A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K6MY1	54015	64.2VH	***	24M	15**	52	44	131	33	4.2	6.6	3.1	4.4	3.1	8.3	15.0	70.4	3.2
K6MY2	54016	57.8VH	***	19M	14**	78	28	54	27	4.4	6.8	1.3	2.1	9.3	10.7	12.5	62.0	5.5
K6MY4	54017	52.3VH	***	5VL	9**	36	22	46	22	4.5	6.9	0.8	1.4	6.5	12.5	16.2	58.0	6.8
K6MY6	54018	62.0VH	***	13L	10**	67	23	71	21	4.2	6.7	1.9	2.7	6.2	7.0	12.9	70.4	3.4
K2CH1	54019	41.1VH	851	1VL	7**	154	27	86	32	5.4	7.0	0.5	1.6	23.9	13.4	25.9	28.5	8.3

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K6MY1		39VH													
K6MY2		55VH													
K6MY4		75VH													
K6MY6		54VH													
K2CH1		63VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2CH2	54020	51.0VH	***	1VL	11**	70	22	56	27	4.6	6.9	0.9	1.6	10.8	11.0	17.0	54.0	7.2
K2CH3	54021	47.8VH	986	2VL	10**	62	38	222	26	4.8	6.8	1.5	3.2	5.0	9.8	34.7	47.0	3.5
K2CH5	54022	39.1VH	812	4VL	10**	92	32	83	37	4.8	6.9	1.0	2.0	11.6	13.0	20.4	47.0	8.0
K3AC4	54023	52.0VH	***	12L	14**	65	38	193	32	4.7	6.8	1.6	3.2	5.2	9.8	30.1	50.5	4.4
K3AC6	54024	66.3VH	***	25M	11**	85M	57L	197VL	55M	4.4	6.6	3.1	5.0	4.3	9.4	19.5	62.0	4.8

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2CH2		64VH													
K2CH3		57VH													
K2CH5		83VH													
K3AC4		91VH													
K3AC6		50VH													

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REPORT NUMBER: 17-293-018

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HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K6AC1	54025	58.8VH	***	11L	9**	61	51	103	19	4.7	6.9	1.2	2.4	6.6	17.8	21.7	50.5	3.5
K6AC4	54026	51.0VH	***	9L	7**	75	32	98	26	5.2	7.0	0.6	1.6	11.9	16.5	30.1	34.5	7.1
K6AC5	54027	60.1VH	***	17L	9**	49	34	133	24	4.8	6.9	1.0	2.2	5.7	12.6	30.0	47.0	4.7
K6AC7	54028	59.4VH	***	9L	8**	52	26	83	16	4.7	6.9	0.9	1.7	7.9	12.8	24.5	50.5	4.2
K4RU1	54029	74.0VH	***	13L	8**	54M	83M	448L	24L	5.0	6.7	2.2	5.4	2.6	12.8	41.7	41.0	2.0

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K6AC1		63VH													
K6AC4		89VH													
K6AC5		44VH													
K6AC7		55VH													
K4RU1		26H													

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GROWER: PO #Z10162991

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SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K4RU3	54030	78.4VH	***	17L	12**	92	33	120	25	4.3	6.7	2.4	3.6	6.6	7.5	16.8	66.0	3.1
K4RU5	54031	59.4VH	***	2VL	6**	61	34	223	28	4.8	6.8	1.5	3.2	5.0	8.9	35.3	47.0	3.8
K4RU6	54032	49.4VH	***	2VL	5**	49	27	104	23	4.9	6.9	0.8	1.7	7.3	12.7	30.2	44.0	5.9
K6GR1	54033	56.0VH	***	9L	11**	79	26	101	14	5.0	7.0	0.7	1.7	12.1	13.1	30.2	41.0	3.7
K6GR2	54034	52.2VH	***	4VL	12**	57	22	64	14	5.0	7.0	0.5	1.2	12.0	15.3	26.6	41.0	5.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K4RU3		40VH													
K4RU5		49VH													
K4RU6		74VH													
K6GR1		62VH													
K6GR2		75VH													

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K6GR4	54035	60.7VH	***	23M	15**	67	43	103	21	4.9	6.9	0.9	2.0	8.5	17.5	25.5	44.0	4.5
K6GR7	54036	60.4VH	***	10L	10**	61	37	84	15	5.0	7.0	0.7	1.6	9.8	18.8	26.4	41.0	4.0
K3GR1	54037	69.0VH	***	27H	13**	50L	104L	840L	22L	5.0	6.6	3.7	8.9	1.4	9.5	47.0	41.0	1.1
K3GR4	54038	61.2VH	***	30H	13**	54M	122M	445L	16L	5.0	6.7	2.4	5.8	2.4	17.2	38.2	41.0	1.2
K3GR6	54039	57.2VH	***	6VL	7**	69L	173M	659L	22L	4.9	6.6	3.9	8.9	2.0	16.0	37.0	44.0	1.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K6GR4		44VH													
K6GR7		46VH													
K3GR1		27H													
K3GR4		36VH													
K3GR6		44VH													

