FORM
27
Rev 6/99

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

FOR OGCC USE ONLY
Received 01/08/15
REM 8859
Document 2313616

OGCC Employee:
☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV
Tracking No:

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☑ Other (describe): 1/2 Buried Tank Removal

OGCC Operator Number: 10489A
Name of Operator: Augustus Energy Resources LLC
Address: P. O. Box 250
City: Wray, State: CO Zip: 80758

Contact Name and Telephone:
Loni Davis
No: 970-332-3585
Fax: 970-332-3587

API Number: 05-125-08374 County: Yuma
Facility Name: Facility Number:
Well Name: Dresen Well Number: 01-29
Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSW/4 Sec. 29 T4N-R47W, 6th pm Latitude: 40.27840 Longitude: -102.66150

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced Water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☑ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Pasture, Dryland and Irrigation

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: 5: Ascalon Fine Sandy loam 0-3% Slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): NA

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	NA	Soil Analysis
☑ Vegetation	NA	Soil Analysis
☐ Groundwater		
☐ Surface Water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

After removal of the 1/2 Buried produced water tank, we sampled the soil under the tank and the background area. Per the soil analysis the EC and PH levels fell within the COGCC Table 910-1 guidelines. The SAR was slightly higher than levels within COGCC table 910-1. Sample of analysis is attached for your review.

Describe how source is to be removed:

NA

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

NA

Submit Page 2 with Page 1

FORM 27 Rev 6/99

Page 2

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Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The Tank hole was treated with approx. 150 lbs of Agricultural Gypsum, then approx. 3' of clean fill dirt was added to the opening, the location was leveled, stitched and strawed.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☑ Y ☐ N If yes, describe:

We will continue to monitor the location for regrowth and take necessary measures to prevent erosion until location is farmed and crop is growing.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 11/24/14	Date Site Investigation Completed: 11/29/14	Date Remediation Plan Submitted: 12/23/14
Remediation Start Date: 12/08/14	Anticipated Completion Date: 12/08/14	Actual Completion Date:

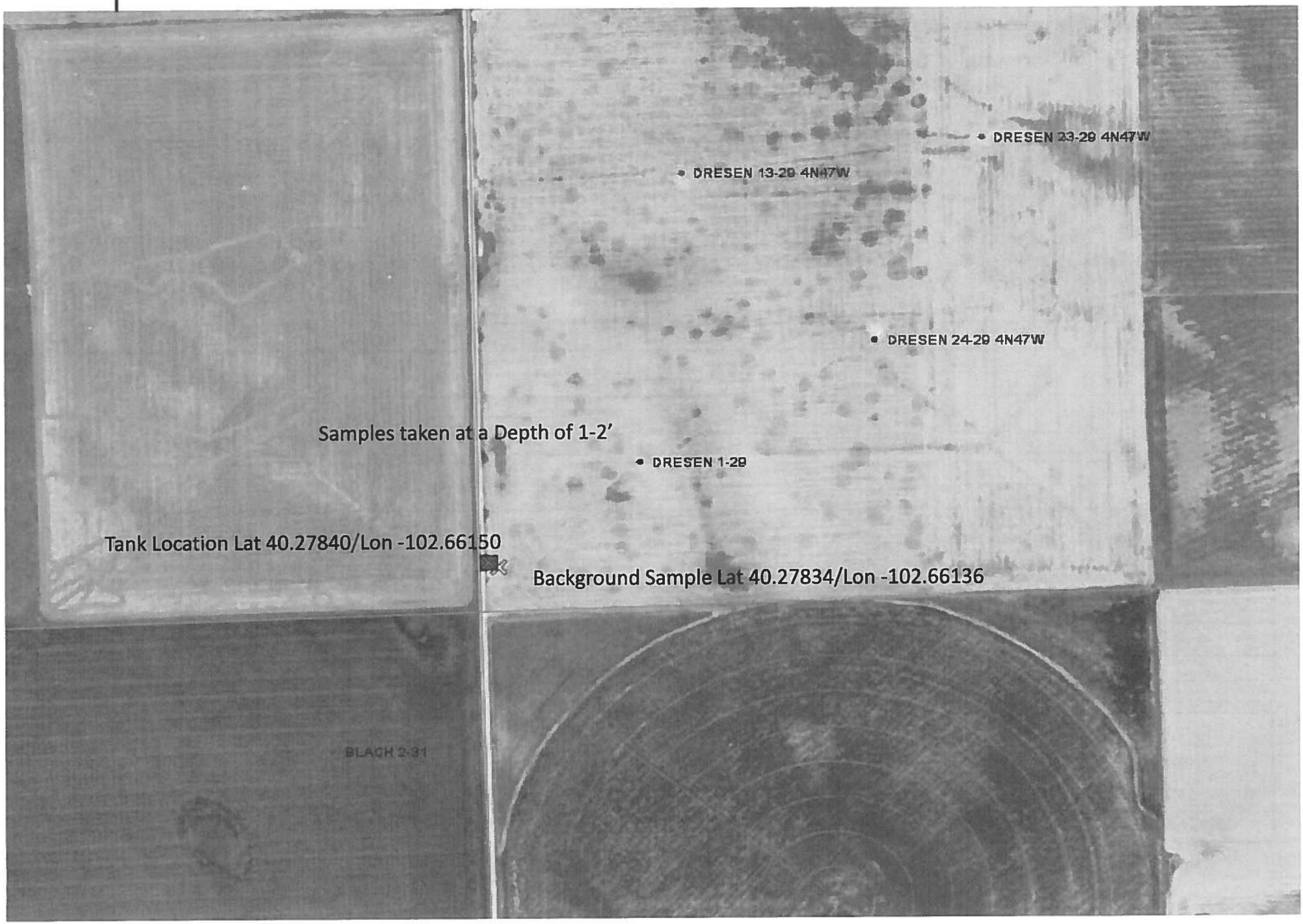
I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Loni J. Davis Signed: Loni J Davis

