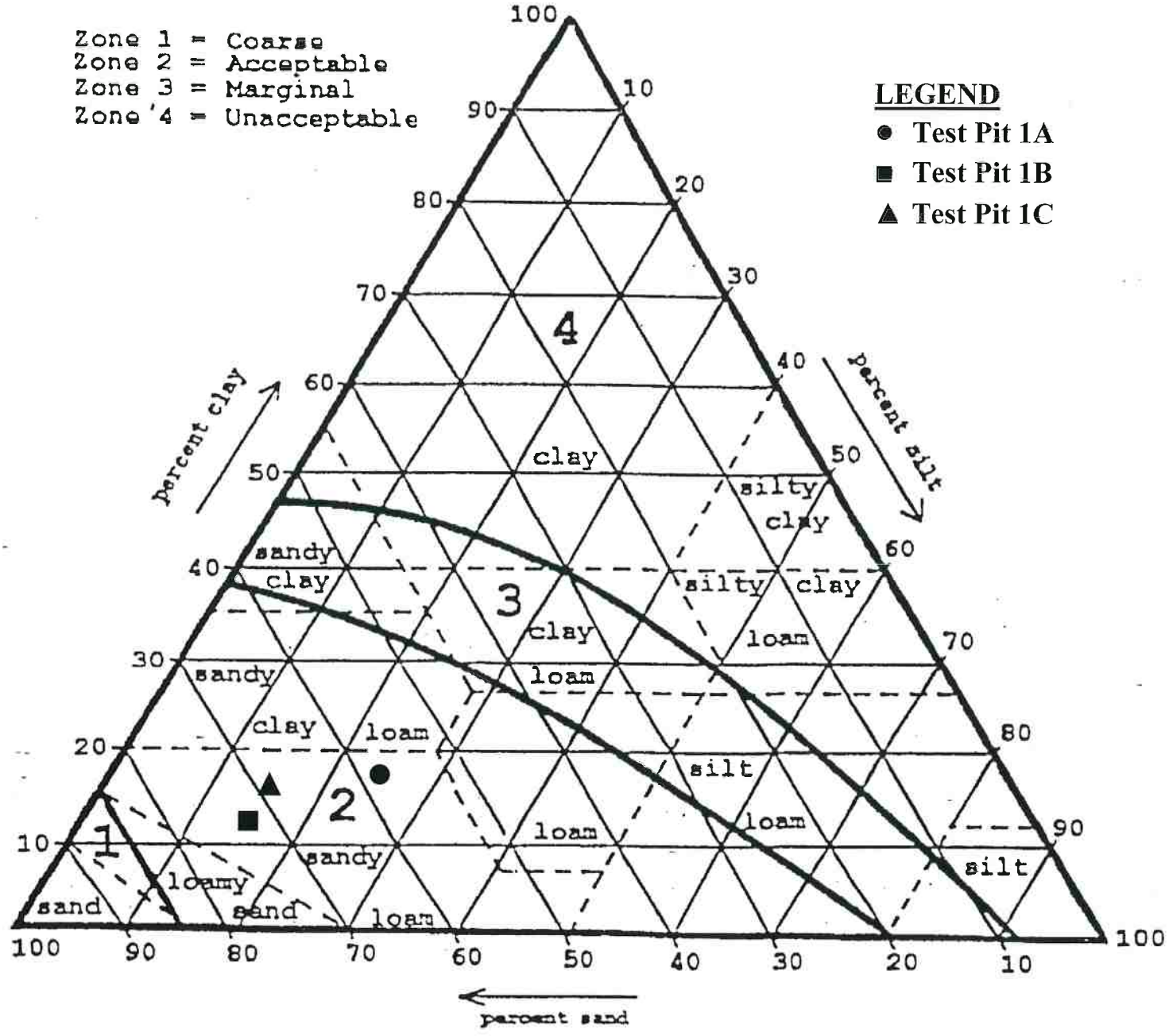
Hole #	TP-1A	TP-1B	TP-1C
Depth (ft)	3'	6'	9'
Oven Dry Weight (g)	100	100	100
Starting Time	855	835	1125
Temp @ 40 Sec	64	63	64
Hydrometer Reading @ 40 sec	49	36	38
Composite Correction	7.3	7.5	7.3
True Density @ 40 sec	41.7	28.5	30.7
Temp @ 2 Hours	67	66	68
Hydrometer Reading @ 2 Hours	25	20	23
Composite Correction	6.5	6.9	6.5
True Density @ 2 hours	18.5	13.1	16.5
% Sand	58	72	69
% Clay	18	13	16
% Silt	24	15	15
Soil Zone	**2**	**2**	**2**
Classification	**Sandy Loam**	**Sandy Loam**	**Sandy Loam**