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K3GR8	54040	78.5VH	***	17L	10**	69L	108L	601VL	21L	4.6	6.5	4.9	9.0	2.0	9.8	33.2	54.0	1.0
K3AC1	54041	60.7VH	***	24M	9**	62M	73L	489VL	26L	4.6	6.6	3.9	7.2	2.2	8.3	33.9	54.0	1.5
K3AC2	54042	67.6VH	***	55VH	30**	72M	128M	636VL	35L	4.7	6.5	4.7	9.2	2.0	11.4	34.4	50.5	1.7
K2ME4	54043	62.8VH	***	2VL	11**	70	48	203	30	4.6	6.7	2.0	3.7	4.8	10.6	27.1	54.0	3.6
K2ME5	54044	59.2VH	***	1VL	10**	40L	78L	753L	18L	5.2	6.7	2.4	7.0	1.5	9.2	53.7	34.5	1.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K3GR8		27H													
K3AC1		60VH													
K3AC2		50VH													
K2ME4		54VH													
K2ME5		31H													

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K1RU1	54045	61.1VH	***	8VL	13**	59M	66M	503L	14L	5.1	6.7	2.0	5.3	2.9	10.3	47.7	38.0	1.1
K1RU2	54046	57.2VH	***	2VL	6**	70M	142M	748L	21L	5.1	6.6	3.2	8.3	2.1	14.0	44.8	38.0	1.1
K1RU3	54047	58.4VH	***	17L	13**	63L	168M	749L	22L	5.2	6.7	2.8	8.2	2.0	16.8	45.5	34.5	1.2
K1RU4	54048	56.4VH	***	13L	11**	88	43	216	22	4.9	6.8	1.4	3.1	7.2	11.2	34.4	44.0	3.1
K1CH1	54049	63.4VH	***	4VL	8**	141H	86M	274VL	45M	4.7	6.7	2.7	5.3	6.8	13.4	25.7	50.5	3.7

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1RU1		33H													
K1RU2		39VH													
K1RU3		29H													
K1RU4		43VH													
K1CH1		63VH													

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		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K1CH2	54050	53.9VH	***	7VL	9**	71M	111M	452L	33L	5.0	6.7	2.4	5.9	3.1	15.4	38.1	41.0	2.4
K1AC1	54051	56.9VH	***	11L	8**	69	40	64	20	4.6	6.9	1.1	2.0	8.9	16.5	16.2	54.0	4.4
K1AC2	54052	67.8VH	***	23M	7**	37L	57L	362VL	24L	4.6	6.6	2.9	5.4	1.8	8.7	33.6	54.0	1.9
K2GR1	54053	53.5VH	***	2VL	12**	73	24	101	27	5.0	7.0	0.7	1.7	11.0	11.6	29.6	41.0	6.8
K2GR3	54054	52.8VH	***	2VL	7**	73	55	110	35	4.8	6.9	1.2	2.5	7.4	17.9	21.7	47.0	6.0

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1CH2		63VH													
K1AC1		50VH													
K1AC2		35H													
K2GR1		66VH													
K2GR3		75VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2GR4	54055	51.2VH	***	2VL	16**	81	33	59	36	4.8	6.9	0.8	1.8	11.8	15.6	16.8	47.0	8.8
K2GR7	54056	69.7VH	***	16L	9**	115H	124M	396L	34L	5.1	6.7	2.1	5.5	5.3	18.3	35.7	38.0	2.7
K2CO1	54057	47.3VH	976	1VL	7**	68	23	41	36	4.8	7.0	0.6	1.4	12.7	13.9	15.0	47.0	11.5
K2CO2	54058	53.2VH	***	2VL	7**	118	47	133	58	4.8	6.8	1.4	3.0	10.0	12.7	22.0	47.0	8.3
K2CO4	54059	49.7VH	***	1VL	9**	64	42	122	41	5.0	6.9	0.9	2.2	7.4	15.7	27.7	41.0	8.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2GR4		92VH													
K2GR7		42VH													
K2CO1		77VH													
K2CO2		79VH													
K2CO4		71VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
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***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2CO5	54060	46.8VH	966	4VL	7**	77	62	256	36	4.7	6.7	2.2	4.3	4.6	11.8	29.5	50.5	3.6
K2ME1	54061	54.7VH	***	7VL	12**	96	52	155	37	4.8	6.8	1.4	3.0	8.1	14.0	25.5	47.0	5.4
K2ME3	54062	65.8VH	***	20M	10**	116H	74M	416L	31L	4.9	6.7	2.4	5.6	5.3	11.0	37.3	44.0	2.4
K1AC4	54063	47.3VH	976	14L	9**	52	26	98	20	4.8	6.9	0.8	1.7	7.7	12.1	28.1	47.0	5.1
K1AC6	54064	67.4VH	***	28H	17**	101M	68L	748L	20VL	4.6	6.5	5.4	10.1	2.6	5.5	37.1	54.0	0.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2CO5		73VH													
K2ME1		91VH													
K2ME3		41VH													
K1AC4		74VH													
K1AC6		49VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