Title: Operations Accounting and Regulatory Specialist Date: 12/23/14

OGCC Approved: Ann C. Eckman PG for Rob Young Title: EPS NE CO Date: 2/08/2015

Dresen 01-29 4N47W Tank Pull



SOIL ANALYSIS REPORT

CLIENT:	AUGUSTUS ENERGY RESOURCES LLC 36695 HWY 385 PO BOX 250 WRAY, CO 80758
18250	

Servi-Tech Laboratories
www.servitechlabs.com

1816 E. Wyatt Earp
PO Box 1397
Dodge City, KS 67801
800.557.7509
620.227.7123
Fax 620.227.2047

LAB NO:	34919 - 34920
INVOICE NO:	195364
DATE RECEIVED:	12/11/2014
DATE REPORTED:	12/19/2014

SOIL ANALYSIS RESULTS FOR: DRESEN **FIELD IDENTIFICATION:** 01-29

METHOD USED:			1:1 Water-Soil		1:1 Water-Soil						Ammonium Acetate		Ammonium Acetate						
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter			Phosphorus ppm P	Potassium ppm K		Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
34919	TANK PULL	0 - 48	8.7		0.67	Hi					362		3399	197	556					
34920	BACKGROUND	0 - 48	8.3		0.24	Hi					233		3629	254	15					

METHOD USED:			Sat. Paste																	
Lab Number	Sample ID	Sample Depth	Saturation % Sat	Soil pH	Electrical Conductivity mmho/cm	Potassium mg/L K	Sulfur mg/L S	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Carbonate mg/L CO3	Bicarbonate mg/L HCO3	Chloride mg/L Cl	Boron mg/L B	Sodium Adsorption Ratio	Cation:Anion				
34919	TANK PULL	0 - 48	34	7.9	2.48	30	168	57	10.3	532	<10	280	350	1.21	17.0	27.6 / 25.3				
34920	BACKGROUND	0 - 48	44	7.9	0.37	12	4	51	9.0	10	<10	170	17	0.05	0.3	4.0 / 3.5				

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to:			N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl
				6.0	6.5	7.0											
34919	TANK PULL																
34920	BACKGROUND																

Cation Exchange Capacity

CEC	%H	%K	%Ca	%Mg	%Na
22	0	4	77	7	11
21	0	3	87	10	0

SPECIAL COMMENTS AND SUGGESTIONS:

Lab Number(s):34919

WARNING: Soil sodium (% Na) is high. Typical symptoms of a sodium problem are soil sealing, crusting, and poor water penetration. Applying gypsum may be beneficial, but additional soil analysis may be required to determine the rate. If irrigated, water analysis can help identify the sodium source. Contact the laboratory for more information.

Lab Number(s):34919, 34920

Servi-Tech Laboratory fertilizer recommendations were not requested.

Lab Number(s):34919, 34920

CEC calculated by cation summation may overestimate true CEC and underestimate exchangeable sodium percentage (ESP) in soils containing excess lime.

