NM1 - ___66_____

Operational Infrastructure and Cell E-1 Construction Certification Report

3 of 4

July 2022

APPENDIX E:
SUBMITTALS

February 24, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #1 - #5 – Solmax HDPE Series, 60-mil Black Textured, Manufacturer's Quality Control Certificate and Conformance Testing.

Submitted Date: 2/11/22 – 2/15/22

Information Submitted:

SCS Engineers have received material submittal for the textured 60-mil HDPE geomembrane specified for this project. The material submitted for approval is the Solmax HDPE Series, 60-mil Black Textured. We have received the manufacturers quality control (MQC) testing results and certificates from Solmax and conformance testing results from TRI Environmental for the 115 rolls of geomembrane to be delivered to the subject project from Solmax.

SCS Response:

SCS has reviewed the testing results as compared to the minimum requirements stated in the project CQA Plan Table 5A and 5B and found the material Solmax product and the rolls produced for this project have met the minimum material requirements and it is approved for use on this project.

copy:

February 8, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

Greetings:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	69755
Material(s) Tested:	Two, Solmax 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203894
TRI Log #: 69755

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	62	61	63	61	62	62	61	60	60	60	**61** **60**	1 << min
Density (ASTM D 1505)												
Density (g/cm3)	0.943	0.943	0.944								**0.943**	0.001
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.27	2.30									**2.29**	0.02
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	166	171	173	182	165						**171**	7
TD Yield Strength (ppi)	171	178	178	168	177						**174**	5
MD Break Strength (ppi)	235	193	238	258	256						**236**	26
TD Break Strength (ppi)	224	206	204	213	225						**214**	10
MD Yield Elongation (%)	15	17	18	16	18						**17**	1
TD Yield Elongation (%)	17	14	16	15	18						**16**	2
MD Break Elongation (%)	621	495	619	631	681						**609**	69
TD Break Elongation (%)	636	544	555	584	607						**585**	38
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	140	146	143	139	142						**142**	3
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	54	52	54	55	55	54	55	56	52	51	**54**	2
TD Tear Strength (lbs)	58	60	57	58	57	58	60	58	55	56	**58**	2

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203901
TRI Log #: 69755

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Thickness (ASTM D 5994)												
Thickness (mils)	60	60	63	62	62	63	61	62	60	61	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.944	0.944	0.944								**0.944**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.34	2.41									**2.38**	0.05
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	161	176	176	181	168						**172**	8
TD Yield Strength (ppi)	163	183	181	183	182						**178**	9
MD Break Strength (ppi)	252	210	232	270	209						**235**	27
TD Break Strength (ppi)	214	213	161	201	210						**200**	22
MD Yield Elongation (%)	18	17	18	17	17						**17**	1
TD Yield Elongation (%)	16	16	16	17	17						**16**	1
MD Break Elongation (%)	678	505	587	660	540						**594**	75
TD Break Elongation (%)	632	556	406	521	561						**535**	83
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	139	135	138	138	137						**138**	1
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	55	53	57	56	53	55	55	57	48	48	**54**	3
TD Tear Strength (lbs)	59	56	58	53	61	57	57	63	57	51	**57**	4

MD Machine Direction TD Transverse Direction

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February 10, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

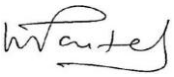
Greetings:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	69788
Material(s) Tested:	Eight, Solmaxr 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,



Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203910
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	60	60	61	60	62	62	62	62	62	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.946	0.946	0.946								**0.946**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.26	2.35									**2.31**	0.06
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	162	184	177	178	173						**175**	8
TD Yield Strength (ppi)	173	184	185	186	187						**183**	6
MD Break Strength (ppi)	239	231	216	236	228						**230**	9
TD Break Strength (ppi)	225	128	198	215	210						**195**	39
MD Yield Elongation (%)	17	18	18	18	18						**18**	0
TD Yield Elongation (%)	16	15	16	17	17						**16**	1
MD Break Elongation (%)	654	573	546	598	585						**591**	40
TD Break Elongation (%)	640	91	538	598	561						**486**	224
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	150	146	154	143	150						**149**	4
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	58	57	58	60	57	61	61	60	53	53	**58**	3
TD Tear Strength (lbs)	61	62	61	63	62	53	58	63	59	57	**60**	3

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203918
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	60	62	60	60	61	62	61	61	62	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.51	2.50									**2.51**	0.01
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	178	169	169	173	155						**169**	9
TD Yield Strength (ppi)	158	176	180	176	169						**172**	9
MD Break Strength (ppi)	201	245	219	227	249						**228**	20
TD Break Strength (ppi)	213	207	192	208	201						**204**	8
MD Yield Elongation (%)	19	19	18	19	19						**19**	0
TD Yield Elongation (%)	16	16	16	16	16						**16**	0
MD Break Elongation (%)	480	622	549	553	692						**579**	81
TD Break Elongation (%)	631	560	501	571	544						**561**	47
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	135	146	146	134	145						**141**	6
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	55	57	54	56	56	56	54	55	50	49	**54**	3
TD Tear Strength (lbs)	54	59	58	59	58	55	57	57	52	52	**56**	3

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203927
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	61	62	61	60	61	63	63	60	62	61	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.11	2.11									**2.11**	0.00
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	170	188	181	175	179						**179**	7
TD Yield Strength (ppi)	177	188	187	174	182						**182**	6
MD Break Strength (ppi)	240	239	260	210	254						**241**	19
TD Break Strength (ppi)	191	198	213	217	219						**208**	12
MD Yield Elongation (%)	17	20	19	19	18						**19**	1
TD Yield Elongation (%)	16	16	16	14	18						**16**	1
MD Break Elongation (%)	637	596	651	543	648						**615**	46
TD Break Elongation (%)	556	541	585	612	608						**580**	31
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	149	142	140	142	145						**143**	3
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	56	54	54	52	58	58	64	60	55	53	**56**	4
TD Tear Strength (lbs)	59	60	58	62	64	63	65	63	57	56	**61**	3

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203935
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	61	62	62	62	60	60	61	61	60	60	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.944	0.944	0.944								**0.944**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.30	2.27									**2.29**	0.02
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	167	171	176	179	160						**171**	8
TD Yield Strength (ppi)	164	178	175	184	178						**176**	7
MD Break Strength (ppi)	241	238	203	254	228						**233**	19
TD Break Strength (ppi)	194	184	207	134	212						**186**	31
MD Yield Elongation (%)	18	20	19	18	18						**19**	1
TD Yield Elongation (%)	16	15	16	16	18						**16**	1
MD Break Elongation (%)	628	613	490	625	647						**601**	63
TD Break Elongation (%)	569	482	572	284	577						**497**	125
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	142	140	143	145	139						**142**	2
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	60	56	57	57	65	61	61	61	53	54	**58**	4
TD Tear Strength (lbs)	58	53	61	59	56	61	61	61	56	58	**59**	3

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203942
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	63	62	60	60	67	62	59	61	61	61	**61**	2
											59	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.51	2.48									**2.50**	0.02
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	175	173	172	177	162						**172**	6
TD Yield Strength (ppi)	170	180	184	178	181						**179**	5
MD Break Strength (ppi)	270	249	216	254	237						**245**	20
TD Break Strength (ppi)	191	207	191	127	211						**185**	34
MD Yield Elongation (%)	17	19	18	18	18						**18**	1
TD Yield Elongation (%)	15	15	16	16	16						**16**	1
MD Break Elongation (%)	682	634	555	629	649						**630**	47
TD Break Elongation (%)	541	542	511	46	578						**444**	224
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	144	141	142	145	142						**143**	2
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	53	54	56	60	54	57	57	58	54	52	**56**	3
TD Tear Strength (lbs)	59	58	56	60	58	57	61	58	52	54	**57**	3

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203951
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	61	61	61	60	61	60	61	62	63	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.05	2.14									**2.10**	0.06
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	170	182	175	186	186						**180**	7
TD Yield Strength (ppi)	177	190	190	187	191						**187**	6
MD Break Strength (ppi)	210	210	237	256	230						**229**	19
TD Break Strength (ppi)	210	193	187	217	197						**201**	12
MD Yield Elongation (%)	18	20	18	21	17						**19**	2
TD Yield Elongation (%)	16	16	16	16	17						**16**	0
MD Break Elongation (%)	552	518	630	642	558						**580**	54
TD Break Elongation (%)	599	508	472	595	534						**542**	55
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	141	139	143	142	138						**141**	2
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	57	58	57	56	55	59	58	63	54	54	**57**	3
TD Tear Strength (lbs)	61	61	63	65	58	62	59	69	56	58	**61**	4

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203959
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	62	62	61	61	62	61	63	62	61	**62**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.948	0.948	0.948								**0.948**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.26	2.42									**2.34**	0.11
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	181	188	183	189	166						**181**	9
TD Yield Strength (ppi)	187	188	183	183	174						**183**	6
MD Break Strength (ppi)	250	269	204	224	248						**239**	25
TD Break Strength (ppi)	250	204	206	143	225						**206**	40
MD Yield Elongation (%)	18	22	18	18	17						**19**	2
TD Yield Elongation (%)	16	16	16	14	17						**16**	1
MD Break Elongation (%)	614	662	484	517	671						**590**	85
TD Break Elongation (%)	668	547	557	124	643						**508**	221
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	139	140	138	144	135						**139**	3
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	58	54	58	55	54	59	61	63	54	52	**57**	4
TD Tear Strength (lbs)	61	61	65	66	60	63	57	66	55	57	**61**	4

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmaxr 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203968
TRI Log #: 69788

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	61	60	62	61	62	62	60	61	61	60	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.947	0.947								**0.947**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.33	2.41									**2.37**	0.06
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	180	179	179	186	164						**178**	8
TD Yield Strength (ppi)	170	186	188	181	192						**183**	8
MD Break Strength (ppi)	229	234	226	242	221						**230**	8
TD Break Strength (ppi)	228	184	217	201	193						**205**	18
MD Yield Elongation (%)	18	19	18	19	18						**18**	1
TD Yield Elongation (%)	15	15	15	14	18						**15**	2
MD Break Elongation (%)	589	602	588	597	606						**596**	8
TD Break Elongation (%)	664	485	591	562	514						**563**	70
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	139	136	143	140	141						**140**	2
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	57	54	57	56	58	53	56	55	48	50	**54**	3
TD Tear Strength (lbs)	57	54	60	53	63	61	57	65	55	55	**58**	4

MD Machine Direction TD Transverse Direction

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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February 8, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

Greetings:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	69813
Material(s) Tested:	Two, Solmax 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203976
TRI Log #: 69813

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	61	60	65	66	60	60	60	61	61	60	**61** **60**	2 << min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.946	0.946								**0.946**	0.001
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.53	2.65									**2.59**	0.08
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	160	179	180	175	167						**172**	9
TD Yield Strength (ppi)	159	172	188	176	183						**176**	11
MD Break Strength (ppi)	232	226	219	259	250						**237**	17
TD Break Strength (ppi)	217	182	143	211	248						**200**	40
MD Yield Elongation (%)	18	21	20	20	18						**19**	1
TD Yield Elongation (%)	16	15	18	17	18						**17**	1
MD Break Elongation (%)	643	565	549	660	649						**613**	52
TD Break Elongation (%)	650	487	313	592	668						**542**	146
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	142	145	142	143	144						**143**	1
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	60	57	54	55	53	51	49	60	58	57	**55**	4
TD Tear Strength (lbs)	60	55	54	58	61	52	50	57	54	58	**56**	4

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-203985
TRI Log #: 69813

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	60	61	61	60	60	64	60	61	61	**61**	1
											60	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.946	0.946								**0.946**	0.001
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.38	2.42									**2.40**	0.03
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	161	173	169	179	157						**168**	9
TD Yield Strength (ppi)	160	180	176	176	177						**174**	8
MD Break Strength (ppi)	245	259	264	237	260						**253**	11
TD Break Strength (ppi)	225	199	189	215	209						**207**	14
MD Yield Elongation (%)	18	22	18	20	18						**19**	2
TD Yield Elongation (%)	16	17	17	17	17						**17**	0
MD Break Elongation (%)	657	663	685	594	713						**662**	44
TD Break Elongation (%)	666	542	507	594	573						**576**	60
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	143	145	145	142	139						**143**	2
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	54	57	57	55	53	48	49	55	55	54	**54**	3
TD Tear Strength (lbs)	57	56	54	56	61	54	53	56	60	57	**56**	3

MD Machine Direction TD Transverse Direction

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February 9, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

Greetings:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	69910
Material(s) Tested:	One, Solmax 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOMEMBRANE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 60 mil Textured HDPE Geomembrane
Sample Identification: 0102-204020
TRI Log #: 69910

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Thickness (ASTM D 5994)												
Thickness (mils)	60	59	60	60	60	62	62	62	61	61	**61**	1
											59	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.938	0.938	0.938								**0.938**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.93	2.98									**2.96**	0.04
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	171	182	176	189	175						**179**	7
TD Yield Strength (ppi)	175	184	184	188	175						**181**	6
MD Break Strength (ppi)	263	199	249	261	211						**237**	30
TD Break Strength (ppi)	209	184	196	198	192						**196**	9
MD Yield Elongation (%)	17	18	17	19	16						**17**	1
TD Yield Elongation (%)	16	15	14	18	15						**16**	2
MD Break Elongation (%)	680	473	632	634	524						**589**	86
TD Break Elongation (%)	582	459	509	511	514						**515**	44
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	149	140	138	142	139						**142**	4
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	55	55	58	57	55	56	60	64	51	52	**56**	4
TD Tear Strength (lbs)	57	58	68	59	62	60	62	64	63	59	**61**	3

MD Machine Direction TD Transverse Direction

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SOLMAX

LIST OF GEOMEMBRANE ROLLS

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1101547-20907-1							
HDPE 60 mils / 1.50 mm Black Textured			**1.0**	**> 0.932**	**100**		**500**
0102-203893	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203894	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203895	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203896	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203897	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203898	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203899	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203900	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203901	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203902	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203903	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203904	21K1057	2022-01-21	0.06	0.938	213		>500 Certified 0102-203842
0102-203905	21k1068	2022-01-21	0.06	0.938	189		>500 Certified 0102-203907
0102-203906	21k1068	2022-01-21	0.06	0.938	189		>500 Certified 0102-203907
0102-203907	21k1068	2022-01-21	0.06	0.938	189		>500 Certified 0102-203907

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

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LIST OF GEOMEMBRANE ROLLS

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203908	21k1068	2022-01-21	0.06	0.938	189		>500 Certified 0102-203907
0102-203909	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203910	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203911	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203912	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203914	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203915	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203916	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203917	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203918	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203919	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203920	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203921	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203922	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203923	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203924	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203925	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203926	21k1068	2022-01-22	0.06	0.938	189		>500 Certified 0102-203907
0102-203927	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203929	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

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LIST OF GEOMEMBRANE ROLLS

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203930	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203931	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203932	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203933	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203934	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203935	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203936	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203937	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203938	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203939	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203940	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203941	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203942	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203943	21k1068	2022-01-23	0.06	0.938	189		>500 Certified 0102-203907
0102-203944	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203945	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203946	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203947	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203948	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203949	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907

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LIST OF GEOMEMBRANE ROLLS



PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203950	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203951	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203952	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203953	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203954	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203955	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203956	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203957	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203958	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203959	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203960	21k1068	2022-01-24	0.06	0.938	189		>500 Certified 0102-203907
0102-203961	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203962	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203963	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203964	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203966	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203967	21k1068	2022-01-25	0.06	0.938	189		>500 Certified 0102-203907
0102-203968	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203969	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203970	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203971	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203972	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203973	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203974	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203975	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203976	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203977	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203978	21L1070	2022-01-25	0.07	0.939	185		>500 Certified 0102-203970
0102-203979	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203980	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203981	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203982	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203983	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203984	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203985	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203986	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203987	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203988	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203989	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203990	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970

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LIST OF GEOMEMBRANE ROLLS

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203991	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203992	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203993	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203994	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203995	21L1070	2022-01-26	0.07	0.939	185		>500 Certified 0102-203970
0102-203996	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-203997	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-203998	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-203999	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204000	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204001	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204002	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204003	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204004	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204005	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204006	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204007	21L1070	2022-01-27	0.07	0.939	185		>500 Certified 0102-203970
0102-204018	21L1070	2022-01-29	0.07	0.939	185		>500 Certified 0102-203970
0102-204019	21L1070	2022-01-29	0.07	0.939	185		>500 Certified 0102-203970
0102-204020	21L1070	2022-01-29	0.07	0.939	185		>500 Certified 0102-203970

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LIST OF GEOMEMBRANE ROLLS

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

QUANTITY (ROLLS): 115

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1101547-20907-1
HDPE 60 mils / 1.50 mm Black Textured

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mils	g/cc	%	Cat 1 and 2	ppi	%	ppi	%	lbs	lbs	%	mils
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	57.0 / 51.0	≥ 0.940	2.0 - 3.0	Cat. 1 & Cat. 2	132	13	132	150	45	120		16 / 16
0102-203893 MD	60.7 / 56.0	0.946	2.20	10/10 views	162.1	17.0	226	595	55	152		18.6 / 20.1
XD					168.7	16.0	206	576	51			
0102-203894 MD	59.5 / 56.5	0.946	2.20	10/10 views	162.1	17.0	226	595	55	152		20.1 / 19.9
XD					168.7	16.0	206	576	51			
0102-203895 MD	60.8 / 56.5	0.946	2.30	10/10 views	162.0	16.6	235	623	55	152		21.3 / 23.8
XD					174.3	15.9	196	520	51			
0102-203896 MD	59.7 / 56.0	0.946	2.30	10/10 views	162.0	16.6	235	623	55	152		18.8 / 21.1
XD					174.3	15.9	196	520	51			
0102-203897 MD	60.3 / 55.5	0.946	2.64	10/10 views	167.8	16.5	232	590	55	152		19.8 / 23.2
XD					170.6	15.1	206	561	51			
0102-203898 MD	58.7 / 54.0	0.946	2.64	10/10 views	167.8	16.5	232	590	57	150		18.2 / 22.5
XD					170.6	15.1	206	561	52			
0102-203899 MD	58.0 / 54.0	0.946	2.43	10/10 views	168.4	16.5	232	597	57	150		19.7 / 20.1
XD					171.9	14.4	194	446	52			
0102-203900 MD	58.5 / 54.0	0.946	2.43	10/10 views	168.4	16.5	232	597	57	150		19.9 / 22.9
XD					171.9	14.4	194	446	52			
0102-203901 MD	60.9 / 57.5	0.946	2.51	10/10 views	153.5	18.2	235	618	57	150		22.4 / 22.1
XD					170.0	15.1	182	472	52			
0102-203902 MD	60.0 / 56.0	0.946	2.51	10/10 views	153.5	18.2	235	618	57	150		20.0 / 20.5
XD					170.0	15.1	182	472	52			
0102-203903 MD	60.0 / 57.5	0.945	2.25	10/10 views	156.9	16.9	239	614	51	151		21.8 / 21.1
XD					166.8	14.8	201	548	57			
0102-203904 MD	61.7 / 58.5	0.945	2.25	10/10 views	156.9	16.9	239	614	51	151		20.4 / 20.8
XD					166.8	14.8	201	548	57			
0102-203905 MD	60.9 / 57.0	0.945	2.23	10/10 views	157.1	16.4	186	490	51	151		19.7 / 22.1
XD					170.2	15.7	192	548	57			
0102-203906 MD	60.8 / 58.0	0.945	2.23	10/10 views	157.1	16.4	186	490	51	151		19.2 / 19.5
XD					170.2	15.7	192	548	57			

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1)

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203907	**MD**	62.1 / 60.5	0.945	2.23	10/10 views	157.1	16.4	186	490	51	151		19.5 / 17.8
	XD					170.2	15.7	192	548	57			
0102-203908	**MD**	62.8 / 61.0	0.945	2.23	10/10 views	157.1	16.4	186	490	50	144		19.7 / 20.9
	XD					170.2	15.7	192	548	51			
0102-203909	**MD**	58.3 / 55.0	0.945	2.04	10/10 views	161.3	18.1	245	630	50	144		18.1 / 18.9
	XD					165.0	16.9	206	561	51			
0102-203910	**MD**	59.7 / 56.0	0.945	2.04	10/10 views	161.3	18.1	245	630	50	144		18.3 / 21.6
	XD					165.0	16.9	206	561	51			
0102-203911	**MD**	58.5 / 54.0	0.945	2.25	10/10 views	162.9	17.3	228	587	50	144		19.5 / 18.6
	XD					175.0	15.5	191	495	51			
0102-203912	**MD**	58.0 / 53.0	0.945	2.25	10/10 views	162.9	17.3	228	587	50	144		20.0 / 18.0
	XD					175.0	15.5	191	495	51			
0102-203914	**MD**	57.8 / 52.0	0.947	2.41	10/10 views	162.5	16.8	226	584	54	151		21.0 / 22.4
	XD					166.4	15.6	198	513	52			
0102-203915	**MD**	58.1 / 53.5	0.947	2.41	10/10 views	162.5	16.8	226	584	54	151		20.2 / 21.4
	XD					166.4	15.6	198	513	52			
0102-203916	**MD**	57.7 / 54.5	0.947	2.60	10/10 views	168.7	16.3	240	626	54	151		20.6 / 24.5
	XD					170.9	17.2	194	483	52			
0102-203917	**MD**	58.0 / 54.0	0.947	2.60	10/10 views	168.7	16.3	240	626	54	151		18.6 / 23.0
	XD					170.9	17.2	194	483	52			
0102-203918	**MD**	60.3 / 56.5	0.947	2.42	10/10 views	165.2	16.4	225	573	54	151		23.1 / 23.7
	XD					188.5	15.6	210	539	52			
0102-203919	**MD**	61.2 / 58.0	0.947	2.42	10/10 views	165.2	16.4	225	573	54	146		22.4 / 22.5
	XD					188.5	15.6	210	539	57			
0102-203920	**MD**	60.7 / 56.5	0.947	2.41	10/10 views	174.3	15.9	231	557	54	146		22.0 / 25.7
	XD					192.9	15.9	219	529	57			
0102-203921	**MD**	60.2 / 54.0	0.947	2.41	10/10 views	174.3	15.9	231	557	54	146		20.3 / 25.2
	XD					192.9	15.9	219	529	57			
0102-203922	**MD**	61.6 / 57.5	0.947	2.29	10/10 views	171.1	16.7	233	577	54	146		19.4 / 24.4
	XD					202.3	16.1	238	576	57			
0102-203923	**MD**	60.6 / 55.5	0.947	2.29	10/10 views	171.1	16.7	233	577	54	146		18.9 / 23.9
	XD					202.3	16.1	238	576	57			
0102-203924	**MD**	61.9 / 58.0	0.948	2.32	10/10 views	169.2	16.3	224	569	55	146		19.6 / 22.6
	XD					202.9	15.5	226	539	58			
0102-203925	**MD**	60.1 / 57.0	0.948	2.32	10/10 views	169.2	16.3	224	569	55	146		20.5 / 18.4
	XD					202.9	15.5	226	539	58			
0102-203926	**MD**	61.1 / 57.0	0.948	2.16	10/10 views	166.5	16.4	230	600	55	146		19.3 / 21.0
	XD					200.6	17.1	228	547	58			
0102-203927	**MD**	59.3 / 56.0	0.948	2.16	10/10 views	166.5	16.4	230	600	55	146		23.7 / 23.7
	XD					200.6	17.1	228	547	58			
0102-203929	**MD**	60.6 / 56.0	0.948	2.32	10/10 views	176.0	17.7	247	591	55	146		23.0 / 23.3

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

	XD					209.8	17.7	251	572	58			
0102-203930	MD	60.8 / 56.5	0.948	2.32	10/10 views	176.0	17.7	247	591	56	143		21.3 / 22.4
	XD					209.8	17.7	251	572	58			
0102-203931	MD	58.4 / 54.5	0.948	2.24	10/10 views	181.8	17.7	243	591	56	143		19.8 / 20.9
	XD					196.5	17.0	239	555	58			
0102-203932	MD	60.8 / 57.5	0.948	2.24	10/10 views	181.8	17.7	243	591	56	143		20.8 / 21.7
	XD					196.5	17.0	239	555	58			
0102-203933	MD	61.3 / 58.0	0.948	2.48	10/10 views	157.5	19.3	227	567	56	143		22.4 / 24.8
	XD					195.5	17.4	240	576	58			
0102-203934	MD	61.5 / 57.0	0.948	2.48	10/10 views	157.5	19.3	227	567	56	143		21.1 / 22.7
	XD					195.5	17.4	240	576	58			
0102-203935	MD	59.7 / 57.0	0.945	2.31	10/10 views	177.1	17.0	238	582	57	149		20.9 / 21.9
	XD					192.3	15.3	211	507	58			
0102-203936	MD	59.7 / 55.5	0.945	2.31	10/10 views	177.1	17.0	238	582	57	149		25.3 / 20.5
	XD					192.3	15.3	211	507	58			
0102-203937	MD	57.6 / 55.0	0.945	2.44	10/10 views	157.7	17.4	221	588	57	149		20.5 / 25.3
	XD					182.8	15.3	198	496	58			
0102-203938	MD	61.6 / 58.5	0.945	2.44	10/10 views	157.7	17.4	221	588	57	149		22.5 / 25.6
	XD					182.8	15.3	198	496	58			
0102-203939	MD	58.9 / 55.0	0.945	2.45	10/10 views	163.5	17.6	225	586	57	149		21.5 / 22.8
	XD					182.5	15.8	216	554	58			
0102-203940	MD	62.0 / 60.0	0.945	2.45	10/10 views	163.5	17.6	225	586	52	148		23.1 / 27.9
	XD					182.5	15.8	216	554	55			
0102-203941	MD	60.5 / 58.0	0.945	2.37	10/10 views	163.6	17.4	221	567	52	148		20.3 / 23.6
	XD					182.5	15.6	213	552	55			
0102-203942	MD	61.1 / 58.5	0.945	2.37	10/10 views	163.6	17.4	221	567	52	148		21.4 / 24.5
	XD					182.5	15.6	213	552	55			
0102-203943	MD	60.2 / 56.0	0.945	2.44	10/10 views	155.4	17.1	212	575	52	148		22.2 / 19.8
	XD					181.9	15.7	198	481	55			
0102-203944	MD	62.6 / 60.5	0.945	2.44	10/10 views	155.4	17.1	212	575	52	148		20.1 / 21.3
	XD					181.9	15.7	198	481	55			
0102-203945	MD	59.6 / 55.0	0.943	2.23	10/10 views	159.4	18.1	219	570	49	144		20.1 / 21.6
	XD					185.4	16.5	227	576	53			
0102-203946	MD	60.9 / 56.5	0.943	2.23	10/10 views	159.4	18.1	219	570	49	144		20.8 / 21.1
	XD					185.4	16.5	227	576	53			
0102-203947	MD	61.6 / 59.5	0.943	2.29	10/10 views	150.8	18.0	210	554	49	144		20.5 / 21.8
	XD					173.0	16.8	220	576	53			
0102-203948	MD	59.3 / 57.5	0.943	2.29	10/10 views	150.8	18.0	210	554	49	144		20.8 / 21.5
	XD					173.0	16.8	220	576	53			
0102-203949	MD	59.4 / 56.0	0.943	2.14	10/10 views	158.7	17.7	239	638	49	144		21.2 / 22.0
	XD					159.8	17.8	223	573	53			

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1)

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203950	**MD**	64.2 / 57.0	0.943	2.14	10/10 views	158.7	17.7	239	638	51	146		23.4 / 23.8
	XD					159.8	17.8	223	573	54			
0102-203951	**MD**	63.4 / 60.0	0.943	2.39	10/10 views	153.0	19.8	225	578	51	146		22.1 / 23.2
	XD					186.4	16.0	213	533	54			
0102-203952	**MD**	60.0 / 54.5	0.943	2.39	10/10 views	153.0	19.8	225	578	51	146		24.8 / 24.9
	XD					186.4	16.0	213	533	54			
0102-203953	**MD**	63.0 / 59.0	0.943	2.34	10/10 views	162.4	17.5	226	588	51	146		20.0 / 21.7
	XD					187.3	15.3	226	584	54			
0102-203954	**MD**	63.2 / 59.5	0.943	2.34	10/10 views	162.4	17.5	226	588	51	146		21.7 / 21.3
	XD					187.3	15.3	226	584	54			
0102-203955	**MD**	62.8 / 58.0	0.949	2.63	10/10 views	164.8	16.9	229	593	53	144		21.9 / 21.6
	XD					183.3	16.1	215	563	54			
0102-203956	**MD**	61.0 / 59.0	0.949	2.63	10/10 views	164.8	16.9	229	593	53	144		20.2 / 20.2
	XD					183.3	16.1	215	563	54			
0102-203957	**MD**	60.0 / 56.5	0.949	2.70	10/10 views	170.0	17.5	232	603	53	144		17.8 / 22.4
	XD					192.2	16.2	228	584	54			
0102-203958	**MD**	60.8 / 56.0	0.949	2.70	10/10 views	170.0	17.5	232	603	53	144		20.1 / 24.2
	XD					192.2	16.2	228	584	54			
0102-203959	**MD**	60.4 / 58.0	0.949	2.72	10/10 views	171.5	16.8	217	544	53	144		20.4 / 22.5
	XD					192.1	15.5	225	569	54			
0102-203960	**MD**	62.2 / 58.0	0.949	2.72	10/10 views	171.5	16.8	217	544	51	138		19.4 / 22.7
	XD					192.1	15.5	225	569	54			
0102-203961	**MD**	60.1 / 56.0	0.949	2.46	10/10 views	154.1	18.8	210	549	51	138		25.8 / 25.5
	XD					183.5	15.8	213	552	54			
0102-203962	**MD**	59.3 / 55.5	0.949	2.46	10/10 views	154.1	18.8	210	549	51	138		20.7 / 22.0
	XD					183.5	15.8	213	552	54			
0102-203963	**MD**	60.4 / 57.5	0.949	2.37	10/10 views	162.1	16.8	222	588	51	138		22.7 / 25.0
	XD					180.6	15.9	195	415	54			
0102-203964	**MD**	60.6 / 56.0	0.949	2.37	10/10 views	162.1	16.8	222	588	51	138		22.5 / 24.8
	XD					180.6	15.9	195	415	54			
0102-203966	**MD**	61.4 / 58.5	0.941	2.33	10/10 views	154.9	17.6	213	573	51	139		21.8 / 23.7
	XD					170.3	15.9	223	604	52			
0102-203967	**MD**	61.6 / 57.0	0.941	2.33	10/10 views	154.9	17.6	213	573	51	139		21.0 / 22.8
	XD					170.3	15.9	223	604	52			
0102-203968	**MD**	59.5 / 56.5	0.941	2.48	10/10 views	168.3	17.4	230	605	51	139		22.8 / 25.2
	XD					181.5	15.6	211	539	52			
0102-203969	**MD**	59.7 / 56.5	0.941	2.48	10/10 views	168.3	17.4	230	605	51	139		21.0 / 22.1
	XD					181.5	15.6	211	539	52			
0102-203970	**MD**	60.1 / 56.5	0.941	2.36	10/10 views	138.3	15.8	207	525	51	139		22.2 / 22.5
	XD					165.6	16.8	198	553	52			
0102-203971	**MD**	59.5 / 56.5	0.941	2.36	10/10 views	138.3	15.8	207	525	52	147		20.2 / 20.4

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1)

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

	XD					165.6	16.8	198	553	51			
0102-203972	MD	59.4 / 55.0	0.941	2.43	10/10 views	158.9	17.7	230	602	52	147		20.3 / 21.1
	XD					178.1	16.3	219	581	51			
0102-203973	MD	59.3 / 56.0	0.941	2.43	10/10 views	158.9	17.7	230	602	52	147		19.9 / 20.2
	XD					178.1	16.3	219	581	51			
0102-203974	MD	59.1 / 54.5	0.941	2.31	10/10 views	164.9	17.0	235	618	52	147		19.5 / 19.8
	XD					180.8	14.9	220	572	51			
0102-203975	MD	58.6 / 54.0	0.941	2.31	10/10 views	164.9	17.0	235	618	52	147		19.7 / 19.2
	XD					180.8	14.9	220	572	51			
0102-203976	MD	59.3 / 56.0	0.945	2.27	10/10 views	163.9	17.0	228	608	52	145		19.9 / 19.1
	XD					178.8	18.8	221	593	51			
0102-203977	MD	59.2 / 54.5	0.945	2.27	10/10 views	163.9	17.0	228	608	52	145		21.3 / 19.5
	XD					178.8	18.8	221	593	51			
0102-203978	MD	58.3 / 53.5	0.945	2.50	10/10 views	165.8	16.9	231	611	52	145		19.4 / 20.2
	XD					177.4	15.8	227	607	51			
0102-203979	MD	62.4 / 59.5	0.945	2.50	10/10 views	165.8	16.9	231	611	52	145		22.4 / 19.0
	XD					177.4	15.8	227	607	51			
0102-203980	MD	62.4 / 56.0	0.945	2.50	10/10 views	165.8	16.9	231	611	52	145		22.1 / 20.7
	XD					177.4	15.8	227	607	51			
0102-203981	MD	62.6 / 59.5	0.945	2.50	10/10 views	165.8	16.9	231	611	52	145		23.3 / 20.3
	XD					177.4	15.8	227	607	51			
0102-203982	MD	60.8 / 58.0	0.945	2.56	10/10 views	151.0	16.2	212	570	52	145		22.4 / 20.1
	XD					178.7	15.3	230	603	51			
0102-203983	MD	60.9 / 57.5	0.945	2.56	10/10 views	151.0	16.2	212	570	52	145		22.1 / 19.5
	XD					178.7	15.3	230	603	51			
0102-203984	MD	61.8 / 55.0	0.945	2.56	10/10 views	151.0	16.2	212	570	52	145		22.1 / 22.3
	XD					178.7	15.3	230	603	51			
0102-203985	MD	59.7 / 56.0	0.945	2.56	10/10 views	151.0	16.2	212	570	52	145		22.6 / 19.3
	XD					178.7	15.3	230	603	51			
0102-203986	MD	61.4 / 57.5	0.949	2.54	10/10 views	158.6	16.7	232	618	52	146		23.5 / 23.1
	XD					180.2	15.7	221	577	53			
0102-203987	MD	61.4 / 56.5	0.949	2.54	10/10 views	158.6	16.7	232	618	52	146		21.9 / 24.1
	XD					180.2	15.7	221	577	53			
0102-203988	MD	60.2 / 54.5	0.949	2.40	10/10 views	164.5	16.8	226	589	52	146		19.8 / 20.5
	XD					184.2	15.5	224	529	53			
0102-203989	MD	60.1 / 56.5	0.949	2.40	10/10 views	164.5	16.8	226	589	52	146		18.1 / 22.0
	XD					184.2	15.5	224	529	53			
0102-203990	MD	59.7 / 57.5	0.949	2.54	10/10 views	168.1	16.0	212	556	52	146		19.3 / 23.5
	XD					185.5	16.2	219	568	53			
0102-203991	MD	58.3 / 55.0	0.949	2.54	10/10 views	168.1	16.0	212	556	53	145		20.8 / 21.7
	XD					185.5	16.2	219	568	50			

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1)

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-2

PROJECT NAME : NORTH RANCH LANDFILL

0102-203992	**MD**	58.7 / 53.0	0.949	2.17	10/10 views	168.7	16.5	228	605	53	145		19.0 / 21.4
	XD					183.6	15.5	217	571	50			
0102-203993	**MD**	58.9 / 55.5	0.949	2.17	10/10 views	168.7	16.5	228	605	53	145		19.4 / 22.7
	XD					183.6	15.5	217	571	50			
0102-203994	**MD**	60.2 / 55.5	0.949	2.01	10/10 views	164.7	17.2	240	631	53	145		18.7 / 19.6
	XD					187.8	16.6	223	578	50			
0102-203995	**MD**	59.1 / 55.0	0.949	2.01	10/10 views	164.7	17.2	240	631	53	145		18.5 / 19.5
	XD					187.8	16.6	223	578	50			
0102-203996	**MD**	62.0 / 59.0	0.946	2.53	10/10 views	162.5	16.6	215	554	51	144		23.1 / 21.4
	XD					186.2	15.3	218	554	53			
0102-203997	**MD**	60.4 / 55.5	0.946	2.53	10/10 views	162.5	16.6	215	554	51	144		23.5 / 21.9
	XD					186.2	15.3	218	554	53			
0102-203998	**MD**	60.6 / 56.0	0.946	2.53	10/10 views	162.5	16.6	215	554	51	144		23.1 / 21.3
	XD					186.2	15.3	218	554	53			
0102-203999	**MD**	60.5 / 57.5	0.946	2.53	10/10 views	162.5	16.6	215	554	51	144		21.8 / 19.1
	XD					186.2	15.3	218	554	53			
0102-204000	**MD**	59.9 / 54.0	0.946	2.63	10/10 views	160.3	16.5	217	564	51	144		24.1 / 20.4
	XD					181.0	16.4	212	533	53			
0102-204001	**MD**	62.1 / 59.0	0.946	2.63	10/10 views	160.3	16.5	217	564	52	151		19.4 / 23.0
	XD					181.0	16.4	212	533	54			
0102-204002	**MD**	61.8 / 55.0	0.946	2.63	10/10 views	160.3	16.5	217	564	52	151		23.1 / 23.7
	XD					181.0	16.4	212	533	54			
0102-204003	**MD**	60.4 / 54.5	0.946	2.63	10/10 views	160.3	16.5	217	564	52	151		21.5 / 19.6
	XD					181.0	16.4	212	533	54			
0102-204004	**MD**	60.1 / 55.0	0.946	2.59	10/10 views	155.7	16.9	213	565	52	151		20.9 / 24.3
	XD					185.1	15.3	218	541	54			
0102-204005	**MD**	59.4 / 55.5	0.946	2.59	10/10 views	155.7	16.9	213	565	52	151		20.9 / 19.5
	XD					185.1	15.3	218	541	54			
0102-204006	**MD**	59.1 / 51.5	0.948	2.30	10/10 views	161.8	17.4	229	615	52	149		20.3 / 21.6
	XD					180.1	16.3	221	590	51			
0102-204007	**MD**	59.5 / 54.0	0.948	2.30	10/10 views	161.8	17.4	229	615	52	149		20.0 / 21.0
	XD					180.1	16.3	221	590	51			
0102-204018	**MD**	59.3 / 55.0	0.949	2.58	10/10 views	152.3	17.8	216	577	54	146		20.2 / 21.7
	XD					160.5	14.2	191	521	52			
0102-204019	**MD**	61.0 / 57.0	0.949	2.65	10/10 views	159.7	17.7	231	627	54	146		22.0 / 24.0
	XD					183.7	17.1	207	514	52			
0102-204020	**MD**	62.7 / 57.5	0.949	2.65	10/10 views	159.7	17.7	231	627	54	146		30.3 / 28.3
	XD					183.7	17.1	207	514	52			

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Formosa Plastics

FORMOSA PLASTICS CORPORATION, TEXAS

201 FORMOSA DRIVE
PO BOX 700
POINT COMFORT TX 77978

PHONE:(888)FPCUSA3

Certificate of Analysis

(CONFIDENTIAL)

CUSTOMER:SOLMAX GEOSYNTHETICS LLC
19103 GUNDLE ROAD

HOUSTON TX 77073

PRODUCT :HL3812
RAILCAR FPAX200355
CLEANING/INSPECTION NO: 200355110521

S/O NO : EWCA192
CUSTOMER PO : PO-604228
DATE SHIPPED: 12/14/21
LOT NO : 21K1057
WEIGHT (LB) : 198,500.00
CUSTID:FT05970 SPIDM6

TEST ITEM	REFERENCE METHOD	TEST VALUE
Melt Index,g/10min	ASTM D1238	.058
HLMI, g/10 min.	ASTM D1238	9.53
Density, g/cm3	ASTM D1505	.9381

Linda Kao

QC SUPERVISOR: LINDA KAO

Formosa Plastics

FORMOSA PLASTICS CORPORATION, TEXAS

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POINT COMFORT TX 77978

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Certificate of Analysis

(CONFIDENTIAL)

CUSTOMER:SOLMAX GEOSYNTHETICS LLC
19103 GUNDLE ROAD

HOUSTON TX 77073

PRODUCT :HL3812
RAILCAR FPAX215390
CLEANING/INSPECTION NO: 215390110621

S/O NO : EWCA194
CUSTOMER PO : PO-604228
DATE SHIPPED: 12/21/21
LOT NO : 21K1068
WEIGHT (LB) : 197,550.00
CUSTID:FT05970 SPIDM6

TEST ITEM	REFERENCE METHOD	TEST VALUE
Melt Index,g/10min	ASTM D1238	.064
HLMI, g/10 min.	ASTM D1238	9.95
Density, g/cm3	ASTM D1505	.9382

Linda Kao

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Certificate of Analysis

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CUSTOMER:SOLMAX GEOSYNTHETICS LLC
19103 GUNDLE ROAD

HOUSTON TX 77073

PRODUCT :HL3812
RAILCAR FPAX200212
CLEANING/INSPECTION NO: 200212120721

S/O NO : EX1A220
CUSTOMER PO : PO-604436
DATE SHIPPED: 1/15/22
LOT NO : 21L1070
WEIGHT (LB) : 197,000.00
CUSTID:FT05970 SPIDM6

TEST ITEM	REFERENCE METHOD	TEST VALUE
Melt Index,g/10min	ASTM D1238	.070
HLMI, g/10 min.	ASTM D1238	10.5
Density, g/cm3	ASTM D1505	.9386

Linda Kao

QC SUPERVISOR: LINDA KAO

SCS ENGINEERS Environmental Consultants & Contractors

February 24, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #6 - #7 – Solmax NW8 15' - 8 oz/sy NWNP Geotextile Fabric, Manufacturer's Quality Control Certificate and Conformance Testing.