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1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K4CH1	54065	53.3VH	***	5VL	6**	54	18	79	32	4.8	6.9	0.7	1.5	8.9	9.7	25.5	47.0	8.9
K4CH2	54066	66.1VH	***	9L	8**	69	60	180	42	4.6	6.7	2.1	3.8	4.6	13.0	23.6	54.0	4.8
K4CH3	54067	55.4VH	***	2VL	5**	78	33	93	40	4.8	6.9	1.0	2.1	9.5	13.0	22.2	47.0	8.3
K4CH4	54068	61.5VH	***	6VL	3**	43	20	53	28	4.5	6.9	0.9	1.6	7.0	10.5	16.7	58.0	7.7
K5MY1	54069	50.6VH	***	2VL	6**	61	28	53	20	5.2	7.0	0.4	1.1	13.8	20.6	23.5	34.5	7.6

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K4CH1		59VH													
K4CH2		55VH													
K4CH3		88VH													
K4CH4		67VH													
K5MY1		56VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

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1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K5MY3	54070	51.7VH	***	8L	8**	64	34	78	41	4.6	6.9	1.2	2.2	7.4	12.8	17.7	54.0	8.0
K5MY4	54071	52.3VH	***	17L	11**	67	21	44	23	4.7	7.0	0.7	1.3	12.7	13.1	16.3	50.5	7.4
K5MY6	54072	50.4VH	***	7VL	10**	40	16	40	21	4.9	7.0	0.4	0.9	10.9	14.3	21.2	44.0	9.6
K2AC1	54073	43.4VH	897	2VL	4**	26	13	40	15	5.0	7.0	0.3	0.7	9.0	14.3	27.2	41.0	8.5
K2AC3	54074	69.3VH	***	23M	12**	69M	59L	388VL	22L	4.6	6.6	3.2	5.8	3.0	8.3	33.1	54.0	1.6

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K5MY3		90VH													
K5MY4		59VH													
K5MY6		68VH													
K2AC1		58VH													
K2AC3		41VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

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A & L WESTERN LABORATORIES, INC.

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1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2AC4	54075	77.1VH	***	20M	13**	65L	77L	786L	38L	4.8	6.5	4.3	9.2	1.8	6.9	42.6	47.0	1.8
K2AC8	54076	67.9VH	***	22M	11**	66	45	128	39	4.3	6.7	2.6	4.0	4.3	9.4	16.0	66.0	4.3
K4GR1	54077	64.9VH	***	8L	8**	57	91	222	38	4.7	6.7	2.2	4.4	3.3	17.0	25.4	50.5	3.8
K4GR2	54078	60.3VH	***	3VL	8**	57	46	154	21	4.5	6.7	1.9	3.3	4.4	11.5	23.3	58.0	2.8
K4GR4	54079	52.1VH	***	7VL	7**	55	62	178	32	5.1	6.9	1.0	2.7	5.2	18.7	32.9	38.0	5.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2AC4		34H													
K2AC8		32H													
K4GR1		59VH													
K4GR2		84VH													
K4GR4		53VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

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1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K4GR6	54080	61.1VH	***	11L	9**	243	60	184	29	5.0	6.8	1.5	3.7	17.0	13.5	25.1	41.0	3.4
K6RU1	54081	62.7VH	***	15L	13**	80	42	73	24	4.8	6.9	0.9	1.9	10.6	17.9	19.0	47.0	5.5
K6RU4	54082	59.6VH	***	14L	12**	148	74	168	47	4.9	6.8	1.6	3.6	10.4	16.8	23.1	44.0	5.7
K6RU6	54083	42.9VH	888	2VL	5**	67	21	52	24	5.2	7.0	0.4	1.1	15.8	15.8	24.1	34.5	9.8
K6RU8	54084	49.1VH	***	3VL	7**	55	23	58	18	5.1	7.0	0.4	1.1	12.5	16.8	25.8	38.0	6.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K4GR6		56VH													
K6RU1		43VH													
K6RU4		44VH													
K6RU6		80VH													
K6RU8		62VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

Rogell Rogers, CCA, PCA
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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K3ME1	54085	68.8VH	***	15L	14**	86M	98L	689VL	34L	4.6	6.5	5.4	10.0	2.2	8.0	34.3	54.0	1.5
K3ME3	54086	52.6VH	***	1VL	9**	52	42	213	23	4.8	6.8	1.4	3.1	4.3	11.1	34.4	47.0	3.2
K3ME4	54087	66.0VH	***	17L	12**	72	56	247	27	4.6	6.7	2.3	4.3	4.3	10.6	28.4	54.0	2.7
K3ME5	54088	67.8VH	***	24M	15**	62M	94M	373VL	21L	4.5	6.6	4.0	6.9	2.3	11.2	27.1	58.0	1.4
K6CH1	54089	74.5VH	***	24M	13**	88	64	168	43	4.4	6.6	2.9	4.7	4.8	11.3	17.9	62.0	4.0