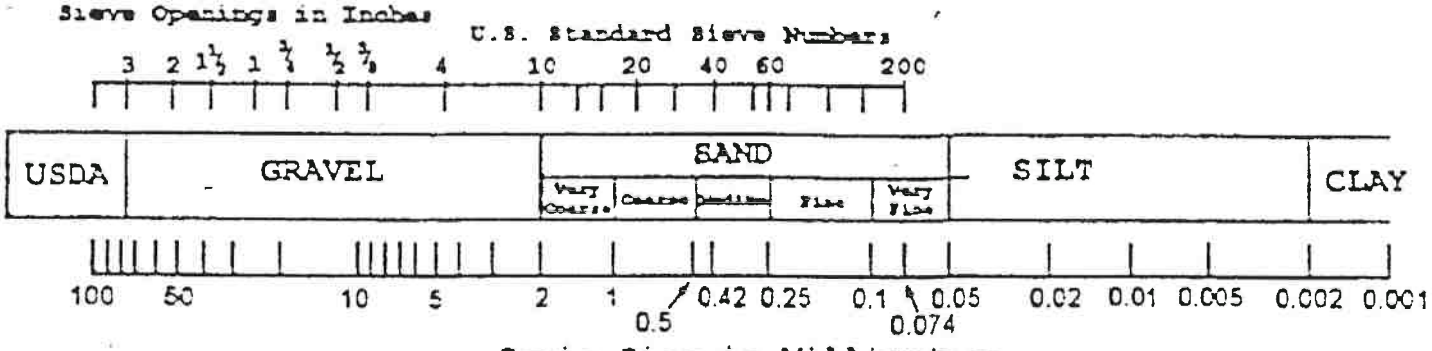
Job Name: Jason Kidd
APN: 316-174.010
Job No.: 0917.02

Test Pit Number	TP-1A	TP-1B	TP-1C
Percolation Rate (minutes per inch)	16	16	16
Application Rate (gallons per day per square foot)	0.7	0.7	0.7

Joshua T. McKnight CE 60687

Jason Kidd
APN: 316-174-010
Job No. 0917.02





TRINITY VALLEY
CONSULTING ENGINEERS, INC
Joshua T. McKnight CE 60687

Date: 10/13/2017

Report to: Jason Kidd
2100 Golf Course Road
Bayside CA 95524

RE: Sabertooth Road
Blue Lake, California

APN: 316-174-010 Hole #s: 2A, 2B, & 2C Depth: 3', 6', & 9' Sample Description: Soil

Sampled By: J. McKnight Date Tested: 10/13/2017 Date Sampled: 09/27/2017

SOILS EXAMINATION FOR SOIL PERCOLATION SUITABILITY

Textural Analysis

	TP-2A	TP-2B	TP-2C
Sand:	65%	57%	53%
Clay:	10%	24%	26%
Silt:	25%	19%	21%
Zone Classification:	**2**	**2**	**2**

Bulk Density: N/A

Comments:

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 ground water.

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

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Soil Texture Analysis Worksheet