Submitted Date: 2/11/22 – 2/15/22

Information Submitted:

SCS Engineers have received material submittal for the 8-oz geotextile fabric specified for this project. The material submitted for approval is the Solmax Nonwoven Geotextile NW8 15'. We have received the manufacturers quality control (MQC) testing results and certificates from Solmax and conformance testing results from TRI Environmental for the 5 rolls of 8 oz/sy NWNP Geotextile Fabric to be delivered to the subject project from Solmax.

SCS Response:

SCS has reviewed the testing results as compared to the minimum requirements stated in the project CQA Plan Table 6 and found the material Solmax product and the rolls produced for this project have met the minimum material requirements and it is approved for use on this project.

copy:

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

February 11, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

Greetings:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	69795
Material(s) Tested:	One, Solmax 8 oz Nonwoven Geotextile(s)
Test(s) Requested:	Mass/Unit Area (ASTM D 5261) Grab Tensile (ASTM D 4632) CBR Puncture Strength (ASTM D 6241) Trapezoidal Tear (ASTM D 4533) Apparent Opening Size (ASTM D 4751) Permittivity (ASTM D 4491)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

Released to Imaging: 8/24/2022 3:35:23 PM

GEOTEXTILE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax 8 oz Nonwoven Geotextile
Sample Identification: 2330-542738
TRI Log #: 69795

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	3.50	3.67	3.40	3.27	3.64	3.82	4.09	3.83	3.48	4.01	**3.67**	0.27
Mass/Unit Area (oz/sq.yd)	8.14	8.54	7.91	7.61	8.47	8.89	9.51	8.91	8.09	9.33	**8.54**	0.62
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	305	233	233	282	296	258	234	248	250	259	**260**	26
TD - Tensile Strength (lbs)	311	304	332	329	269	311	356	267	278	295	**305**	29
MD - Elong. @ Max. Load (%)	82	76	79	80	86	71	71	83	73	79	**78**	5
TD - Elong. @ Max. Load (%)	101	98	95	111	109	107	103	95	102	107	**103**	6
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	626	759	702	685	774	679	742	751	709	752	**718**	46
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	96	119	135	127	104	121	121	112	132	111	**118**	12
TD - Tear Strength (lbs)	129	93	97	108	111	103	86	72	102	78	**98**	17
Apparent Opening Size (ASTM D 4751, Method B.)												
Opening Size Diameter (mm)	0.115	0.130	0.147	0.139	0.131						**0.132**	0.012
Sieve No.	100	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	18.7
Correction Factor:	1.034

Test Specimen No. >	1					2				
Thickness (mils)	103	103	103	103	103	120	120	120	120	120
Thickness (mm)	2.62	2.62	2.62	2.62	2.62	3.05	3.05	3.05	3.05	3.05
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time (s)	14.4	14.3	14.5	14.5	14.3	15.3	15.6	15.3	15.4	15.0
Specimen Permittivity @20°C (sec-1)	1.41	1.42	1.40	1.40	1.42	1.33	1.31	1.33	1.32	1.36
Specimen Flow rate (GPM/ft2)	105.8	106.5	105.0	105.0	106.5	99.5	97.6	99.5	98.9	101.5
Specimen Flow rate (LPM/m2)			4280					4060		
Specimen Permeability (cm/s)	0.37	0.37	0.37	0.37	0.37	0.35	0.34	0.41	0.40	0.41

Test Specimen No. >	3					4				
Thickness (mils)	105.7	105.7	105.7	105.7	105.7	106.6	106.6	106.6	106.6	106.6
Thickness (mm)	2.68	2.68	2.68	2.68	2.68	2.71	2.71	2.71	2.71	2.71
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time (s)	14.6	14.7	14.7	14.6	14.5	15.1	14.7	14.5	14.5	14.6
Specimen Permittivity @20°C (sec-1)	1.39	1.39	1.39	1.39	1.40	1.35	1.39	1.40	1.40	1.39
Specimen Flow rate (GPM/ft2)	104.3	103.6	103.6	104.3	105.0	100.9	103.6	105.0	105.0	104.3
Specimen Flow rate (LPM/m2)			4220					4280		
Specimen Permeability (cm/s)	0.37	0.37	0.37	0.37	0.38	0.36	0.37	0.38	0.38	0.38

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	**1.38**
	Flow rate (GPM/ft2)	**103.3**
	Flow rate (LPM/m2)	**4210**
	Permeability (cm/s)	**0.38**

MD Machine Direction TD Transverse Direction

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SOLMAX

TECHNICAL DATA SHEET

Nonwoven Geotextile NW8 15'

PROPERTY(1)	TEST METHOD	FREQUENCY	UNIT Imperial	1106429
SPECIFICATIONS				
AASHTO M288 Class		-		1
Mass per Unit Area	ASTM D5261	1/90,000 ft²	oz/yd²	8
Grab Tensile Properties (min. avg)	ASTM D4632	1/90,000 ft²		
Strength (MD)			lbf	220
Strength (TD)			lbf	220
Elongation (MD)			%	50
Elongation (TD)			%	50
Trapezoidal Tear Strength	ASTM D4533	1/90,000 ft²	lbf	95
CBR Puncture Strength	ASTM D6241	1/540,000 ft²	lbf	575
Apparent Opening Size (max.)	ASTM D4751	1/540,000 ft²	mm	0.180
Permittivity	ASTM D4491	1/540,000 ft²	sec^{-1}	1.3
Water Flow Rate	ASTM D4491	1/540,000 ft²	gpm/ft²	95
UV Resistance-% retained after 500 hrs	ASTM D4355	1/Formulation/Year	%	70
SUPPLY SPECIFICATIONS(Roll dimensions may vary ±1%)				
Roll Dimension - Width	-		ft	15.0
Roll Dimension - Length	-		ft	600
Area (Surface/Roll)	-		ft²	9000

NOTES

* The property values listed are in weaker principal direction. All values listed are Minimum Average Roll Values, except when specified as minimum or maximum.
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Revision date: 17-Mar-2020

MANUFACTURING QUALITY CONTROL

SOLMAX Tiffany Lambert APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-1

PROJECT NAME : NORTH RANCH LANDFILL

ROLL NUMBER	MANUFACT. DATE
Product Code : 1106429	
Nonwoven Geotextile NW8 15'	
TRI Pickup - Patricia Zabaleta **3 ft x RW, 1/100,00 sf, min 1/Lot**	
2330-542738	2022-01-25
2330-542739	2022-01-25
2330-542740	2022-01-25
2330-542741	2022-01-25
2330-542742	2022-01-25

QUANTITY (ROLLS): 5

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25 Jan 2022

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MANUFACTURING QUALITY CONTROL

SOLMAX Tiffany Lambert APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-1

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1106429
Nonwoven Geotextile NW8 15'

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/90,000 ft^2	oz/yd^2
	Grab Tensile Properties (min. avg)		ASTM D4632	1/90,000 ft^2	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%
6	Trapezoidal Tear Strength	MD	ASTM D4533	1/90,000 ft^2	lbf
7	Trapezoidal Tear Strength	TD	ASTM D4533	1/90,000 ft^2	lbf
8	Puncture Resistance		ASTM D4833	1/90,000 ft^2	lbf
9	CBR Puncture Strength		ASTM D6241	1/540,000 ft^2	lbf
10	Apparent Opening Size (max.)		ASTM D4751	1/540,000 ft^2	mm
11	Permittivity		ASTM D4491	1/540,000 ft^2	sec^{-1}
12	Water Flow Rate		ASTM D4491	1/540,000 ft^2	gpm/ft^2

Test	1	2	3	4	5	6	7	8	9	10	11	12
SPECIFICATIONS	**8**	**220**	**220**	**50**	**50**	**95**	**95**	**120**	**575**	**0.180**	**1.3**	**95**
2330-542738	8.7	248	247	88	103	110	127	138	628	0.180	1.8	133
2330-542739	8.7	248	247	88	103	110	127	138	628	0.180	1.8	133
2330-542740	8.7	248	247	88	103	110	127	138	628	0.180	1.8	133
2330-542741	8.7	248	247	88	103	110	127	138	628	0.180	1.8	133
2330-542742	8.7	248	247	88	103	110	127	138	628	0.180	1.8	133

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MANUFACTURING QUALITY CONTROL

SOLMAX Tiffany Lambert APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER:	21119-E972725 (Rev-1
SALES ORDER:	SO-092987
PACKING SLIP NUMBER:	Pre-SO-092987-1

PROJECT NAME : NORTH RANCH LANDFILL

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SOLMAX

1245 Eastland Avenue
Kingstree, SC 29556
Phone 843-382-4603
Fax 843-382-4604

Date: January 25, 2022

Project: SO-092987
Ref: NORTH RANCH LANDFILL

To Whom It May Concern:

The resistance of nonwoven needle punched geotextiles to ultraviolet light depends primarily on antioxident and carbon black package mixed with resin to prepare a formulation for fiber extrusion. As long as this formulation remains the same the UV resistance of a geotextiles does not change. Therefore, UV testing is performed only once per resin formulation, according to ASTM Test Method D4355 and test value noted on Solmax geotextile specification sheet. Currently, all Solmax geotextiles meet or exceed a value of 70% strength retained after 500 hours of UV exposure. Solmax will meet or exceed this value for the referenced project.

Although Solmax geotextiles are manufactured using one of the best available antioxident packages, we recommend covering the geotextiles within 15 days of exposure to direct Sunlight. This period does not include time during which geotextiles rolls remain on site covered in black shrink-wrap. Our recommendation is based on UV performance data published in technical literature indicating geotextile strength can decrease sharply after prolonged exposure to Sunlight.



Thomas E. Harrelson
Lab Manager

SCS ENGINEERS Environmental Consultants & Contractors

April 4, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #8-10 and 20 – Solmax Bentoliner 0.75lb/ft^2, NS, Peel 35 Manufacturer's Quality Control Certificate and Conformance Testing.

Submitted Date: 2/8/22 – 3/30/22

Information Submitted:

SCS Engineers have received material submittal for the textured geosynthetic clay liner specified for this project. The material submitted for approval is the Solmax Bentoliner 0.75lb/ft^2, NS, Peel 35. We have received the manufacturers quality control (MQC) testing results and certificates from Solmax and conformance testing results from TRI Environmental for the 276 rolls of geomembrane to be delivered to the subject project from Solmax.

SCS Response:

SCS has reviewed the testing results as compared to the minimum requirements stated in the project CQA Plan Table 4 and found the material Solmax product and the rolls produced for this project have met the minimum material requirements and it is approved for use on this project.

copy:

SOLMAX

TECHNICAL DATA SHEET

Bentoliner 0.75 lbs/ft², NS, Peel 35

PROPERTY(1)	TEST METHOD	FREQUENCY	UNIT Imperial	1109263-20907-2
SPECIFICATIONS				
GEOTEXTILE PROPERTY		-		
Cap Layer	-			Nonwoven
Cap Mass per Unit area	ASTM D5261	1/200,000 ft²	oz/yd²	6
Carrier Layer	-			Woven
Carrier Mass/Unit area	ASTM D5261	1/200,000 ft²	oz/yd²	3.1
BENTONITE PROPERTY		-		
Swell Index (min.)	ASTM D5890	1 / 100,000 lb	ml/2 g	24
Moisture Content (max.)	ASTM D4643	1 / 100,000 lb	%	12
Fluid Loss (max.)	ASTM D5891	1 / 100,000 lb	ml	18
FINISHED GCL PROPERTY		-		
Bentonite Mass (0% moisture)	ASTM D5993	1/40,000 ft²	lbs/ft²	0.75
Tensile Strength MD (min. avg.)	ASTM D6768	1/40,000 ft²	lbf/in	30
Peel Strength (min.avg.)	ASTM D6496	1/40,000 ft²	lbf/in	5.3
Peel Strength (min.avg.)	ASTM D4632	1/40,000 ft²	lbf	35
Hydraulic Conductivity (max.)	ASTM D5887	1/270,000 ft²	cm/s	$5x10^{-9}$
Index Flux	ASTM D5887	1/270,000 ft²	$m^3/m^2/sec$	$1x10^{-8}$
Effective Confining Stress (max.)			lbs/in²	5
Internal Shear Strength	ASTM D6243	Periodically	lbs/ft²	500
Normal Stress			lbs/ft²	200
SUPPLY SPECIFICATIONS(Roll dimensions may vary ±1%)				
Roll Dimension - Width	-		ft	15.5
Roll Dimension - Length	-		ft	150
Area (Surface/Roll)	-		ft²	2325

NOTES

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Revision date: 04-Aug-2021

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1	CONFORMANCE
Product Code : 1109263-20907-2					
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35					
TRI Pickup - Patricia Zabaleta 1 ft x RW, 1/100,00 sf, min 1/Lot					
0242-370617	2021-10-18	1093021C	2026923017	3021090781	N/A
0242-370618	2021-10-18	1093021C	2026923017	3021090781	N/A
0242-370619	2021-10-18	1093021D	2026923017	3021090781	N/A
0242-370620	2021-10-18	1093021D	2026923024	3021090781	N/A
0242-370621	2021-10-18	1093021D	2026826803	3021090781	N/A
0242-370622	2021-10-18	1093021D	2026826803	3021090781	N/A
0242-370623	2021-10-18	1093021D	2026826803	3021090781	Conformance
0242-370624	2021-10-18	1093021D	2026826803	3021090449	N/A
0242-370626	2021-10-18	1093021D	2026826803	3021090449	N/A
0242-370627	2021-10-18	1093021D	2026826803	3021090449	N/A
0242-370628	2021-10-18	1093021D	2026826803	3021090449	N/A
0242-370633	2021-10-18	1093021D	2026826801	3021090449	N/A
0242-370634	2021-10-18	1093021D	2026826801	3021090449	N/A
0242-374598	2022-02-16	1021122D	2027011078	3021111036	Conformance
0242-374599	2022-02-16	1021122D	2027011078	3021111036	N/A
0242-374600	2022-02-16	1021122D	2027011078	3021120256	N/A
0242-374601	2022-02-16	1021122D	2027011078	3021120256	N/A
0242-374602	2022-02-16	1021122D	2027011078	3021120256	N/A
0242-374603	2022-02-16	1021122D	2027011078	3021120256	N/A
0242-374604	2022-02-16	1021122D	2027011078	3021120256	N/A

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PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

0242-374605	2022-02-16	1021122D	2027011051	3021120256	N/A
0242-374606	2022-02-16	1021122D	2027011051	3021120256	N/A
0242-374607	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374608	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374609	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374610	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374611	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374612	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374613	2022-02-17	1021122D	2027011051	3021120256	N/A
0242-374614	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374615	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374616	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374617	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374618	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374619	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374620	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374621	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374622	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374623	2022-02-17	1021522A	2027011074	3021120256	N/A
0242-374624	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374625	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374626	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374627	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374628	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374629	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374630	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374631	2022-02-17	1021522A	2027011075	3021120256	N/A
0242-374632	2022-02-17	1021522A	2027011075	3021111034	N/A
0242-374633	2022-02-17	1021522A	2027011075	3021111034	N/A

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MANUFACTURING QUALITY CONTROL

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PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

0242-374634	2022-02-17	1021522A	2027011075	3021111034	N/A
0242-374635	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374636	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374637	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374638	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374639	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374640	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374641	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374642	2022-02-17	1021522A	2027011080	3021111034	Conformance
0242-374643	2022-02-17	1021522A	2027011080	3021111034	N/A
0242-374644	2022-02-17	1021522A	2027011064	3021111034	N/A
0242-374645	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374646	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374647	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374648	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374649	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374650	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374651	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374652	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374653	2022-02-17	1021522B	2027011064	3021111034	N/A
0242-374654	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374655	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374656	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374657	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374658	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374659	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374660	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374661	2022-02-17	1021522B	2027011077	3021111034	N/A
0242-374662	2022-02-17	1021522B	2027011077	3021120240	N/A

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SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

0242-374663	2022-02-17	1021522B	2027011077	3021120240	N/A
0242-374664	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374665	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374666	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374667	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374668	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374669	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374670	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374671	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374672	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374673	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374674	2022-02-17	1021522B	2027011079	3021120240	N/A
0242-374675	2022-02-17	1021522B	2027011066	3021120240	N/A
0242-374676	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374677	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374678	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374679	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374680	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374681	2022-02-17	1021522C	2027011066	3021120240	N/A
0242-374682	2022-02-18	1021522C	2027011066	3021120240	N/A
0242-374683	2022-02-18	1021522C	2027011066	3021120240	N/A
0242-374684	2022-02-18	1021522C	2027011066	3021120240	N/A
0242-374685	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374686	2022-02-18	1021522C	2027011052	3021120240	1' Conformance
0242-374687	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374688	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374689	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374690	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374691	2022-02-18	1021522C	2027011052	3021120240	N/A

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

0242-374692	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374693	2022-02-18	1021522C	2027011052	3021120240	N/A
0242-374694	2022-02-18	1021522C	2027011073	3021120377	N/A
0242-374695	2022-02-18	1021522C	2027011073	3021120377	N/A
0242-374696	2022-02-18	1021522C	2027011073	3021120377	N/A
0242-374697	2022-02-18	1021522C	2027011073	3021120377	N/A

QUANTITY (ROLLS): 113

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18 Feb 2022

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1109263-23454-1
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**0.75**	**35**	**5.3**	**30**
0242-370617	0.82	56	11.4	47
0242-370618	0.82	56	11.4	47
0242-370619	0.82	56	11.4	47
0242-370620	0.82	56	11.4	47
0242-370621	0.82	56	11.4	47
0242-370622	0.82	56	11.4	47
0242-370623	0.8	64	13.7	38
0242-370624	0.8	64	13.7	38
0242-370626	0.8	64	13.7	38
0242-370627	0.8	64	13.7	38
0242-370628	0.8	64	13.7	38
0242-370633	0.8	64	13.7	38
0242-370634	0.8	64	13.7	38
0242-374598	0.79	58	12.5	45
0242-374599	0.79	58	12.5	45
0242-374600	0.79	58	12.5	45
0242-374601	0.79	58	12.5	45
0242-374602	0.79	58	12.5	45
0242-374603	0.79	58	12.5	45
0242-374604	0.79	58	12.5	45
0242-374605	0.79	58	12.5	45
0242-374606	0.79	58	12.5	45
0242-374607	0.79	58	12.5	45
0242-374608	0.79	58	12.5	45
0242-374609	0.79	58	12.5	45
0242-374610	0.79	58	12.5	45
0242-374611	0.79	58	12.5	45

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374612	0.79	58	12.5	45
0242-374613	0.79	58	12.5	45
0242-374614	0.81	47	9.3	45
0242-374615	0.81	47	9.3	45
0242-374616	0.81	47	9.3	45
0242-374617	0.81	47	9.3	45
0242-374618	0.81	47	9.3	45
0242-374619	0.81	47	9.3	45
0242-374620	0.81	47	9.3	45
0242-374621	0.81	47	9.3	45
0242-374622	0.81	47	9.3	45
0242-374623	0.81	47	9.3	45
0242-374624	0.81	47	9.3	45
0242-374625	0.81	47	9.3	45
0242-374626	0.81	47	9.3	45
0242-374627	0.81	47	9.3	45
0242-374628	0.81	47	9.3	45
0242-374629	0.81	47	9.3	45
0242-374630	0.8	60	11.8	44
0242-374631	0.8	60	11.8	44
0242-374632	0.8	60	11.8	44
0242-374633	0.8	60	11.8	44
0242-374634	0.8	60	11.8	44
0242-374635	0.8	60	11.8	44
0242-374636	0.8	60	11.8	44
0242-374637	0.8	60	11.8	44
0242-374638	0.8	60	11.8	44
0242-374639	0.8	60	11.8	44
0242-374640	0.8	60	11.8	44
0242-374641	0.8	60	11.8	44
0242-374642	0.8	60	11.8	44
0242-374643	0.8	60	11.8	44
0242-374644	0.8	60	11.8	44
0242-374645	0.8	60	11.8	44
0242-374646	0.9	65	13.2	44
0242-374647	0.9	65	13.2	44

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374648	0.9	65	13.2	44
0242-374649	0.9	65	13.2	44
0242-374650	0.9	65	13.2	44
0242-374651	0.9	65	13.2	44
0242-374652	0.9	65	13.2	44
0242-374653	0.9	65	13.2	44
0242-374654	0.9	65	13.2	44
0242-374655	0.9	65	13.2	44
0242-374656	0.9	65	13.2	44
0242-374657	0.9	65	13.2	44
0242-374658	0.9	65	13.2	44
0242-374659	0.9	65	13.2	44
0242-374660	0.9	65	13.2	44
0242-374661	0.9	65	13.2	44
0242-374662	0.83	58	12	43
0242-374663	0.83	58	12	43
0242-374664	0.83	58	12	43
0242-374665	0.83	58	12	43
0242-374666	0.83	58	12	43
0242-374667	0.83	58	12	43
0242-374668	0.83	58	12	43
0242-374669	0.83	58	12	43
0242-374670	0.83	58	12	43
0242-374671	0.83	58	12	43
0242-374672	0.83	58	12	43
0242-374673	0.83	58	12	43
0242-374674	0.83	58	12	43
0242-374675	0.83	58	12	43
0242-374676	0.83	58	12	43
0242-374677	0.83	58	12	43
0242-374678	0.83	55	9.1	48
0242-374679	0.83	55	9.1	48
0242-374680	0.83	55	9.1	48
0242-374681	0.83	55	9.1	48
0242-374682	0.83	55	9.1	48
0242-374683	0.83	55	9.1	48

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374684	0.83	55	9.1	48
0242-374685	0.83	55	9.1	48
0242-374686	0.83	55	9.1	48
0242-374687	0.83	55	9.1	48
0242-374688	0.83	55	9.1	48
0242-374689	0.83	55	9.1	48
0242-374690	0.83	55	9.1	48
0242-374691	0.83	55	9.1	48
0242-374692	0.83	55	9.1	48
0242-374693	0.83	55	9.1	48
0242-374694	0.79	57	11	45
0242-374695	0.79	57	11	45
0242-374696	0.79	57	11	45
0242-374697	0.79	57	11	45

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1109263-23454-1
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1021122D	30.5	10.1	15
1021522A	29	11.1	15
1021522B	29	10.2	14
1021522C	29	11	14
1093021C	35	9.8	13.2
1093021D	36	9.9	12.4

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	oz/yd²
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**6**	**22**	**22**	**100**	**100**
2026826801	7.08	71.86	194.19	161	131
2026826803	7.72	79.28	200.73	167	132
2026923017	8.01	101.21	254.94	136	129
2026923024	7.86	113.74	217.73	136	125
2027011051	8	146	247	167	161
2027011052	8	146	247	167	161
2027011064	8	143	253	164	145
2027011066	8	134	241	163	165
2027011073	8	130	249	160	156
2027011074	8	127	228	172	151
2027011075	8	127	228	172	151
2027011077	7	119	213	165	157
2027011078	7	119	213	165	157
2027011079	7	119	213	165	157
2027011080	8	121	237	150	156

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261		oz/yd^2
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft^2	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**3**	**135**	**100**	**10**	**10**
3021090449	3.29	162.7	170.7	41	22
3021090781	3.33	157.7	131	36	17
3021111034	3.42	159.7	162	35	19
3021111036	3.27	168.4	137.6	40	18
3021120240	3.42	159.7	162	35	19
3021120256	3.27	156.8	135.5	40	16
3021120377	3.42	159.7	162	35	19

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-3

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1109263-20907-2
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1021122D	30.5	10.1	15
1021522A	29	11.1	15
1021522B	29	10.2	14
1021522C	29	11	14
1093021C	35	9.8	13.2
1093021D	36	9.9	12.4

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004612007	**10-03-21**	**1093021C**	**8.6**	**0.03**	**2.67**	**12.0**	**114**	**34**	**893**

OCTOBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.30**	**0.03**	**2.85**	**12.20**	**114.67**	**33.67**	**921.33**
3	STD DEV	**0.50**	**0.01**	**0.44**	**0.16**	**0.94**	**0.47**	**21.20**

DATE
10-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.05**	**0.15**	**4.08**	**12.67**	**114.58**	**32.66**	**964.15**
463	STD DEV	**0.72**	**0.42**	**1.85**	**0.67**	**3.64**	**2.00**	**51.45**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

File

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
10/04/21

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004612008	**10-04-21**	**1093021D**	**8.7**	**0.04**	**3.45**	**12.2**	**116**	**33**	**927**

OCTOBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.30**	**0.03**	**2.85**	**12.20**	**114.67**	**33.67**	**921.33**
3	STD DEV	**0.50**	**0.01**	**0.44**	**0.16**	**0.94**	**0.47**	**21.20**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.05**	**0.15**	**4.08**	**12.67**	**114.58**	**32.66**	**964.15**
463	STD DEV	**0.72**	**0.42**	**1.85**	**0.67**	**3.64**	**2.00**	**51.45**

DATE
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10/04/21

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668541	**02-15-22**	**1021122D**	**9.0**	**2.18**	**1.70**	**14.2**	**116**	**30**	**941**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.86**	**0.54**	**2.34**	**14.54**	**114.88**	**30.19**	**953.13**
16	STD DEV	**0.97**	**1.00**	**1.76**	**0.62**	**2.12**	**0.95**	**42.78**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.87**	**0.39**	**3.24**	**14.27**	**113.40**	**30.23**	**948.40**
43	STD DEV	**0.75**	**0.92**	**1.70**	**0.68**	**2.75**	**1.31**	**54.60**

DATE
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02/15/22

CC: Thomas Anderson
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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004668543	**02-15-22**	**1021522A**	**9.7**	**0.08**	**3.85**	**14.0**	**116**	**30**	**1016**

FEBRUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **17**	M AVG	**8.91**	**0.51**	**2.43**	**14.51**	**114.94**	**30.18**	**956.82**
	STD DEV	**0.96**	**0.98**	**1.74**	**0.62**	**2.07**	**0.92**	**44.06**

DATE
02-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **44**	M AVG	**8.88**	**0.38**	**3.25**	**14.27**	**113.45**	**30.23**	**949.93**
	STD DEV	**0.75**	**0.92**	**1.69**	**0.67**	**2.74**	**1.29**	**54.91**

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Prepared by: TO
02/16/22

CC: Thomas Anderson
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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668545	**02-15-22**	**1021522B**	**9.1**	**0.02**	**4.13**	**13.8**	**112**	**28**	**937**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.92**	**0.48**	**2.53**	**14.47**	**114.78**	**30.06**	**955.72**
18	STD DEV	**0.94**	**0.96**	**1.74**	**0.62**	**2.12**	**1.03**	**43.06**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.89**	**0.37**	**3.27**	**14.26**	**113.42**	**30.18**	**949.64**
45	STD DEV	**0.75**	**0.91**	**1.67**	**0.66**	**2.72**	**1.32**	**54.33**

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19103 Gundle RD
Houston, TX 77073

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/16/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668546	**02-15-22**	**1021522C**	**9.4**	**0.06**	**5.35**	**12.6**	**108**	**29**	**940**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.94**	**0.46**	**2.67**	**14.37**	**114.42**	**30.00**	**954.89**
19	STD DEV	**0.92**	**0.94**	**1.81**	**0.73**	**2.56**	**1.03**	**42.05**

DATE
02-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.37**	**3.32**	**14.22**	**113.30**	**30.15**	**949.43**
46	STD DEV	**0.74**	**0.90**	**1.68**	**0.70**	**2.80**	**1.32**	**53.76**

SOLD TO: **Solmax**
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Houston, TX 77073

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/17/22

CC: Thomas Anderson
Jason Tawse

File

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1	CONFORMANCE
Product Code : 1109263-20907-2					
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35					
TRI Pickup - Patricia Zabaleta					
1 ft x RW, 1/100,00 sf, min 1/Lot					
0242-374698	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374700	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374701	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374702	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374703	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374704	2022-02-22	1021522C	2027011073	3021120377	N/A
0242-374705	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374706	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374707	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374708	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374709	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374710	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374711	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374712	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374713	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374714	2022-02-22	1021522D	2027011054	3021120377	N/A
0242-374715	2022-02-22	1021522D	2330-542273	3021120377	N/A
0242-374716	2022-02-22	1021522D	2330-542273	3021120377	N/A
0242-374717	2022-02-22	1021522D	2330-542273	3021120377	N/A
0242-374718	2022-02-22	1021522D	2330-542273	3021120377	N/A

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX.COM

25 Feb 2022

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

0242-374719	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374720	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374721	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374722	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374723	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374724	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374725	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374726	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374727	2022-02-22	1021522D	2330-542309	3021120377	N/A
0242-374728	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374729	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374730	2022-02-22	1021522D	2330-542344	3021120486	1' Conformance
0242-374731	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374732	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374733	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374734	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374735	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374736	2022-02-22	1021522D	2330-542344	3021120486	N/A
0242-374737	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374738	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374739	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374740	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374741	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374742	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374743	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374744	2022-02-22	1022122A	2330-542258	3021120486	N/A
0242-374745	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374746	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374747	2022-02-22	1022122A	2330-542278	3021120486	N/A

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

0242-374748	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374749	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374750	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374751	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374752	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374753	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374754	2022-02-22	1022122A	2330-542278	3021120486	N/A
0242-374755	2022-02-22	1022122A	2330-542282	3021120486	N/A
0242-374756	2022-02-22	1022122A	2330-542282	3021120486	N/A
0242-374757	2022-02-22	1022122A	2330-542282	3021120486	N/A
0242-374758	2022-02-22	1022122A	2330-542282	3021120486	N/A
0242-374759	2022-02-22	1022122A	2330-542282	3021120486	N/A
0242-374760	2022-02-23	1022122A	2330-542282	3021110495	N/A
0242-374761	2022-02-23	1022122A	2330-542282	3021110495	N/A
0242-374762	2022-02-23	1022122A	2330-542282	3021110495	N/A
0242-374763	2022-02-23	1022122A	2330-542282	3021110495	N/A
0242-374764	2022-02-23	1022122A	2330-542337	3021110495	N/A
0242-374765	2022-02-23	1022122A	2330-542337	3021110495	N/A
0242-374766	2022-02-23	1022122A	2330-542337	3021110495	N/A
0242-374767	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374768	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374769	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374770	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374771	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374772	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374773	2022-02-23	1022122B	2330-542337	3021110495	N/A
0242-374774	2022-02-23	1022122B	2330-542283	3021110495	Conformance
0242-374775	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374776	2022-02-23	1022122B	2330-542283	3021110495	N/A

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25 Feb 2022

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

0242-374777	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374778	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374779	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374780	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374781	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374782	2022-02-23	1022122B	2330-542283	3021110495	N/A
0242-374783	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374784	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374785	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374786	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374787	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374788	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374789	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374790	2022-02-23	1022122B	2330-542277	3021110495	N/A
0242-374791	2022-02-23	1022122B	2330-542277	3021120239	N/A
0242-374792	2022-02-23	1022122B	2330-542275	3021120239	N/A
0242-374793	2022-02-23	1022122B	2330-542275	3021120239	N/A
0242-374794	2022-02-23	1022122B	2330-542275	3021120239	N/A
0242-374795	2022-02-23	1022122B	2330-542275	3021120239	N/A
0242-374796	2022-02-23	1022122B	2330-542275	3021120239	N/A
0242-374797	2022-02-23	1022122C	2330-542275	3021120239	N/A
0242-374798	2022-02-23	1022122C	2330-542275	3021120239	N/A
0242-374799	2022-02-23	1022122C	2330-542275	3021120239	N/A
0242-374800	2022-02-23	1022122C	2330-542275	3021120239	N/A
0242-374801	2022-02-23	1022122C	2330-542275	3021120239	N/A
0242-374802	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374803	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374804	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374805	2022-02-23	1022122C	2330-542269	3021120239	N/A

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25 Feb 2022

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MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

0242-374806	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374807	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374808	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374809	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374810	2022-02-23	1022122C	2330-542269	3021120239	N/A
0242-374811	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374812	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374813	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374814	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374815	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374816	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374817	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374818	2022-02-23	1022122C	2330-542320	3021120239	Conformance
0242-374819	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374820	2022-02-23	1022122C	2330-542320	3021120239	N/A
0242-374821	2022-02-23	1022122C	2330-542286	3021120239	N/A
0242-374822	2022-02-23	1022122C	2330-542286	3021120239	N/A
0242-374823	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374824	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374825	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374826	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374827	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374828	2022-02-23	1022122C	2330-542286	3021111062	N/A
0242-374829	2022-02-23	1022122D	2330-542286	3021111062	N/A
0242-374830	2022-02-23	1022122D	2330-542284	3021111062	N/A
0242-374831	2022-02-23	1022122D	2330-542284	3021111062	N/A
0242-374832	2022-02-23	1022122D	2330-542284	3021111062	N/A
0242-374833	2022-02-23	1022122D	2330-542284	3021111062	N/A
0242-374834	2022-02-24	1022122D	2330-542284	3021111062	N/A

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SOLMAX.COM

25 Feb 2022

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

0242-374835	2022-02-24	1022122D	2330-542284	3021111062	N/A
0242-374836	2022-02-24	1022122D	2330-542284	3021111062	N/A
0242-374837	2022-02-24	1022122D	2330-542284	3021111062	N/A
0242-374838	2022-02-24	1022122D	2330-542284	3021111062	N/A
0242-374839	2022-02-24	1022122D	2330-542284	3021111062	N/A
0242-374840	2022-02-24	1022122D	2330-542289	3021111062	N/A
0242-374841	2022-02-24	1022122D	2330-542289	3021111062	N/A
0242-374842	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374843	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374844	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374845	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374846	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374847	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374848	2022-02-24	1022122D	2330-542289	3021111000	N/A
0242-374849	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374850	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374851	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374852	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374853	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374854	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374855	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374856	2022-02-24	1022122D	2330-542343	3021111000	N/A
0242-374857	2022-02-24	1022322A	2330-542343	3021111000	N/A
0242-374858	2022-02-24	1022322A	2330-542280	3021111000	Conformance
0242-374859	2022-02-24	1022322A	2330-542280	3021111000	N/A
0242-374860	2022-02-24	1022322A	2330-542280	3021111000	N/A
0242-374861	2022-02-24	1022322A	2330-542280	3021111000	N/A

QUANTITY (ROLLS): 163

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SOLMAX.COM

25 Feb 2022

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1109263-20907-2
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**0.75**	**35**	**5.3**	**30**
0242-374698	0.79	57.0	11.0	45
0242-374700	0.79	57.0	11.0	45
0242-374701	0.79	57.0	11.0	45
0242-374702	0.79	57.0	11.0	45
0242-374703	0.79	57.0	11.0	45
0242-374704	0.79	57.0	11.0	45
0242-374705	0.79	57.0	11.0	45
0242-374706	0.79	57.0	11.0	45
0242-374707	0.79	57.0	11.0	45
0242-374708	0.79	57.0	11.0	45
0242-374709	0.79	57.0	11.0	45
0242-374710	0.92	69.0	14.8	50
0242-374711	0.92	69.0	14.8	50
0242-374712	0.92	69.0	14.8	50
0242-374713	0.92	69.0	14.8	50
0242-374714	0.92	69.0	14.8	50
0242-374715	0.92	69.0	14.8	50
0242-374716	0.92	69.0	14.8	50
0242-374717	0.92	69.0	14.8	50
0242-374718	0.92	69.0	14.8	50
0242-374719	0.92	69.0	14.8	50
0242-374720	0.92	69.0	14.8	50
0242-374721	0.92	69.0	14.8	50
0242-374722	0.92	69.0	14.8	50
0242-374723	0.92	69.0	14.8	50
0242-374724	0.92	69.0	14.8	50
0242-374725	0.92	69.0	14.8	50