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K3ME1		43VH													
K3ME3		65VH													
K3ME4		60VH													
K3ME5		53VH													
K6CH1		58VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K6CH2	54090	63.8VH	***	22M	14**	41	21	59	20	4.4	6.9	1.1	1.7	6.0	10.0	16.9	62.0	5.0
K6CH3	54091	61.3VH	***	9L	11**	65	23	84	18	4.6	6.9	1.0	1.9	8.9	10.1	22.7	54.0	4.3
K6CH4	54092	57.9VH	***	14L	11**	65	29	85	28	4.8	6.9	0.8	1.8	9.3	13.4	23.6	47.0	6.7
K5AC1	54093	85.2VH	***	14L	10**	49	24	119	30	3.9	6.6	3.2	4.2	3.0	4.7	14.2	75.0	3.1
K5AC2	54094	58.3VH	***	14L	12**	70	46	244	27	4.5	6.7	2.6	4.5	4.0	8.4	27.0	58.0	2.6

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K6CH2		47VH													
K6CH3		68VH													
K6CH4		66VH													
K5AC1		31H													
K5AC2		56VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
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REPORT NUMBER: 17-293-018

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HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K5AC5	54095	56.0VH	***	15L	10**	43	28	97	21	4.8	6.9	0.8	1.7	6.4	13.5	27.9	47.0	5.2
K5AC7	54096	81.4VH	***	16L	20**	64	62	186	41	4.4	6.7	2.9	4.7	3.5	10.9	19.8	62.0	3.8
K4MY1	54097	31.4VH	657	7VL	7**	71	38	98	47	4.6	6.8	1.4	2.6	7.0	12.0	19.0	54.0	7.9
K4MY3	54098	61.6VH	***	7VL	7**	47	22	63	34	4.2	6.7	1.8	2.6	4.6	6.9	12.2	70.4	5.8
K4MY6	54099	64.9VH	***	14L	11**	51	21	42	24	4.2	6.8	1.5	2.1	6.3	8.3	10.0	70.4	4.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K5AC5		56VH													
K5AC7		21M													
K4MY1		76VH													
K4MY3		50VH													
K4MY6		48VH													

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K4MY8	54100	56.5VH	***	1VL	5**	31	18	30	18	4.5	7.0	0.6	1.1	7.3	13.8	13.6	58.0	7.3
K3CO1	54101	47.2VH	974	3VL	10**	47	39	156	23	5.0	6.9	0.9	2.2	5.4	14.4	34.7	41.0	4.5
K3CO3	54102	47.5VH	980	5VL	6**	76	59	186	39	5.1	6.9	1.1	2.9	6.8	17.0	32.4	38.0	5.8
K3CO6	54103	50.6VH	***	11L	15**	109	69	219	40	4.9	6.8	1.7	3.8	7.4	15.1	28.9	44.0	4.6
K3CO8	54104	62.7VH	***	25M	10**	72M	122M	585L	27L	5.2	6.7	2.2	6.4	2.9	15.6	45.2	34.5	1.8

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K4MY8		79VH													
K3CO1		126VH													
K3CO3		62VH													
K3CO6		78VH													
K3CO8		32H													

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

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SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K5RU1	54105	60.8VH	***	13L	10**	65	56	217	30	4.6	6.7	2.2	4.0	4.2	11.6	27.0	54.0	3.3
K5RU2	54106	60.0VH	***	13L	10**	55	48	192	27	4.8	6.8	1.4	3.0	4.6	13.1	31.5	47.0	3.9
K5RU5	54107	57.3VH	***	12L	11**	83	70	288	31	4.8	6.7	2.1	4.4	4.8	12.9	32.3	47.0	3.0
K5RU6	54108	62.0VH	***	22M	14**	46	27	60	21	4.4	6.9	1.2	1.9	6.2	11.5	15.7	62.0	4.7
K2MY1	54109	50.2VH	***	3VL	8**	57	46	147	30	4.9	6.9	1.1	2.5	5.9	15.3	29.6	44.0	5.3

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K5RU1		60VH													
K5RU2		53VH													
K5RU5		61VH													
K5RU6		50VH													
K2MY1		45VH													

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
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SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2MY2	54110	59.1VH	***	14L	9**	94	54	119	43	4.8	6.8	1.3	2.8	8.7	16.1	21.5	47.0	6.8
K2MY3	54111	65.6VH	***	18M	10**	72M	59L	334VL	18L	4.6	6.7	2.8	5.2	3.5	9.2	31.7	54.0	1.5
K2MY4	54112	51.9VH	***	17M	9**	115	78	310	50	4.9	6.7	2.1	4.8	6.1	13.4	32.1	44.0	4.5
K1GR1	54113	62.3VH	***	18M	13**	107	53	157	30	4.7	6.8	1.7	3.3	8.4	13.3	23.8	50.5	4.0
K1GR4	54114	59.4VH	***	23M	12**	79	32	169	20	4.9	6.9	1.1	2.5	8.1	10.6	33.8	44.0	3.5