Job Name: Jason Kidd
APN: 316-174-010
Job No.: 917.02
Performed By: J. McKnight

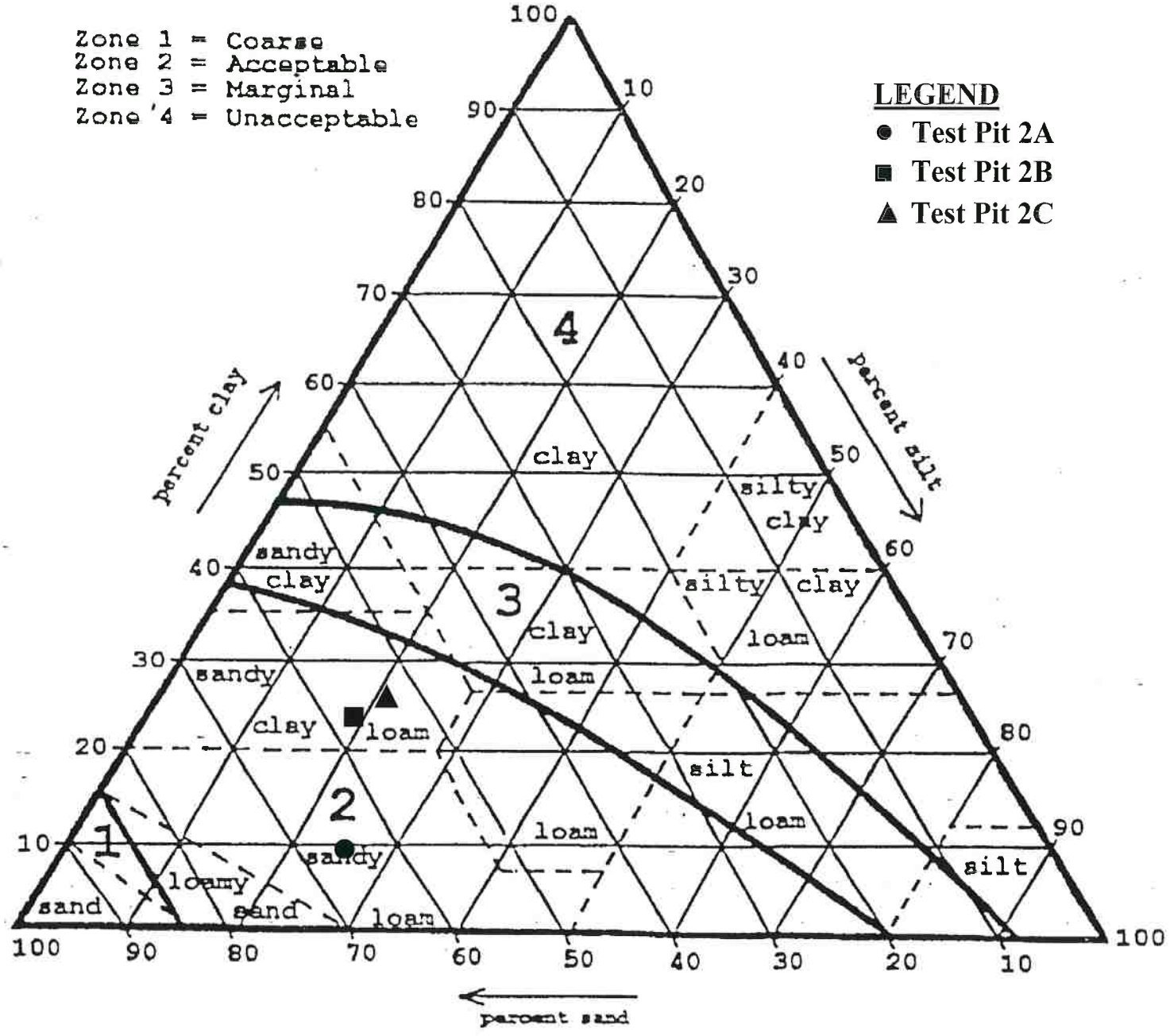
Hole #	TP-2A	TP-2B	TP-2C
Depth (ft)	3'	6'	9'
Oven Dry Weight (g)	100	100	100
Starting Time	1120	840	850
Temp @ 40 Sec	65	64	64
Hydrometer Reading @ 40 sec	42	50	54
Composite Correction	7.1	7.3	7.3
True Density @ 40 sec	34.9	42.7	46.7
Temp @ 2 Hours	68	69	67
Hydrometer Reading @ 2 Hours	17	30	32
Composite Correction	6.5	6.3	6.5
True Density @ 2 hours	10.5	23.7	25.5
% Sand	65	57	53
% Clay	10	24	26
% Silt	25	19	21
Soil Zone	**2**	**2**	**2**
Classification	**Sandy Loam**	**Sandy Clay Loam**	**Sandy Clay Loam**