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374726	0.78	52.0	10.2	40
0242-374727	0.78	52.0	10.2	40
0242-374728	0.78	52.0	10.2	40
0242-374729	0.78	52.0	10.2	40
0242-374730	0.78	52.0	10.2	40
0242-374731	0.78	52.0	10.2	40
0242-374732	0.78	52.0	10.2	40
0242-374733	0.78	52.0	10.2	40
0242-374734	0.78	52.0	10.2	40
0242-374735	0.78	52.0	10.2	40
0242-374736	0.78	52.0	10.2	40
0242-374737	0.78	52.0	10.2	40
0242-374738	0.78	52.0	10.2	40
0242-374739	0.78	52.0	10.2	40
0242-374740	0.78	52.0	10.2	40
0242-374741	0.78	52.0	10.2	40
0242-374742	0.83	57.0	12.7	33
0242-374743	0.83	57.0	12.7	33
0242-374744	0.83	57.0	12.7	33
0242-374745	0.83	57.0	12.7	33
0242-374746	0.83	57.0	12.7	33
0242-374747	0.83	57.0	12.7	33
0242-374748	0.83	57.0	12.7	33
0242-374749	0.83	57.0	12.7	33
0242-374750	0.83	57.0	12.7	33
0242-374751	0.83	57.0	12.7	33
0242-374752	0.83	57.0	12.7	33
0242-374753	0.83	57.0	12.7	33
0242-374754	0.83	57.0	12.7	33
0242-374755	0.83	57.0	12.7	33
0242-374756	0.83	57.0	12.7	33
0242-374757	0.83	57.0	12.7	33
0242-374758	0.78	60.0	12.3	39
0242-374759	0.78	60.0	12.3	39
0242-374760	0.78	60.0	12.3	39
0242-374761	0.78	60.0	12.3	39

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374762	0.78	60.0	12.3	39
0242-374763	0.78	60.0	12.3	39
0242-374764	0.78	60.0	12.3	39
0242-374765	0.78	60.0	12.3	39
0242-374766	0.78	60.0	12.3	39
0242-374767	0.78	60.0	12.3	39
0242-374768	0.78	60.0	12.3	39
0242-374769	0.78	60.0	12.3	39
0242-374770	0.78	60.0	12.3	39
0242-374771	0.78	60.0	12.3	39
0242-374772	0.78	60.0	12.3	39
0242-374773	0.78	60.0	12.3	39
0242-374774	0.81	58.0	10.9	35
0242-374775	0.81	58.0	10.9	35
0242-374776	0.81	58.0	10.9	35
0242-374777	0.81	58.0	10.9	35
0242-374778	0.81	58.0	10.9	35
0242-374779	0.81	58.0	10.9	35
0242-374780	0.81	58.0	10.9	35
0242-374781	0.81	58.0	10.9	35
0242-374782	0.81	58.0	10.9	35
0242-374783	0.81	58.0	10.9	35
0242-374784	0.81	58.0	10.9	35
0242-374785	0.81	58.0	10.9	35
0242-374786	0.81	58.0	10.9	35
0242-374787	0.81	58.0	10.9	35
0242-374788	0.81	58.0	10.9	35
0242-374789	0.81	58.0	10.9	35
0242-374790	0.88	56.0	11.6	37
0242-374791	0.88	56.0	11.6	37
0242-374792	0.88	56.0	11.6	37
0242-374793	0.88	56.0	11.6	37
0242-374794	0.88	56.0	11.6	37
0242-374795	0.88	56.0	11.6	37
0242-374796	0.88	56.0	11.6	37
0242-374797	0.88	56.0	11.6	37

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374798	0.88	56.0	11.6	37
0242-374799	0.88	56.0	11.6	37
0242-374800	0.88	56.0	11.6	37
0242-374801	0.88	56.0	11.6	37
0242-374802	0.88	56.0	11.6	37
0242-374803	0.88	56.0	11.6	37
0242-374804	0.88	56.0	11.6	37
0242-374805	0.88	56.0	11.6	37
0242-374806	0.90	67.0	13.3	43
0242-374807	0.90	67.0	13.3	43
0242-374808	0.90	67.0	13.3	43
0242-374809	0.90	67.0	13.3	43
0242-374810	0.90	67.0	13.3	43
0242-374811	0.90	67.0	13.3	43
0242-374812	0.90	67.0	13.3	43
0242-374813	0.90	67.0	13.3	43
0242-374814	0.90	67.0	13.3	43
0242-374815	0.90	67.0	13.3	43
0242-374816	0.90	67.0	13.3	43
0242-374817	0.90	67.0	13.3	43
0242-374818	0.90	67.0	13.3	43
0242-374819	0.90	67.0	13.3	43
0242-374820	0.90	67.0	13.3	43
0242-374821	0.90	67.0	13.3	43
0242-374822	0.81	59.0	6.2	34
0242-374823	0.81	59.0	6.2	34
0242-374824	0.81	59.0	6.2	34
0242-374825	0.81	59.0	6.2	34
0242-374826	0.81	59.0	6.2	34
0242-374827	0.81	59.0	6.2	34
0242-374828	0.81	59.0	6.2	34
0242-374829	0.81	59.0	6.2	34
0242-374830	0.81	59.0	6.2	34
0242-374831	0.81	59.0	6.2	34
0242-374832	0.81	59.0	6.2	34
0242-374833	0.81	59.0	6.2	34

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX Charles Taylor APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4
0242-374834	0.81	59.0	6.2	34
0242-374835	0.81	59.0	6.2	34
0242-374836	0.81	59.0	6.2	34
0242-374837	0.81	59.0	6.2	34
0242-374838	0.80	53.0	10.0	43
0242-374839	0.80	53.0	10.0	43
0242-374840	0.80	53.0	10.0	43
0242-374841	0.80	53.0	10.0	43
0242-374842	0.80	53.0	10.0	43
0242-374843	0.80	53.0	10.0	43
0242-374844	0.80	53.0	10.0	43
0242-374845	0.80	53.0	10.0	43
0242-374846	0.80	53.0	10.0	43
0242-374847	0.80	53.0	10.0	43
0242-374848	0.80	53.0	10.0	43
0242-374849	0.80	53.0	10.0	43
0242-374850	0.80	53.0	10.0	43
0242-374851	0.80	53.0	10.0	43
0242-374852	0.80	53.0	10.0	43
0242-374853	0.80	53.0	10.0	43
0242-374854	0.80	52.0	9.8	40
0242-374855	0.80	52.0	9.8	40
0242-374856	0.80	52.0	9.8	40
0242-374857	0.80	52.0	9.8	40
0242-374858	0.80	52.0	9.8	40
0242-374859	0.80	52.0	9.8	40
0242-374860	0.80	52.0	9.8	40
0242-374861	0.80	52.0	9.8	40

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1109263-20907-2
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NS, Peel 35

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	oz/yd²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**6**	**22**	**22**	**130**	**100**
2330-542258	6.7	44	52	198	241
2330-542269	6.8	46	54	237	237
2330-542273	6.7	50	47	235	231
2330-542275	6.7	50	47	235	231
2330-542277	6.7	50	47	235	231
2330-542278	6.7	50	47	235	231
2330-542280	6.7	50	47	235	231
2330-542282	7.0	47	42	176	283
2330-542283	7.0	47	42	176	283
2330-542284	7.0	47	42	176	283
2330-542286	7.0	47	42	176	283
2330-542289	6.9	42	50	252	247
2330-542309	6.4	38	34	201	208
2330-542320	6.7	30	44	219	225
2330-542337	6.3	33	28	211	201
2330-542343	6.3	33	28	211	201
2330-542344	6.3	33	28	211	201

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1021522C	29.0	11.0	14
1021522D	31.0	10.7	15
1022122A	31.5	10.0	15
1022122B	30.0	10.0	16
1022122C	27.0	10.9	15
1022122D	30.0	9.7	15
1022322A	29.0	9.8	15

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	oz/yd²
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**6**	**22**	**22**	**100**	**100**
2027011054	8.0	137	265	158	160
2027011073	8.0	130	249	160	156

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-5

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261		oz/yd^2
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft^2	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**3**	**135**	**100**	**10**	**10**
3021110495	3.3	171	161	39	19
3021111000	3.3	164	135	37	18
3021111062	3.3	157	136	40	16
3021120239	3.3	168	138	40	18
3021120377	3.4	160	162	35	19
3021120486	3.3	173	166	39	19

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668546	**02-15-22**	**1021522C**	**9.4**	**0.06**	**5.35**	**12.6**	**108**	**29**	**940**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.94**	**0.46**	**2.67**	**14.37**	**114.42**	**30.00**	**954.89**
19	STD DEV	**0.92**	**0.94**	**1.81**	**0.73**	**2.56**	**1.03**	**42.05**

DATE
02-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.37**	**3.32**	**14.22**	**113.30**	**30.15**	**949.43**
46	STD DEV	**0.74**	**0.90**	**1.68**	**0.70**	**2.80**	**1.32**	**53.76**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

File

Prepared by: TO
02/17/22

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668650	**02-21-22**	**1021522D**	**9.5**	**0.12**	**6.36**	**13.6**	**114**	**29**	**990**
B0004668549	**02-21-22**	**1022122A**	**8.5**	**0.05**	**2.36**	**14.4**	**116**	**30**	**963**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.95**	**0.43**	**2.83**	**14.33**	**114.48**	**29.95**	**956.95**
21	STD DEV	**0.89**	**0.90**	**1.89**	**0.72**	**2.46**	**1.00**	**40.71**

DATE
02-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.35**	**3.36**	**14.21**	**113.38**	**30.13**	**950.56**
48	STD DEV	**0.73**	**0.88**	**1.71**	**0.69**	**2.77**	**1.30**	**52.97**

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Houston, TX 77073

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Tucker Goodvin

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Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/22/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668650	**02-21-22**	**1021522D**	**9.5**	**0.12**	**6.36**	**13.6**	**114**	**29**	**990**
B0004668549	**02-21-22**	**1022122A**	**8.5**	**0.05**	**2.36**	**14.4**	**116**	**30**	**963**

FEBRUARY

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
21	M AVG	**8.95**	**0.43**	**2.83**	**14.33**	**114.48**	**29.95**	**956.95**
	STD DEV	**0.89**	**0.90**	**1.89**	**0.72**	**2.46**	**1.00**	**40.71**

DATE
02-*

YTD

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
48	M AVG	**8.90**	**0.35**	**3.36**	**14.21**	**113.38**	**30.13**	**950.56**
	STD DEV	**0.73**	**0.88**	**1.71**	**0.69**	**2.77**	**1.30**	**52.97**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/22/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668552	**02-22-22**	**1022122B**	**8.8**	**0.08**	**4.11**	**14.4**	**118**	**34**	**1035**
B0004668555	**02-22-22**	**1022122C**	**9.9**	**0.14**	**3.14**	**14.0**	**116**	**30**	**1016**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.98**	**0.40**	**2.90**	**14.32**	**114.70**	**30.13**	**962.91**
23	STD DEV	**0.87**	**0.86**	**1.83**	**0.69**	**2.47**	**1.26**	**43.53**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.92**	**0.34**	**3.37**	**14.21**	**113.52**	**30.20**	**953.56**
50	STD DEV	**0.73**	**0.86**	**1.68**	**0.68**	**2.82**	**1.39**	**53.97**

DATE
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Houston, TX 77073

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Q.A. SUPERVISOR
Tucker Goodvin

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02/22/22

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Jason Tawse

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CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

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554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004668552	**02-22-22**	**1022122B**	**8.8**	**0.08**	**4.11**	**14.4**	**118**	**34**	**1035**
B0004668555	**02-22-22**	**1022122C**	**9.9**	**0.14**	**3.14**	**14.0**	**116**	**30**	**1016**

FEBRUARY		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.98**	**0.40**	**2.90**	**14.32**	**114.70**	**30.13**	**962.91**
23	STD DEV	**0.87**	**0.86**	**1.83**	**0.69**	**2.47**	**1.26**	**43.53**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.92**	**0.34**	**3.37**	**14.21**	**113.52**	**30.20**	**953.56**
50	STD DEV	**0.73**	**0.86**	**1.68**	**0.68**	**2.82**	**1.39**	**53.97**

DATE
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Cheryl Hofer (chofer@gseworld.com)

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SHIPPED TO: **Solmax**
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SPEARFISH, SD 57783

Prepared by: TO
02/22/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004668556	**02-22-22**	**1022122D**	**8.6**	**0.13**	**3.62**	**14.2**	**112**	**32**	**996**

FEBRUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **24**	M AVG	**8.97**	**0.39**	**2.93**	**14.32**	**114.58**	**30.21**	**964.29**
	STD DEV	**0.86**	**0.85**	**1.79**	**0.68**	**2.48**	**1.29**	**43.12**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **51**	M AVG	**8.92**	**0.34**	**3.38**	**14.21**	**113.49**	**30.24**	**954.39**
	STD DEV	**0.73**	**0.86**	**1.66**	**0.67**	**2.80**	**1.39**	**53.77**

DATE
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SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/23/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004668558	**02-23-22**	**1022322A**	**8.9**	**0.19**	**2.34**	**14.0**	**114**	**31**	**990**

FEBRUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **25**	M AVG	**8.96**	**0.38**	**2.91**	**14.30**	**114.56**	**30.24**	**965.32**
	STD DEV	**0.84**	**0.83**	**1.76**	**0.66**	**2.43**	**1.27**	**42.55**

DATE
02-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **52**	M AVG	**8.92**	**0.34**	**3.36**	**14.21**	**113.50**	**30.25**	**955.08**
	STD DEV	**0.72**	**0.85**	**1.65**	**0.67**	**2.77**	**1.39**	**53.47**

SOLD TO: **Solmax**
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Houston, TX 77073

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/24/22

CC: Thomas Anderson
Jason Tawse

File

TRI ENVIRONMENTAL

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES

Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

November 8, 2021

Mail To:

Chuck Taylor
Solmax

ctaylor@solmax.com

Bill To:

<= Same (PO # 515580)

Greetings,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project:	BentoLiner NS (.75lb) P35 Periodic Shear
TRI Job Reference Number:	68252
Material(s) Tested:	One Solmax Bentoliner NS GCL
Test(s) Requested:	Internal Shear Strength (ASTM D6243)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel, Ph.D.

Geosynthetic Services Division

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TRI ENVIRONMENTAL
TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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GCL TEST RESULTS
TRI Client: Solmax
Project: Howard County LF Cell 2A Construction

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-371022
TRI Log #: 68252

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.
	1						
Internal Shear Strength (ASTM D6243, modified via single point, shear at 0.04 ipm)							
Sample hydrated under	**200**	**psf for**	**24**	**hours**			
Maximum Internal Shear Strengfth (psf)	1287		Secant Friction Angle (degrees)		81.2	**1287**	-

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Report Date
2/23/2022

Quality Assurance Laboratory Test Results

Index Flux - Hydraulic Conductivity report

MF-LAB-52

Revision:01

Date: 2021-09-09

Project: NORTH RANCH LANDFILL
Sales Order: SO-092987
Product: Bentoliner 0.75 lbs/ft², NS, Peel 35

Required Testing: ASTM D5887 - Standard Test Method for Measurement of Index Flux Through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter

Frequency: 1/270,000 sf

Effective Stress: 5 psi

Roll Number	Production Date	Index Flux ($m^3/m^2/sec$)	Hydraulic Conductivity (cm/sec)
0242-370623	10/18/2021	5.33E-09	2.32E-09
0242-374598	2/16/2022	2.68E-09	1.13E-09

Approved By:	Chuck Taylor
Date Approved:	02/23/22

Report Date
3/1/2022

Quality Assurance Laboratory Test Results

Index Flux - Hydraulic Conductivity report

MF-LAB-52

Revision:01

Date: 2021-09-09

Project: NORTH RANCH LANDFILL
Sales Order: SO-092987
Product: Bentoliner 0.75 lbs/ft², NS, Peel 35

Required Testing: ASTM D5887 - Standard Test Method for Measurement of Index Flux Through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter

Frequency: 1/270,000 sf

Effective Stress: 5 psi

Roll Number	Production Date	Index Flux ($m^3/m^2/sec$)	Hydraulic Conductivity (cm/sec)
0242-370623	10/18/2021	5.33E-09	2.32E-09
0242-374598	2/16/2022	2.68E-09	1.13E-09
0242-374714	2/22/2022	2.84E-09	9.83E-10
0242-374834	2/24/2022	3.19E-09	1.41E-09

Approved By:	Chuck Taylor
Date Approved:	03/01/22

TRI ENVIRONMENTAL

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES

Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

March 4, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, Tx

ravi@hr-epc.com

Bill To:

<= Same

Greetings,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	70253
Material(s) Tested:	One Solmax Bentoliner NS GCL
Test(s) Requested:	Mass Per Unit Area (ASTM D5993) Tensile Strength (ASTM D6768) Index Flux (ASTM D5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel, Ph.D.

Geosynthetic Services Division

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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GCL TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374686
TRI Log #: 70253

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)								
Mass/unit area (lbs/ft^2)								
GCL (ω = 0%)	0.91	0.88	0.93	0.89	0.92	**0.91**	0.02	
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)						
Bentonite (ω = 0%)	0.85	0.82	0.86	0.83	0.86	**0.84**	0.02	0.75 MIN
Moisture Content (%)	9.8	9.9	9.9	10.1	10.1	**10.0**	0.1	-
Tensile Strength (ASTM D6768)								
MD - Tensile Strength (lbs/in)	49.9	45.9	46.0	40.1	47.5	**45.9**	3.6	30 MIN
Index Flux (ASTM D5887)								
Index Flux (m^3/m^2/sec)		3.0E-09				**3.0E-09**		1.0E-08 MAX
Hydraulic Conductivity (cm/sec)		1.2E-09				**1.2E-09**		5.0E-09 MAX

MD Machine Direction

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March 14, 2022
March 30, 2022

Updated Index Flux results

Mail To:

Ravi Vemulaoalli
High Roller EPC/ NuBlu Energy

Houston TX

ravi@hr-epc.com
travis@hr-epc.com
mbradford@scsengineers.com, Xavier@cqasolutions.co

Bill To:

<= Same

Greetings,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	70256
Material(s) Tested:	Three Solmax Bentoliner NS GCL
Test(s) Requested:	Mass Per Unit Area (ASTM D5993) Tensile Strength (ASTM D6768) Index Flux (ASTM D5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel, Ph.D.

Geosynthetic Services Division

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GCL TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374598
TRI Log #: 70256

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)							
Mass/unit area (lbs/ft^2)							
GCL (ω = 0%)	0.91	1.00	0.97	0.96	0.97	**0.96**	0.03
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)					
Bentonite (ω = 0%)	0.85	0.94	0.91	0.89	0.90	**0.90**	0.03
Moisture Content (%)	9.8	9.9	9.9	10.0	10.0	**9.9**	0.1
Tensile Strength (ASTM D6768)							
MD - Tensile Strength (lbs/in)	48.0	44.1	48.2	47.2	48.5	**47.2**	1.8
Index Flux (ASTM D5887)							
Index Flux (m^3/m^2/sec)		3.3E-09				**3.3E-09**	
Hydraulic Conductivity (cm/sec)		1.3E-09				**1.3E-09**	

MD Machine Direction

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GCL TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-370623
TRI Log #: 70256

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)							
Mass/unit area (lbs/ft^2)							
GCL (ω = 0%)	1.03	0.91	0.97	0.93	0.95	**0.96**	0.04
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)					
Bentonite (ω = 0%)	0.97	0.85	0.90	0.87	0.89	**0.90**	0.04
Moisture Content (%)	9.0	8.9	9.0	9.0	9.0	**9.0**	0.0
Tensile Strength (ASTM D6768)							
MD - Tensile Strength (lbs/in)	43.1	43.7	42.2	39.7	40.6	**41.9**	1.7
Index Flux (ASTM D5887)							
Index Flux (m^3/m^2/sec)		2.2E-09				**2.2E-09**	
Hydraulic Conductivity (cm/sec)		8.2E-10				**8.2E-10**	

MD Machine Direction

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GCL TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-370642
TRI Log #: 70256

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)							
Mass/unit area (lbs/ft^2)							
GCL (ω = 0%)	0.93	1.03	0.91	0.94	0.90	**0.94**	0.05
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)					
Bentonite (ω = 0%)	0.86	0.97	0.84	0.88	0.84	**0.88**	0.05
Moisture Content (%)	10.3	10.3	10.3	10.3	10.4	**10.3**	0.0
Tensile Strength (ASTM D6768)							
MD - Tensile Strength (lbs/in)	39.1	40.9	40.3	42.1	38.0	**40.1**	1.6
Index Flux (ASTM D5887)							
Index Flux (m^3/m^2/sec)		2.7E-09				**2.7E-09**	
Hydraulic Conductivity (cm/sec)		9.6E-10				**9.6E-10**	

MD Machine Direction

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TRI ENVIRONMENTAL, INC.
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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

March 14, 2022
March 15, 2022 Updated - Added remaining Index results

Mail To:

Ravi Vemulaoalli
High Roller EPC/ NuBlu Energy

Houston TX

ravi@hr-epc.com

Bill To:

<= Same

Greetings,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	70385
Material(s) Tested:	Two Solmax Bentoliner NS GCL
Test(s) Requested:	Mass Per Unit Area (ASTM D5993) Tensile Strength (ASTM D6768) Index Flux (ASTM D5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel, Ph.D.

Geosynthetic Services Division

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GCL TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374730
TRI Log #: 70385

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)							
Mass/unit area (lbs/ft^2)							
GCL (ω = 0%)	0.82	0.89	0.89	0.82	0.89	**0.86**	0.04
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)					
Bentonite (ω = 0%)	0.75	0.82	0.83	0.76	0.83	**0.80**	0.04
Moisture Content (%)	9.6	9.7	10.0	9.9	10.0	**9.8**	0.2
Tensile Strength (ASTM D6768)							
MD - Tensile Strength (lbs/in)	44.1	41.0	38.3	43.1	41.5	**41.6**	2.2
Index Flux (ASTM D5887)							
Index Flux (m^3/m^2/sec)		3.0E-09				**3.0E-09**	
Hydraulic Conductivity (cm/sec)		1.4E-09				**1.4E-09**	

MD Machine Direction

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GCL TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374774
TRI Log #: 70385

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)							
Mass/unit area (lbs/ft^2)							
GCL (ω = 0%)	0.89	0.90	0.88	0.94	0.86	**0.90**	0.03
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)					
Bentonite (ω = 0%)	0.83	0.84	0.82	0.88	0.80	**0.83**	0.03
Moisture Content (%)	10.8	10.8	10.6	10.9	10.8	**10.8**	0.1
Tensile Strength (ASTM D6768)							
MD - Tensile Strength (lbs/in)	42.6	40.0	39.8	40.2	42.3	**41.0**	1.4
Index Flux (ASTM D5887)							
Index Flux (m^3/m^2/sec)		3.9E-09				**3.9E-09**	
Hydraulic Conductivity (cm/sec)		1.5E-09				**1.5E-09**	

MD Machine Direction

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TRI ENVIRONMENTAL, INC.
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March 16, 2022
March 18, 2022 Updated - Added Index results

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, TX

ravi@hr-epc.com

Bill To:

<= Same

Greetings,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project: **North Ranch Landfill**

TRI Job Reference Number: 70414

Material(s) Tested: Three Solmax Bentoliner NS GCLs

Test(s) Requested:
Mass Per Unit Area (ASTM D5993)
Tensile Strength (ASTM D6768)
Index Flux (ASTM D5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel, Ph.D.

Geosynthetic Services Division

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GCL TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374818
TRI Log #: 70414

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)								
Mass/unit area (lbs/ft^2)								
GCL (ω = 0%)	1.02	0.99	0.97	0.97	1.00	**0.99**	0.02	
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)						
Bentonite (ω = 0%)	0.95	0.93	0.91	0.90	0.94	**0.93**	0.02	0.75 MIN
Moisture Content (%)	9.7	9.9	9.8	9.8	10.1	**9.8**	0.1	-
Tensile Strength (ASTM D6768)								
MD - Tensile Strength (lbs/in)	48.4	44.2	40.4	43.3	44.1	**44.1**	2.9	30 MIN
Index Flux (ASTM D5887)								
Index Flux (m^3/m^2/sec)		5.7E-09				**5.7E-09**		1.0E-08 MAX
Hydraulic Conductivity (cm/sec)		1.4E-09				**1.4E-09**		5.0E-09 MAX

MD Machine Direction

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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GCL TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374858
TRI Log #: 70414

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)								
Mass/unit area (lbs/ft^2)								
GCL (ω = 0%)	0.93	0.87	0.85	0.81	0.90	**0.87**	0.05	
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)						
Bentonite (ω = 0%)	0.86	0.80	0.79	0.74	0.84	**0.81**	0.05	0.75 MIN
Moisture Content (%)	10.0	10.0	10.2	10.1	10.1	**10.1**	0.1	-
Tensile Strength (ASTM D6768)								
MD - Tensile Strength (lbs/in)	43.9	41.1	43.7	45.9	43.4	**43.6**	1.7	30 MIN
Index Flux (ASTM D5887)								
Index Flux (m^3/m^2/sec)		2.6E-09				**2.6E-09**		1.0E-08 MAX
Hydraulic Conductivity (cm/sec)		9.1E-10				**9.1E-10**		5.0E-09 MAX

MD Machine Direction

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GCL TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax Bentoliner NS GCL
Sample Identification: 0242-374862
TRI Log #: 70414

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)								
Mass/unit area (lbs/ft^2)								
GCL (ω = 0%)	0.96	0.92	1.01	0.93	0.91	**0.95**	0.04	
Non-Bentonite Components	0.063	(Assumed Material-Specific Value)						
Bentonite (ω = 0%)	0.90	0.86	0.95	0.87	0.85	**0.89**	0.04	0.75 MIN
Moisture Content (%)	9.3	8.9	9.0	8.9	9.2	**9.1**	0.2	-
Tensile Strength (ASTM D6768)								
MD - Tensile Strength (lbs/in)	46.3	44.5	43.4	44.0	40.2	**43.7**	2.2	30 MIN
Index Flux (ASTM D5887)								
Index Flux (m^3/m^2/sec)		4.2E-09				**4.2E-09**		1.0E-08 MAX
Hydraulic Conductivity (cm/sec)		1.5E-09				**1.5E-09**		5.0E-09 MAX

MD Machine Direction

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SCS ENGINEERS Environmental Consultants & Contractors

February 28, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #12 and 12A – EPG Series 7 Pump

Submitted Date: 2/25/22 – 2/28/22

Information Submitted:

SCS Engineers have received material submittal for the submersible pumps for both the Truck Wash station and the Cell E-1 Leachate System. Pumps submitted are EPG Companies Inc. Series 7 SurePump with manufacturer's recommended controllers and appurtenances. The Cell E-1 Pump is a SurePump Series 7-3 and the Truck Wash is a SurePump Series 7-2. The TruckWash pump has been equipped with a slotted screen for it's specific application.

SCS Response:

SCS has reviewed the pump specifications submitted and approve both pumps with no comment.

copy:

Received by OCD: 8/24/2022 3:28:31 PM

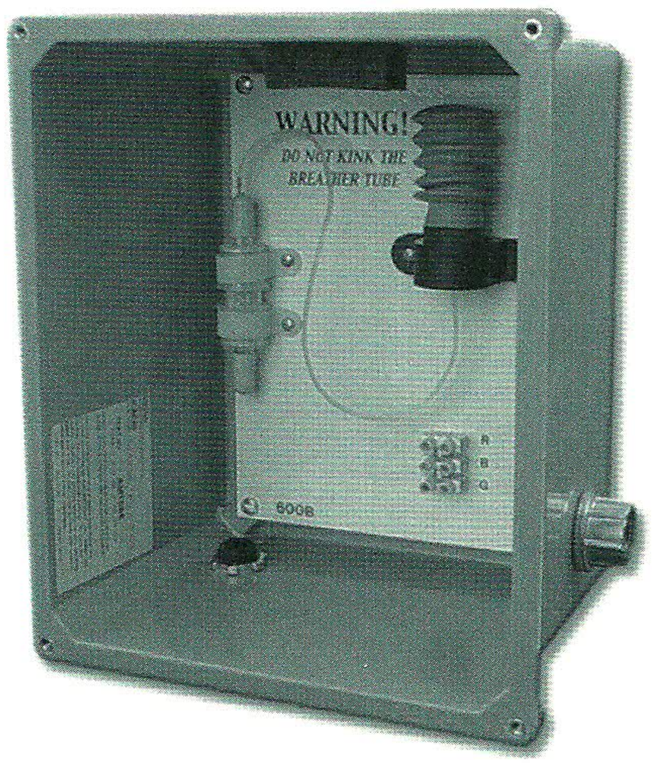
Breakout Junction Boxes

To simplify maintenance and repair and increase the safety of your system, install an EPG Breakout Junction Box between your pump and control panel.

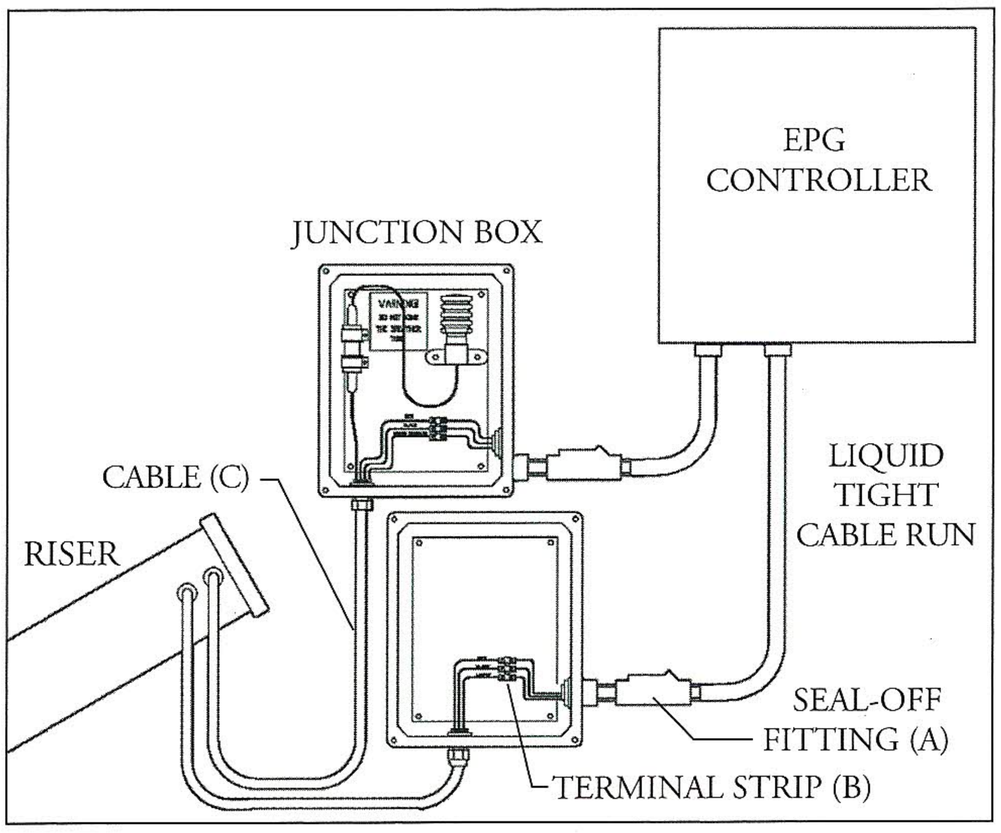
EPG Breakout Junction Boxes provide a simple and convenient way to disconnect power or sensor wires during maintenance and/or repair work. They also provide a gas-tight seal between your riser, well or sump and your control panel. Corrosive gases migrating through motor and sensor cable conduit to the controller is a major contributor to early control panel failure. Not only can these gases increase the chance for explosions, they also corrode contacts and make wires brittle. Give your system a break! Install an EPG Breakout Box close to the side slope riser or sump and then hardwire the breakout box to the controller.

EPG Breakout Junction Boxes - a break you need for optimum landfill operation!

- Seals off harmful gas migration (A)
- Equipped with FNPT waterproof exit hub
- Terminal strip to facilitate pump and sensor removal (B)
- Minimizes costs by running shorter motor or sensor cable (C)
- Available in a variety of configurations for one or more devices
- Weatherproof NEMA 4X enclosure with cord restraint, seal off and mounting hardware



BJBL600B



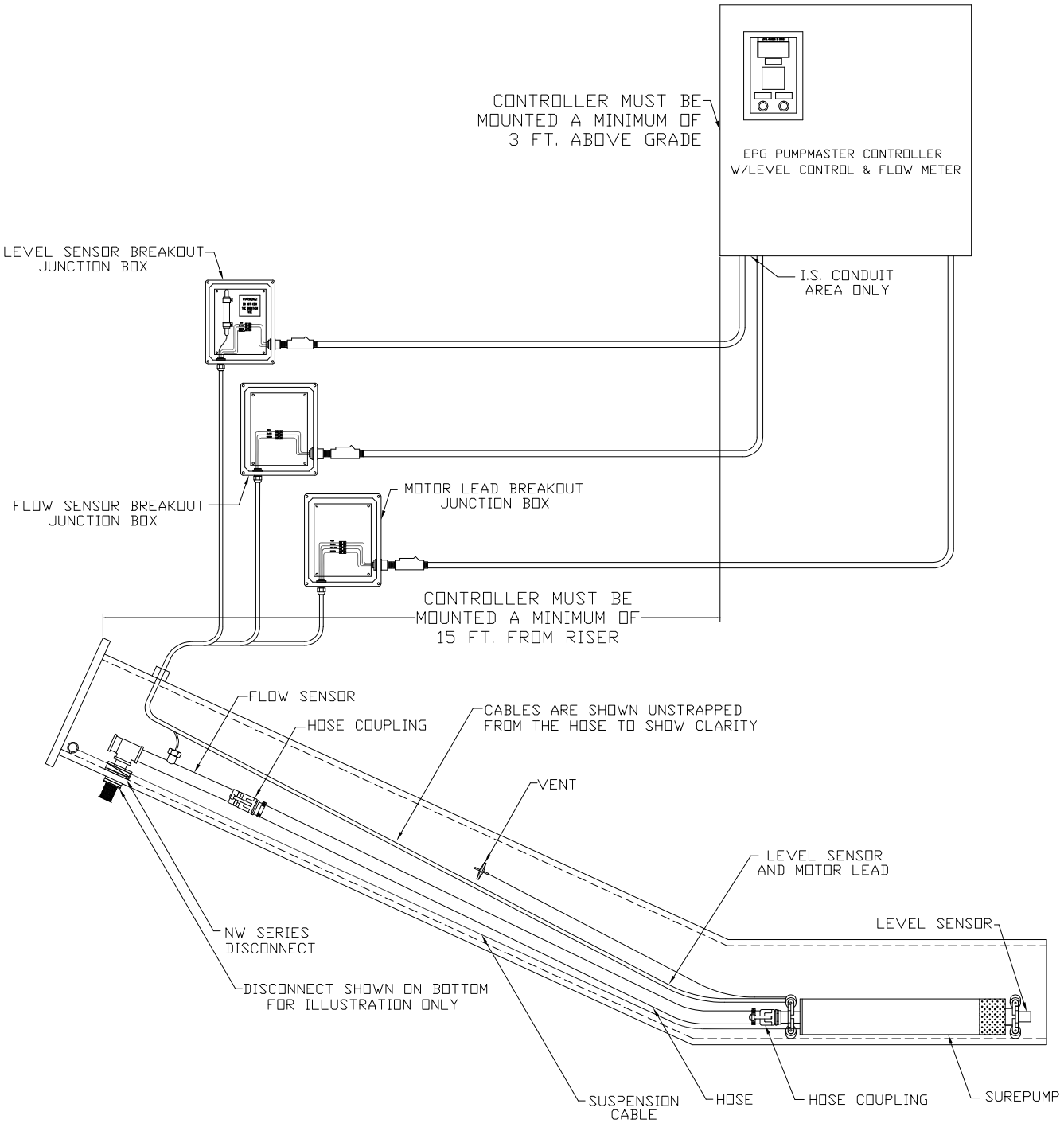
continued on back

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EPG DESIGN GUIDE

SIDE SLOPE RISER



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REFERENCE

TOLERANCES (EXCEPT AS NOTED)	REVISIONS NO.	DATE	BY
DECIMAL ±	1	12-30-02	ALO
FRACTIONAL ±	2	05-13-03	ALO
ANGULAR ±	3		
	4		
	5		

EPG COMPANIES

SIDE SLOPE RISER TYPICAL INSTALLATION

DESIGN	SCALE	MATERIAL
C.A.S.	NONE	
DRAWN C.A.S.	DATE 07/23/02	DRAWING NO. 05644-0000
CHK'D	APP'D	

"NW" Series

Stainless Steel Discharge Adapters



EPG's NW Stainless Steel Discharge Adapters are designed for leachate, monitoring and remediation piping applications. The discharge adapters fasten through a riser or sump wall to allow for quick and easy pump connections and disconnections.

Features include:

- Solid 316 Stainless Steel construction for "C" models. All others are 304 Stainless
- Insert and housing have tapered slide fittings and O-ring seals, to maximize liquid-tight slip joint sealing
- Designed for maximum service life and ease of maintenance
- Built in 90° elbow with blind top that has female threads to accept threaded pipe to facilitate easy removal
- Reduces the need for personnel to enter hazardous locations to make pump connections and disconnections
- EPDM gasket for inner and outer wall with a washer and lock nut to make a gas tight seal
- Extended length discharge allows adapter to fit through 0.25" to 3" material wall thickness
- 1", 1.25", 1.5", 2", and 3" NPT sized fittings for pump, lift-out, and discharge pipes

For more information, call EPG Companies Inc., your environmental solutions partner!