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2MY2		64VH													
K2MY3		32H													
K2MY4		54VH													
K1GR1		68VH													
K1GR4		28H													

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GROWER: PO #Z10162991

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K1GR5	54115	57.7VH	***	24M	16**	57	41	207	17	4.4	6.7	2.6	4.2	3.5	8.1	24.7	62.0	1.7
K1GR7	54116	66.9VH	***	18M	10**	78M	84M	322VL	27L	4.7	6.7	2.7	5.3	3.8	13.1	30.4	50.5	2.2
K5GR1	54117	58.2VH	***	14L	32**	75	60	165	25	5.0	6.9	1.1	2.7	7.0	18.1	29.9	41.0	4.0
K5GR2	54118	59.6VH	***	20M	14**	87	42	62	24	4.9	6.9	0.8	1.8	12.6	19.7	17.6	44.0	6.0
K5GR5	54119	69.2VH	***	21M	14**	55	42	108	18	4.4	6.8	1.8	2.9	4.9	11.9	18.5	62.0	2.7

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1GR5		39VH													
K1GR7		35H													
K5GR1		71VH													
K5GR2		54VH													
K5GR5		39VH													

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K5GR6	54120	64.9VH	***	20M	12**	50	65	125	16	4.7	6.8	1.4	2.7	4.7	19.5	22.8	50.5	2.6
K5CH1	54121	61.5VH	***	13L	10**	91	74	201	39	4.9	6.8	1.6	3.6	6.5	17.0	27.8	44.0	4.7
K5CH2	54122	53.8VH	***	7VL	10**	53	23	66	17	4.7	6.9	0.7	1.5	9.2	13.0	22.4	50.5	5.0
K5CH3	54123	51.4VH	***	4VL	6**	47	21	48	13	5.2	7.0	0.3	0.9	13.3	19.2	26.6	34.5	6.4
K1ME1	54124	60.0VH	***	14L	8**	66M	107M	531L	27L	4.8	6.6	3.4	7.2	2.3	12.3	36.8	47.0	1.6

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K5GR6		30H													
K5CH1		42VH													
K5CH2		70VH													
K5CH3		69VH													
K1ME1		45VH													

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SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K1ME2	54125	59.4VH	***	17L	9**	53M	91M	428L	25L	4.8	6.7	2.8	5.9	2.3	12.7	36.2	47.0	1.8
K1ME3	54126	73.0VH	***	12L	10**	76M	110L	500VL	70M	4.5	6.5	5.4	9.3	2.1	9.8	26.9	58.0	3.3
K1ME5	54127	56.0VH	***	18M	10**	60M	103M	441VL	24L	4.7	6.6	3.4	6.7	2.3	12.7	32.9	50.5	1.6
K1ME1	54128	66.1VH	***	19M	15**	64M	37L	134VL	32L	4.0	6.6	3.8	5.1	3.2	5.9	13.1	75.0	2.8
K1ME3	54129	59.0VH	***	13L	13**	49	21	81	17	4.4	6.8	1.3	2.0	6.1	8.4	19.8	62.0	3.6

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1ME2		42VH													
K1ME3		26H													
K1ME5		54VH													
K1ME1		78VH													
K1ME3		80VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K1ME4	54130	57.7VH	***	11L	10**	66	32	49	30	4.4	6.8	1.3	2.1	7.9	12.5	11.5	62.0	6.1
K1ME5	54131	81.2VH	***	22M	18**	62M	65L	222VL	55M	4.2	6.5	4.9	6.9	2.3	7.7	16.1	70.4	3.5
K5CO1	54132	56.1VH	***	13L	8**	44	32	75	19	4.8	6.9	0.7	1.6	7.2	16.7	23.9	47.0	5.3
K5CO2	54133	53.7VH	***	7VL	7**	50	27	49	16	4.9	7.0	0.5	1.2	10.7	18.9	20.5	44.0	5.9
K5CO5	54134	51.8VH	***	16L	10**	61	33	97	28	5.0	6.9	0.7	1.8	8.9	15.6	27.6	41.0	6.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1ME4		78VH													
K1ME5		31H													
K5CO1		56VH													
K5CO2		92VH													
K5CO5		83VH													

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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K5CO6	54135	56.2VH	***	12L	9**	65	26	64	56	4.9	6.9	0.7	1.7	9.9	12.7	19.0	44.0	14.4
K1MY1	54136	65.4VH	***	30H	18**	110	59	119	52	4.4	6.7	2.6	4.2	6.7	11.6	14.2	62.0	5.4
K1MY2	54137	57.6VH	***	23M	14**	101M	132M	379VL	46M	5.0	6.7	2.4	5.8	4.4	18.6	32.5	41.0	3.4
K1MY3	54138	48.4VH	998	1VL	8**	61	40	86	31	4.8	6.9	0.9	2.0	7.9	16.6	21.7	47.0	6.8
K1MY4	54139	60.2VH	***	22M	12**	102M	124M	360VL	46M	4.8	6.6	2.9	6.2	4.2	16.5	29.1	47.0	3.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K5CO6		66VH													
K1MY1		53VH													
K1MY2		89VH													
K1MY3		89VH													
K1MY4		41VH													