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Steve Harrold, Technical Coordinator

12/19/2014 3:18 pm

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1816 E. Wyatt Earp • PO Box 1397 • Dodge City, KS 67801
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Phone: 620.227.7123
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Fax: 620.227.2047

Lab No.: 34919

SOIL ANALYSIS RESULTS

Date Reported: 12/19/2014

Send To: 18250	AUGUSTUS ENERGY RESOURCES LLC 36695 HWY 385 PO BOX 250 WRAY, CO 80758

Steve Harrold
Technical Coordinator

Results For:	DRESEN	**Invoice No.:**	195364
Sample Identification:	TANK PULL	**Date Received:**	12/11/2014
Sample Depth:	0-48"	**Field ID**	01-29

Exchangable:	ppm	%		
Calcium, Ca	3399	77	Cation Exchange Capacity, CEC meq/100g	22
Magnesium, Mg	197	7	Soil pH - 1:1	8.7
Potassium, K	362	4	Soil pH - Saturated Paste	7.9
Sodium, Na	556	11	Soluble Salts, mmho/cm	0.67
Excess Lime Rating		HIGH	Exchangable Sodium Percent, ESP	11

Extractable (from saturated paste, based on 34% water saturation):

	mg/L	meq/L
Calcium (Ca)	57	2.8
Magnesium (Mg)	10.3	0.8
Sodium (Na)	532	23.1
Chloride (Cl)	350	9.9
Sulfur (S)	168	10.5
Boron (B)	1.21	
Potassium (K)	30	0.8
Bicarbonate (HCO3)	280	4.6
Carbonate (CO3)	<10	<0.3
Sodium Adsorption Ratio (SAR)	17.0	
Electrical Conductivity (ECe), mmho/cm	2.48	
Cation:Anion	27.6 / 25.3	

Calculated Gypsum Recomendation (from ESP and CEC)

Soil Texture		Gypsum Rec. T/A		
COARSE	(sands, loamy sands, sandy loams)	0.0	To	0.0
MEDIUM	(loams, silt loams, clay loams)	0.0	To	0.9
FINE	(silty clay, clay loams, clays)	1.4	To	2.4

This soil is considered: NON-SALINE/NON-SODIC

GYPSUM SUGGESTIONS: If soil has good internal drainage, full gypsum rate can be used to reclaim the affected area, but keep applications below 2 to 3 tons in a single year. Reclamation may not be feasible if a high water table is present, but applying 1/2 to 1 ton of gypsum every one to two years may help prevent crusting and surface "sealing".

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SOIL ANALYSIS RESULTS

Date Reported: 12/19/2014

Send To: 18250	AUGUSTUS ENERGY RESOURCES LLC 36695 HWY 385 PO BOX 250 WRAY, CO 80758		Steve Harrold Technical Coordinator
Results For:	DRESEN	**Invoice No.:**	195364
Sample Identification:	TANK PULL	**Date Received:**	12/11/2014
Sample Depth:	0-48"	**Field ID**	01-29

SOIL PERMEABILITY HAZARD (based on ESP and SAR):

Soil texture	Potential hazard
COARSE (sands, loamy sands, sandy loams)	LOW
MEDIUM (loams, silt loams, clay loams)	CAUTION
FINE (silty clay loams, clays)	HIGH

SOIL SALINITY: Saline soils can be managed by choosing tolerant crops, keeping the seedbed moist until crop establishment, and/or irrigating with relatively good quality irrigation water. Good internal soil drainage is needed to reclaim saline areas, so lowering water tables may be necessary. Test soil (and water) annually to monitor changes in salinity levels.

SOIL SALINITY HAZARD (based on extractable salts, ECe):

Crop type	Potential hazard
SALT SENSITIVE (onions, carrots, many ornamentals,many fruit crops, etc.)	HIGH
MODERATELY SENSITIVE (seedling alfalfa, corn, soybeans, many vegetables, etc.)	CAUTION
MODERATELY TOLERANT (wheat, wheatgrass, sudangrass, sorghum, fescue, oats, bromegrass, etc.)	LOW
SALT TOLERANT (barley, bermudagrass, sugarbeets,cotton, etc.)	LOW

CHLORIDE: Excess soil chloride may cause toxicity symptoms in sensitive plants. Toxicity should be verified by plant tissue analysis. High chloride soils can be managed by choosing tolerant crops, keeping the seed bed moist until crop establishment, and/or by irrigating with relatively good quality irrigation water.

EXTRACTABLE CHLORIDE HAZARD (based on soil extractable chloride, Cl):

HIGH for chloride sensitive crops (includes berries, fruit trees, grapes, citrus, etc.)
LOW for moderately tolerant crops (includes alfalfa, beans, rice, sorghum, etc.)
LOW for chloride tolerant crops (includes wheat, flax, tomato, cotton, barley, corn, beets, etc.)

BORON: Excess soil boron may cause toxicity symptoms in sensitive plants. Toxicity should be verified by plant tissue analysis. If toxicity is a problem, choose boron tolerant crops and/or irrigate with relatively good quality irrigation water.