Sold By:

MODEL	"A"	"B"	Minimum I.D.
NW1SS	1" NPT	4"	8"
NW1.25SS	1.25" NPT	4"	8"
NW1.5SS-C	1.5" NPT	4"	8"
NW2SS-C	2" NPT	5"	8"
NW3SS	3" NPT	6.25"	12"

(763) 424-2613 (800) 443-7426 FAX: (763) 493-4812

Manufacturer of Environmental & Industrial Solutions

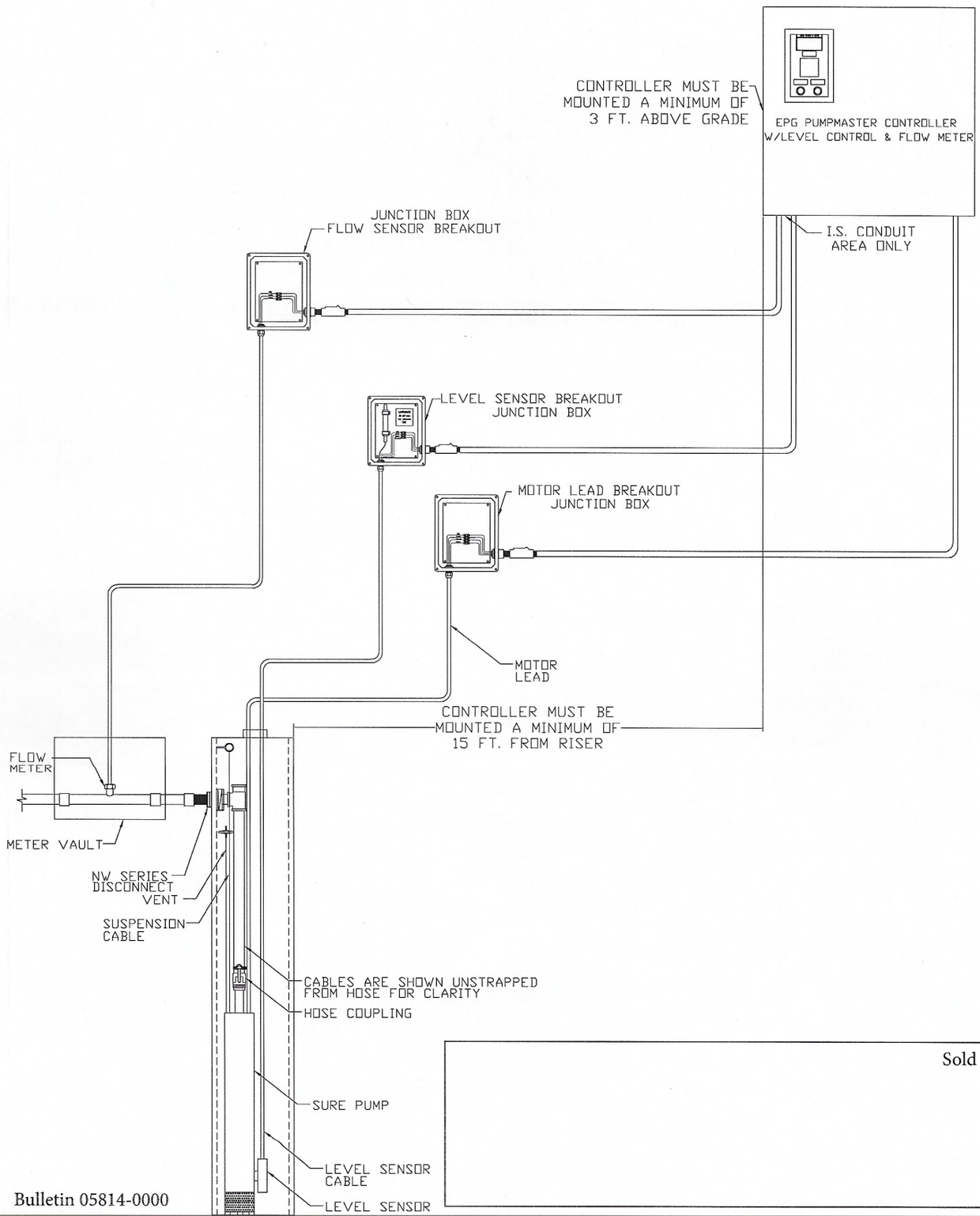
Mailing Address
P.O. Box 427
Rogers, MN 55374

Corporate Offices
19900 County Road 81
Maple Grove, MN 55311
www.epgco.com
info@epgco.com

Bulletin 0286

EPG DESIGN GUIDE

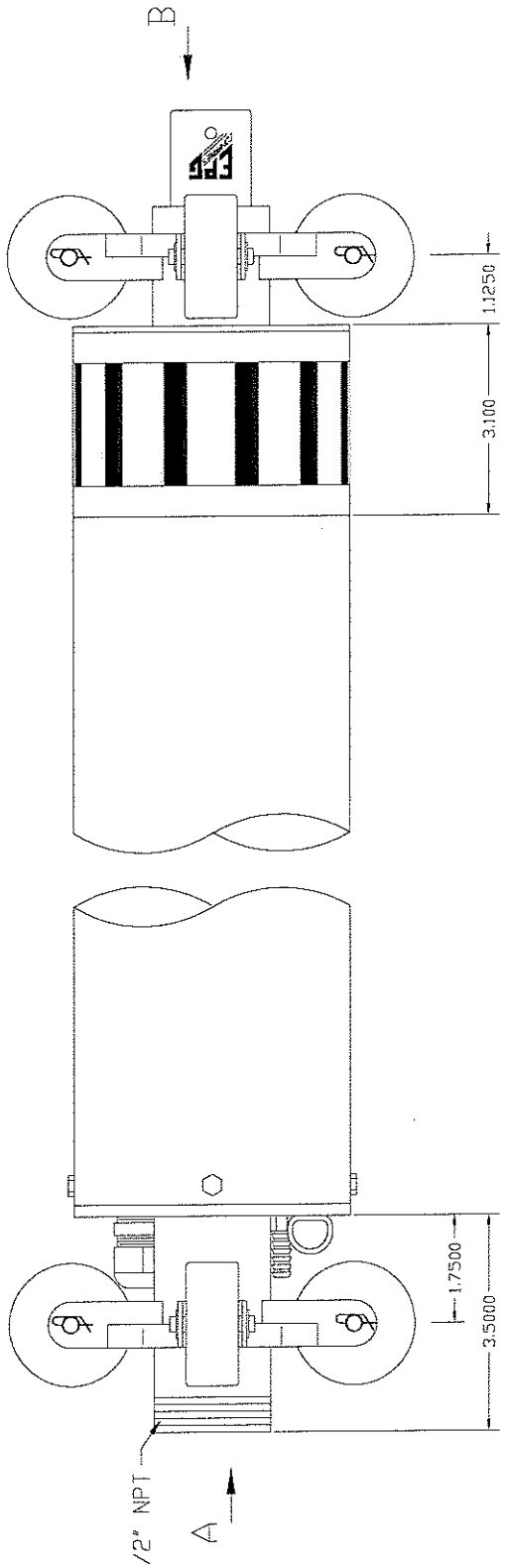
VERTICAL RISER

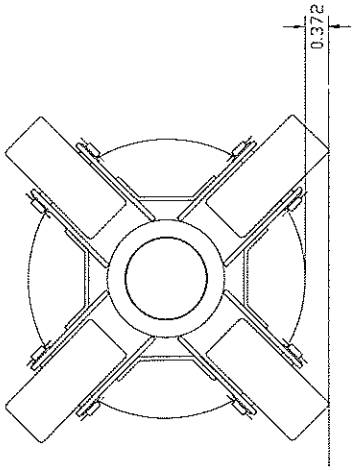


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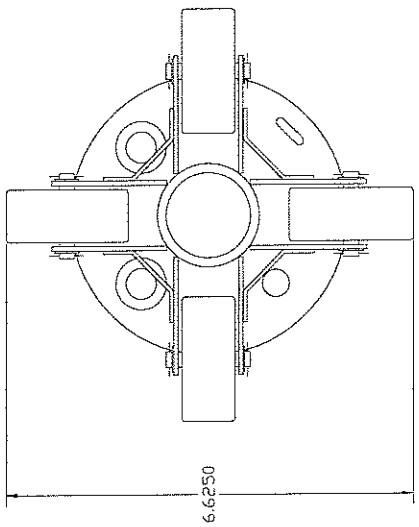
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VIEW B
ROTATED



VIEW A

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SIZE 4-1 1/2" WSDPTSL
ASSY/WELDMENT

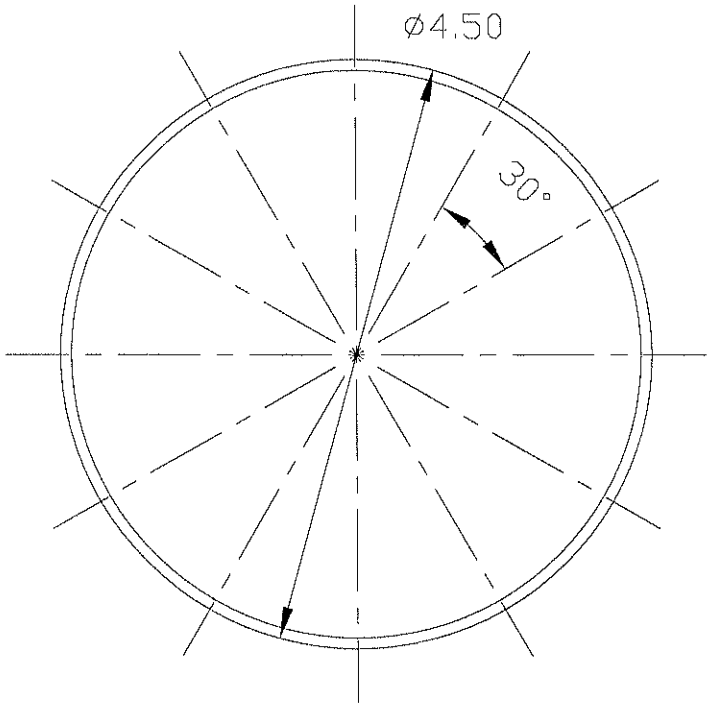
NO	REVISIONS DATE	BY
1	08-25-04	ALD
2	06-30-08	EJH
3		
4		
5		

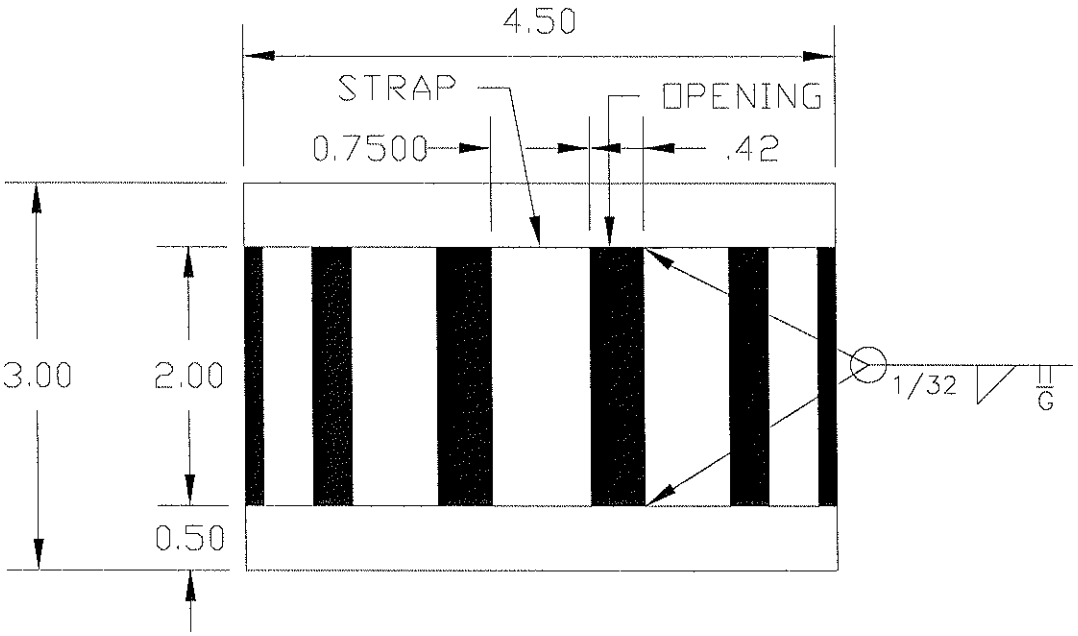
TOLERANCES
(EXCEPT AS NOTED)
DECIMAL
FRACTIONAL
ANGULAR

DESIGN A.L.D. SCALE
DRAWN A.L.D. DATE 09-29-03 MATERIAL
CHKD'D DRAWING NO 06172-0000

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM





NOTE:
1) WELD ALL STRAPS IN PLACE.
MATERIAL: 304 S.S.

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TOLERANCES (EXCEPT AS NOTED)	REVISIONS NO.	DATE	BY
DECIMAL .?	1	06-30-08	EJH
FRACTIONAL ?	2		
ANGULAR ?	3		
	4		
	5		

EPG COMPANIES
SIZE 4 WSDPTSL
INTAKE SCREEN

DESIGN	A.L.D.	SCALE	MATERIAL
DRAWN	A.L.D.	DATE 09-29-03	DRAWING NO. 06172-0001
CHK'D		APP'D	

SCS ENGINEERS Environmental Consultants & Contractors

April 27, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

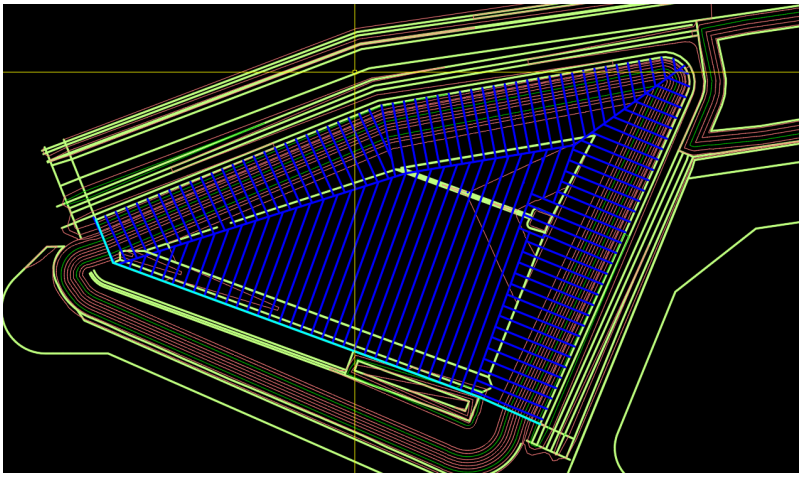
Response to Construction Material Submittal #13C – Cell E-1 and Leachate Pond Geomembrane Panel Layout

Requested Date: April 25, 2022

Information Requested:

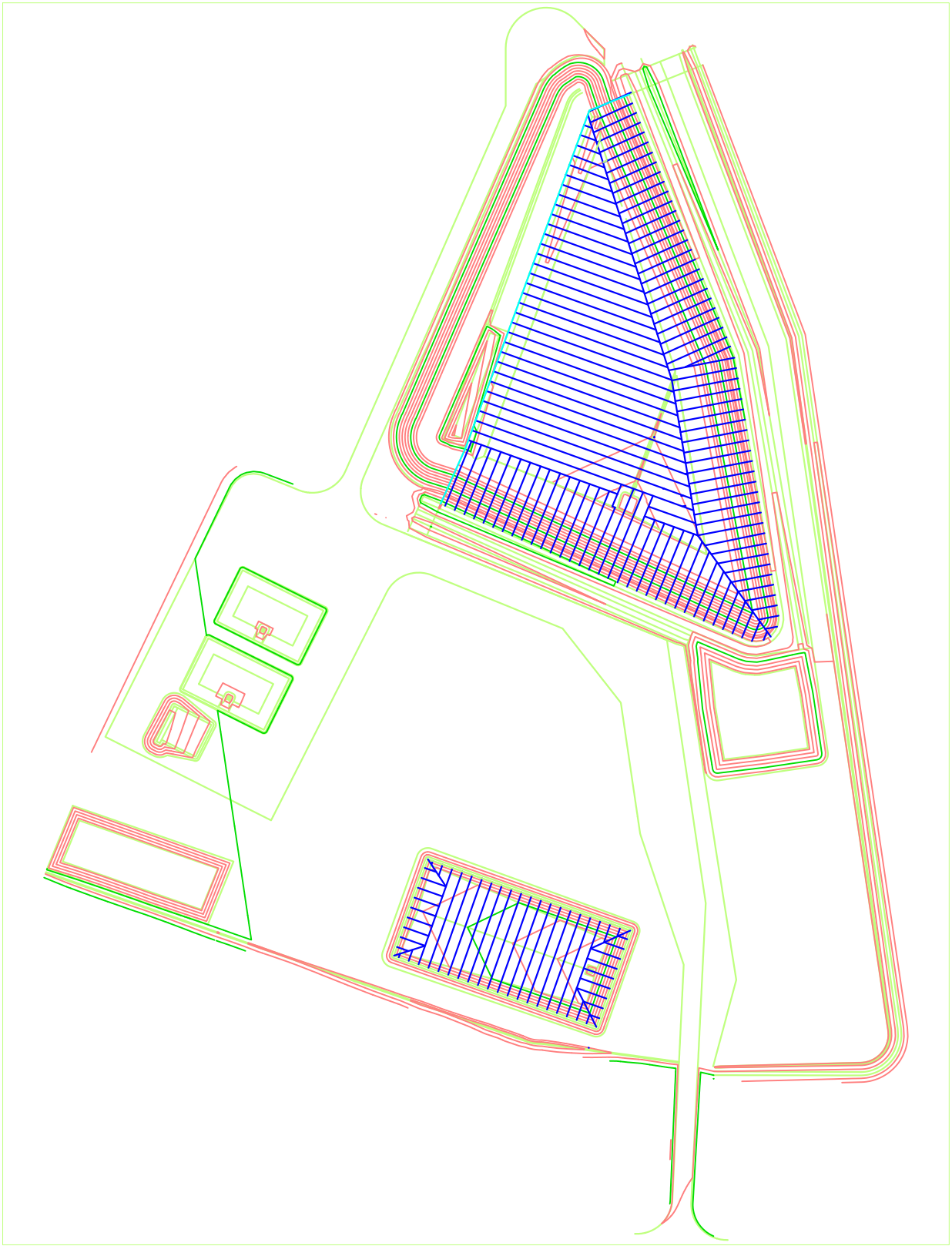
Mustang requests a revision to the Cell E-1 Secondary Geomembrane Panel Layout that was submitted and approved on March 1, 2022. No changes to the Leachate Evap Pond panel layout are proposed at this time.

SCS Response:



Certifying Engineer has reviewed the proposed panel layout revision for Cell E-1 submitted April 25, 2022. See below:

This panel layout for the Secondary Cell E-1 Geomembrane is APPROVED.



SCS ENGINEERS Environmental Consultants & Contractors

March 19, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #13a – Cell E-1 and Leachate Pond Geomembrane Panel Layout

Requested Date: March 1, 2022

Information Requested:

Panel Layout approval based on submitted layout from Mustang Extreme

SCS Response:

Certifying Engineer has reviewed the proposed panel layout submitted March 1, 2022 and approves.

copy:

SCS ENGINEERS Environmental Consultants & Contractors

April 27, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #13b – Cell E-1 and Leachate Pond Geomembrane Panel Layout

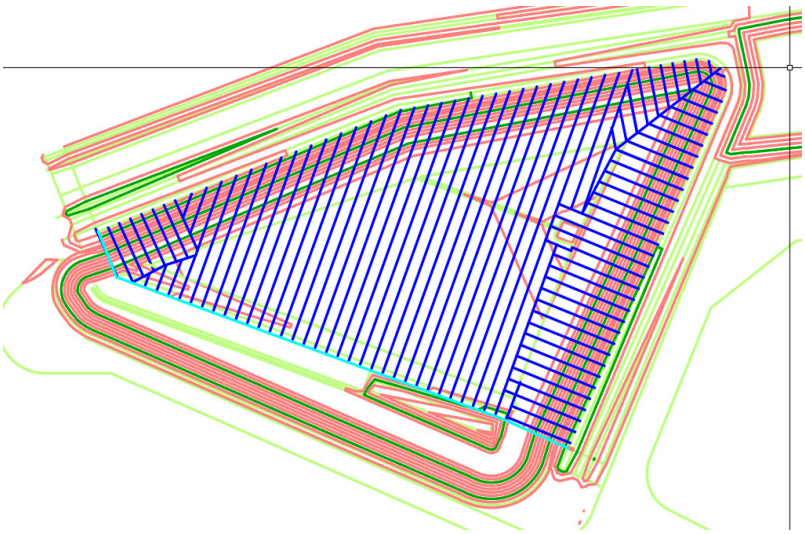
Requested Date: April 25, 2022

Information Requested:

Mustang requests a revision to the Cell E-1 Panel Layout that was submitted and approved on March 1, 2022. No changes to the Leachate Evap Pond panel layout are proposed at this time.

SCS Response:

Certifying Engineer has reviewed the proposed panel layout revision for Cell E-1 submitted April 25, 2022. See below:



<u>This panel layout is REJECTED as drawn and does not match what was discussed in the field or what is currently being installed</u>.

The issue is along the north slope. Installed membrane seams may not be at an angle to the 3:1 slopes and must be perpendicular or near perpendicular to the slope.

As discussed in the field and what is currently being installed the panels seams along the north slope must be perpendicular to the 3:1 slope and stop at the toe of the slope. Panel orientation along the floor as shown is acceptable and should tie to the toe line slope panel as described above. Please resubmit a panel layout for the secondary that matches field conditions.

SCS ENGINEERS Environmental Consultants & Contractors

April 27, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

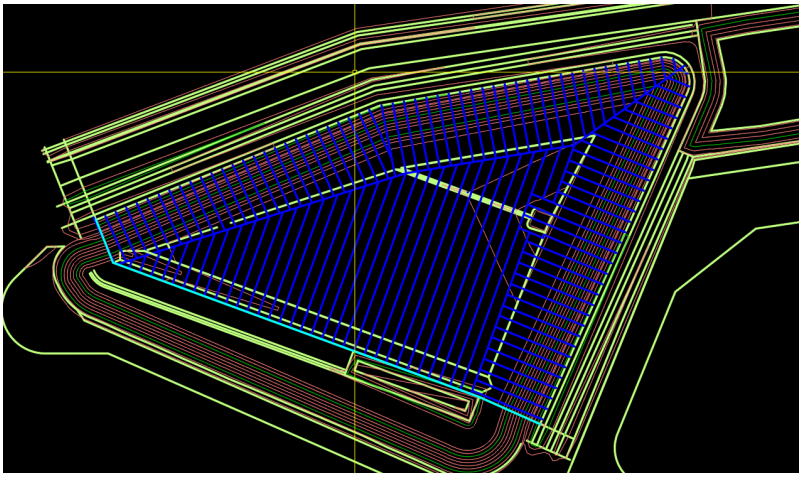
Response to Construction Material Submittal #13C – Cell E-1 and Leachate Pond Geomembrane Panel Layout

Requested Date: April 25, 2022

Information Requested:

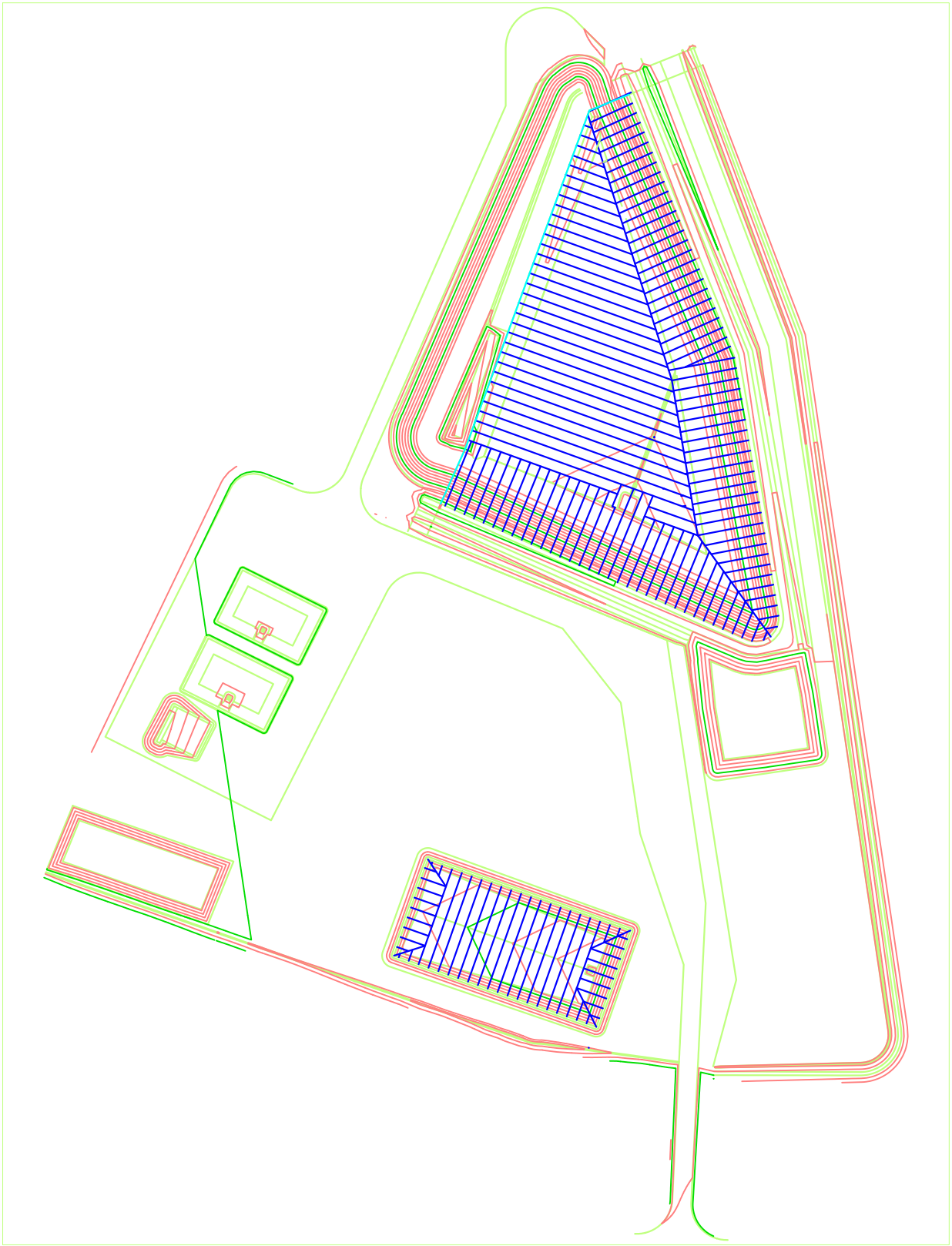
Mustang requests a revision to the Cell E-1 Secondary Geomembrane Panel Layout that was submitted and approved on March 1, 2022. No changes to the Leachate Evap Pond panel layout are proposed at this time.

SCS Response:



Certifying Engineer has reviewed the proposed panel layout revision for Cell E-1 submitted April 25, 2022. See below:

This panel layout for the Secondary Cell E-1 Geomembrane is APPROVED.



March 19, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #14 – West and East Drying Pad Survey Verification and Field Density Log certification from Engineer

Requested Date: March 17, 2021

Information Requested:

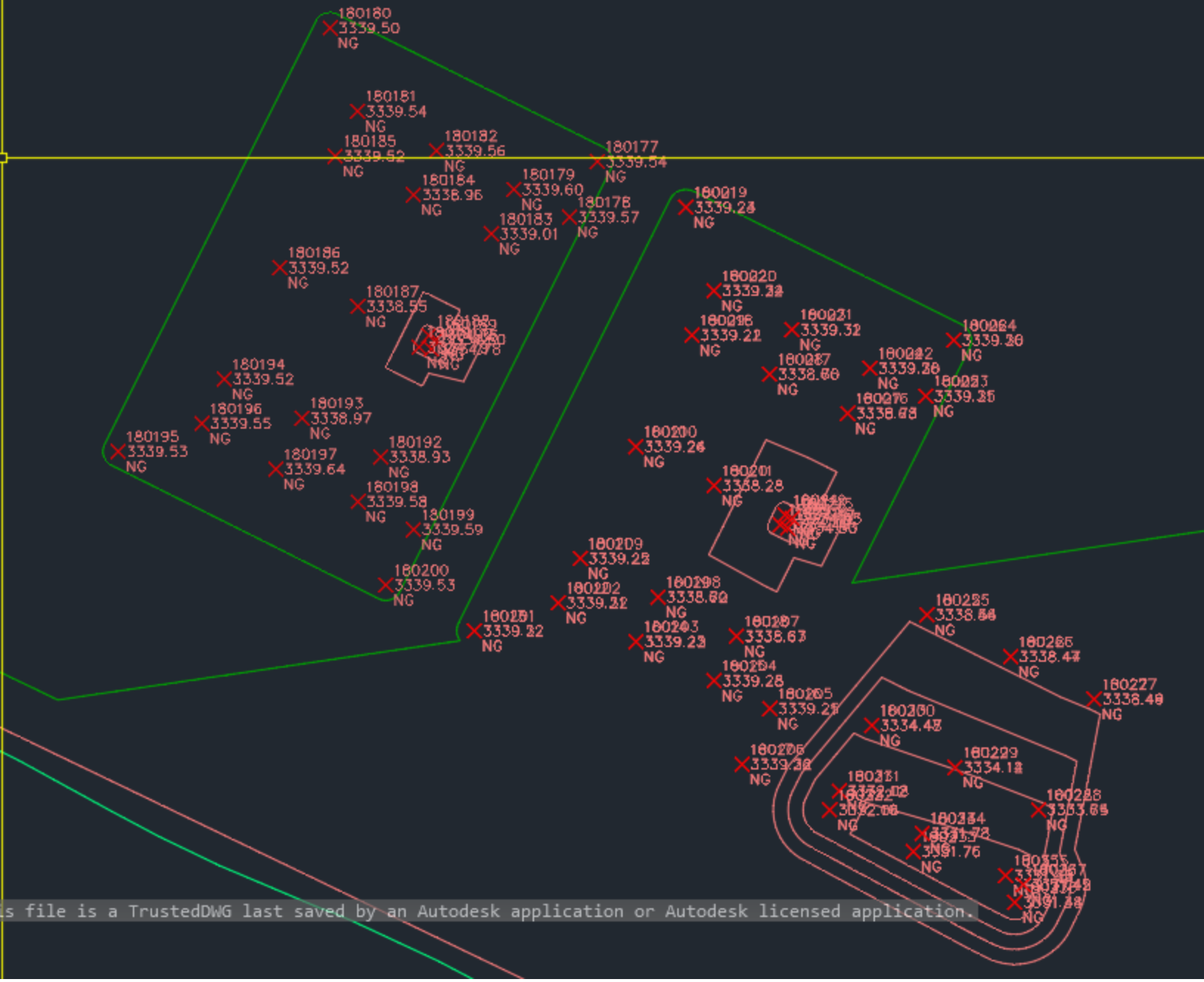
Certification to deploy liner in west and east drying pads

SCS Response:

Certifying Engineer has reviewed the grading as-built survey as well as the CQA monitor's field soil density testing logs for the east and west drying pads. Based on the required data provided that the two drying pads have met spec and are ready to receive liner. Engineer approves the CQA monitor to perform the liner subgrade surface inspection and certification form for the two drying pads.

Attached is a diagram of the points surveyed, the associate design grade tolerance verification, and the field density log.

copy:



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NORTH RANCH - WEST DRYING PAD, EAST DRYING PAD, TRUCK WASH SURVEY G

ID	N	E	AB	Design	Delta	Check
10001	418211.2	812669.3	3339.226	3339.301	-0.075	PASS
10002	418177.8	812680.6	3339.235	3339.301	-0.066	PASS
10003	418162.2	812712	3339.311	3339.3	0.0108	PASS
10004	418146.7	812743.3	3339.279	3339.301	-0.022	PASS
10005	418135.5	812765.7	3339.253	3339.301	-0.048	PASS
10006	418157.9	812776.9	3339.26	3339.301	-0.041	PASS
10007	418128.6	812734.2	3338.683	3338.691	-0.0077	PASS
10008	418144.3	812703	3338.705	3338.697	0.0082	PASS
10009	418160	812671.7	3339.216	3339.299	-0.0834	PASS
10010	418115.3	812649.2	3339.238	3339.301	-0.063	PASS
10011	418070.4	812627	3339.22	3339.298	-0.0782	PASS
10012	418052.5	812618.1	3339.221	3339.3	-0.0793	PASS
10013	418041.3	812584.4	3339.22	3339.301	-0.081	PASS
10014	418036.9	812649.4	3339.221	3339.3	-0.079	PASS
10015	418021.3	812680.6	3339.253	3339.299	-0.0462	PASS
10016	418010.1	812703	3339.248	3339.301	-0.053	PASS
10017	417987.7	812691.8	3339.216	3339.301	-0.085	PASS
10018	418039.2	812689.6	3338.634	3338.696	-0.0621	PASS
10019	418054.8	812658.2	3338.716	3338.699	0.0171	PASS
10020	418099.6	812680.6	3338.284	3338.301	-0.0173	PASS
10021	418084	812707.2	3334.486	3334.468	0.018	PASS
10022	418082.6	812710.1	3334.501	3334.468	0.033	PASS
10023	418086.4	812712	3334.454	3334.491	-0.0365	PASS
10024	418087.8	812709	3334.389	3334.505	-0.1157	FAIL
10025	418047.7	812766.1	3338.458	3338.442	0.0161	PASS
10026	418030.9	812799.7	3338.44	3338.444	-0.0042	PASS
10027	418013.9	812833.2	3338.489	3338.414	0.0746	PASS
10028	417969.6	812810.9	3333.638	3333.705	-0.0668	PASS
10029	417986.5	812777.3	3334.117	3334.067	0.0502	PASS
10030	418003.3	812744	3334.467	3334.477	-0.0104	PASS
10031	417977.1	812730.8	3332.085	3332.126	-0.0411	PASS
10032	417969.4	812727.1	3332.095	3332.116	-0.0214	PASS
10033	417952.7	812760.6	3331.757	3331.742	0.0152	PASS
10034	417960.1	812764.1	3331.784	3331.743	0.0406	PASS
10035	417943.2	812797.7	3331.416	3331.368	0.0483	PASS
10036	417939.5	812804.9	3331.425	3331.367	0.0579	PASS
10037	417932.3	812801.3	3331.383	3331.367	0.0159	PASS
180177	418229.7	812633.8	3339.543	3339.597	-0.054	PASS
180178	418207.3	812622.6	3339.573	3339.597	-0.024	PASS
180179	418218.5	812600.3	3339.602	3339.597	0.0051	PASS
180180	418283.2	812526.5	3339.504	3339.597	-0.093	PASS
180181	418249.8	812537.5	3339.535	3339.597	-0.062	PASS
180182	418234	812569.2	3339.564	3339.596	-0.0323	PASS
180183	418200.6	812591.2	3339.012	3338.994	0.018	PASS

180184	418216.3	812560	3338.964	3338.995	-0.0306	PASS
180185	418231.8	812528.6	3339.517	3339.597	-0.08	PASS
180186	418187.1	812506.4	3339.516	3339.596	-0.0802	PASS
180187	418171.5	812537.7	3338.548	3338.597	-0.0491	PASS
180188	418159.8	812566.2	3334.847	3334.786	0.0611	PASS
180189	418158.3	812569.1	3334.796	3334.767	0.0291	PASS
180190	418154.3	812567.2	3334.785	3334.772	0.0128	PASS
180191	418155.1	812562.2	3334.792	3335.277	-0.4852	FAIL
180192	418111.1	812546.8	3338.927	3338.992	-0.0653	PASS
180193	418126.7	812515.3	3338.969	3338.997	-0.0283	PASS
180194	418142.3	812484.1	3339.522	3339.596	-0.0736	PASS
180195	418113.3	812441.5	3339.528	3339.597	-0.069	PASS
180196	418124.5	812475	3339.547	3339.597	-0.05	PASS
180197	418106.2	812504.8	3339.64	3339.597	0.043	PASS
180198	418093.1	812537.7	3339.578	3339.597	-0.019	PASS
180199	418081.9	812560.1	3339.586	3339.597	-0.011	PASS
180200	418059.7	812548.9	3339.534	3339.597	-0.063	PASS
180201	418041.3	812584.4	3339.319	3339.301	0.018	PASS
180202	418052.5	812618	3339.307	3339.301	0.006	PASS
180203	418037	812649.2	3339.233	3339.3	-0.0669	PASS
180204	418021.3	812680.6	3339.284	3339.301	-0.017	PASS
180205	418010.1	812703	3339.206	3339.301	-0.095	PASS
180206	417987.7	812691.9	3339.363	3339.301	0.062	PASS
180207	418039.1	812689.6	3338.669	3338.7	-0.0313	PASS
180208	418054.9	812658.1	3338.605	3338.697	-0.0919	PASS
180209	418070.4	812626.9	3339.248	3339.301	-0.053	PASS
180210	418115.2	812649.3	3339.265	3339.301	-0.036	PASS
180211	418099.6	812680.6	3338.284	3338.3	-0.0163	PASS
180212	418087.8	812709.2	3334.466	3334.484	-0.0177	PASS
180213	418083.8	812707.2	3334.409	3334.478	-0.0692	PASS
180214	418082.5	812710.1	3334.533	3334.473	0.0604	PASS
180215	418086.4	812711.9	3334.527	3334.472	0.0547	PASS
180216	418128.6	812734.3	3338.734	3338.694	0.0397	PASS
180217	418144.3	812702.9	3338.664	3338.696	-0.0321	PASS
180218	418159.9	812671.8	3339.213	3339.297	-0.0839	PASS
180219	418211.3	812669.4	3339.242	3339.301	-0.059	PASS
180220	418177.8	812680.5	3339.325	3339.301	0.024	PASS
180221	418162.2	812711.8	3339.324	3339.3	0.0242	PASS
180222	418146.6	812743.2	3339.303	3339.299	0.0042	PASS
180223	418135.6	812765.5	3339.311	3339.301	0.0102	PASS
180224	418157.9	812776.8	3339.3	3339.301	-0.001	PASS
180225	418047.8	812766.1	3338.535	3338.445	0.09	PASS
180226	418031	812799.7	3338.474	3338.444	0.0303	PASS
180227	418013.9	812833.1	3338.475	3338.411	0.0637	PASS
180228	417969.4	812810.8	3333.75	3333.687	0.0632	PASS
180229	417986.5	812777.4	3334.141	3334.065	0.0756	PASS
180230	418003.4	812744	3334.478	3334.482	-0.0041	PASS