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K1CO1	54140	61.5VH	***	12L	8**	97M	73M	297VL	39M	4.6	6.6	2.9	5.4	4.6	11.0	27.3	54.0	3.1
K1CO2	54141	63.6VH	***	11L	13**	106M	105M	390VL	49M	4.9	6.7	2.6	5.9	4.6	14.6	33.1	44.0	3.6
K1CO5	54142	59.3VH	***	4VL	7**	66	70	252	49	4.7	6.7	2.3	4.5	3.8	12.9	28.0	50.5	4.8
K1CO8	54143	49.2VH	***	8VL	7**	67	58	124	64	5.0	6.9	1.1	2.6	6.6	18.1	23.7	41.0	10.6
K2RU1	54144	59.4VH	***	16L	22**	81M	128M	883L	26L	5.1	6.6	3.5	9.3	2.2	11.3	47.3	38.0	1.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K1CO1		64VH													
K1CO2		79VH													
K1CO5		62VH													
K1CO8		82VH													
K2RU1		35H													

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REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

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3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K2RU2	54145	55.9VH	***	24M	10**	72M	66L	516L	34L	4.8	6.6	3.1	6.5	2.8	8.4	39.5	47.0	2.3
K2RU4	54146	49.0VH	***	2VL	7**	87	49	84	30	4.8	6.9	1.0	2.2	10.0	18.1	18.9	47.0	6.0
K2RU7	54147	53.1VH	***	16L	11**	63	56	182	28	4.8	6.8	1.5	3.1	5.2	14.8	29.1	47.0	3.9
K6ME1	54148			27H	24**	93	64	168	51	4.8	6.8	1.6	3.4	6.9	15.3	24.4	47.0	6.4
K6ME2	54149			32H	24**	136	41	184	67	4.6	6.7	2.2	4.1	8.4	8.2	22.3	54.0	7.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K2RU2		38VH													
K2RU4		57VH													
K2RU7		60VH													
K6ME1		52VH													
K6ME2		51VH													

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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
K6ME3	54150	61.7VH	***	16L	14**	82	34	63	29	4.6	6.9	1.1	2.0	10.4	13.8	15.6	54.0	6.2
K6ME4	54151	63.1VH	***	19M	17**	88	48	96	29	4.3	6.7	2.4	3.6	6.3	11.0	13.3	66.0	3.4
O5RU1	54152	80.7VH	***	17L	20**	61L	91L	295VL	41L	3.7	6.3	7.7	10.2	1.5	7.3	14.4	75.0	1.7
O5RU2	54153	70.4VH	***	20M	18**	111M	56L	212VL	24L	4.1	6.5	5.4	7.3	3.9	6.2	14.4	74.0	1.4
O5RU4	54154			20M	24**	88M	59VL	383VL	27L	3.7	6.3	8.2	11.0	2.1	4.5	17.4	75.0	1.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
K6ME3		56VH													
K6ME4		77VH													
O5RU1		16M													
O5RU2		47VH													
O5RU4		25M													

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REPORT NUMBER: 17-293-018

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GROWER: PO #Z10162991

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SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O5RU5	54155	66.1VH	***	20M	24**	77M	59L	271VL	20L	3.9	6.4	6.4	8.5	2.3	5.7	16.0	75.0	1.0
O4ME1	54156	90.1VH	***	10L	14**	61L	178L	724VL	26VL	3.9	5.7	16.0	21.4	0.7	6.8	16.9	75.0	0.5
O4ME3	54157	62.8VH	***	15L	11**	84L	190M	720VL	21VL	4.5	6.3	7.5	13.0	1.6	12.0	27.6	58.0	0.7
O4ME5	54158	62.2VH	***	19M	18**	64L	115L	720VL	23VL	4.5	6.4	6.6	11.4	1.4	8.3	31.4	58.0	0.9
O4ME6	54159	70.3VH	***	22M	22**	139M	107M	433VL	38L	4.5	6.5	4.9	8.5	4.2	10.4	25.5	58.0	1.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O5RU5		48VH													
O4ME1		15M													
O4ME3		50VH													
O4ME5		26H													
O4ME6		49VH													