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SOIL ANALYSIS RESULTS

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Send To: 18250	AUGUSTUS ENERGY RESOURCES LLC 36695 HWY 385 PO BOX 250 WRAY, CO 80758		Steve Harrold Technical Coordinator
Results For:	DRESEN	**Invoice No.:**	195364
Sample Identification:	TANK PULL	**Date Received:**	12/11/2014
Sample Depth:	0-48"	**Field ID**	01-29

EXTRACTABLE BORON HAZARD (based on soil extractable boron, B):

Crop type	Potential hazard
BORON SENSITIVE (such as sunflower, barley, onions, citrus, fruit trees, grapes, etc.)	HIGH
MODERATELY SENSITIVE (such as potatoes, peppers, peas, radishes, etc.)	CAUTION
MODERATELY TOLERANT (such as wheat, corn, oats, clover, lettuce, turnips, celery, etc.)	LOW
BORON TOLERANT (such as alfalfa, beets, cotton, grain sorghum, tomatoes, vetch, etc.)	LOW

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Lab No.: 34920

SOIL ANALYSIS RESULTS

Date Reported: 12/19/2014

Send To: 18250	AUGUSTUS ENERGY RESOURCES LLC 36695 HWY 385 PO BOX 250 WRAY, CO 80758

Steve Harrold
Technical Coordinator

Results For:	DRESEN	**Invoice No.:**	195364
Sample Identification:	BACKGROUND	**Date Received:**	12/11/2014
Sample Depth:	0-48"	**Field ID**	01-29

Exchangable:

	ppm	%		
Calcium, Ca	3629	87	Cation Exchange Capacity, CEC meq/100g	21
Magnesium, Mg	254	10	Soil pH - 1:1	8.3
Potassium, K	233	3	Soil pH - Saturated Paste	7.9
Sodium, Na	15	0	Soluble Salts, mmho/cm	0.24
Excess Lime Rating		HIGH	Exchangable Sodium Percent, ESP	0

Extractable (from saturated paste, based on 44% water saturation):

	mg/L	meq/L
Calcium (Ca)	51	2.5
Magnesium (Mg)	9.0	0.7
Sodium (Na)	10	0.4
Chloride (Cl)	17	0.5
Sulfur (S)	4	0.2
Boron (B)	0.05	
Potassium (K)	12	0.3
Bicarbonate (HCO3)	170	2.8
Carbonate (CO3)	<10	<0.3

Sodium Adsorption Ratio (SAR)	0.3
Electrical Conductivity (ECe), mmho/cm	0.37
Cation:Anion	4.0 / 3.5

Calculated Gypsum Recomendation (from ESP and CEC)

Soil Texture		Gypsum Rec. T/A		
COARSE	(sands, loamy sands, sandy loams)	0.0	To	0.0
MEDIUM	(loams, silt loams, clay loams)	0.0	To	0.0
FINE	(silty clay, clay loams, clays)	0.0	To	0.0

This soil is considered: NON-SALINE/NON-SODIC

SOIL PERMEABILITY HAZARD (based on ESP and SAR):

Soil texture	Potential hazard
COARSE (sands, loamy sands, sandy loams)	LOW
MEDIUM (loams, silt loams, clay loams)	LOW
FINE (silty clay loams, clays)	LOW

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SOIL ANALYSIS RESULTS

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Technical Coordinator

Results For:	DRESEN	**Invoice No.:**	195364
Sample Identification:	BACKGROUND	**Date Received:**	12/11/2014
Sample Depth:	0-48"	**Field ID**	01-29

SOIL SALINITY HAZARD (based on extractable salts, ECe):

Crop type	Potential hazard
SALT SENSITIVE (onions, carrots, many ornamentals,many fruit crops, etc.)	LOW
MODERATELY SENSITIVE (seedling alfalfa, corn, soybeans, many vegetables, etc.)	LOW
MODERATELY TOLERANT (wheat, wheatgrass, sudangrass, sorghum, fescue, oats, bromegrass, etc.)	LOW
SALT TOLERANT (barley, bermudagrass, sugarbeets,cotton, etc.)	LOW

EXTRACTABLE CHLORIDE HAZARD (based on soil extractable chloride, Cl):

LOW for chloride sensitive crops (includes berries, fruit trees, grapes, citrus, etc.)
LOW for moderately tolerant crops (includes alfalfa, beans, rice, sorghum, etc.)
LOW for chloride tolerant crops (includes wheat, flax, tomato, cotton, barley, corn, beets, etc.)

EXTRACTABLE BORON HAZARD (based on soil extractable boron, B):

Crop type	Potential hazard
BORON SENSITIVE (such as sunflower, barley, onions, citrus, fruit trees, grapes, etc.)	LOW
MODERATELY SENSITIVE (such as potatoes, peppers, peas, radishes, etc.)	LOW
MODERATELY TOLERANT (such as wheat, corn, oats, clover, lettuce, turnips, celery, etc.)	LOW
BORON TOLERANT (such as alfalfa, beets, cotton, grain sorghum, tomatoes, vetch, etc.)	LOW