180231	417977	812730.8	3332.12	3332.118	0.0017	PASS
180232	417969.4	812727	3332.065	3332.116	-0.0514	PASS
180233	417952.7	812760.6	3331.748	3331.742	0.0062	PASS
180234	417960	812764.2	3331.729	3331.742	-0.0132	PASS
180235	417943.1	812797.6	3331.382	3331.368	0.0141	PASS
180236	417932.3	812801.4	3331.445	3331.367	0.0779	PASS
180237	417939.5	812804.8	3331.447	3331.367	0.0799	PASS

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Received by OCD: 8/24/2022 3:28:34 PM

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	PASS / FAIL	Tech. Initials
WDP-L1-01	N/A	1	1	3/2/2022	SF2	13.6	110.7	104.9	7.60	7.24	94.76	112.5	-6.36	-0.24	FAIL	XAIS
WDP-L1-01	1	1	1	3/2/2022	SF2	13.6	110.7	109.5	13.50	12.33	98.92	123.0	-1.27	3.92	PASS	XAIS
WDP-L1-02	N/A	1	1	3/2/2022	SF2	13.6	110.7	101.6	5.60	5.51	91.78	107.2	-8.09	-3.22	FAIL	XAIS
WDP-L1-02	1	1	1	3/2/2022	SF2	13.6	110.7	106.6	14.20	13.32	96.30	120.8	-0.28	1.30	PASS	XAIS
WDP-L1-03	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	109.8	14.90	13.57	99.19	124.7	-0.03	4.19	PASS	XAIS
WDP-L1-04	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	104.7	10.00	9.55	94.58	114.7	-4.05	-0.42	FAIL	XAIS
WDP-L1-04	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	105.3	12.40	11.78	95.12	117.7	-1.82	0.12	PASS	XAIS
WDP-L1-05	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	110.5	13.30	12.04	99.82	123.8	-1.56	4.82	PASS	XAIS
WDP-L1-06	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	99.5	5.60	5.63	89.88	105.1	-7.97	-5.12	FAIL	XAIS
WDP-L1-06	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	110.2	12.10	10.98	99.55	122.3	-2.62	4.55	FAIL	XAIS
WDP-L1-06	2	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	107.7	13.80	12.81	97.29	121.5	-0.79	2.29	PASS	XAIS
WDP-L1-07	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	97.6	6.60	6.76	88.17	104.2	-6.84	-6.83	FAIL	XAIS
WDP-L1-07	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	97.4	5.70	5.85	87.99	103.1	-7.75	-7.01	FAIL	XAIS
WDP-L1-07	2	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	108.1	12.10	11.19	97.65	120.2	-2.41	2.65	FAIL	XAIS
WDP-L1-07	3	1	1	3/3/2022	SF2 (Standard)	13.6	110.7	107.5	14.50	13.49	97.11	122.0	-0.11	2.11	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	95	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	PASS / FAIL	Tech. Initials
WDP-L1-01	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	104.5	19.70	18.85	99.43	124.2	1.95	4.43	PASS	XAIS
WDP-L1-02	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	103.7	16.70	16.10	98.67	120.4	-0.80	3.67	PASS	XAIS
WDP-L1-03	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	100.9	16.00	15.86	96.00	116.9	-1.04	1.00	PASS	XAIS
WDP-L1-04	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	105.0	17.50	16.67	99.90	122.5	-0.23	4.90	PASS	XAIS
WDP-L1-05	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	101.9	16.70	16.39	96.96	118.6	-0.51	1.96	PASS	XAIS
WDP-L1-06	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	99.9	15.40	15.42	95.05	115.3	-1.48	0.05	PASS	XAIS
WDP-L1-07	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	100.1	18.40	18.38	95.24	118.5	1.48	0.24	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	95	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	PASS / FAIL	Tech. Initials
WDP-L3-01	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	109.9	13.10	11.92	99.28	123.0	-1.68	4.28	PASS	XAIS
WDP-L3-02	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	110.0	14.40	13.09	99.37	124.4	-0.51	4.37	PASS	XAIS
WDP-L3-03	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	105.7	13.50	12.77	95.48	119.2	-0.83	0.48	PASS	XAIS
WDP-L3-04	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	105.8	16.50	15.60	95.57	122.3	2.00	0.57	PASS	XAIS
WDP-L3-05	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	105.8	12.70	12.00	95.57	118.5	-1.60	0.57	PASS	XAIS
WDP-L3-06	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	105.2	13.90	13.21	95.03	119.1	-0.39	0.03	PASS	XAIS
WDP-L3-07	N/A	3	1	3/10/2022	SF2 (Standard)	13.6	110.7	109.2	14.80	13.55	98.64	124.0	-0.05	3.64	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	95	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	PASS / FAIL	Tech. Initials
EDP-L1-01	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	108.5	10.50	9.68	98.01	119.0	-3.92	3.01	FAIL	XAIS
EDP-L1-01	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	108.2	14.97	13.84	97.74	123.2	0.24	2.74	PASS	XAIS
EDP-L1-02	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	107.9	17.70	16.40	97.47	125.6	2.80	2.47	FAIL	XAIS
EDP-L1-02	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	110.1	12.90	11.72	99.46	123.0	-1.88	4.46	PASS	XAIS
EDP-L1-03	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	107.3	19.30	17.99	96.93	126.6	4.39	1.93	FAIL	XAIS
EDP-L1-03	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	109.4	12.70	11.61	98.83	122.1	-1.99	3.83	PASS	XAIS
EDP-L1-04	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	110.5	11.80	10.68	99.82	122.3	-2.92	4.82	FAIL	XAIS
EDP-L1-04	1	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	109.5	12.80	11.69	98.92	122.3	-1.91	3.92	PASS	XAIS
EDP-L1-05	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	107.2	16.10	15.02	96.84	123.3	1.42	1.84	PASS	XAIS
EDP-L1-06	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	110.5	16.80	15.20	99.82	127.3	1.60	4.82	PASS	XAIS
EDP-L1-07	N/A	1	1	3/2/2022	SF2 (Standard)	13.6	110.7	109.9	16.60	15.10	99.28	126.5	1.50	4.28	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	95	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	PASS / FAIL	Tech. Initials
EDP-L2-01	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	100.2	18.90	18.86	95.34	119.1	1.96	0.34	PASS	XAIS
EDP-L2-02	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	103.4	17.90	17.31	98.38	121.3	0.41	3.38	PASS	XAIS
EDP-L2-03	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	103.7	18.40	17.74	98.67	122.1	0.84	3.67	PASS	XAIS
EDP-L2-04	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	102.5	15.30	14.93	97.53	117.8	-1.97	2.53	PASS	XAIS
EDP-L2-05	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	103.3	16.00	15.49	98.29	119.3	-1.41	3.29	PASS	XAIS
EDP-L2-06	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	102.5	15.90	15.51	97.53	118.4	-1.39	2.53	PASS	XAIS
EDP-L2-07	N/A	2	1	3/4/2022	SF1 (Standard)	16.9	105.1	103.0	17.30	16.80	98.00	120.3	-0.10	3.00	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	95	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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Received by OCD: 8/24/2022 3:28:34 PM

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	Deviation from Modified compaction spec	STANDARD PASS / FAIL	MODIFIED PASS/FAIL	Tech. Initials
EDP-L3-01	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	109.7	10.50	9.57	89.92	120.2	-0.03	-5.08	-2.08	FAIL		XAIS
EDP-L3-01	1	3	1	3/15/2022	GF-2 (standard)	9.6	122.0	110.4	9.70	8.79	90.49	120.1	-0.81	-4.51	-1.51	FAIL		XAIS
EDP-L3-01	2	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	112.7	15.90	14.11	98.17	128.6	0.81	3.17	6.17		PASS	XAIS
EDP-L3-02	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	112.2	11.40	10.16	91.97	123.6	0.56	-3.03	-0.03	FAIL		XAIS
EDP-L3-02	1	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	111.3	14.00	12.58	96.95	125.3	-0.72	1.95	4.95		PASS	XAIS
EDP-L3-03	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	110.9	6.90	6.22	90.90	117.8	-3.38	-4.10	-1.10	FAIL		XAIS
EDP-L3-03	1	3	1	3/16/2022	GF-2 (standard)	9.6	122.0	115.9	12.70	10.96	95.00	128.6	1.36	0.00	3.00	PASS		XAIS
EDP-L3-03	N/A	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	113.2	14.6	12.90	98.61	127.8	-0.40	3.61	6.61		PASS	XAIS
EDP-L3-04	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	113.3	11.80	10.41	92.87	125.1	0.81	-2.13	0.87	FAIL		XAIS
EDP-L3-04	1	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	112.6	12.90	11.46	98.08	125.5	-1.84	3.08	6.08		PASS	XAIS
EDP-L3-05	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	108.1	14.30	13.23	88.61	122.4	3.63	-6.39	-3.39	FAIL		XAIS
EDP-L3-05	1	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	111.1	16.10	14.49	96.78	127.2	1.19	1.78	4.78		PASS	XAIS
EDP-L3-06	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	109.1	10.30	9.44	89.43	119.4	-0.16	-5.57	-2.57	FAIL		XAIS
EDP-L3-06	1	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	110.7	14.10	12.74	96.43	124.8	-0.56	1.43	4.43		PASS	XAIS
EDP-L3-07	N/A	3	1	3/13/2022	GF-2 (standard)	9.6	122.0	113.4	9.80	8.64	92.95	123.2	-0.96	-2.05	0.95	PASS		XAIS
EDP-L3-07	1	3	1	3/17/2022	SF-1 (Modified)	13.3	114.8	111.8	14.60	13.06	97.39	126.4	-0.24	2.39	5.39		PASS	XAIS

Frequency:	12	tests/lift/acre
Standard Compaction	95	% of Standard
Modified CoMpaction	92	% of MODIFIED
Moisture Spec (Standard)		2% below OM to 2% above OM
Moisture Spec (Modified)		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

SCS ENGINEERS Environmental Consultants & Contractors

March 22, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #14a – Truck Wash Pad Survey Verification and Field Density Log certification from Engineer

Requested Date: March 22, 2022

Information Requested:

Certification to deploy liner in west and east drying pads

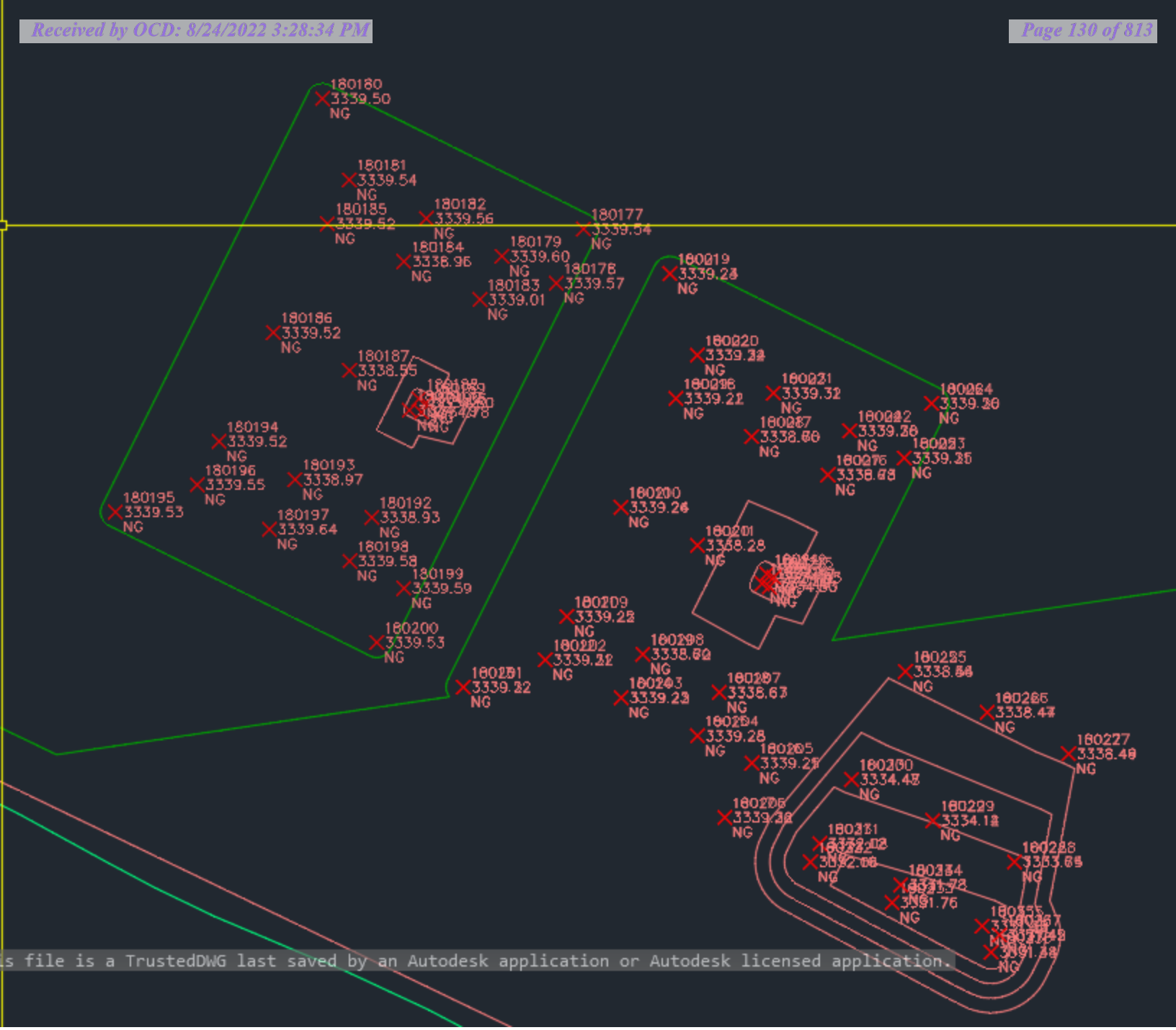
SCS Response:

Certifying Engineer has reviewed the grading as-built survey as well as the CQA monitor's field soil density testing logs for Truck Wash pad. Based on the required data provided, the truck wash pad subgrade has met spec and is ready to receive liner. Engineer approves the CQA monitor to perform the liner subgrade surface inspection and certification form for the two drying pads.

Attached is a diagram of the points surveyed, the associate design grade tolerance verification, and the field density log.

copy:

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NORTH RANCH - WEST DRYING PAD, EAST DRYING PAD, TRUCK WASH SURVEY G

ID	N	E	AB	Design	Delta	Check
10001	418211.2	812669.3	3339.226	3339.301	-0.075	PASS
10002	418177.8	812680.6	3339.235	3339.301	-0.066	PASS
10003	418162.2	812712	3339.311	3339.3	0.0108	PASS
10004	418146.7	812743.3	3339.279	3339.301	-0.022	PASS
10005	418135.5	812765.7	3339.253	3339.301	-0.048	PASS
10006	418157.9	812776.9	3339.26	3339.301	-0.041	PASS
10007	418128.6	812734.2	3338.683	3338.691	-0.0077	PASS
10008	418144.3	812703	3338.705	3338.697	0.0082	PASS
10009	418160	812671.7	3339.216	3339.299	-0.0834	PASS
10010	418115.3	812649.2	3339.238	3339.301	-0.063	PASS
10011	418070.4	812627	3339.22	3339.298	-0.0782	PASS
10012	418052.5	812618.1	3339.221	3339.3	-0.0793	PASS
10013	418041.3	812584.4	3339.22	3339.301	-0.081	PASS
10014	418036.9	812649.4	3339.221	3339.3	-0.079	PASS
10015	418021.3	812680.6	3339.253	3339.299	-0.0462	PASS
10016	418010.1	812703	3339.248	3339.301	-0.053	PASS
10017	417987.7	812691.8	3339.216	3339.301	-0.085	PASS
10018	418039.2	812689.6	3338.634	3338.696	-0.0621	PASS
10019	418054.8	812658.2	3338.716	3338.699	0.0171	PASS
10020	418099.6	812680.6	3338.284	3338.301	-0.0173	PASS
10021	418084	812707.2	3334.486	3334.468	0.018	PASS
10022	418082.6	812710.1	3334.501	3334.468	0.033	PASS
10023	418086.4	812712	3334.454	3334.491	-0.0365	PASS
10024	418087.8	812709	3334.389	3334.505	-0.1157	FAIL
10025	418047.7	812766.1	3338.458	3338.442	0.0161	PASS
10026	418030.9	812799.7	3338.44	3338.444	-0.0042	PASS
10027	418013.9	812833.2	3338.489	3338.414	0.0746	PASS
10028	417969.6	812810.9	3333.638	3333.705	-0.0668	PASS
10029	417986.5	812777.3	3334.117	3334.067	0.0502	PASS
10030	418003.3	812744	3334.467	3334.477	-0.0104	PASS
10031	417977.1	812730.8	3332.085	3332.126	-0.0411	PASS
10032	417969.4	812727.1	3332.095	3332.116	-0.0214	PASS
10033	417952.7	812760.6	3331.757	3331.742	0.0152	PASS
10034	417960.1	812764.1	3331.784	3331.743	0.0406	PASS
10035	417943.2	812797.7	3331.416	3331.368	0.0483	PASS
10036	417939.5	812804.9	3331.425	3331.367	0.0579	PASS
10037	417932.3	812801.3	3331.383	3331.367	0.0159	PASS
180177	418229.7	812633.8	3339.543	3339.597	-0.054	PASS
180178	418207.3	812622.6	3339.573	3339.597	-0.024	PASS
180179	418218.5	812600.3	3339.602	3339.597	0.0051	PASS
180180	418283.2	812526.5	3339.504	3339.597	-0.093	PASS
180181	418249.8	812537.5	3339.535	3339.597	-0.062	PASS
180182	418234	812569.2	3339.564	3339.596	-0.0323	PASS
180183	418200.6	812591.2	3339.012	3338.994	0.018	PASS

180184	418216.3	812560	3338.964	3338.995	-0.0306	PASS
180185	418231.8	812528.6	3339.517	3339.597	-0.08	PASS
180186	418187.1	812506.4	3339.516	3339.596	-0.0802	PASS
180187	418171.5	812537.7	3338.548	3338.597	-0.0491	PASS
180188	418159.8	812566.2	3334.847	3334.786	0.0611	PASS
180189	418158.3	812569.1	3334.796	3334.767	0.0291	PASS
180190	418154.3	812567.2	3334.785	3334.772	0.0128	PASS
180191	418155.1	812562.2	3334.792	3335.277	-0.4852	FAIL
180192	418111.1	812546.8	3338.927	3338.992	-0.0653	PASS
180193	418126.7	812515.3	3338.969	3338.997	-0.0283	PASS
180194	418142.3	812484.1	3339.522	3339.596	-0.0736	PASS
180195	418113.3	812441.5	3339.528	3339.597	-0.069	PASS
180196	418124.5	812475	3339.547	3339.597	-0.05	PASS
180197	418106.2	812504.8	3339.64	3339.597	0.043	PASS
180198	418093.1	812537.7	3339.578	3339.597	-0.019	PASS
180199	418081.9	812560.1	3339.586	3339.597	-0.011	PASS
180200	418059.7	812548.9	3339.534	3339.597	-0.063	PASS
180201	418041.3	812584.4	3339.319	3339.301	0.018	PASS
180202	418052.5	812618	3339.307	3339.301	0.006	PASS
180203	418037	812649.2	3339.233	3339.3	-0.0669	PASS
180204	418021.3	812680.6	3339.284	3339.301	-0.017	PASS
180205	418010.1	812703	3339.206	3339.301	-0.095	PASS
180206	417987.7	812691.9	3339.363	3339.301	0.062	PASS
180207	418039.1	812689.6	3338.669	3338.7	-0.0313	PASS
180208	418054.9	812658.1	3338.605	3338.697	-0.0919	PASS
180209	418070.4	812626.9	3339.248	3339.301	-0.053	PASS
180210	418115.2	812649.3	3339.265	3339.301	-0.036	PASS
180211	418099.6	812680.6	3338.284	3338.3	-0.0163	PASS
180212	418087.8	812709.2	3334.466	3334.484	-0.0177	PASS
180213	418083.8	812707.2	3334.409	3334.478	-0.0692	PASS
180214	418082.5	812710.1	3334.533	3334.473	0.0604	PASS
180215	418086.4	812711.9	3334.527	3334.472	0.0547	PASS
180216	418128.6	812734.3	3338.734	3338.694	0.0397	PASS
180217	418144.3	812702.9	3338.664	3338.696	-0.0321	PASS
180218	418159.9	812671.8	3339.213	3339.297	-0.0839	PASS
180219	418211.3	812669.4	3339.242	3339.301	-0.059	PASS
180220	418177.8	812680.5	3339.325	3339.301	0.024	PASS
180221	418162.2	812711.8	3339.324	3339.3	0.0242	PASS
180222	418146.6	812743.2	3339.303	3339.299	0.0042	PASS
180223	418135.6	812765.5	3339.311	3339.301	0.0102	PASS
180224	418157.9	812776.8	3339.3	3339.301	-0.001	PASS
180225	418047.8	812766.1	3338.535	3338.445	0.09	PASS
180226	418031	812799.7	3338.474	3338.444	0.0303	PASS
180227	418013.9	812833.1	3338.475	3338.411	0.0637	PASS
180228	417969.4	812810.8	3333.75	3333.687	0.0632	PASS
180229	417986.5	812777.4	3334.141	3334.065	0.0756	PASS
180230	418003.4	812744	3334.478	3334.482	-0.0041	PASS

180231	417977	812730.8	3332.12	3332.118	0.0017	PASS
180232	417969.4	812727	3332.065	3332.116	-0.0514	PASS
180233	417952.7	812760.6	3331.748	3331.742	0.0062	PASS
180234	417960	812764.2	3331.729	3331.742	-0.0132	PASS
180235	417943.1	812797.6	3331.382	3331.368	0.0141	PASS
180236	417932.3	812801.4	3331.445	3331.367	0.0779	PASS
180237	417939.5	812804.8	3331.447	3331.367	0.0799	PASS

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Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	Deviation from Modified compaction spec	STANDARD PASS / FAIL	MODIFIED PASS/FAIL	Tech. Initials
TW-L1-01	N/A	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	93.7	8.40	8.96	89.15	102.1	-7.94	-5.85	-2.85	FAIL	-	XAIS
TW-L1-01	1	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	97.6	8.30	8.50	92.86	105.9	-8.40	-2.14	0.86	FAIL	-	XAIS
TW-L1-01	2	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	100.1	16.40	16.38	95.24	116.5	-0.52	0.24	3.24	PASS	-	XAIS
TW-L1-02	N/A	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	101.9	9.10	8.93	96.96	111.0	-7.97	1.96	4.96	FAIL	-	XAIS
TW-L1-02	1	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	98.9	14.50	14.66	94.10	113.4	-2.24	-0.90	2.10	FAIL	-	XAIS
TW-L1-02	2	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	91.0	16.80	18.46	86.58	107.8	1.56	-8.42	-5.42	FAIL	-	XAIS
TW-L1-02	3	1	1	2/25/2022	SF-1 (Standard)	16.9	105.1	88.5	20.40	23.05	84.21	108.9	6.15	-10.79	-7.79	FAIL	-	XAIS
TW-L1-02	4	1	1	2/25/2022	SF-1 (Standard)	16.9	105.1	101.1	15.90	15.73	96.19	117.0	-1.17	1.19	4.19	PASS	-	XAIS

Frequency:	12	tests/lift/acre
Standard Compaction	95	% of Standard
Modified CoMpaction	92	% of MODIFIED
Moisture Spec (Standard)		2% below OM to 2% above OM
Moisture Spec (Modified)		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	Deviation from Modified compaction spec	STANDARD PASS / FAIL	MODIFIED PASS/FAIL	Tech. Initials
TW-L2-01	N/A	2	1	3/16/2022	SF-1 (Modified)	13.3	114.8	106.4	14.70	13.82	92.68	121.1	0.52	-2.32	0.68	-	PASS	XAIS
TW-L2-02	N/A	2	1	3/16/2022	SF-1 (Modified)	13.3	114.8	110.7	13.10	11.83	96.43	123.8	-1.47	1.43	4.43	-	PASS	XAIS

Frequency:	12	tests/lift/acre
Standard Compaction	95	% of Standard
Modified CoMpaction	92	% of MODIFIED
Moisture Spec (Standard)		2% below OM to 2% above OM
Moisture Spec (Modified)		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

March 22, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #14a – Truck Wash Pad Survey Verification and Field Density Log certification from Engineer

Requested Date: March 22, 2022

Information Requested:

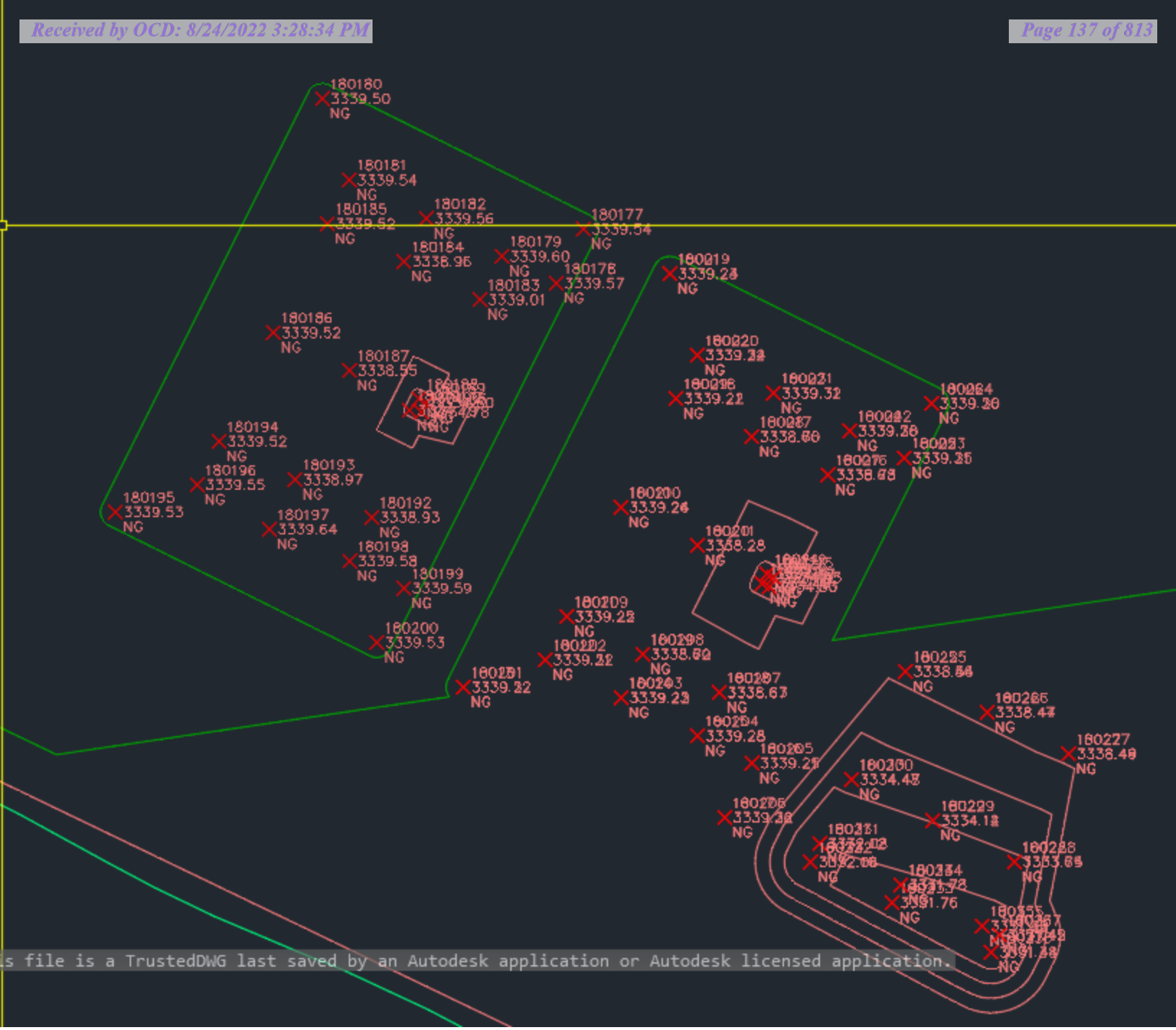
Certification to deploy liner in west and east drying pads

SCS Response:

Certifying Engineer has reviewed the grading as-built survey as well as the CQA monitor's field soil density testing logs for Truck Wash pad. Based on the required data provided, the truck wash pad subgrade has met spec and is ready to receive liner. Engineer approves the CQA monitor to perform the liner subgrade surface inspection and certification form for the two drying pads.

Attached is a diagram of the points surveyed, the associate design grade tolerance verification, and the field density log.

copy:



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NORTH RANCH - WEST DRYING PAD, EAST DRYING PAD, TRUCK WASH SURVEY G

ID	N	E	AB	Design	Delta	Check
10001	418211.2	812669.3	3339.226	3339.301	-0.075	PASS
10002	418177.8	812680.6	3339.235	3339.301	-0.066	PASS
10003	418162.2	812712	3339.311	3339.3	0.0108	PASS
10004	418146.7	812743.3	3339.279	3339.301	-0.022	PASS
10005	418135.5	812765.7	3339.253	3339.301	-0.048	PASS
10006	418157.9	812776.9	3339.26	3339.301	-0.041	PASS
10007	418128.6	812734.2	3338.683	3338.691	-0.0077	PASS
10008	418144.3	812703	3338.705	3338.697	0.0082	PASS
10009	418160	812671.7	3339.216	3339.299	-0.0834	PASS
10010	418115.3	812649.2	3339.238	3339.301	-0.063	PASS
10011	418070.4	812627	3339.22	3339.298	-0.0782	PASS
10012	418052.5	812618.1	3339.221	3339.3	-0.0793	PASS
10013	418041.3	812584.4	3339.22	3339.301	-0.081	PASS
10014	418036.9	812649.4	3339.221	3339.3	-0.079	PASS
10015	418021.3	812680.6	3339.253	3339.299	-0.0462	PASS
10016	418010.1	812703	3339.248	3339.301	-0.053	PASS
10017	417987.7	812691.8	3339.216	3339.301	-0.085	PASS
10018	418039.2	812689.6	3338.634	3338.696	-0.0621	PASS
10019	418054.8	812658.2	3338.716	3338.699	0.0171	PASS
10020	418099.6	812680.6	3338.284	3338.301	-0.0173	PASS
10021	418084	812707.2	3334.486	3334.468	0.018	PASS
10022	418082.6	812710.1	3334.501	3334.468	0.033	PASS
10023	418086.4	812712	3334.454	3334.491	-0.0365	PASS
10024	418087.8	812709	3334.389	3334.505	-0.1157	FAIL
10025	418047.7	812766.1	3338.458	3338.442	0.0161	PASS
10026	418030.9	812799.7	3338.44	3338.444	-0.0042	PASS
10027	418013.9	812833.2	3338.489	3338.414	0.0746	PASS
10028	417969.6	812810.9	3333.638	3333.705	-0.0668	PASS
10029	417986.5	812777.3	3334.117	3334.067	0.0502	PASS
10030	418003.3	812744	3334.467	3334.477	-0.0104	PASS
10031	417977.1	812730.8	3332.085	3332.126	-0.0411	PASS
10032	417969.4	812727.1	3332.095	3332.116	-0.0214	PASS
10033	417952.7	812760.6	3331.757	3331.742	0.0152	PASS
10034	417960.1	812764.1	3331.784	3331.743	0.0406	PASS
10035	417943.2	812797.7	3331.416	3331.368	0.0483	PASS
10036	417939.5	812804.9	3331.425	3331.367	0.0579	PASS
10037	417932.3	812801.3	3331.383	3331.367	0.0159	PASS
180177	418229.7	812633.8	3339.543	3339.597	-0.054	PASS
180178	418207.3	812622.6	3339.573	3339.597	-0.024	PASS
180179	418218.5	812600.3	3339.602	3339.597	0.0051	PASS
180180	418283.2	812526.5	3339.504	3339.597	-0.093	PASS
180181	418249.8	812537.5	3339.535	3339.597	-0.062	PASS
180182	418234	812569.2	3339.564	3339.596	-0.0323	PASS
180183	418200.6	812591.2	3339.012	3338.994	0.018	PASS

180184	418216.3	812560	3338.964	3338.995	-0.0306	PASS
180185	418231.8	812528.6	3339.517	3339.597	-0.08	PASS
180186	418187.1	812506.4	3339.516	3339.596	-0.0802	PASS
180187	418171.5	812537.7	3338.548	3338.597	-0.0491	PASS
180188	418159.8	812566.2	3334.847	3334.786	0.0611	PASS
180189	418158.3	812569.1	3334.796	3334.767	0.0291	PASS
180190	418154.3	812567.2	3334.785	3334.772	0.0128	PASS
180191	418155.1	812562.2	3334.792	3335.277	-0.4852	FAIL
180192	418111.1	812546.8	3338.927	3338.992	-0.0653	PASS
180193	418126.7	812515.3	3338.969	3338.997	-0.0283	PASS
180194	418142.3	812484.1	3339.522	3339.596	-0.0736	PASS
180195	418113.3	812441.5	3339.528	3339.597	-0.069	PASS
180196	418124.5	812475	3339.547	3339.597	-0.05	PASS
180197	418106.2	812504.8	3339.64	3339.597	0.043	PASS
180198	418093.1	812537.7	3339.578	3339.597	-0.019	PASS
180199	418081.9	812560.1	3339.586	3339.597	-0.011	PASS
180200	418059.7	812548.9	3339.534	3339.597	-0.063	PASS
180201	418041.3	812584.4	3339.319	3339.301	0.018	PASS
180202	418052.5	812618	3339.307	3339.301	0.006	PASS
180203	418037	812649.2	3339.233	3339.3	-0.0669	PASS
180204	418021.3	812680.6	3339.284	3339.301	-0.017	PASS
180205	418010.1	812703	3339.206	3339.301	-0.095	PASS
180206	417987.7	812691.9	3339.363	3339.301	0.062	PASS
180207	418039.1	812689.6	3338.669	3338.7	-0.0313	PASS
180208	418054.9	812658.1	3338.605	3338.697	-0.0919	PASS
180209	418070.4	812626.9	3339.248	3339.301	-0.053	PASS
180210	418115.2	812649.3	3339.265	3339.301	-0.036	PASS
180211	418099.6	812680.6	3338.284	3338.3	-0.0163	PASS
180212	418087.8	812709.2	3334.466	3334.484	-0.0177	PASS
180213	418083.8	812707.2	3334.409	3334.478	-0.0692	PASS
180214	418082.5	812710.1	3334.533	3334.473	0.0604	PASS
180215	418086.4	812711.9	3334.527	3334.472	0.0547	PASS
180216	418128.6	812734.3	3338.734	3338.694	0.0397	PASS
180217	418144.3	812702.9	3338.664	3338.696	-0.0321	PASS
180218	418159.9	812671.8	3339.213	3339.297	-0.0839	PASS
180219	418211.3	812669.4	3339.242	3339.301	-0.059	PASS
180220	418177.8	812680.5	3339.325	3339.301	0.024	PASS
180221	418162.2	812711.8	3339.324	3339.3	0.0242	PASS
180222	418146.6	812743.2	3339.303	3339.299	0.0042	PASS
180223	418135.6	812765.5	3339.311	3339.301	0.0102	PASS
180224	418157.9	812776.8	3339.3	3339.301	-0.001	PASS
180225	418047.8	812766.1	3338.535	3338.445	0.09	PASS
180226	418031	812799.7	3338.474	3338.444	0.0303	PASS
180227	418013.9	812833.1	3338.475	3338.411	0.0637	PASS
180228	417969.4	812810.8	3333.75	3333.687	0.0632	PASS
180229	417986.5	812777.4	3334.141	3334.065	0.0756	PASS
180230	418003.4	812744	3334.478	3334.482	-0.0041	PASS

180231	417977	812730.8	3332.12	3332.118	0.0017	PASS
180232	417969.4	812727	3332.065	3332.116	-0.0514	PASS
180233	417952.7	812760.6	3331.748	3331.742	0.0062	PASS
180234	417960	812764.2	3331.729	3331.742	-0.0132	PASS
180235	417943.1	812797.6	3331.382	3331.368	0.0141	PASS
180236	417932.3	812801.4	3331.445	3331.367	0.0779	PASS
180237	417939.5	812804.8	3331.447	3331.367	0.0799	PASS

;RADE VERIFICATION.

Comment

Lower is okay

Backcheck to 10024

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	Deviation from Modified compaction spec	STANDARD PASS / FAIL	MODIFIED PASS/FAIL	Tech. Initials
TW-L1-01	N/A	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	93.7	8.40	8.96	89.15	102.1	-7.94	-5.85	-2.85	FAIL	-	XAIS
TW-L1-01	1	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	97.6	8.30	8.50	92.86	105.9	-8.40	-2.14	0.86	FAIL	-	XAIS
TW-L1-01	2	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	100.1	16.40	16.38	95.24	116.5	-0.52	0.24	3.24	PASS	-	XAIS
TW-L1-02	N/A	1	1	2/23/2022	SF-1 (Standard)	16.9	105.1	101.9	9.10	8.93	96.96	111.0	-7.97	1.96	4.96	FAIL	-	XAIS
TW-L1-02	1	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	98.9	14.50	14.66	94.10	113.4	-2.24	-0.90	2.10	FAIL	-	XAIS
TW-L1-02	2	1	1	2/24/2022	SF-1 (Standard)	16.9	105.1	91.0	16.80	18.46	86.58	107.8	1.56	-8.42	-5.42	FAIL	-	XAIS
TW-L1-02	3	1	1	2/25/2022	SF-1 (Standard)	16.9	105.1	88.5	20.40	23.05	84.21	108.9	6.15	-10.79	-7.79	FAIL	-	XAIS
TW-L1-02	4	1	1	2/25/2022	SF-1 (Standard)	16.9	105.1	101.1	15.90	15.73	96.19	117.0	-1.17	1.19	4.19	PASS	-	XAIS

Frequency:	12	tests/lift/acre
Standard Compaction	95	% of Standard
Modified CoMpaction	92	% of MODIFIED
Moisture Spec (Standard)		2% below OM to 2% above OM
Moisture Spec (Modified)		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Standard compaction spec	Deviation from Modified compaction spec	STANDARD PASS / FAIL	MODIFIED PASS/FAIL	Tech. Initials
TW-L2-01	N/A	2	1	3/16/2022	SF-1 (Modified)	13.3	114.8	106.4	14.70	13.82	92.68	121.1	0.52	-2.32	0.68	-	PASS	XAIS
TW-L2-02	N/A	2	1	3/16/2022	SF-1 (Modified)	13.3	114.8	110.7	13.10	11.83	96.43	123.8	-1.47	1.43	4.43	-	PASS	XAIS

Frequency:	12	tests/lift/acre
Standard Compaction	95	% of Standard
Modified CoMpaction	92	% of MODIFIED
Moisture Spec (Standard)		2% below OM to 2% above OM
Moisture Spec (Modified)		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

SCS ENGINEERS Environmental Consultants & Contractors

March 22, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #15 – Tencate Mirafi, PT800E, 8 oz/sy NWNP Geotextile Fabric, Alternative Material Request

Submitted Date: 3/22/22

Information Submitted:

SCS Engineers have received an alternative material submittal for the 8-oz geotextile fabric specified for this project. The material submitted for approval is the Tencate Mirafi PT800E Non-Woven Geotextile. We have received the manufacturers data sheet for this material.