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SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O4GR1	54160	64.1VH	***	13L	10**	103M	71VL	393VL	39L	4.0	6.2	8.9	11.9	2.2	4.9	16.4	75.0	1.4
O4GR3	54161	74.7VH	***	12L	10**	68	29	93	27	4.4	6.8	1.6	2.6	6.7	9.1	17.8	62.0	4.4
O4GR5	54162	80.5VH	***	6VL	8**	79	51	133	36	4.4	6.7	2.3	3.8	5.4	11.0	17.5	62.0	4.1
O4GR8	54163	74.7VH	***	13L	13**	65	52	88	13	3.9	6.6	3.3	4.4	3.8	9.8	10.1	75.0	1.3
O4MY1	54164	80.5VH	***	11L	13**	85L	112L	493VL	42L	4.0	6.0	11.3	15.1	1.4	6.1	16.3	75.0	1.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O4GR1		27H													
O4GR3		33H													
O4GR5		45VH													
O4GR8		19M													
O4MY1		22M													

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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O1GR1	54165	64.6VH	***	5VL	6**	63	23	61	15	4.1	6.7	2.0	2.8	5.8	6.8	11.0	74.0	2.4
O1GR3	54166	66.8VH	***	14L	16**	83M	43VL	233VL	25L	4.0	6.5	5.5	7.3	2.9	4.8	15.8	75.0	1.5
O1GR5	54167	69.9VH	***	16L	16**	114	46	134	32	4.6	6.8	1.7	3.2	9.1	11.8	20.8	54.0	4.4
O1GR7	54168	50.1VH	***	2VL	9**	53	30	73	18	4.4	6.8	1.3	2.2	6.2	11.2	16.8	62.0	3.7
O3AC1	54169	51.9VH	***	3VL	8**	52	22	43	23	4.3	6.8	1.2	1.8	7.2	9.6	11.7	66.0	5.5

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O1GR1		35H													
O1GR3		52VH													
O1GR5		49VH													
O1GR7		58VH													
O3AC1		56VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
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***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

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GROWER: PO #Z10162991

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O3AC4	54170	72.7VH	***	13L	9**	39	20	26	20	3.7	6.8	1.5	1.9	5.1	8.4	6.8	75.0	4.6
O3AC7	54171	46.0VH	951	8L	10**	59	32	71	36	5.0	7.0	0.6	1.6	9.6	17.0	22.5	41.0	9.9
O3AC8	54172	85.4VH	***	7VL	8**	44L	36VL	166VL	60M	3.5	6.5	4.5	6.0	1.9	5.0	13.8	75.0	4.3
O4RU1	54173	39.3VH	816	8L	9**	74	135	174	26	5.1	6.8	1.4	3.7	5.1	30.3	23.6	38.0	3.1
O4RU2	54174	67.0VH	***	32H	16**	92L	242M	1021VL	32VL	4.6	6.2	8.8	16.2	1.4	12.3	31.4	54.0	0.9

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O3AC4		26H													
O3AC7		45VH													
O3AC8		20M													
O4RU1		59VH													
O4RU2		25M													

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GROWER: PO #Z10162991

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O4RU3	54175	50.8VH	***	1VL	13**	47M	66M	341VL	17L	4.6	6.7	2.9	5.3	2.3	10.3	32.1	54.0	1.4
O4RU4	54176	46.1VH	953	18M	12**	54L	336VH	580VL	17VL	4.9	6.5	4.6	10.5	1.3	26.4	27.6	44.0	0.7
O4AC1	54177	42.1VH	872	3VL	10**	81	119	231	32	5.3	6.9	1.1	3.6	5.7	27.3	32.1	31.0	3.9
O3GR1	54178	59.5VH	***	15L	9**	65	69	197	29	4.6	6.7	2.2	4.0	4.1	14.2	24.6	54.0	3.1
O3GR3	54179	57.1VH	***	17M	11**	82M	77M	234VL	33L	4.5	6.6	3.0	5.1	4.1	12.3	22.8	58.0	2.8

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O4RU3		47VH													
O4RU4		29H													
O4AC1		55VH													
O3GR1		44VH													
O3GR3		54VH													

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O3GR4	54180	60.2VH	***	8L	11**	67	33	73	19	4.1	6.7	2.5	3.4	5.0	8.0	10.7	74.0	2.4
O3GR6	54181	60.2VH	***	5VL	6**	61	20	33	23	4.3	6.9	1.1	1.7	9.0	9.7	9.5	66.0	5.9
O2CH2	54182	79.5VH	***	8VL	12**	44M	46L	119VL	64H	3.2	6.6	4.1	5.4	2.0	7.0	10.9	75.0	5.1
O2CH5	54183	83.1VH	***	16L	14**	67L	83L	243VL	48L	3.4	6.4	6.8	9.1	1.9	7.5	13.3	75.0	2.3
O2CH6	54184	46.7VH	964	1VL	6**	61	26	31	19	4.6	6.9	0.7	1.3	11.8	16.1	11.6	54.0	6.4

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O3GR4		32H													
O3GR6		39VH													
O2CH2		20M													
O2CH5		18M													
O2CH6		57VH													