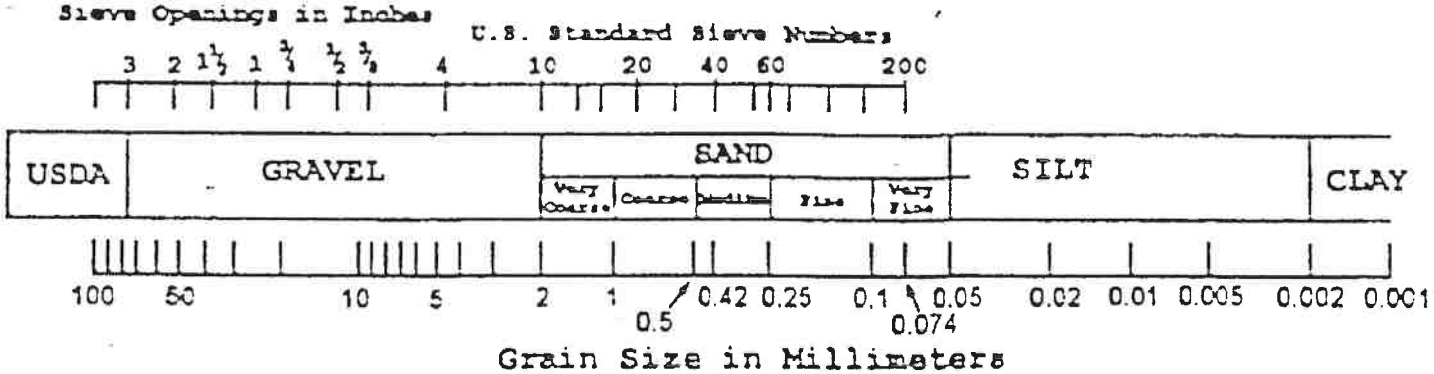
Job Name: Jason Kidd
APN: 316-174.010
Job No.: 917.02

Test Pit Number	TP-2A	TP-2B	TP-2C
Percolation Rate (minutes per inch)	16	53	53
Application Rate (gallons per day per square foot)	0.7	0.5	0.5

Joshua T. McKnight CE 60687

Jason Kidd
APN: 316-174-010
Job No. 0917.02





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Date: 10/13/2017

Report to: Jason Kidd
2100 Golf Course Road
Bayside CA 95524

RE: Sabertooth Road
Blue Lake, California

APN: 316-174-010 Hole #s: 3A, 3B, & 3C Depth: 3', 6', & 9' Sample Description: Soil

Sampled By: J. McKnight Date Tested: 10/13/2017 Date Sampled: 09/27/2017

SOILS EXAMINATION FOR SOIL PERCOLATION SUITABILITY

Textural Analysis

	TP-3A	TP-3B	TP-3C
Sand:	66%	45%	50%
Clay:	18%	26%	22%
Silt:	16%	29%	28%
Zone Classification:	**2**	**2**	**2**

Bulk Density: N/A

Comments:

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 ground water.

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Soil Texture Analysis Worksheet

Job Name: Jason Kidd
APN: 316-174-010
Job No.: 917.02
Performed By: J. McKnight

Hole #	TP-3A	TP-3B	TP-3C
Depth (ft)	3'	6'	9'
Oven Dry Weight (g)	100	100	100
Starting Time	830	835	845
Temp @ 40 Sec	63	63	63
Hydrometer Reading @ 40 sec	42	62	58
Composite Correction	7.5	7.5	7.5
True Density @ 40 sec	34.5	54.5	50.5
Temp @ 2 Hours	63	63	63
Hydrometer Reading @ 2 Hours	25	34	29
Composite Correction	7.5	7.5	7.5
True Density @ 2 hours	17.5	26.5	21.5
% Sand	66	45	50
% Clay	18	26	22
% Silt	16	29	28
Soil Zone	**2**	**2**	**2**
Classification	**Sandy Loam**	**Loam**	**Loam**

Job Name: Jason Kidd
APN: 316-174-010
Job No.: 917.02

Test Pit Number	TP-3A	TP-3B	TP-3C
Percolation Rate (minutes per inch)	16	30	30
Application Rate (gallons per day per square foot)	0.7	0.6	0.6

TRINITY VALLEY
CONSULTING ENGINEERS, INC.
Joshua T. McKnight CE 60687

Jason Kidd
APN: 316-174-010
Job No. 0917.02