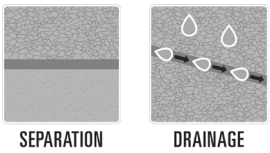
SCS Response:

SCS has reviewed the manufacturer's data sheet. This does not meet specifications having roughly half of the tensile and puncture strength required by the CQA Plan. Therefore:

- This material is not approved for use in the Cell E-1 or Evaporation Pond areas due to the dynamic stresses that the landfill and pond setting will exert onto the liner system. Only previously approved Solmax material may be used in the Cell and Pond.
- This material is approved for use as a geomembrane cushion layer in the truck wash and drying pad subgrades as they will be in a static setting once the concrete is constructed.

copy:

TENCATE Mirafi®



Mirafi® PT800E

Mirafi® PT800E is a needlepunched nonwoven geotextile composed of polymeric fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® PT800E is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

TenCate Geosynthetics Americas Laboratories is accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

MECHANICAL PROPERTIES	TEST METHOD	UNIT	TYPICAL ROLL VALUE	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	135(601)	135(601)
Grab Tensile Elongation	ASTM D4632	%	75	90
Trapezoid Tear Strength	ASTM D4533	lbs (N)	60 (267)	65 (289)
Puncture Strength	ASTM D4833	lbs (N)	65 (289)	
Permittivity	ASTM D4491	sec^{-1}	2.4	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	180 (7333)	

PHYSICAL PROPERTIES	UNIT	TYPICAL ROLL SIZE
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.57 x 91.4)
Roll Area	yd^2 (m^2)	500 (418)
Estimated Roll Weight	lbs (kg)	234 (106)
Label Roll Color		WHITE

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TENCATE GEOSYNTHETICS

SCS ENGINEERS Environmental Consultants & Contractors

March 23, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #16 – Solmax 200-mil Fabrinet Geocomposite Manufacturer's Quality Control Certificate and Conformance Testing.

Submitted Date: 2/11/22 – 2/15/22

Information Submitted:

SCS Engineers have received material submittal for the geocomposite drainage netting specified for this project. The material submitted for approval is the Solmax 200-mil Fabrinet. We have received the manufacturers quality control (MQC) testing results and certificates from Solmax and conformance testing results from TRI Environmental all rolls ordered and to be delivered to the subject project from Solmax.

SCS Response:

SCS has reviewed the testing results as compared to the minimum requirements stated in the project CQA Plan Table 6 and found the Solmax product and the rolls produced for this project have met the minimum material requirements and it is approved for use on this project.

copy:

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

February 25, 2022
March 18, 2022 Updated - Added remaining test results

Mail To:

Ravi Vemulaoalli
High Roller EPC / NuBlu Energy
Houston, TX

email: ravi@hr-epc.com

Bill To:

<= Same

Dear Mr. Vemulaoalli:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project: **North Ranch Landfill**

TRI Job Reference Number: 70136

Material(s) Tested: Six, Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite(s)

Test(s) Requested:
Transmissivity (ASTM D 4716) - GC
Peel Strength (ASTM D 7005) - GC
Transmissivity (ASTM D 4716) - GN
Thickness (ASTM D 5199) - GN
Density (ASTM D 1505) - GN
Carbon Content (ASTM D 4218) - GN
Tensile Properties (ASTM D 7179, 12 ipm strain rate) - GN
Mass/Unit Area (ASTM D 5261) - GT
Grab Tensile (ASTM D 4632) - GT
CBR Puncture Strength (ASTM D 6241) - GT
Trapezoidal Tear (ASTM D 4533) - GT
Apparent Opening Size (ASTM D 4751) - GT
Permittivity (ASTM D 4491) - GT

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

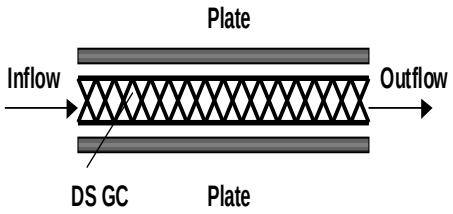
*Signature is on file

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

PARAMETER		TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)													
Direction Tested: Machine Direction													
Normal Load (psf):	10,000												
Hydraulic Gradient:	0.1												
Test Length (in)	12												
Test Width (in)	12												
Plate / Sample / Plate													
Seat Time (hours)		Specimen		1			2						
	Volume (cc)		633	638	636	602	612	618					
	Time (s)		50.06	50.51	50.37	50.26	50.31	50.59					
0.25	Flow Rate (GPM/ft width)		0.20	0.20	0.20	0.19	0.19	0.19				**0.20**	0.00
	Transmissivity (m^2/s)		4.13E-04	4.12E-04	4.12E-04	3.91E-04	3.97E-04	3.99E-04				**4.04E-04**	9.58E-06
	Test Temp (C)			20.4			20.4						
	Temp. Corr. Factor			0.995			0.995						
Peel Strength (ASTM D 7005)													
A - MD Average Peel Strength (ppi)		4.29	3.24	3.88	4.74	3.68						**3.97**	0.57
A - MD Average Peel Strength (g/in)		1948	1471	1762	2152	1671						**1801**	261
B - MD Average Peel Strength (ppi)		3.44	3.96	5.23	4.46	3.15						**4.05**	0.83
B - MD Average Peel Strength (g/in)		1562	1798	2374	2025	1430						**1838**	376



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

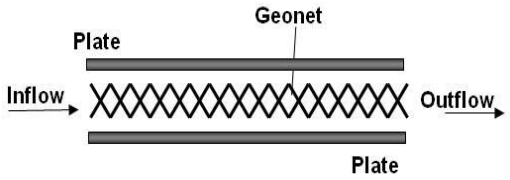
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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

GEONET COMPONENT

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Geonet / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	6000	6000	6000	6000	6000	6000					
	Time (s)	29.10	28.81	29.18	29.58	29.90	29.10					
0.25	Flow Rate (GPM/ft width)	3.25	3.28	3.24	3.19	3.16	3.24				**3.23**	0.05
	Transmissivity (m^2/s)	6.73E-03	6.80E-03	6.71E-03	6.60E-03	6.53E-03	6.71E-03				**6.68E-03**	9.49E-05
	Test Temp (C)		20.4			20.5						
	Temp. Corr. Factor		0.995			0.992						
Thickness (ASTM D 5199)												
Thickness (mils)	254	256	257	248	241	254	248	252	253	254	**252**	5
											241	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.952	0.952	0.952								**0.952**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.12	2.14									**2.13**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	99	90	84	94	92						**92**	6
MD Elong. @ Max. Strength (%)	21	25	22	20	21						**21**	2



MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	2.68	3.47	3.53	3.45	4.15	4.02	3.61	3.53	3.21	3.37	**3.50**	0.41
Mass/Unit Area (oz/sq.yd)	6.23	8.07	8.21	8.02	9.65	9.35	8.40	8.21	7.47	7.84	**8.15**	0.94
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	300	282	223	277	225	246	221	265	243	279	**256**	28
TD - Tensile Strength (lbs)	265	264	286	342	286	276	262	258	296	320	**285**	27
MD - Elong. @ Max. Load (%)	75	77	87	81	64	63	67	74	71	71	**73**	7
TD - Elong. @ Max. Load (%)	102	91	91	101	97	105	94	95	98	95	**97**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	727	687	649	671	708	769	782	718	740	776	**723**	45
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	94	106	95	100	115	146	110	94	83	101	**104**	17
TD - Tear Strength (lbs)	134	124	135	114	127	134	136	164	129	123	**132**	13
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.132	0.124	0.124	0.143	0.119						**0.128**	0.009
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.3											
Correction Factor:	0.997											
Test Specimen No. >:			1					2				
Thickness (mils)	94.2	94.2	94.2	94.2	94.2	94	94	94	94	94		
Thickness (mm)	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.0	13.3	13.1	13.3	13.1	13.2	13.6	13.7	13.7	13.4		
Specimen Permittivity @20°C (sec-1)	1.51	1.48	1.50	1.48	1.50	1.49	1.44	1.43	1.43	1.46		
Specimen Flow rate (GPM/ft2)	112.9	110.4	112.1	110.4	112.1	111.2	107.9	107.1	107.1	109.5		
Specimen Flow rate (LPM/m2)			4570					4370				
Specimen Permeability (cm/s)	0.36	0.35	0.36	0.35	0.36	0.36	0.35	0.34	0.34	0.35		
Test Specimen No. >:			3					4				
Thickness (mils)	105.4	105.4	105.4	105.4	105.4	105.7	105.7	105.7	105.7	105.7		
Thickness (mm)	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.4	13.9	13.7	13.9	13.7	13.2	13.5	14.0	13.4	13.6		
Specimen Permittivity @20°C (sec-1)	1.46	1.41	1.43	1.41	1.43	1.49	1.45	1.40	1.46	1.44		
Specimen Flow rate (GPM/ft2)	109.5	105.6	107.1	105.6	107.1	111.2	108.7	104.8	109.5	107.9		
Specimen Flow rate (LPM/m2)			4370					4270				
Specimen Permeability (cm/s)	0.39	0.38	0.38	0.38	0.38	0.40	0.39	0.38	0.39	0.39		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.46
	Flow rate (GPM/ft2)	108.9
	Flow rate (LPM/m2)	4400
	Permeability (cm/s)	0.37

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.34	4.11	4.16	4.03	3.62	4.05	3.98	3.75	3.86	3.85	**3.98**	0.21
Mass/Unit Area (oz/sq.yd)	10.09	9.56	9.68	9.37	8.42	9.42	9.26	8.72	8.98	8.96	**9.25**	0.49
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	301	282	278	264	267	337	284	260	278	259	**281**	23
TD - Tensile Strength (lbs)	317	372	341	318	323	287	320	315	323	272	**319**	27
MD - Elong. @ Max. Load (%)	75	76	71	71	69	73	72	72	73	73	**73**	2
TD - Elong. @ Max. Load (%)	101	95	99	99	115	89	98	99	99	99	**99**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	898	771	722	839	792	748	744	692	735	786	**773**	60
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	98	97	108	91	140	89	113	96	98	120	**105**	16
TD - Tear Strength (lbs)	121	109	123	118	97	132	123	120	100	121	**116**	11
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.109	0.123	0.122	0.138	0.155						**0.129**	0.018
Sieve No.	100	100	100	100	70						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013388
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.4											
Correction Factor:	0.995											
Test Specimen No. >:			1					2				
Thickness (mils)	95.5	95.5	95.5	95.5	95.5	101.5	101.5	101.5	101.5	101.5		
Thickness (mm)	2.43	2.43	2.43	2.43	2.43	2.58	2.58	2.58	2.58	2.58		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.8	14.9	14.8	14.9	14.9	14.6	14.5	14.6	14.4	14.8		
Specimen Permittivity @20°C (sec-1)	1.32	1.31	1.32	1.31	1.31	1.34	1.35	1.34	1.36	1.32		
Specimen Flow rate (GPM/ft2)	99.0	98.3	99.0	98.3	98.3	100.4	101.1	100.4	101.8	99.0		
Specimen Flow rate (LPM/m2)			4030					4090				
Specimen Permeability (cm/s)	0.32	0.32	0.32	0.32	0.32	0.33	0.33	0.35	0.35	0.34		
Test Specimen No. >:			3					4				
Thickness (mils)	100.3	100.3	100.3	100.3	100.3	93.9	93.9	93.9	93.9	93.9		
Thickness (mm)	2.55	2.55	2.55	2.55	2.55	2.39	2.39	2.39	2.39	2.39		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.0	13.5	13.0	13.0	13.2	14.8	14.8	14.8	14.8	14.9		
Specimen Permittivity @20°C (sec-1)	1.51	1.45	1.51	1.51	1.48	1.32	1.32	1.32	1.32	1.31		
Specimen Flow rate (GPM/ft2)	112.7	108.5	112.7	112.7	111.0	99.0	99.0	99.0	99.0	98.3		
Specimen Flow rate (LPM/m2)			4590					4030				
Specimen Permeability (cm/s)	0.38	0.37	0.38	0.38	0.38	0.34	0.34	0.32	0.32	0.31		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.37
	Flow rate (GPM/ft2)	102.4
	Flow rate (LPM/m2)	4190
	Permeability (cm/s)	0.34

MD Machine Direction TD Transverse Direction

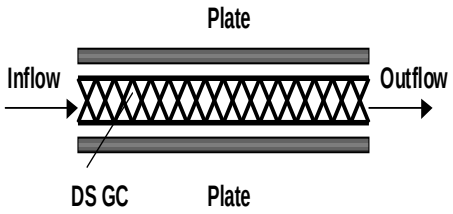
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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	502	503	504	669	665	664					
	Time (s)	45.48	45.54	45.52	60.29	60.27	60.46					
0.25	Flow Rate (GPM/ft width)	0.17	0.17	0.17	0.18	0.18	0.18				**0.18**	0.00
	Transmissivity (m^2/s)	3.60E-04	3.60E-04	3.61E-04	3.70E-04	3.69E-04	3.67E-04				**3.65E-04**	4.46E-06
	Test Temp (C)		20.4			19.4						
	Temp. Corr. Factor		0.995			1.017						
Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	2.68	2.67	2.87	2.42	1.27						**2.38**	0.64
A - MD Average Peel Strength (g/in)	1217	1212	1303	1099	577						**1081**	291
B - MD Average Peel Strength (ppi)	2.76	2.63	1.39	3.28	1.70						**2.35**	0.78
B - MD Average Peel Strength (g/in)	1253	1194	631	1489	772						**1068**	356



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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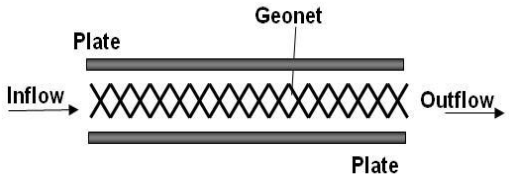
GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

GEONET COMPONENT

PARAMETER		TEST REPLICATE NUMBER										MEAN	STD. DEV.
		1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)													
Direction Tested: Machine Direction													
Normal Load (psf):	10,000												
Hydraulic Gradient:	0.1												
Test Length (in)	12												
Test Width (in)	12												
Plate / Geonet / Plate													
Seat Time (hours)		Specimen		1			2						
	Volume (cc)		6000	6000	6000	6000	6000	6000					
	Time (s)		30.02	29.69	30.03	27.42	27.68	27.72					
0.25	Flow Rate (GPM/ft width)		3.14	3.18	3.14	3.52	3.49	3.48				**3.33**	0.19
	Transmissivity (m^2/s)		6.51E-03	6.58E-03	6.50E-03	7.29E-03	7.22E-03	7.21E-03				**6.88E-03**	3.89E-04
	Test Temp (C)			20.5			19.5						
	Temp. Corr. Factor			0.992			1.015						
Thickness (ASTM D 5199)													
Thickness (mils)		242	245	246	252	260	262	248	248	245	240	**249**	7
												240	<< min
Density (ASTM D 1505)													
Density (g/cm3)		0.952	0.952	0.952								**0.952**	0.000
Carbon Black Content (ASTM D 4218)													
% Carbon Black		2.12	2.09									**2.11**	0.02
Tensile Properties (ASTM D 7179, 12 ipm strain rate)													
MD Max. Strength (ppi)		83	94	91	93	82						**89**	6
MD Elong. @ Max. Strength (%)		18	21	18	19	20						**19**	1

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.45	3.83	3.61	4.07	4.11	4.15	4.00	3.60	3.68	4.23	**3.97**	0.28
Mass/Unit Area (oz/sq.yd)	10.35	8.91	8.40	9.47	9.56	9.65	9.30	8.37	8.56	9.84	**9.24**	0.66
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	267	246	217	269	336	240	237	255	352	301	**272**	44
TD - Tensile Strength (lbs)	300	300	299	323	246	299	318	296	301	300	**298**	20
MD - Elong. @ Max. Load (%)	75	72	90	79	84	81	80	83	84	93	**82**	6
TD - Elong. @ Max. Load (%)	110	97	99	98	105	109	103	99	114	117	**105**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	683	839	762	787	748	707	829	716	785	656	**751**	61
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	131	138	88	105	107	127	118	102	80	124	**112**	19
TD - Tear Strength (lbs)	130	127	168	129	146	103	123	107	133	145	**131**	19
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.120	0.111	0.123	0.132	0.155						**0.128**	0.017
Sieve No.	100	100	100	100	70						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.5											
Correction Factor:	0.992											
Test Specimen No. >:			1					2				
Thickness (mils)	93.9	93.9	93.9	93.9	93.9	97.1	97.1	97.1	97.1	97.1		
Thickness (mm)	2.39	2.39	2.39	2.39	2.39	2.47	2.47	2.47	2.47	2.47		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	16.0	16.0	16.2	16.1	16.1	15.0	14.9	15.3	15.0	15.4		
Specimen Permittivity @20°C (sec-1)	1.22	1.22	1.21	1.21	1.21	1.30	1.31	1.28	1.30	1.27		
Specimen Flow rate (GPM/ft2)	91.3	91.3	90.2	90.8	90.8	97.4	98.1	95.5	97.4	94.9		
Specimen Flow rate (LPM/m2)			3680					3890				
Specimen Permeability (cm/s)	0.29	0.29	0.29	0.29	0.29	0.31	0.31	0.31	0.32	0.31		
Test Specimen No. >:			3					4				
Thickness (mils)	107.8	107.8	107.8	107.8	107.8	109.1	109.1	109.1	109.1	109.1		
Thickness (mm)	2.74	2.74	2.74	2.74	2.74	2.77	2.77	2.77	2.77	2.77		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.9	15.0	15.1	15.1	15.1	16.3	16.5	16.3	16.4	16.4		
Specimen Permittivity @20°C (sec-1)	1.31	1.30	1.29	1.29	1.29	1.20	1.18	1.20	1.19	1.19		
Specimen Flow rate (GPM/ft2)	98.1	97.4	96.8	96.8	96.8	89.6	88.6	89.6	89.1	89.1		
Specimen Flow rate (LPM/m2)			3940					3650				
Specimen Permeability (cm/s)	0.36	0.36	0.35	0.35	0.35	0.33	0.32	0.33	0.33	0.33		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.25
	Flow rate (GPM/ft2)	93.5
	Flow rate (LPM/m2)	3790
	Permeability (cm/s)	0.32

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.16	3.88	3.67	3.78	3.90	3.99	3.42	3.45	3.62	3.38	**3.73**	0.26
Mass/Unit Area (oz/sq.yd)	9.68	9.02	8.54	8.79	9.07	9.28	7.95	8.02	8.42	7.86	**8.66**	0.61
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	321	241	242	260	256	316	216	262	267	294	**267**	33
TD - Tensile Strength (lbs)	323	272	279	299	311	325	326	329	326	260	**305**	26
MD - Elong. @ Max. Load (%)	77	113	79	81	76	69	105	85	84	82	**85**	14
TD - Elong. @ Max. Load (%)	117	113	103	111	103	109	103	102	99	117	**108**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	701	739	688	698	728	771	844	740	719	739	**737**	45
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	110	83	107	105	78	111	140	85	129	97	**105**	20
TD - Tear Strength (lbs)	108	119	116	136	180	121	118	128	150	155	**133**	22
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.120	0.119	0.129	0.139	0.139						**0.129**	0.010
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013419
TRI Log #: 70136

GEOTEXTILE - SIDE B

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Water Temp. (C):	20.8											
Correction Factor:	0.986											
Test Specimen No. >:			1					2				
Thickness (mils)	92.2	92.2	92.2	92.2	92.2	116.5	116.5	116.5	116.5	116.5		
Thickness (mm)	2.34	2.34	2.34	2.34	2.34	2.96	2.96	2.96	2.96	2.96		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	19.6	19.5	19.5	19.5	19.5	16.7	16.9	16.9	16.9	16.7		
Specimen Permittivity @20°C (sec-1)	0.99	0.99	0.99	0.99	0.99	1.16	1.15	1.15	1.15	1.16		
Specimen Flow rate (GPM/ft2)	74.0	74.4	74.4	74.4	74.4	86.9	85.9	85.9	85.9	86.9		
Specimen Flow rate (LPM/m2)			3030					3500				
Specimen Permeability (cm/s)	0.23	0.23	0.23	0.23	0.23	0.27	0.27	0.34	0.34	0.34		
Test Specimen No. >:			3					4				
Thickness (mils)	111.4	111.4	111.4	111.4	111.4	119.5	119.5	119.5	119.5	119.5		
Thickness (mm)	2.83	2.83	2.83	2.83	2.83	3.04	3.04	3.04	3.04	3.04		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	11.2	11.3	11.1	11.2	11.2	16.9	16.7	16.7	16.8	17.1		
Specimen Permittivity @20°C (sec-1)	1.73	1.72	1.75	1.73	1.73	1.15	1.16	1.16	1.15	1.13		
Specimen Flow rate (GPM/ft2)	129.6	128.4	130.7	129.6	129.6	85.9	86.9	86.9	86.4	84.9		
Specimen Flow rate (LPM/m2)			5330					3540				
Specimen Permeability (cm/s)	0.49	0.49	0.49	0.49	0.49	0.32	0.33	0.35	0.35	0.34		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.26
	Flow rate (GPM/ft2)	94.1
	Flow rate (LPM/m2)	3850
	Permeability (cm/s)	0.34

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												

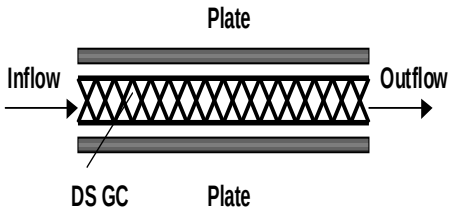


Plate / Sample / Plate

Seat Time (hours)		Specimen		1			2				
	Volume (cc)		685	689	683	693	708	690			
	Time (s)		60.28	60.41	60.10	60.23	60.54	60.32			
0.25	Flow Rate (GPM/ft width)		0.18	0.18	0.18	0.19	0.19	0.18		**0.18**	0.00
	Transmissivity (m^2/s)		3.80E-04	3.81E-04	3.79E-04	3.84E-04	3.91E-04	3.82E-04		**3.83E-04**	4.24E-06
	Test Temp (C)			19.4			19.4				
	Temp. Corr. Factor			1.017			1.017				

Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	5.14	4.54	4.96	4.76	5.34						**4.95**	0.31
A - MD Average Peel Strength (g/in)	2334	2061	2252	2161	2424						**2246**	142
B - MD Average Peel Strength (ppi)	4.17	3.67	5.24	3.95	6.32						**4.67**	1.10
B - MD Average Peel Strength (g/in)	1893	1666	2379	1793	2869						**2120**	498

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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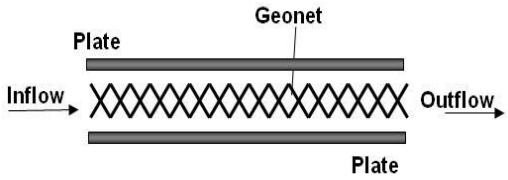
GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

GEONET COMPONENT

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Geonet / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	6000	6000	6000	6000	6000	6000					
	Time (s)	34.12	34.28	34.34	34.42	34.59	34.86					
0.25	Flow Rate (GPM/ft width)	2.82	2.81	2.81	2.80	2.78	2.76				**2.80**	0.02
	Transmissivity (m^2/s)	5.84E-03	5.82E-03	5.81E-03	5.79E-03	5.76E-03	5.72E-03				**5.79E-03**	4.35E-05
	Test Temp (C)		19.6			19.6						
	Temp. Corr. Factor		1.013			1.013						
Thickness (ASTM D 5199)												
Thickness (mils)	228	235	245	247	244	219	242	222	224	227	**233**	10
											219	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.39	2.38									**2.39**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	62	68	70	89	83						**74**	11
MD Elong. @ Max. Strength (%)	16	19	17	20	20						**18**	2

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.74	3.73	4.00	3.77	3.97	4.03	3.73	3.10	3.63	3.54	**3.72**	0.27
Mass/Unit Area (oz/sq.yd)	8.70	8.68	9.30	8.77	9.23	9.37	8.68	7.21	8.44	8.23	**8.66**	0.63
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	326	230	270	285	270	294	288	293	271	255	**278**	26
TD - Tensile Strength (lbs)	260	319	352	326	336	330	308	337	324	302	**319**	25
MD - Elong. @ Max. Load (%)	88	127	90	87	89	85	83	90	89	86	**91**	13
TD - Elong. @ Max. Load (%)	103	108	103	110	98	111	96	100	108	107	**104**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	657	695	726	702	733	722	775	741	772	635	**716**	45
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	116	113	98	103	103	102	110	100	77	134	**106**	15
TD - Tear Strength (lbs)	126	134	165	150	143	117	117	114	140	135	**134**	16
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.118	0.117	0.119	0.125	0.129						**0.122**	0.005
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.0											
Correction Factor:	0.981											
Test Specimen No. >:			1					2				
Thickness (mils)	97.6	97.6	97.6	97.6	97.6	93.7	93.7	93.7	93.7	93.7		
Thickness (mm)	2.48	2.48	2.48	2.48	2.48	2.38	2.38	2.38	2.38	2.38		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.8	14.9	14.7	14.8	14.7	15.1	15.1	15.1	15.0	15.0		
Specimen Permittivity @20°C (sec-1)	1.30	1.30	1.31	1.30	1.31	1.28	1.28	1.28	1.29	1.29		
Specimen Flow rate (GPM/ft2)	97.6	96.9	98.3	97.6	98.3	95.7	95.7	95.7	96.3	96.3		
Specimen Flow rate (LPM/m2)			4000					3900				
Specimen Permeability (cm/s)	0.32	0.32	0.33	0.32	0.33	0.32	0.32	0.30	0.31	0.31		
Test Specimen No. >:			3					4				
Thickness (mils)	95.8	95.8	95.8	95.8	95.8	91.4	91.4	91.4	91.4	91.4		
Thickness (mm)	2.43	2.43	2.43	2.43	2.43	2.32	2.32	2.32	2.32	2.32		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.0	14.0	14.0	13.8	13.8	15.8	15.8	16.1	16.0	16.0		
Specimen Permittivity @20°C (sec-1)	1.38	1.38	1.38	1.40	1.40	1.22	1.22	1.20	1.21	1.21		
Specimen Flow rate (GPM/ft2)	103.2	103.2	103.2	104.7	104.7	91.4	91.4	89.7	90.3	90.3		
Specimen Flow rate (LPM/m2)			4200					3660				
Specimen Permeability (cm/s)	0.34	0.34	0.34	0.34	0.34	0.30	0.30	0.28	0.28	0.28		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.30
	Flow rate (GPM/ft2)	97.0
	Flow rate (LPM/m2)	3940
	Permeability (cm/s)	0.31

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.47	4.15	3.75	4.08	3.42	3.95	3.76	4.26	4.04	3.84	**3.87**	0.28
Mass/Unit Area (oz/sq.yd)	8.07	9.65	8.72	9.49	7.95	9.19	8.75	9.91	9.40	8.93	**9.01**	0.65
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	293	273	270	287	283	312	289	307	263	297	**287**	16
TD - Tensile Strength (lbs)	280	275	335	405	356	322	376	392	384	373	**350**	45
MD - Elong. @ Max. Load (%)	90	82	91	89	83	89	81	96	98	85	**89**	6
TD - Elong. @ Max. Load (%)	108	101	103	121	102	121	106	106	106	113	**109**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	699	809	796	765	776	670	692	718	729	638	**729**	56
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	103	111	99	137	92	122	118	82	127	119	**111**	17
TD - Tear Strength (lbs)	148	120	125	136	115	150	133	108	154	129	**132**	15
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.128	0.092	0.112	0.126	0.109						**0.113**	0.015
Sieve No.	100	140	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013446
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.0											
Correction Factor:	0.982											
Test Specimen No. >:			1					2				
Thickness (mils)	105.7	105.7	105.7	105.7	105.7	94.8	94.8	94.8	94.8	94.8		
Thickness (mm)	2.68	2.68	2.68	2.68	2.68	2.41	2.41	2.41	2.41	2.41		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.7	15.0	14.6	14.7	14.7	15.7	15.3	15.2	15.3	15.3		
Specimen Permittivity @20°C (sec-1)	1.32	1.29	1.32	1.32	1.32	1.23	1.26	1.27	1.26	1.26		
Specimen Flow rate (GPM/ft2)	98.4	96.4	99.1	98.4	98.4	92.1	94.5	95.1	94.5	94.5		
Specimen Flow rate (LPM/m2)			4040					3880				
Specimen Permeability (cm/s)	0.35	0.35	0.36	0.35	0.35	0.33	0.34	0.31	0.30	0.30		
Test Specimen No. >:			3					4				
Thickness (mils)	96.5	96.5	96.5	96.5	96.5	90.2	90.2	90.2	90.2	90.2		
Thickness (mm)	2.45	2.45	2.45	2.45	2.45	2.29	2.29	2.29	2.29	2.29		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	11.7	11.6	11.7	11.8	11.7	12.8	13.0	12.8	12.9	12.7		
Specimen Permittivity @20°C (sec-1)	1.65	1.67	1.65	1.64	1.65	1.51	1.49	1.51	1.50	1.52		
Specimen Flow rate (GPM/ft2)	123.6	124.7	123.6	122.6	123.6	113.0	111.2	113.0	112.1	113.9		
Specimen Flow rate (LPM/m2)			5040					4600				
Specimen Permeability (cm/s)	0.41	0.41	0.41	0.40	0.41	0.37	0.36	0.35	0.34	0.35		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.43
	Flow rate (GPM/ft2)	107.1
	Flow rate (LPM/m2)	4390
	Permeability (cm/s)	0.36

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	10,000
Hydraulic Gradient:	0.1
Test Length (in)	12
Test Width (in)	12

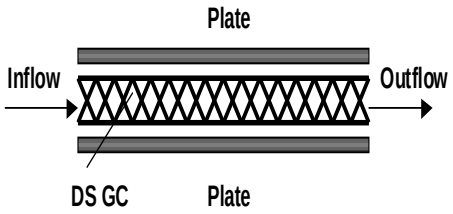


Plate / Sample / Plate

PARAMETER		TEST REPLICATE NUMBER										MEAN	STD. DEV.
		1	2	3	4	5	6	7	8	9	10		
Seat Time (hours)	Specimen			1			2						
	Volume (cc)		720	714	714	657	652	649					
	Time (s)		30.37	30.33	30.34	15.32	15.32	15.30					
0.25	Flow Rate (GPM/ft width)		0.38	0.37	0.37	0.68	0.67	0.67				**0.52**	0.16
	Transmissivity (m^2/s)		7.79E-04	7.73E-04	7.73E-04	1.41E-03	1.40E-03	1.39E-03				**1.09E-03**	3.41E-04
	Test Temp (C)			20.1			20.2						
	Temp. Corr. Factor			1.001			0.999						

Peel Strength (ASTM D 7005)

A - MD Average Peel Strength (ppi)	4.88	4.24	3.45	2.95	2.20							**3.54**	1.05
A - MD Average Peel Strength (g/in)	2216	1925	1566	1339	999							**1609**	478
B - MD Average Peel Strength (ppi)	2.24	4.31	3.56	2.80	3.41							**3.26**	0.79
B - MD Average Peel Strength (g/in)	1017	1957	1616	1271	1548							**1482**	357

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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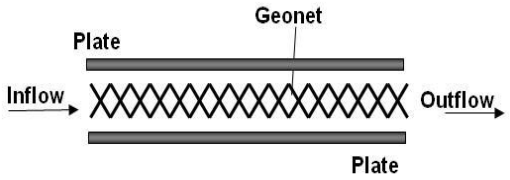
GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

GEONET COMPONENT

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Geonet / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	2325	2296	2292	2351	2344	2342					
	Time (s)	10.52	10.39	10.37	10.46	10.45	10.45					
0.25	Flow Rate (GPM/ft width)	3.56	3.56	3.56	3.62	3.61	3.61				**3.58**	0.03
	Transmissivity (m^2/s)	7.36E-03	7.36E-03	7.36E-03	7.49E-03	7.47E-03	7.46E-03				**7.42E-03**	6.18E-05
	Test Temp (C)		19.5			19.5						
	Temp. Corr. Factor		1.015			1.015						
Thickness (ASTM D 5199)												
Thickness (mils)	229	240	243	245	248	244	244	241	232	231	**240**	7
											229	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.37	2.31									**2.34**	0.04
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	66	83	80	72	72						**75**	7
MD Elong. @ Max. Strength (%)	17	18	20	14	16						**17**	2

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.98	3.53	3.67	4.06	3.62	3.82	3.62	3.71	3.87	3.94	**3.78**	0.18
Mass/Unit Area (oz/sq.yd)	9.26	8.21	8.54	9.44	8.42	8.89	8.42	8.63	9.00	9.16	**8.80**	0.41
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	310	229	238	250	291	287	216	222	236	254	**253**	32
TD - Tensile Strength (lbs)	266	287	275	233	262	263	260	261	311	291	**271**	21
MD - Elong. @ Max. Load (%)	78	63	75	74	84	73	66	73	69	75	**73**	6
TD - Elong. @ Max. Load (%)	95	92	101	106	105	107	98	98	99	111	**101**	6
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	764	794	695	668	545	730	731	701	704	776	**711**	70
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	125	78	100	93	121	90	111	99	120	88	**102**	16
TD - Tear Strength (lbs)	94	124	86	138	98	122	97	90	88	109	**105**	18
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.143	0.141	0.144	0.119	0.12						**0.133**	0.013
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.0											
Correction Factor:	0.981											
Test Specimen No. >:			1					2				
Thickness (mils)	85	85	85	85	85	84.2	84.2	84.2	84.2	84.2		
Thickness (mm)	2.16	2.16	2.16	2.16	2.16	2.14	2.14	2.14	2.14	2.14		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	11.1	11.5	11.7	11.6	11.5	13.2	12.9	12.6	12.8	13.0		
Specimen Permittivity @20°C (sec-1)	1.74	1.68	1.65	1.66	1.68	1.46	1.50	1.53	1.51	1.49		
Specimen Flow rate (GPM/ft2)	130.1	125.6	123.5	124.5	125.6	109.4	112.0	114.6	112.8	111.1		
Specimen Flow rate (LPM/m2)			5030					4670				
Specimen Permeability (cm/s)	0.38	0.36	0.36	0.36	0.36	0.32	0.32	0.33	0.32	0.32		
Test Specimen No. >:			3					4				
Thickness (mils)	103.5	103.5	103.5	103.5	103.5	103.1	103.1	103.1	103.1	103.1		
Thickness (mm)	2.63	2.63	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.62		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	11.8	11.9	11.9	11.9	12.0	12.8	12.6	12.4	12.6	12.6		
Specimen Permittivity @20°C (sec-1)	1.64	1.62	1.62	1.62	1.61	1.51	1.53	1.56	1.53	1.53		
Specimen Flow rate (GPM/ft2)	122.4	121.4	121.4	121.4	120.4	112.8	114.6	116.5	114.6	114.6		
Specimen Flow rate (LPM/m2)			4950					4750				
Specimen Permeability (cm/s)	0.43	0.43	0.43	0.43	0.42	0.40	0.40	0.41	0.40	0.40		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.58
	Flow rate (GPM/ft2)	118.5
	Flow rate (LPM/m2)	4850
	Permeability (cm/s)	0.38

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.08	3.76	3.97	3.74	3.82	3.78	3.97	3.33	3.83	3.99	**3.83**	0.21
Mass/Unit Area (oz/sq.yd)	9.49	8.75	9.23	8.70	8.89	8.79	9.23	7.75	8.91	9.28	**8.90**	0.49
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	304	249	234	323	259	301	253	252	264	252	**269**	29
TD - Tensile Strength (lbs)	268	275	246	289	264	355	251	329	378	344	**300**	47
MD - Elong. @ Max. Load (%)	71	74	73	84	73	69	70	74	71	69	**73**	4
TD - Elong. @ Max. Load (%)	99	96	99	91	99	108	108	101	95	93	**99**	6
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	699	829	796	780	682	835	642	702	698	764	**743**	67
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	99	81	80	81	131	107	101	89	102	103	**97**	16
TD - Tear Strength (lbs)	136	105	161	122	185	100	123	124	128	115	**130**	26
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.140	0.139	0.124	0.129	0.122						**0.131**	0.008
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013473
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.5											
Correction Factor:	0.992											
Test Specimen No. >:			1					2				
Thickness (mils)	93.4	93.4	93.4	93.4	93.4	104.3	104.3	104.3	104.3	104.3		
Thickness (mm)	2.37	2.37	2.37	2.37	2.37	2.65	2.65	2.65	2.65	2.65		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.4	14.2	14.2	14.2	13.7	16.8	17.0	17.1	16.9	16.9		
Specimen Permittivity @20°C (sec-1)	1.36	1.38	1.38	1.38	1.43	1.16	1.15	1.14	1.16	1.16		
Specimen Flow rate (GPM/ft2)	101.5	102.9	102.9	102.9	106.7	87.0	86.0	85.4	86.5	86.5		
Specimen Flow rate (LPM/m2)			4190					3480				
Specimen Permeability (cm/s)	0.32	0.33	0.33	0.33	0.34	0.28	0.27	0.30	0.31	0.31		
Test Specimen No. >:			3					4				
Thickness (mils)	108.7	108.7	108.7	108.7	108.7	127.2	127.2	127.2	127.2	127.2		
Thickness (mm)	2.76	2.76	2.76	2.76	2.76	3.23	3.23	3.23	3.23	3.23		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.9	14.8	15.0	14.9	15.1	14.2	14.1	14.3	14.4	14.4		
Specimen Permittivity @20°C (sec-1)	1.31	1.32	1.30	1.31	1.29	1.38	1.39	1.37	1.36	1.36		
Specimen Flow rate (GPM/ft2)	98.1	98.7	97.4	98.1	96.8	102.9	103.6	102.2	101.5	101.5		
Specimen Flow rate (LPM/m2)			3970					4160				
Specimen Permeability (cm/s)	0.36	0.36	0.36	0.36	0.36	0.38	0.38	0.44	0.44	0.44		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.30
	Flow rate (GPM/ft2)	97.4
	Flow rate (LPM/m2)	3950
	Permeability (cm/s)	0.35