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SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O2CH7	54185	78.6VH	***	17L	14**	68	30	86	29	3.7	6.6	2.9	3.9	4.5	6.3	11.0	75.0	3.3
O2RU1	54186	48.8VH	***	2VL	8**	59	22	29	22	4.6	7.0	0.7	1.2	12.1	14.5	11.7	54.0	7.7
O2RU2	54187	64.3VH	***	11L	17**	48	20	40	13	4.3	6.9	1.1	1.6	7.7	10.2	12.5	66.0	3.6
O2RU3	54188	51.1VH	***	3VL	8**	47	24	63	17	4.3	6.8	1.4	2.1	5.8	9.5	15.3	66.0	3.5
O5GR1	54189			7VL	13**	64L	64VL	465VL	37L	4.0	6.2	9.5	12.7	1.3	4.1	18.3	75.0	1.3

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O2CH7		34H													
O2RU1		89VH													
O2RU2		43VH													
O2RU3		36VH													
O5GR1		15M													

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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

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O5GR2	54190	83.6VH	***	23M	17**	42L	61L	296VL	22L	3.6	6.4	6.5	8.7	1.2	5.7	16.9	75.0	1.1
O5GR6	54191	57.9VH	***	17M	14**	69	70	238	29	4.6	6.7	2.4	4.5	3.9	12.8	26.5	54.0	2.8
O5GR8	54192	81.5VH	***	13L	10**	36L	38VL	321VL	20L	3.7	6.4	6.3	8.4	1.1	3.7	19.1	75.0	1.0
O3ME1	54193	87.0VH	***	18M	12**	58L	64L	326VL	37L	3.5	6.3	7.4	9.8	1.5	5.4	16.5	75.0	1.6
O3ME4	54194	43.0VH	890	1VL	8**	31	15	53	9	4.2	6.8	1.2	1.7	4.7	7.1	15.5	70.4	2.3

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O5GR2		13M													
O5GR6		33H													
O5GR8		14M													
O3ME1		23M													
O3ME4		31H													

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O3ME7	54195	71.8VH	***	10L	13**	96	25	41	22	3.9	6.7	2.3	3.0	8.1	6.8	6.8	75.0	3.2
O3ME8	54196	51.0VH	***	1VL	9**	51	36	176	27	4.6	6.8	1.7	3.1	4.2	9.5	28.5	54.0	3.8
O6MY1	54197	76.4VH	***	21M	15**	68M	38VL	246VL	33L	3.8	6.5	5.6	7.4	2.3	4.2	16.5	75.0	1.9
O6MY2	54198	86.2VH	***	11L	10**	84M	29VL	140VL	37M	3.2	6.6	3.9	5.3	4.1	4.5	13.3	75.0	3.1
O6MY3	54199	67.2VH	***	6VL	9**	71	21	46	19	4.1	6.7	1.9	2.6	7.1	6.7	9.0	74.0	3.2

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O3ME7		27H													
O3ME8		89VH													
O6MY1		22M													
O6MY2		27H													
O6MY3		55VH													

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		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O6MY6	54200	84.0VH	***	8VL	10**	65M	54L	245VL	41L	3.6	6.4	6.0	8.1	2.1	5.6	15.1	75.0	2.2
O5ME1	54201	81.1VH	***	29H	20**	95L	82L	432VL	44L	3.7	6.2	9.8	13.1	1.9	5.1	16.5	75.0	1.5
O5ME2	54202	84.3VH	***	10L	10**	50L	62VL	402VL	26L	3.5	6.3	8.3	11.0	1.2	4.6	18.2	75.0	1.0
O5ME5	54203	85.2VH	***	10L	10**	50M	48L	143VL	37L	3.2	6.6	4.2	5.6	2.3	7.1	12.8	75.0	2.9
O5ME7	54204	63.8VH	***	11L	13**	78M	44L	199VL	23L	3.7	6.5	5.0	6.6	3.0	5.5	15.0	75.0	1.5

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O6MY6		24M													
O5ME1		38VH													
O5ME2		19M													
O5ME5		19M													
O5ME7		34H													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-293-018

CLIENT NO: 9999-D

SEND TO: DR. NICOLE HYNSON
3190 MAILE WAY RM 101
HONOLULU, HI 96822-

SUBMITTED BY: DR. CAMERON EGAN

GROWER: PO #Z10162991

DATE OF REPORT: 10/27/17

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
O6ME1	54205	82.1VH	***	9L	11**	84M	49L	231VL	30L	3.6	6.4	5.7	7.6	2.8	5.3	15.2	75.0	1.7
O6ME2	54206			9L	12**	77M	50L	101VL	32L	3.9	6.6	3.8	5.0	3.9	8.2	10.1	75.0	2.8
O6ME3	54207			9L	10**	37	21	163	26	3.2	6.6	3.6	4.8	2.0	3.6	17.0	75.0	2.4
O6ME8	54208			7VL	9**	90M	45L	217VL	35L	3.9	6.5	5.5	7.3	3.1	5.0	14.8	75.0	2.1

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
O6ME1		20M													
O6ME2		54VH													
O6ME3		15M													
O6ME8		47VH													

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
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MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.