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	10,000
Hydraulic Gradient:	0.1
Test Length (in)	12
Test Width (in)	12

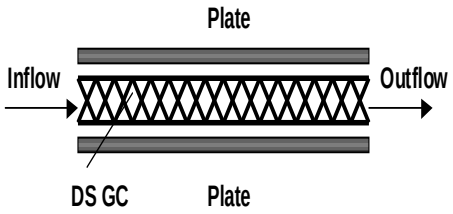


Plate / Sample / Plate

PARAMETER		TEST REPLICATE NUMBER										MEAN	STD. DEV.
		1	2	3	4	5	6	7	8	9	10		
Seat Time (hours)	Specimen			1			2						
	Volume (cc)		620	620	618	643	638	622					
	Time (s)		15.40	15.43	15.46	15.47	15.43	15.28					
0.25	Flow Rate (GPM/ft width)		0.65	0.65	0.65	0.67	0.67	0.66				**0.66**	0.01
	Transmissivity (m^2/s)		1.35E-03	1.34E-03	1.34E-03	1.39E-03	1.38E-03	1.36E-03				**1.36E-03**	2.18E-05
	Test Temp (C)			19.3			19.3						
	Temp. Corr. Factor			1.020			1.020						

Peel Strength (ASTM D 7005)

A - MD Average Peel Strength (ppi)	2.00	2.95	1.91	4.33	4.01							**3.04**	1.11
A - MD Average Peel Strength (g/in)	908	1339	867	1966	1821							**1380**	506
B - MD Average Peel Strength (ppi)	4.75	3.21	4.38	4.35	4.99							**4.34**	0.68
B - MD Average Peel Strength (g/in)	2157	1457	1989	1975	2265							**1969**	310

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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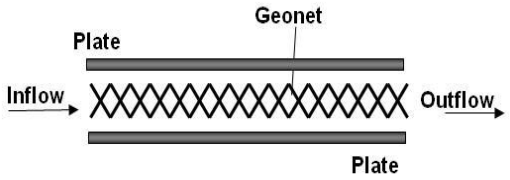
GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

GEONET COMPONENT

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Geonet / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	2229	2228	2216	2433	2424	2418					
	Time (s)	10.40	10.41	10.37	10.37	10.34	10.31					
0.25	Flow Rate (GPM/ft width)	3.45	3.44	3.44	3.77	3.77	3.77				**3.61**	0.18
	Transmissivity (m^2/s)	7.14E-03	7.13E-03	7.12E-03	7.81E-03	7.81E-03	7.81E-03				**7.47E-03**	3.74E-04
	Test Temp (C)		19.5			19.5						
	Temp. Corr. Factor		1.015			1.015						
Thickness (ASTM D 5199)												
Thickness (mils)	250	255	256	245	233	231	243	242	236	236	**243**	9
											231	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.953	0.953	0.953								**0.953**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.45	2.44									**2.45**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	88	79	91	81	72						**82**	8
MD Elong. @ Max. Strength (%)	19	22	23	22	18						**21**	2

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.48	3.83	3.80	4.36	3.56	3.95	4.05	3.99	3.32	3.22	**3.76**	0.36
Mass/Unit Area (oz/sq.yd)	8.09	8.91	8.84	10.14	8.28	9.19	9.42	9.28	7.72	7.49	**8.74**	0.83
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	336	264	307	283	284	278	337	255	346	319	**301**	32
TD - Tensile Strength (lbs)	384	369	342	309	297	340	354	373	372	284	**342**	35
MD - Elong. @ Max. Load (%)	88	88	89	85	85	133	83	73	101	101	**93**	16
TD - Elong. @ Max. Load (%)	109	101	113	114	112	115	101	102	114	99	**108**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	720	891	843	927	858	798	806	764	767	635	**801**	85
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	107	95	88	105	140	99	113	96	119	110	**107**	15
TD - Tear Strength (lbs)	138	120	144	132	180	115	142	172	151	156	**145**	21
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.154	0.117	0.112	0.122	0.129						**0.127**	0.016
Sieve No.	70	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.0											
Correction Factor:	0.982											
Test Specimen No. >:			1					2				
Thickness (mils)	104.4	104.4	104.4	104.4	104.4	100.5	100.5	100.5	100.5	100.5		
Thickness (mm)	2.65	2.65	2.65	2.65	2.65	2.55	2.55	2.55	2.55	2.55		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	15.0	14.6	14.7	14.7	14.7	14.2	14.2	13.9	14.4	14.1		
Specimen Permittivity @20°C (sec-1)	1.29	1.32	1.32	1.32	1.32	1.36	1.36	1.39	1.34	1.37		
Specimen Flow rate (GPM/ft2)	96.4	99.1	98.4	98.4	98.4	101.8	101.8	104.0	100.4	102.6		
Specimen Flow rate (LPM/m2)			4010					4240				
Specimen Permeability (cm/s)	0.34	0.35	0.35	0.35	0.35	0.36	0.36	0.36	0.34	0.35		
Test Specimen No. >:			3					4				
Thickness (mils)	97.7	97.7	97.7	97.7	97.7	98.4	98.4	98.4	98.4	98.4		
Thickness (mm)	2.48	2.48	2.48	2.48	2.48	2.50	2.50	2.50	2.50	2.50		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.5	13.7	13.6	13.6	13.8	16.4	16.3	16.6	16.6	16.4		
Specimen Permittivity @20°C (sec-1)	1.43	1.41	1.42	1.42	1.40	1.18	1.19	1.16	1.16	1.18		
Specimen Flow rate (GPM/ft2)	107.1	105.6	106.3	106.3	104.8	88.2	88.7	87.1	86.9	88.2		
Specimen Flow rate (LPM/m2)			4330					3550				
Specimen Permeability (cm/s)	0.36	0.35	0.35	0.35	0.35	0.29	0.29	0.29	0.29	0.29		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.32
	Flow rate (GPM/ft2)	98.5
	Flow rate (LPM/m2)	4030
	Permeability (cm/s)	0.34

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.98	3.44	4.21	3.53	3.72	3.47	3.32	3.06	3.42	3.22	**3.54**	0.35
Mass/Unit Area (oz/sq.yd)	9.26	8.00	9.79	8.21	8.65	8.07	7.72	7.12	7.95	7.49	**8.23**	0.81
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	245	245	250	243	221	260	230	279	271	287	**253**	21
TD - Tensile Strength (lbs)	300	282	181	248	259	236	302	365	313	222	**271**	52
MD - Elong. @ Max. Load (%)	67	72	79	71	81	73	67	79	79	83	**75**	6
TD - Elong. @ Max. Load (%)	101	107	89	92	109	105	95	101	111	107	**102**	8
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	628	700	724	728	564	673	549	713	530	766	**658**	84
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	95	121	87	98	99	102	78	100	90	106	**97**	12
TD - Tear Strength (lbs)	101	107	102	120	94	120	128	114	146	90	**112**	17
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.118	0.139	0.125	0.140	0.115						**0.127**	0.012
Sieve No.	100	100	100	100	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013505
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.9											
Correction Factor:	0.983											
Test Specimen No. >:			1					2				
Thickness (mils)	91.2	91.2	91.2	91.2	91.2	102.7	102.7	102.7	102.7	102.7		
Thickness (mm)	2.32	2.32	2.32	2.32	2.32	2.61	2.61	2.61	2.61	2.61		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	16.3	16.5	16.1	16.3	16.5	13.8	13.6	13.7	13.8	13.8		
Specimen Permittivity @20°C (sec-1)	1.19	1.17	1.20	1.19	1.17	1.40	1.42	1.41	1.40	1.40		
Specimen Flow rate (GPM/ft2)	88.8	87.7	89.9	88.8	87.7	104.9	106.4	105.6	104.9	104.9		
Specimen Flow rate (LPM/m2)			3660					4300				
Specimen Permeability (cm/s)	0.27	0.27	0.28	0.27	0.27	0.32	0.33	0.37	0.37	0.37		
Test Specimen No. >:			3					4				
Thickness (mils)	100.1	100.1	100.1	100.1	100.1	98.4	98.4	98.4	98.4	98.4		
Thickness (mm)	2.54	2.54	2.54	2.54	2.54	2.50	2.50	2.50	2.50	2.50		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.3	13.2	13.7	13.2	13.2	13.3	13.3	13.1	134.0	13.1		
Specimen Permittivity @20°C (sec-1)	1.45	1.47	1.41	1.47	1.47	1.45	1.45	1.48	0.14	1.48		
Specimen Flow rate (GPM/ft2)	108.8	109.6	105.6	109.6	109.6	108.8	108.8	110.5	10.8	110.5		
Specimen Flow rate (LPM/m2)			4300					4500				
Specimen Permeability (cm/s)	0.37	0.37	0.36	0.37	0.37	0.37	0.37	0.37	0.04	0.37		

TEMPERATURE CORRECTED VALUES		MEAN
	Permittivity (s-1)	1.31
	Flow rate (GPM/ft2)	98.1
	Flow rate (LPM/m2)	4190
	Permeability (cm/s)	0.32

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	10,000
Hydraulic Gradient:	0.1
Test Length (in)	12
Test Width (in)	12

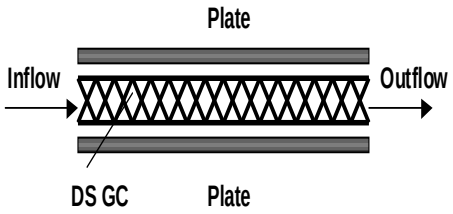


Plate / Sample / Plate

PARAMETER		TEST REPLICATE NUMBER										MEAN	STD. DEV.
		1	2	3	4	5	6	7	8	9	10		
Seat Time (hours)	Specimen			1			2						
0.25	Volume (cc)		659	659	657	666	661	660					
	Time (s)		25.38	15.37	15.35	20.40	20.37	20.38					
	Flow Rate (GPM/ft width)		0.42	0.69	0.69	0.53	0.52	0.52				**0.56**	0.11
	Transmissivity (m^2/s)		8.69E-04	1.43E-03	1.43E-03	1.09E-03	1.09E-03	1.08E-03				**1.17E-03**	2.23E-04
	Test Temp (C)			19.3			19.3						
	Temp. Corr. Factor			1.020			1.020						

Peel Strength (ASTM D 7005)

A - MD Average Peel Strength (ppi)	1.67	4.73	2.20	0.76	2.90			**2.45**	1.49
A - MD Average Peel Strength (g/in)	758	2147	999	346	1317			**1113**	678
B - MD Average Peel Strength (ppi)	2.70	1.62	1.53	2.97	1.20			**2.00**	0.78
B - MD Average Peel Strength (g/in)	1226	735	695	1348	545			**910**	354

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

GEONET COMPONENT

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Geonet / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	2195	2192	2184	2199	2226	2240					
	Time (s)	10.39	10.39	10.31	10.28	10.40	10.45					
0.25	Flow Rate (GPM/ft width)	3.39	3.39	3.40	3.43	3.44	3.44				**3.42**	0.02
	Transmissivity (m^2/s)	7.02E-03	7.01E-03	7.04E-03	7.11E-03	7.11E-03	7.12E-03				**7.07E-03**	5.14E-05
	Test Temp (C)		19.6			19.6						
	Temp. Corr. Factor		1.013			1.013						
Thickness (ASTM D 5199)												
Thickness (mils)	240	237	244	242	246	248	236	236	235	234	**240**	5
											234	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.61	2.56									**2.59**	0.04
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	80	72	78	78	76						**77**	3
MD Elong. @ Max. Strength (%)	17	19	14	21	18						**18**	3

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.10	3.84	3.80	3.80	3.86	3.98	3.71	3.65	3.60	3.51	**3.79**	0.18
Mass/Unit Area (oz/sq.yd)	9.54	8.93	8.84	8.84	8.98	9.26	8.63	8.49	8.37	8.16	**8.80**	0.41
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	317	187	233	228	262	314	269	240	206	302	**256**	45
TD - Tensile Strength (lbs)	253	308	300	283	312	328	256	323	316	303	**298**	26
MD - Elong. @ Max. Load (%)	77	113	83	82	78	85	82	101	80	75	**86**	12
TD - Elong. @ Max. Load (%)	99	97	103	97	106	109	109	103	110	107	**104**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	839	746	713	673	704	647	649	754	617	719	**706**	65
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	107	93	114	98	128	156	105	98	136	97	**113**	21
TD - Tear Strength (lbs)	123	127	126	137	139	136	145	119	163	112	**133**	15
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.118	0.134	0.134	0.157	0.132						**0.135**	0.014
Sieve No.	100	100	100	70	100						**100**	

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.0											
Correction Factor:	0.981											
Test Specimen No. >:			1					2				
Thickness (mils)	101.4	101.4	101.4	101.4	101.4	107.2	107.2	107.2	107.2	107.2		
Thickness (mm)	2.58	2.58	2.58	2.58	2.58	2.72	2.72	2.72	2.72	2.72		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	12.8	12.5	12.4	12.5	12.4	13.7	13.3	13.4	13.7	13.5		
Specimen Permittivity @20°C (sec-1)	1.51	1.54	1.56	1.54	1.56	1.41	1.45	1.44	1.41	1.43		
Specimen Flow rate (GPM/ft2)	112.8	115.6	116.5	115.6	116.5	105.4	108.6	107.8	105.4	107.0		
Specimen Flow rate (LPM/m2)			4750					4390				
Specimen Permeability (cm/s)	0.39	0.40	0.40	0.40	0.40	0.36	0.37	0.39	0.38	0.39		
Test Specimen No. >:			3					4				
Thickness (mils)	113.8	113.8	113.8	113.8	113.8	91.8	91.8	91.8	91.8	91.8		
Thickness (mm)	2.89	2.89	2.89	2.89	2.89	2.33	2.33	2.33	2.33	2.33		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	17.7	18.1	17.8	17.3	17.9	14.3	14.1	14.1	14.1	14.3		
Specimen Permittivity @20°C (sec-1)	1.09	1.07	1.08	1.12	1.08	1.35	1.37	1.37	1.37	1.35		
Specimen Flow rate (GPM/ft2)	81.6	79.8	81.1	83.5	80.7	101.0	102.4	102.4	102.4	101.0		
Specimen Flow rate (LPM/m2)			3310					4170				
Specimen Permeability (cm/s)	0.32	0.31	0.31	0.32	0.31	0.39	0.40	0.32	0.32	0.31		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.36
	Flow rate (GPM/ft2)	101.4
	Flow rate (LPM/m2)	4160
	Permeability (cm/s)	0.36

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.52	3.71	3.94	3.91	4.30	3.70	4.04	4.04	3.93	3.71	**3.88**	0.22
Mass/Unit Area (oz/sq.yd)	8.19	8.63	9.16	9.09	10.00	8.61	9.40	9.40	9.14	8.63	**9.02**	0.52
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	229	261	275	272	267	240	266	259	282	266	**262**	16
TD - Tensile Strength (lbs)	277	308	294	336	281	220	287	283	291	307	**288**	30
MD - Elong. @ Max. Load (%)	66	71	76	86	73	71	74	76	71	65	**73**	6
TD - Elong. @ Max. Load (%)	101	91	95	95	92	94	97	84	85	95	**93**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	654	810	809	718	781	706	857	860	764	675	**763**	73
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	101	104	101	110	107	143	105	116	121	98	**111**	13
TD - Tear Strength (lbs)	135	144	168	121	99	160	152	107	110	93	**129**	27
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.152	0.132	0.123	0.127	0.135						**0.134**	0.011
Sieve No.	70	100	100	100	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	109	120	104	110	115	89	94	90	95	95	**102**	11
Thickness (mm)	2.77	3.05	2.64	2.79	2.92	2.26	2.39	2.29	2.41	2.41	**2.59**	0.28
Permittivity (Sec-1)	1.55	1.16	1.05	1.13	1.16	1.42	1.38	1.16	1.13	1.07	**1.22**	0.17
Permittivity (GPM/ft2)	115.9	86.8	78.5	84.5	86.8	106.2	103.2	86.8	84.5	80.0	**91.3**	12.5
Flow rate (LPM/m2)	4724	3535	3200	3444	3535	4328	4206	3535	3444	3261	**3721**	511
Permittivity (cm/sec)	0.429	0.354	0.277	0.316	0.339	0.321	0.329	0.265	0.273	0.258	**0.316**	0.052

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC / NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013531
TRI Log #: 70136

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	21.8											
Correction Factor:	0.963											
Test Specimen No. >:			1					2				
Thickness (mils)	97.3	97.3	97.3	97.3	97.3	97.1	97.1	97.1	97.1	97.1		
Thickness (mm)	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	11.7	11.7	11.7	11.7	11.8	13.6	13.7	13.9	13.6	13.6		
Specimen Permittivity @20°C (sec-1)	1.62	1.62	1.62	1.62	1.61	1.39	1.38	1.36	1.39	1.39		
Specimen Flow rate (GPM/ft2)	121.2	121.2	121.2	121.2	120.2	104.3	103.5	102.1	104.3	104.3		
Specimen Flow rate (LPM/m2)			4940					4160				
Specimen Permeability (cm/s)	0.40	0.40	0.40	0.40	0.40	0.34	0.34	0.34	0.34	0.34		
Test Specimen No. >:			3					4				
Thickness (mils)	100.7	100.7	100.7	100.7	100.7	97.7	97.7	97.7	97.7	97.7		
Thickness (mm)	2.56	2.56	2.56	2.56	2.56	2.48	2.48	2.48	2.48	2.48		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.3	13.5	13.5	13.5	13.4	15.9	16.2	16.2	16.0	16.2		
Specimen Permittivity @20°C (sec-1)	1.43	1.40	1.40	1.40	1.42	1.19	1.17	1.17	1.19	1.17		
Specimen Flow rate (GPM/ft2)	106.7	105.1	105.1	105.1	105.9	89.2	87.6	87.6	88.7	87.6		
Specimen Flow rate (LPM/m2)			4280					3570				
Specimen Permeability (cm/s)	0.36	0.36	0.36	0.36	0.36	0.31	0.30	0.29	0.29	0.29		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.40
	Flow rate (GPM/ft2)	104.6
	Flow rate (LPM/m2)	4240
	Permeability (cm/s)	0.35

MD Machine Direction TD Transverse Direction

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

March 23, 2022

Mail To:

High Roller EPC/ NuBlu Energy
Ravi Vemulaoalli
Houston TX

email: ravi@hr-epc.com
cc email: mbradford@scsengineers.com
cc email: travis@hr-epc.com

Bill To:

<= Same

Dear Mr. Vemulaoalli:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	70286
Material(s) Tested:	Four Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite(s)
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (ASTM D 7005) - GC Transmissivity (ASTM D 4716) - GN Thickness (ASTM D 5199) - GN Density (ASTM D 1505) - GN Carbon Content (ASTM D 4218) - GN Tensile Properties (ASTM D 7179, 12 ipm strain rate) - GN Mass/Unit Area (ASTM D 5261) - GT Grab Tensile (ASTM D 4632) - GT CBR Puncture Strength (ASTM D 6241) - GT Trapezoidal Tear (ASTM D 4533) - GT Apparent Opening Size (ASTM D 4751) - GT Permittivity (ASTM D 4491) - GT

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

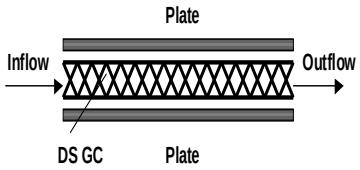
*Signature is on file

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013568
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		718	714	708	767	764	760					
Time (s)		15.37	15.36	15.31	15.37	15.33	15.27					
Flow Rate (GPM/ft width)		0.75	0.75	0.74	0.80	0.80	0.80				**0.77**	0.03
Transmissivity (m^2/s)		1.56E-03	1.55E-03	1.54E-03	1.66E-03	1.66E-03	1.65E-03				**1.60E-03**	5.94E-05
Test Temp (C)			19.5			19.6						
Temp. Corr. Factor			1.015			1.013						
Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	2.43	1.62	3.46	0.86	1.32						**1.94**	1.03
A - MD Average Peel Strength (g/in)	1103	735	1571	390	599						**880**	466
B - MD Average Peel Strength (ppi)	2.48	2.75	1.15	2.13	1.42						**1.99**	0.68
B - MD Average Peel Strength (g/in)	1126	1249	522	967	645						**902**	310



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

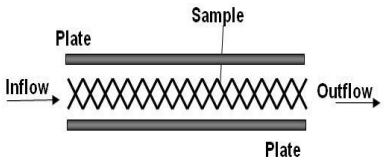
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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013568 GEONET COMPONENT
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	6000	6000	6000	6000	6000	6000					
	Time (s)	23.01	23.06	23.08	26.94	26.98	26.99					
0.25	Flow Rate (GPM/ft width)	4.21	4.20	4.19	3.58	3.58	3.58				**3.89**	0.34
	Transmissivity (m^2/s)	8.70E-03	8.68E-03	8.68E-03	7.42E-03	7.41E-03	7.40E-03				**8.05E-03**	7.01E-04
	Test Temp (C)		19.4			19.5						
	Temp. Corr. Factor		1.017			1.015						
Thickness (ASTM D 5199)												
Thickness (mils)	228	228	234	235	229	229	251	249	244	242	**237**	9
											228	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.63	2.65									**2.64**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)												
MD Max. Strength (ppi)	76	71	73	80	79						**76**	4
MD Elong. @ Max. Strength (%)	15	15	14	17	17						**15**	1

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulaoalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013568
TRI Log #: 70286

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.80	3.79	3.69	3.84	3.75	3.94	3.70	3.89	3.50	3.76	**3.77**	0.12
Mass/Unit Area (oz/sq.yd)	8.84	8.82	8.58	8.93	8.72	9.16	8.61	9.05	8.14	8.75	**8.76**	0.28
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	275	269	256	273	230	278	311	256	288	284	**272**	22
TD - Tensile Strength (lbs)	284	341	391	294	292	283	310	278	241	253	**297**	43
MD - Elong. @ Max. Load (%)	64	73	71	63	57	69	76	77	71	78	**70**	7
TD - Elong. @ Max. Load (%)	93	86	95	86	107	95	87	95	79	100	**92**	8
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	694	858	743	756	760	801	647	743	772	748	**752**	57
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	159	117	111	122	86	137	134	117	106	120	**121**	20
TD - Tear Strength (lbs)	106	134	149	131	117	123	119	116	124	98	**122**	14
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.105	0.113	0.129	0.141	0.138						**0.125**	0.016
Sieve No.	140	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	19.6											
Correction Factor:	1.014											
Test Specimen No. >:			**1**					**2**				
Thickness (mils)	98.3	98.3	98.3	98.3	98.3	88	88	88	88	88		
Thickness (mm)	2.50	2.50	2.50	2.50	2.50	2.24	2.24	2.24	2.24	2.24		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	15.0	14.9	15.0	14.9	14.8	11.2	11.1	11.0	11.1	11.3		
Specimen Permittivity @20°C (sec-1)	1.33	1.34	1.33	1.34	1.35	1.78	1.80	1.81	1.80	1.77		
Specimen Flow rate (GPM/ft2)	99.5	100.2	99.5	100.2	100.9	133.3	134.5	135.7	134.5	132.1		
Specimen Flow rate (LPM/m2)			4060					5530				
Specimen Permeability (cm/s)	0.33	0.33	0.33	0.33	0.34	0.44	0.45	0.41	0.40	0.39		
Test Specimen No. >:			**3**					**4**				
Thickness (mils)	90.3	90.3	90.3	90.3	90.3	106.4	106.4	106.4	106.4	106.4		
Thickness (mm)	2.29	2.29	2.29	2.29	2.29	2.70	2.70	2.70	2.70	2.70		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	13.3	13.5	13.4	13.3	13.3	15.6	15.8	15.5	15.5	15.7		
Specimen Permittivity @20°C (sec-1)	1.50	1.48	1.49	1.50	1.50	1.28	1.26	1.29	1.29	1.27		
Specimen Flow rate (GPM/ft2)	112.3	110.6	111.4	112.3	112.3	95.7	94.5	96.3	96.3	95.1		
Specimen Flow rate (LPM/m2)			4540					3920				
Specimen Permeability (cm/s)	0.34	0.34	0.34	0.34	0.34	0.29	0.29	0.35	0.35	0.34		

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	**1.48**
	Flow rate (GPM/ft2)	**110.4**
	Flow rate (LPM/m2)	**4510**
	Permeability (cm/s)	**0.36**

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013568
TRI Log #: 70286

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.94	3.36	3.46	3.74	3.97	3.85	3.67	3.60	3.92	3.88	**3.74**	0.21
Mass/Unit Area (oz/sq.yd)	9.16	7.82	8.05	8.70	9.23	8.96	8.54	8.37	9.12	9.02	**8.70**	0.49
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	186	249	249	266	271	274	248	228	256	219	**244**	27
TD - Tensile Strength (lbs)	303	318	356	318	266	296	306	262	276	305	**301**	28
MD - Elong. @ Max. Load (%)	77	72	77	71	68	73	70	77	73	72	**73**	3
TD - Elong. @ Max. Load (%)	105	89	95	89	101	103	94	92	89	97	**95**	6
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	777	861	595	753	779	811	732	860	848	717	**773**	81
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	85	105	94	99	115	91	119	84	100	77	**97**	13
TD - Tear Strength (lbs)	115	125	126	109	93	114	107	146	138	113	**119**	15
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.125	0.118	0.143	0.123	0.122						**0.126**	0.010
Sieve No.	100	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	19.8										
Correction Factor:	1.008										
Test Specimen No. >:			**1**					**2**			
Thickness (mils)	104.3	104.3	104.3	104.3	104.3	95.3	95.3	95.3	95.3	95.3	
Thickness (mm)	2.65	2.65	2.65	2.65	2.65	2.42	2.42	2.42	2.42	2.42	
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time (s)	16.4	16.5	16.9	16.5	16.3	12.6	12.5	12.4	12.3	12.6	
Specimen Permittivity @20°C (sec-1)	1.21	1.20	1.17	1.20	1.22	1.57	1.59	1.60	1.61	1.57	
Specimen Flow rate (GPM/ft2)	90.5	89.9	87.8	89.9	91.0	117.8	118.7	119.7	120.6	117.8	
Specimen Flow rate (LPM/m2)			3580					4880			
Specimen Permeability (cm/s)	0.32	0.32	0.31	0.32	0.32	0.42	0.42	0.39	0.39	0.38	
Test Specimen No. >:			**3**					**4**			
Thickness (mils)	94.7	94.7	94.7	94.7	94.7	88.6	88.6	88.6	88.6	88.6	
Thickness (mm)	2.41	2.41	2.41	2.41	2.41	2.25	2.25	2.25	2.25	2.25	
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time (s)	15.4	15.6	15.5	15.4	15.6	14.8	14.8	14.8	14.8	14.7	
Specimen Permittivity @20°C (sec-1)	1.29	1.27	1.28	1.29	1.27	1.34	1.34	1.34	1.34	1.35	
Specimen Flow rate (GPM/ft2)	96.3	95.1	95.7	96.3	95.1	100.3	100.3	100.3	100.3	100.9	
Specimen Flow rate (LPM/m2)			3900					4090			
Specimen Permeability (cm/s)	0.31	0.31	0.31	0.31	0.31	0.32	0.32	0.30	0.30	0.30	

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.35
	Flow rate (GPM/ft2)	101.2
	Flow rate (LPM/m2)	4110
	Permeability (cm/s)	0.33

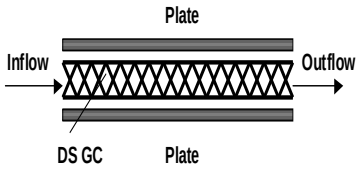
MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-13594
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		592	579	575	556	555	552					
Time (s)		20.46	20.31	20.31	20.42	20.46	20.42					
Flow Rate (GPM/ft width)		0.46	0.46	0.45	0.44	0.43	0.43				**0.45**	0.01
Transmissivity (m^2/s)		9.61E-04	9.47E-04	9.41E-04	9.02E-04	8.99E-04	8.96E-04				**9.25E-04**	2.85E-05
Test Temp (C)			19.6			19.7						
Temp. Corr. Factor			1.013			1.011						
Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	2.39	1.98	3.37	1.83	0.78						**2.07**	0.94
A - MD Average Peel Strength (g/in)	1085	899	1530	831	352						**939**	427
B - MD Average Peel Strength (ppi)	1.29	2.18	2.57	2.38	0.63						**1.81**	0.82
B - MD Average Peel Strength (g/in)	586	990	1167	1081	284						**821**	374



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

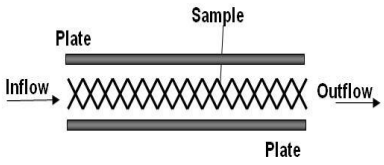
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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-13594 GEONET COMPONENT
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	6000	6000	6000	6000	6000	6000					
	Time (s)	29.15	29.18	29.18	24.87	24.90	24.93					
0.25	Flow Rate (GPM/ft width)	3.30	3.30	3.30	3.86	3.86	3.86				**3.58**	0.31
	Transmissivity (m^2/s)	6.84E-03	6.83E-03	6.83E-03	8.00E-03	7.99E-03	7.98E-03				**7.41E-03**	6.32E-04
	Test Temp (C)		19.6			19.7						
	Temp. Corr. Factor		1.013			1.011						
Thickness (ASTM D 5199)												
Thickness (mils)	236	236	243	246	238	236	254	253	243	239	**242**	7
											236	<< min
Density (ASTM D 1505)					GEONET COMPONENT							
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000
Carbon Black Content (ASTM D 4218)					GEONET COMPONENT							
% Carbon Black	2.68	2.65									**2.67**	0.02
Tensile Properties (ASTM D 7179, 12 ipm strain rate)					GEONET COMPONENT							
MD Max. Strength (ppi)	75	82	79	90	78						**81**	6
MD Elong. @ Max. Strength (%)	18	19	18	19	18						**18**	1

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulaoalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-13594
TRI Log #: 70286

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.34	3.90	3.58	3.71	4.01	3.62	3.69	3.76	3.50	4.35	**3.85**	0.30
Mass/Unit Area (oz/sq.yd)	10.09	9.07	8.33	8.63	9.33	8.42	8.58	8.75	8.14	10.12	**8.95**	0.70
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	298	285	244	287	315	302	342	253	266	269	**286**	30
TD - Tensile Strength (lbs)	319	346	307	330	254	422	327	333	300	317	**325**	42
MD - Elong. @ Max. Load (%)	90	83	97	97	87	103	95	86	81	87	**91**	7
TD - Elong. @ Max. Load (%)	109	109	109	113	100	121	106	111	101	118	**110**	6
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	837	756	765	668	669	779	711	742	651	795	**737**	61
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	122	112	87	78	88	99	137	83	96	90	**99**	19
TD - Tear Strength (lbs)	176	155	138	120	117	124	161	144	149	95	**138**	24
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.135	0.117	0.118	0.105	0.127						**0.120**	0.011
Sieve No.	100	100	100	140	100						**100**	
Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)												
Water Temp. (C):	20.0											
Correction Factor:	1.004											
Test Specimen No. >:			1					2				
Thickness (mils)	94.6	94.6	94.6	94.6	94.6	95.4	95.4	95.4	95.4	95.4		
Thickness (mm)	2.40	2.40	2.40	2.40	2.40	2.42	2.42	2.42	2.42	2.42		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.8	14.6	14.6	15.0	14.8	16.7	16.7	16.9	16.8	17.0		
Specimen Permittivity @20°C (sec-1)	1.34	1.35	1.35	1.32	1.34	1.18	1.18	1.17	1.18	1.16		
Specimen Flow rate (GPM/ft2)	99.9	101.3	101.3	98.6	99.9	88.5	88.5	87.5	88.0	87.0		
Specimen Flow rate (LPM/m2)			4130					3570				
Specimen Permeability (cm/s)	0.32	0.33	0.33	0.32	0.32	0.28	0.28	0.28	0.29	0.28		
Test Specimen No. >:			3					4				
Thickness (mils)	96.1	96.1	96.1	96.1	96.1	93	93	93	93	93		
Thickness (mm)	2.44	2.44	2.44	2.44	2.44	2.36	2.36	2.36	2.36	2.36		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	15.4	15.1	15.2	15.1	15.2	17.4	17.4	17.5	17.3	17.2		
Specimen Permittivity @20°C (sec-1)	1.28	1.31	1.30	1.31	1.30	1.14	1.14	1.13	1.14	1.15		
Specimen Flow rate (GPM/ft2)	96.0	97.9	97.3	97.9	97.3	85.0	85.0	84.5	85.5	86.0		
Specimen Flow rate (LPM/m2)			3960					3440				
Specimen Permeability (cm/s)	0.31	0.32	0.32	0.32	0.32	0.28	0.28	0.27	0.27	0.27		
			TEMPERATURE CORRECTED VALUES								Permittivity (s-1)	**1.24**
											Flow rate (GPM/ft2)	**92.6**
											Flow rate (LPM/m2)	**3780**
											Permeability (cm/s)	**0.30**

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-13594
TRI Log #: 70286

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.13	3.99	3.88	3.77	3.89	4.19	3.95	3.86	3.79	3.62	**3.91**	0.17
Mass/Unit Area (oz/sq.yd)	9.61	9.28	9.02	8.77	9.05	9.75	9.19	8.98	8.82	8.42	**9.09**	0.39
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	326	230	284	269	300	287	283	313	310	325	**293**	29
TD - Tensile Strength (lbs)	291	316	347	327	302	282	384	381	359	313	**330**	36
MD - Elong. @ Max. Load (%)	82	92	94	84	95	90	83	104	109	87	**92**	9
TD - Elong. @ Max. Load (%)	105	108	109	103	115	107	109	103	104	108	**107**	4
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	672	725	730	760	689	774	764	671	709	771	**726**	40
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	122	83	103	103	90	95	122	106	108	111	**104**	13
TD - Tear Strength (lbs)	145	121	113	124	115	146	98	136	124	95	**122**	17
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.114	0.130	0.117	0.127	0.120						**0.122**	0.007
Sieve No.	100	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	20.1											
Correction Factor:	1.001											
Test Specimen No. >:			**1**					**2**				
Thickness (mils)	99.9	99.9	99.9	99.9	99.9	99.4	99.4	99.4	99.4	99.4		
Thickness (mm)	2.54	2.54	2.54	2.54	2.54	2.52	2.52	2.52	2.52	2.52		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	15.8	15.5	15.2	15.1	15.4	16.6	16.3	16.8	16.6	16.8		
Specimen Permittivity @20°C (sec-1)	1.25	1.27	1.30	1.30	1.28	1.19	1.21	1.17	1.19	1.17		
Specimen Flow rate (GPM/ft2)	93.3	95.1	97.0	97.6	95.7	88.8	90.4	87.7	88.8	87.7		
Specimen Flow rate (LPM/m2)			3950					3570				
Specimen Permeability (cm/s)	0.32	0.32	0.33	0.33	0.32	0.30	0.31	0.30	0.30	0.30		
Test Specimen No. >:			**3**					**4**				
Thickness (mils)	90.4	90.4	90.4	90.4	90.4	89	89	89	89	89		
Thickness (mm)	2.30	2.30	2.30	2.30	2.30	2.26	2.26	2.26	2.26	2.26		
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
Time (s)	14.8	14.7	14.8	15.1	14.8	15.0	14.8	15.0	15.0	14.9		
Specimen Permittivity @20°C (sec-1)	1.33	1.34	1.33	1.30	1.33	1.31	1.33	1.31	1.31	1.32		
Specimen Flow rate (GPM/ft2)	99.6	100.3	99.6	97.6	99.6	98.2	99.6	98.2	98.2	98.9		
Specimen Flow rate (LPM/m2)			4060					4000				
Specimen Permeability (cm/s)	0.31	0.31	0.31	0.30	0.31	0.30	0.31	0.30	0.30	0.30		

TEMPERATURE CORRECTED VALUES		
Permittivity (s-1)	**1.28**	
Flow rate (GPM/ft2)	**95.6**	
Flow rate (LPM/m2)	**3900**	
Permeability (cm/s)	**0.31**	

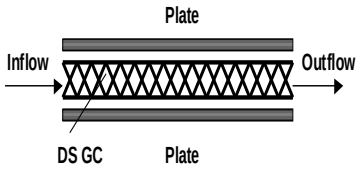
MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013622
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		565	563	562	592	591	591					
Time (s)		15.33	15.30	15.33	20.33	20.33	20.33					
Flow Rate (GPM/ft width)		0.59	0.59	0.59	0.47	0.46	0.46				**0.53**	0.07
Transmissivity (m^2/s)		1.22E-03	1.22E-03	1.21E-03	9.63E-04	9.62E-04	9.62E-04				**1.09E-03**	1.39E-04
Test Temp (C)			19.8			19.8						
Temp. Corr. Factor			1.008			1.008						
Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	3.57	2.94	3.21	1.31	2.48						**2.70**	0.87
A - MD Average Peel Strength (g/in)	1621	1335	1457	595	1126						**1227**	397
B - MD Average Peel Strength (ppi)	0.35	2.84	3.91	0.48	2.97						**2.11**	1.60
B - MD Average Peel Strength (g/in)	158	1289	1775	216	1348						**957**	728



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

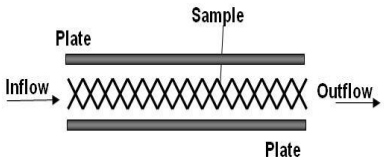
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Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013622
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		6000	6000	6000	6000	6000	6000					
Time (s)		28.57	28.60	28.63	24.03	24.06	24.09					
Flow Rate (GPM/ft width)		3.36	3.35	3.35	3.98	3.98	3.97				**3.66**	0.34
Transmissivity (m^2/s)		6.95E-03	6.94E-03	6.93E-03	8.24E-03	8.23E-03	8.22E-03				**7.59E-03**	7.07E-04
Test Temp (C)			19.8			19.9						
Temp. Corr. Factor			1.008			1.006						
Thickness (ASTM D 5199)					GEONET COMPONENT							
Thickness (mils)	247	246	243	248	243	253	240	257	247	236	**246**	6
											236	<< min
Density (ASTM D 1505)					GEONET COMPONENT							
Density (g/cm3)	0.954	0.955	0.955								**0.955**	0.001
Carbon Black Content (ASTM D 4218)					GEONET COMPONENT							
% Carbon Black	2.81	2.82									**2.82**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)					GEONET COMPONENT							
MD Max. Strength (ppi)	79	77	75	76	80						**77**	2
MD Elong. @ Max. Strength (%)	15	17	16	18	18						**17**	1

MD Machine Direction



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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulaoalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013622
TRI Log #: 70286

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.52	4.04	4.14	4.18	3.67	3.77	3.95	3.93	3.31	3.74	**3.83**	0.28
Mass/Unit Area (oz/sq.yd)	8.19	9.40	9.63	9.72	8.54	8.77	9.19	9.14	7.70	8.70	**8.90**	0.64
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	231	245	215	254	241	244	218	227	290	281	**244**	25
TD - Tensile Strength (lbs)	251	273	321	238	229	233	275	338	346	302	**281**	44
MD - Elong. @ Max. Load (%)	83	85	91	85	76	94	94	106	86	81	**88**	9
TD - Elong. @ Max. Load (%)	102	102	108	105	113	97	106	111	101	103	**105**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	712	687	726	762	891	645	603	759	787	663	**723**	82
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	102	94	77	92	81	87	105	105	102	41	**89**	19
TD - Tear Strength (lbs)	116	109	111	119	107	82	110	95	149	118	**112**	17
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.139	0.146	0.117	0.165	0.141						**0.142**	0.017
Sieve No.	100	100	100	70	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	109	118	131	146	131	122	121	102	119	110	**121**	13
Thickness (mm)	2.77	3.00	3.33	3.71	3.33	3.10	3.07	2.59	3.02	2.79	**3.07**	0.32
Permittivity (Sec-1)	1.18	1.33	1.09	1.46	1.16	1.37	1.24	1.61	1.36	1.35	**1.32**	0.15
Permittivity (GPM/ft2)	88.3	99.5	81.5	109.2	86.8	102.5	92.8	120.4	101.7	101.0	**98.4**	11.5
Flow rate (LPM/m2)	3596	4053	3322	4450	3535	4175	3779	4907	4145	4114	**4008**	469
Permittivity (cm/sec)	0.327	0.399	0.363	0.541	0.386	0.425	0.381	0.417	0.411	0.377	**0.403**	0.057

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013622
TRI Log #: 70286

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.84	4.41	4.06	4.05	4.30	4.02	4.10	3.62	3.85	3.77	**4.00**	0.24
Mass/Unit Area (oz/sq.yd)	8.93	10.26	9.44	9.42	10.00	9.35	9.54	8.42	8.96	8.77	**9.31**	0.56
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	280	267	230	286	297	220	277	214	283	283	**264**	31
TD - Tensile Strength (lbs)	214	291	282	282	285	329	270	286	288	281	**281**	28
MD - Elong. @ Max. Load (%)	77	83	85	87	100	89	85	78	83	79	**85**	7
TD - Elong. @ Max. Load (%)	107	111	115	97	107	115	103	121	100	111	**109**	8
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	578	659	821	791	800	757	690	840	729	636	**730**	87
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	114	115	89	113	62	101	98	79	98	118	**99**	18
TD - Tear Strength (lbs)	111	155	118	142	88	107	96	79	125	117	**114**	23
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.120	0.135	0.144	0.148	0.133						**0.136**	0.011
Sieve No.	100	100	100	100	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	126	118	102	119	122	109	117	103	117	113	**115**	8
Thickness (mm)	3.20	3.00	2.59	3.02	3.10	2.77	2.97	2.62	2.97	2.87	**2.91**	0.20
Permittivity (Sec-1)	1.17	1.17	1.43	1.38	1.16	1.44	1.38	1.56	1.20	1.09	**1.30**	0.16
Permittivity (GPM/ft2)	87.5	87.5	107.0	103.2	86.8	107.7	103.2	116.7	89.8	81.5	**97.1**	11.8
Flow rate (LPM/m2)	3566	3566	4358	4206	3535	4389	4206	4754	3657	3322	**3956**	481
Permittivity (cm/sec)	0.374	0.351	0.370	0.417	0.359	0.399	0.410	0.408	0.357	0.313	**0.376**	0.033

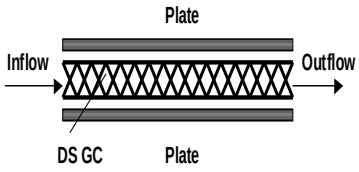
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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013652
TRI Log #: 70286

PARAMETER		TEST REPLICATE NUMBER										MEAN	STD. DEV.
		1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)													
Direction Tested: Machine Direction													
Normal Load (psf):	10,000												
Hydraulic Gradient:	0.1												
Test Length (in)	12												
Test Width (in)	12												
Plate / Sample / Plate													
Seat Time (hours)		Specimen		1			2						
	Volume (cc)		569	564	564	506	504	503					
	Time (s)		20.35	20.34	20.33	25.44	25.46	25.47					
0.25	Flow Rate (GPM/ft width)		0.45	0.44	0.44	0.32	0.32	0.32				**0.38**	0.07
	Transmissivity (m^2/s)		9.25E-04	9.17E-04	9.17E-04	6.57E-04	6.54E-04	6.52E-04				**7.87E-04**	1.45E-04
	Test Temp (C)			19.8			19.9						
	Temp. Corr. Factor			1.008			1.006						
Peel Strength (ASTM D 7005)													
A - MD Average Peel Strength (ppi)		3.09	0.51	4.23	4.46	4.73						**3.40**	1.73
A - MD Average Peel Strength (g/in)		1403	232	1920	2025	2147						**1545**	787
B - MD Average Peel Strength (ppi)		3.77	4.42	3.10	1.68	2.88						**3.17**	1.03
B - MD Average Peel Strength (g/in)		1712	2007	1407	763	1308						**1439**	467



Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

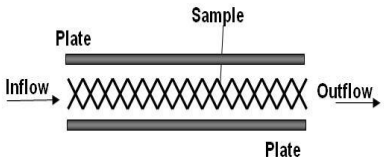
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Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013652
TRI Log #: 70286

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		6000	6000	6000	6000	6000	6000					
Time (s)		23.99	24.04	24.04	26.40	26.40	26.44					
Flow Rate (GPM/ft width)		4.02	4.01	4.01	3.66	3.66	3.65				**3.83**	0.19
Transmissivity (m^2/s)		8.31E-03	8.29E-03	8.29E-03	7.57E-03	7.57E-03	7.56E-03				**7.93E-03**	4.02E-04
Test Temp (C)			19.6			19.5						
Temp. Corr. Factor			1.013			1.015						
Thickness (ASTM D 5199)					GEONET COMPONENT							
Thickness (mils)	233	232	241	241	247	250	244	244	243	244	**242**	6
											232	<< min
Density (ASTM D 1505)					GEONET COMPONENT							
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000
Carbon Black Content (ASTM D 4218)					GEONET COMPONENT							
% Carbon Black	2.90	2.90									**2.90**	0.00
Tensile Properties (ASTM D 7179, 12 ipm strain rate)					GEONET COMPONENT							
MD Max. Strength (ppi)	76	71	81	80	78						**77**	4
MD Elong. @ Max. Strength (%)	19	21	20	20	19						**20**	1

MD Machine Direction



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Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013652
TRI Log #: 70286

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.83	3.78	3.78	3.64	3.55	3.71	3.85	3.94	3.82	4.03	**3.79**	0.14
Mass/Unit Area (oz/sq.yd)	8.91	8.79	8.79	8.47	8.26	8.63	8.96	9.16	8.89	9.37	**8.82**	0.32
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	261	311	262	279	276	297	298	294	313	278	**287**	18
TD - Tensile Strength (lbs)	293	295	258	279	267	250	284	284	252	293	**275**	18
MD - Elong. @ Max. Load (%)	63	75	67	69	69	74	74	76	71	67	**71**	4
TD - Elong. @ Max. Load (%)	101	94	92	101	109	108	105	92	90	104	**100**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	819	772	804	872	835	708	824	849	761	728	**797**	53
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	115	97	92	91	83	108	114	83	112	89	**98**	13
TD - Tear Strength (lbs)	109	118	96	101	93	94	101	107	92	93	**100**	9
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.158	0.159	0.160	0.164	0.149						**0.158**	0.006
Sieve No.	70	70	70	70	100						**70**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	114	129	131	111	102	113	114	104	119	111	**115**	9
Thickness (mm)	2.90	3.28	3.33	2.82	2.59	2.87	2.90	2.64	3.02	2.82	**2.92**	0.24
Permittivity (Sec-1)	1.66	1.53	1.51	1.65	1.41	1.32	1.31	1.45	1.26	1.41	**1.45**	0.14
Permittivity (GPM/ft2)	124.2	114.4	112.9	123.4	105.5	98.7	98.0	108.5	94.2	105.5	**108.5**	10.3
Flow rate (LPM/m2)	5059	4663	4602	5029	4297	4023	3992	4419	3840	4297	**4422**	419
Permittivity (cm/sec)	0.481	0.501	0.502	0.465	0.365	0.379	0.379	0.383	0.381	0.398	**0.423**	0.057

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: Ravi Vemulacalli
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double Sided Geocomposite
Sample Identification: 0116-013652
TRI Log #: 70286

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.91	3.88	3.84	3.84	3.79	4.01	3.76	3.56	3.27	3.87	**3.77**	0.21
Mass/Unit Area (oz/sq.yd)	9.09	9.02	8.93	8.93	8.82	9.33	8.75	8.28	7.61	9.00	**8.78**	0.49
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	327	297	272	316	298	237	268	279	313	264	**287**	28
TD - Tensile Strength (lbs)	261	307	309	288	253	291	262	282	266	263	**278**	20
MD - Elong. @ Max. Load (%)	77	70	78	71	70	96	94	96	99	99	**85**	13
TD - Elong. @ Max. Load (%)	105	101	98	91	98	71	68	74	68	65	**84**	16
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	843	744	812	772	763	741	757	759	813	883	**789**	47
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	97	115	110	112	87	89	114	85	116	105	**103**	12
TD - Tear Strength (lbs)	115	111	116	112	99	110	102	101	102	84	**105**	10
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.147	0.155	0.168	0.152	0.159						**0.156**	0.008
Sieve No.	100	70	70	70	70						**70**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	114	105	101	110	118	119	118	121	125	123	**115**	8
Thickness (mm)	2.90	2.67	2.57	2.79	3.00	3.02	3.00	3.07	3.18	3.12	**2.93**	0.20
Permittivity (Sec-1)	1.31	1.46	1.76	1.56	1.47	1.34	1.48	1.48	1.48	1.25	**1.45**	0.14
Permittivity (GPM/ft2)	98.0	109.2	131.6	116.7	110.0	100.2	110.7	110.7	110.7	93.5	**109.1**	10.6
Flow rate (LPM/m2)	3992	4450	5364	4754	4480	4084	4511	4511	4511	3810	**4447**	434
Permittivity (cm/sec)	0.379	0.389	0.452	0.436	0.441	0.405	0.444	0.455	0.470	0.391	**0.426**	0.032

MD Machine Direction TD Transverse Direction

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
Austin, TX - USA | CA - USA | SC - USA | Gold Coast - Australia | Suzhou - China | Sao Paulo, Brazil | Johannesburg - Africa

March 15, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC/ NuBlu Energy
Houston TX

email: ravi@hr-epc.com

Bill To:

<= Same

Dear Mr. Vemulaoalli,

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project: **North Ranch Landfill**

TRI Job Reference Number: 70326

Material(s) Tested: Two, Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite

Test(s) Requested:
Transmissivity (ASTM D 4716) - GC
Peel Strength (ASTM D 413, mod.)
Transmissivity (ASTM D 4716) - GN
Thickness (ASTM D 5199) - GN
Density (ASTM D 1505) - GN
Carbon Content (ASTM D 4218) - GN
Tensile Properties (ASTM D 7179, 12 ipm strain rate) - GN
Mass/Unit Area (ASTM D 5261) - GT
Grab Tensile (ASTM D 4632) - GT
CBR Puncture Strength (ASTM D 6241) - GT
Trapezoidal Tear (ASTM D 4533) - GT
Apparent Opening Size (ASTM D 4751) - GT
Permittivity (ASTM D 4491) - GT

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013682
TRI Log #: 70326

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
Volume (cc)		567	564	565	656	651	644					
Time (s)		40.34	40.30	40.36	25.84	25.40	25.41					
0.25 Flow Rate (GPM/ft width)		0.23	0.23	0.23	0.42	0.42	0.41				**0.32**	0.10
Transmissivity (m^2/s)		4.78E-04	4.75E-04	4.75E-04	8.61E-04	8.69E-04	8.59E-04				**6.70E-04**	2.12E-04
Test Temp (C)			18.6			18.7						
Temp. Corr. Factor			1.035			1.033						
Peel Strength (ASTM D 413, mod.)												
A - MD Average Peel Strength (ppi)	3.8	4.3	4.4	5.5	4.5						**4.5**	0.6
A - MD Average Peel Strength (g/in)	1725	1952	1998	2497	2043						**2043**	282
B - MD Average Peel Strength (ppi)	2.5	2.1	3.3	6.0	5.2						**3.8**	1.7
B - MD Average Peel Strength (g/in)	1135	953	1498	2724	2361						**1734**	774
A - TD Average Peel Strength (ppi)	3.3	4.2	3.5	4.0	4.3						**3.9**	0.4
A - TD Average Peel Strength (g/in)	1498	1907	1589	1816	1952						**1752**	199
B - TD Average Peel Strength (ppi)	4.3	3.2	3.9	5.5	6.1						**4.6**	1.2
B - TD Average Peel Strength (g/in)	1952	1453	1771	2497	2769						**2088**	537
Note: A and B represent a randomly assigned top and bottom of the sample												
Hydraulic Transmissivity (ASTM D 4716)	GEONET COMPONENT											
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
Volume (cc)		2099	2047	2061	1995	2010	1991					
Time (s)		10.46	10.30	10.34	10.37	10.42	10.36					
0.25 Flow Rate (GPM/ft width)		3.20	3.17	3.18	3.06	3.07	3.06				**3.12**	0.07
Transmissivity (m^2/s)		6.62E-03	6.56E-03	6.58E-03	6.34E-03	6.35E-03	6.33E-03				**6.46E-03**	1.38E-04
Test Temp (C)			19.9			20.0						
Temp. Corr. Factor			1.006			1.004						
Thickness (ASTM D 5199)	GEONET COMPONENT											
Thickness (mils)	230	221	226	229	226	224	224	221	222	220	**224**	3
											220	<< min
Density (ASTM D 1505)	GEONET COMPONENT											
Density (g/cm3)	0.952	0.952	0.952								**0.952**	0.000
Carbon Black Content (ASTM D 4218)	GEONET COMPONENT											
% Carbon Black	2.28	2.29									**2.29**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)	GEONET COMPONENT											
MD Max. Strength (ppi)	64	69	79	74	76						**72**	6
MD Elong. @ Max. Strength (%)	19	19	20	18	17						**18**	1

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013682
TRI Log #: 70326

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.75	3.96	3.80	3.53	3.85	3.55	3.58	3.59	3.45	3.53	**3.66**	0.17
Mass/Unit Area (oz/sq.yd)	8.72	9.21	8.84	8.21	8.96	8.26	8.33	8.35	8.02	8.21	**8.51**	0.39
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	247	271	251	246	280	260	253	276	298	269	**265**	17
TD - Tensile Strength (lbs)	214	259	251	281	254	249	280	328	263	287	**267**	30
MD - Elong. @ Max. Load (%)	66	67	70	67	70	72	67	71	72	66	**69**	3
TD - Elong. @ Max. Load (%)	91	87	83	99	94	91	93	90	101	93	**92**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	662	846	856	904	801	813	768	787	743	755	**793**	68
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	98	101	104	115	107	89	82	121	95	108	**102**	12
TD - Tear Strength (lbs)	110	96	112	102	121	91	127	119	111	122	**111**	12
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.151	0.149	0.155	0.154	0.135						**0.149**	0.008
Sieve No.	70	100	70	70	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	122	114	117	118	117	108	108	103	104	100	**111**	7
Thickness (mm)	3.10	2.90	2.97	3.00	2.97	2.74	2.74	2.62	2.64	2.54	**2.82**	0.19
Permittivity (Sec-1)	1.44	1.50	1.59	1.56	1.22	1.58	1.23	1.23	1.29	1.37	**1.40**	0.15
Permittivity (GPM/ft2)	107.7	112.2	118.9	116.7	91.3	118.2	92.0	92.0	96.5	102.5	**104.8**	11.4
Flow rate (LPM/m2)	4389	4572	4846	4754	3718	4815	3749	3749	3932	4175	**4270**	464
Permittivity (cm/sec)	0.446	0.434	0.473	0.468	0.363	0.433	0.337	0.322	0.341	0.348	**0.396**	0.059

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013682
TRI Log #: 70326

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.02	3.77	3.56	3.66	3.52	3.78	3.55	3.41	3.41	3.77	**3.65**	0.19
Mass/Unit Area (oz/sq.yd)	9.35	8.77	8.28	8.51	8.19	8.79	8.26	7.93	7.93	8.77	**8.48**	0.45
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	303	241	266	289	264	265	226	287	307	298	**275**	27
TD - Tensile Strength (lbs)	229	235	287	276	226	270	273	278	274	271	**262**	23
MD - Elong. @ Max. Load (%)	75	61	69	78	71	66	62	69	74	73	**70**	6
TD - Elong. @ Max. Load (%)	94	87	87	93	89	93	97	93	93	85	**91**	4
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	732	710	831	759	787	834	856	796	765	735	**780**	49
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	105	119	119	112	107	97	108	100	107	86	**106**	10
TD - Tear Strength (lbs)	95	111	111	112	103	92	112	114	112	121	**108**	9
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.139	0.141	0.139	0.127	0.143						**0.138**	0.006
Sieve No.	100	100	100	100	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	99	93	92	91	104	106	115	118	116	120	**105**	11
Thickness (mm)	2.51	2.36	2.34	2.31	2.64	2.69	2.92	3.00	2.95	3.05	**2.68**	0.29
Permittivity (Sec-1)	1.38	1.35	1.31	1.11	1.36	1.49	1.44	1.52	1.57	1.49	**1.40**	0.13
Permittivity (GPM/ft2)	103.2	101.0	98.0	83.0	101.7	111.5	107.7	113.7	117.4	111.5	**104.9**	9.9
Flow rate (LPM/m2)	4206	4114	3992	3383	4145	4541	4389	4633	4785	4541	**4273**	404
Permittivity (cm/sec)	0.347	0.319	0.306	0.257	0.359	0.401	0.421	0.456	0.463	0.454	**0.378**	0.072

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013715
TRI Log #: 70326

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
Volume (cc)		600	589	592	682	682	680					
Time (s)		15.46	15.39	15.40	15.28	15.25	15.23					
0.25 Flow Rate (GPM/ft width)		0.64	0.63	0.63	0.73	0.73	0.73				**0.68**	0.05
0.25 Transmissivity (m^2/s)		1.32E-03	1.30E-03	1.30E-03	1.51E-03	1.51E-03	1.51E-03				**1.41E-03**	1.13E-04
Test Temp (C)			18.7			18.8						
Temp. Corr. Factor			1.033			1.031						
Peel Strength (ASTM D 413, mod.)												
A - MD Average Peel Strength (ppi)	2.6	3.4	3.1	3.7	2.2						**3.0**	0.6
A - MD Average Peel Strength (g/in)	1180	1544	1407	1680	999						**1362**	274
B - MD Average Peel Strength (ppi)	2.2	1.8	2.1	3.0	4.5						**2.7**	1.1
B - MD Average Peel Strength (g/in)	999	817	953	1362	2043						**1235**	495
A - TD Average Peel Strength (ppi)	2.4	2.0	2.7	1.9	1.5						**2.1**	0.5
A - TD Average Peel Strength (g/in)	1090	908	1226	863	681						**953**	211
B - TD Average Peel Strength (ppi)	2.1	3.5	1.0	1.3	1.0						**1.8**	1.1
B - TD Average Peel Strength (g/in)	953	1589	454	590	454						**808**	482
Note: A and B represent a randomly assigned top and bottom of the sample												
Hydraulic Transmissivity (ASTM D 4716)	GEONET COMPONENT											
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
Volume (cc)		2072	2065	2039	1873	1848	1818					
Time (s)		10.45	10.44	10.40	10.49	10.47	10.27					
0.25 Flow Rate (GPM/ft width)		3.17	3.16	3.13	2.85	2.81	2.82				**2.99**	0.18
0.25 Transmissivity (m^2/s)		6.56E-03	6.54E-03	6.49E-03	5.89E-03	5.83E-03	5.84E-03				**6.19E-03**	3.71E-04
Test Temp (C)			19.8			19.9						
Temp. Corr. Factor			1.008			1.006						
Thickness (ASTM D 5199)	GEONET COMPONENT											
Thickness (mils)	243	242	240	235	233	236	233	232	228	227	**235**	5
											227	<< min
Density (ASTM D 1505)	GEONET COMPONENT											
Density (g/cm3)	0.950	0.950	0.951								**0.950**	0.001
Carbon Black Content (ASTM D 4218)	GEONET COMPONENT											
% Carbon Black	2.29	2.26									**2.28**	0.02
Tensile Properties (ASTM D 7179, 12 ipm strain rate)	GEONET COMPONENT											
MD Max. Strength (ppi)	84	77	72	70	72						**75**	6
MD Elong. @ Max. Strength (%)	21	19	18	20	19						**19**	1

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013715
TRI Log #: 70326

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.65	3.95	4.22	3.91	3.87	3.70	3.57	3.90	3.93	4.08	**3.88**	0.20
Mass/Unit Area (oz/sq.yd)	8.49	9.19	9.82	9.09	9.00	8.61	8.30	9.07	9.14	9.49	**9.02**	0.46
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	256	249	276	238	210	230	245	265	238	266	**247**	20
TD - Tensile Strength (lbs)	262	265	318	270	249	190	309	297	310	284	**275**	38
MD - Elong. @ Max. Load (%)	77	73	76	77	72	81	71	77	75	69	**75**	4
TD - Elong. @ Max. Load (%)	105	101	97	107	106	93	93	98	105	106	**101**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	624	587	799	797	759	800	843	746	625	829	**741**	94
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	122	106	95	83	102	108	106	84	117	117	**104**	14
TD - Tear Strength (lbs)	123	141	148	153	93	109	113	104	125	83	**119**	23
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.141	0.116	0.141	0.129	0.157						**0.137**	0.015
Sieve No.	100	100	100	100	70						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	97	104	111	108	128	117	115	95	104	106	**109**	10
Thickness (mm)	2.46	2.64	2.82	2.74	3.25	2.97	2.92	2.41	2.64	2.69	**2.76**	0.25
Permittivity (Sec-1)	1.40	0.82	1.22	1.10	1.37	1.26	1.26	1.20	1.11	1.62	**1.24**	0.21
Permittivity (GPM/ft2)	104.7	61.3	91.3	82.3	102.5	94.2	94.2	89.8	83.0	121.2	**92.5**	15.8
Flow rate (LPM/m2)	4267	2499	3718	3352	4175	3840	3840	3657	3383	4937	**3767**	644
Permittivity (cm/sec)	0.345	0.217	0.344	0.302	0.445	0.374	0.368	0.290	0.293	0.436	**0.341**	0.070

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013715
TRI Log #: 70326

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.45	4.36	4.21	4.08	3.81	3.97	3.99	4.08	4.14	3.87	**4.10**	0.20
Mass/Unit Area (oz/sq.yd)	10.35	10.14	9.79	9.49	8.86	9.23	9.28	9.49	9.63	9.00	**9.53**	0.47
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	264	219	255	266	299	286	273	257	283	296	**270**	24
TD - Tensile Strength (lbs)	289	329	330	349	332	317	352	366	342	369	**337**	24
MD - Elong. @ Max. Load (%)	79	73	85	81	73	74	81	80	79	70	**77**	5
TD - Elong. @ Max. Load (%)	95	91	82	87	99	98	87	90	87	90	**91**	5
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	871	868	863	1060	1026	737	943	866	953	810	**900**	97
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	111	106	101	143	135	100	119	122	123	127	**119**	14
TD - Tear Strength (lbs)	105	140	145	175	147	141	161	162	176	168	**152**	21
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.129	0.119	0.124	0.141	0.128						**0.128**	0.008
Sieve No.	100	100	100	100	100						**100**	
Permittivity (ASTM D 4491,Method C)												
Thickness (mil)	104	116	114	104	119	119	122	111	111	102	**112**	7
Thickness (mm)	2.64	2.95	2.90	2.64	3.02	3.02	3.10	2.82	2.82	2.59	**2.85**	0.18
Permittivity (Sec-1)	1.17	0.87	0.98	1.39	1.03	1.16	1.20	1.34	1.31	1.62	**1.21**	0.22
Permittivity (GPM/ft2)	87.5	65.1	73.3	104.0	77.0	86.8	89.8	100.2	98.0	121.2	**90.3**	16.4
Flow rate (LPM/m2)	3566	2652	2987	4236	3139	3535	3657	4084	3992	4937	**3679**	668
Permittivity (cm/sec)	0.309	0.256	0.284	0.367	0.311	0.351	0.372	0.378	0.369	0.420	**0.342**	0.050

MD Machine Direction TD Transverse Direction

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

March 23, 2022

Mail To:

Ravi Vemulaoalli
High Roller EPC/ NuBlu Energy
Houston TX

email: ravi@hr-epc.com
ccemail: mbradford@scsengineers.com
ccemail: travis@hr-epc.com

Bill To:

<= Same

Dear Mr. Vemulaoalli:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	70384
Material(s) Tested:	One, Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (ASTM D 7005) Transmissivity (ASTM D 4716) - GN Thickness (ASTM D 5199) - GN Density (ASTM D 1505) - GN Carbon Content (ASTM D 4218) - GN Tensile Properties (ASTM D 7179, 12 ipm strain rate) - GN Mass/Unit Area (ASTM D 5261) - GT Grab Tensile (ASTM D 4632) - GT CBR Puncture Strength (ASTM D 6241) - GT Trapezoidal Tear (ASTM D 4533) - GT Apparent Opening Size (ASTM D 4751) - GT Permittivity (ASTM D 4491) - GT

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division

*Signature is on file

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013896
TRI Log #: 70384

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		528	530	528	700	694	698					
Time (s)		25.39	25.43	25.41	20.39	20.33	20.39					
Flow Rate (GPM/ft width)		0.34	0.34	0.34	0.56	0.56	0.56				**0.45**	0.12
Transmissivity (m^2/s)		7.02E-04	7.03E-04	7.01E-04	1.16E-03	1.15E-03	1.15E-03				**9.27E-04**	2.47E-04
Test Temp (C)			18.9			19.0						
Temp. Corr. Factor			1.029			1.026						
Peel Strength (ASTM D 7005)												
A - MD Average Peel Strength (ppi)	4.11	4.82	3.91	3.86	4.80						**4.30**	0.47
A - MD Average Peel Strength (g/in)	1866	2188	1775	1752	2179						**1952**	216
B - MD Average Peel Strength (ppi)	3.95	5.21	4.88	5.06	4.68						**4.76**	0.49
B - MD Average Peel Strength (g/in)	1793	2365	2216	2297	2125						**2159**	223
Note: A and B represent a randomly assigned top and bottom of the sample												
Hydraulic Transmissivity (ASTM D 4716)	GEONET COMPONENT											
Direction Tested: Machine Direction												
Normal Load (psf): 10,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Sample / Plate												
Seat Time (hours)	Specimen		1			2						
0.25 Volume (cc)		2064	2069	2060	2071	2065	2060					
Time (s)		10.41	10.43	10.38	10.37	10.34	10.31					
Flow Rate (GPM/ft width)		3.23	3.23	3.23	3.26	3.26	3.27				**3.25**	0.02
Transmissivity (m^2/s)		6.68E-03	6.68E-03	6.68E-03	6.75E-03	6.76E-03	6.76E-03				**6.72E-03**	4.24E-05
Test Temp (C)			19.0			18.8						
Temp. Corr. Factor			1.026			1.031						
Thickness (ASTM D 5199)	GEONET COMPONENT											
Thickness (mils)	237	237	232	236	240	234	247	241	244	235	**238**	5
											232	<< min
Density (ASTM D 1505)	GEONET COMPONENT											
Density (g/cm3)	0.959	0.959	0.959								**0.959**	0.000
Carbon Black Content (ASTM D 4218)	GEONET COMPONENT											
% Carbon Black	2.45	2.43									**2.44**	0.01
Tensile Properties (ASTM D 7179, 12 ipm strain rate)	GEONET COMPONENT											
MD Max. Strength (ppi)	69	82	81	72	64						**74**	8
MD Elong. @ Max. Strength (%)	21	18	17	17	20						**19**	2

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013896
TRI Log #: 70384

GEOTEXTILE - SIDE A

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	4.01	3.45	3.81	4.32	3.92	4.20	4.08	3.83	4.35	3.67	**3.96**	0.29
Mass/Unit Area (oz/sq.yd)	9.33	8.02	8.86	10.05	9.12	9.77	9.49	8.91	10.12	8.54	**9.22**	0.67
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	258	253	266	294	228	269	264	181	325	277	**261**	38
TD - Tensile Strength (lbs)	290	332	318	276	306	296	299	333	291	235	**298**	29
MD - Elong. @ Max. Load (%)	67	71	84	79	71	74	78	71	86	81	**76**	6
TD - Elong. @ Max. Load (%)	103	99	86	99	113	107	98	94	99	103	**100**	7
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	728	678	612	822	763	725	799	732	755	637	**725**	67
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	108	143	127	98	105	103	103	99	114	95	**109**	15
TD - Tear Strength (lbs)	127	122	117	140	154	129	162	170	123	176	**142**	22
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.104	0.116	0.137	0.127	0.119						**0.121**	0.012
Sieve No.	140	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	21.0
Correction Factor:	0.981

Test Specimen No. >:	1					2				
Thickness (mils)	108	108	108	108	108	93.8	93.8	93.8	93.8	93.8
Thickness (mm)	2.74	2.74	2.74	2.74	2.74	2.38	2.38	2.38	2.38	2.38
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time (s)	16.3	16.2	16.0	16.1	16.3	12.3	12.2	12.3	12.5	12.3
Specimen Permittivity @20°C (sec-1)	1.18	1.19	1.21	1.20	1.18	1.57	1.58	1.57	1.54	1.57
Specimen Flow rate (GPM/ft2)	88.6	89.2	90.3	89.7	88.6	117.4	118.4	117.4	115.6	117.4
Specimen Flow rate (LPM/m2)			3680					4790		
Specimen Permeability (cm/s)	0.32	0.33	0.33	0.33	0.32	0.43	0.43	0.37	0.37	0.37

Test Specimen No. >:	3					4				
Thickness (mils)	92.8	92.8	92.8	92.8	92.8	87	87	87	87	87
Thickness (mm)	2.36	2.36	2.36	2.36	2.36	2.21	2.21	2.21	2.21	2.21
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Time (s)	14.5	14.4	14.4	14.5	14.5	12.5	12.8	12.8	12.8	12.6
Specimen Permittivity @20°C (sec-1)	1.33	1.34	1.34	1.33	1.33	1.54	1.51	1.51	1.51	1.53
Specimen Flow rate (GPM/ft2)	99.6	100.3	100.3	99.6	99.6	115.6	112.8	112.8	112.8	114.6
Specimen Flow rate (LPM/m2)			4090					4600		
Specimen Permeability (cm/s)	0.31	0.32	0.32	0.31	0.31	0.36	0.36	0.33	0.33	0.34

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	**1.40**
	Flow rate (GPM/ft2)	**105.0**
	Flow rate (LPM/m2)	**4290**
	Permeability (cm/s)	**0.35**

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS
TRI Client: High Roller EPC/ NuBlu Energy
Project: North Ranch Landfill

Material: Solmax FS2-200E-08-08-FA-00 Double-Sided Geocomposite
Sample Identification: 0116-013896
TRI Log #: 70384

GEOTEXTILE - SIDE B

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Mass/Unit Area (ASTM D 5261)												
5" diameter Circle - Mass (g)	3.99	4.24	3.79	4.01	4.38	3.33	4.43	4.01	4.18	4.07	**4.04**	0.32
Mass/Unit Area (oz/sq.yd)	9.28	9.86	8.82	9.33	10.19	7.75	10.30	9.33	9.72	9.47	**9.40**	0.74
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	273	294	250	27	236	267	295	235	261	280	**242**	78
TD - Tensile Strength (lbs)	226	287	273	396	276	282	344	370	263	254	**297**	55
MD - Elong. @ Max. Load (%)	88	79	93	73	69	87	80	79	73	74	**80**	8
TD - Elong. @ Max. Load (%)	111	95	103	108	99	113	96	95	87	103	**101**	8
CBR Puncture Strength (ASTM D 6241)												
Puncture Resistance (lbs)	731	788	887	663	810	574	660	750	914	700	**748**	105
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	108	138	94	118	101	107	126	112	118	110	**113**	13
TD - Tear Strength (lbs)	163	124	135	198	138	150	137	172	142	146	**151**	22
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.108	0.111	0.109	0.114	0.146						**0.118**	0.016
Sieve No.	140	100	100	100	100						**100**	

Constant Head Permittivity (ASTM D 4491, 51-mm Constant Head; 2 in opening)

Water Temp. (C):	18.8
Correction Factor:	1.032

Test Specimen No. >:	**1**					**2**					
Thickness (mils)	96.2	96.2	96.2	96.2	96.2	96.3	96.3	96.3	96.3	96.3	
Thickness (mm)	2.44	2.44	2.44	2.44	2.44	2.45	2.45	2.45	2.45	2.45	
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time (s)	15.1	15.1	15.1	15.1	15.0	14.7	14.8	14.5	14.5	14.7	
Specimen Permittivity @20°C (sec-1)	1.35	1.35	1.35	1.35	1.35	1.38	1.37	1.40	1.40	1.38	
Specimen Flow rate (GPM/ft2)	100.6	100.6	100.6	100.6	101.3	103.4	102.7	104.8	104.8	103.4	
Specimen Flow rate (LPM/m2)			4100					4270			
Specimen Permeability (cm/s)	0.33	0.33	0.33	0.33	0.33	0.34	0.34	0.34	0.34	0.34	
Test Specimen No. >:	**3**					**4**					
Thickness (mils)	95.7	95.7	95.7	95.7	95.7	88.6	88.6	88.6	88.6	88.6	
Thickness (mm)	2.43	2.43	2.43	2.43	2.43	2.25	2.25	2.25	2.25	2.25	
Volume Collected (liters)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Time (s)	12.7	13.3	13.3	13.3	13.3	15.2	14.9	15.0	15.0	15.0	
Specimen Permittivity @20°C (sec-1)	1.60	1.53	1.53	1.53	1.53	1.34	1.36	1.35	1.35	1.35	
Specimen Flow rate (GPM/ft2)	119.7	114.3	114.3	114.3	114.3	100.0	102.0	101.3	101.3	101.3	
Specimen Flow rate (LPM/m2)			4660					4130			
Specimen Permeability (cm/s)	0.39	0.37	0.37	0.37	0.37	0.32	0.33	0.30	0.30	0.30	

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	**1.41**
	Flow rate (GPM/ft2)	**105.3**
	Flow rate (LPM/m2)	**4290**
	Permeability (cm/s)	**0.34**

MD Machine Direction TD Transverse Direction

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SOLMAX

TECHNICAL DATA SHEET

FabriNet 200 mil, Double Sided 8 oz/yd², Nonwoven Cal.

PROPERTY(1)	TEST METHOD	FREQUENCY	UNIT Imperial	1106375
SPECIFICATIONS				
GEOCOMPOSITE		-		
Transmissivity	ASTM D4716	1/540,000 ft²	m²/sec	$1x10^{-4}$
Load / Seat Time / Gradient			psf/min/-	10000/15/0.1
Boundary Conditions				Steel plates
Ply Adhesion Average (min. avg.)	ASTM D7005	1/50,000 ft²	lbf/in	1.0
GEONET CORE		-		
Thickness (min. avg.)	ASTM D5199	1/50,000 ft²	mils	200
Transmissivity	ASTM D4716	1/Shift	m²/sec	$2x10^{-3}$
Load / Seat Time / Gradient			psf/min/-	10000/15/0.1
Boundary Conditions				Steel plates
Density (min.)	ASTM D792	1/50,000 ft²	g/cc	0.94
Carbon Black Content	ASTM D4218	1/50,000 ft²	%	2.0
Tensile Stength (MD)	ASTM D7179	1/50,000 ft²	lbf/in	45
GEOTEXTILE (2)		-		
Mass	ASTM D5261	1/90,000 ft²	oz/yd²	8
Grab Tensile Strength	ASTM D4632	1/90,000 ft²	lbf	220
Grab Elongation	ASTM D4632	1/90,000 ft²	%	50
CBR Puncture Strength	ASTM D6241	1/540,000 ft²	lbf	575
Trapezoidal Tear Strength	ASTM D4533	1/90,000 ft²	lbf	90
Apparent Opening Size (max.)	ASTM D4751	1/540,000 ft²	mm	0.180
Permittivity	ASTM D4491	1/540,000 ft²	sec-1	1.3
Water Flow Rate	ASTM D4491	1/540,000 ft²	gpm/ft²	95
UV Resistance-% retained after 500 hrs (typ.)	ASTM D4355	Per formulation	%	70
SUPPLY SPECIFICATIONS(Roll dimensions may vary ±1%)				
Roll Dimension - Width	-		ft	14.75
Roll Dimension - Length	-		ft	260
Area (Surface/Roll)	-		ft²	3835

NOTES

2. Component properties prior to lamination.

* All geotextile properties are minimum average roll values except AOS which is maximum average roll value and UV resistance is typical value.
* The information contained herein is provided for reference purposes only and is not intended as a warranty of guarantee. Final determination of suitability for use contemplated is the sole responsibility of the user. SOLMAX assumes no liability in connection with the use of this information.

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

SOLMAX.COM

Revision date: 17-Mar-2020

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

ROLL NUMBER	MANUFACT. DATE	RESIN LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1106375				
FabriNet 200 mil, Double Sided 8 oz/yd², Nonwoven Cal.				
TRI Pickup - Patricia Zabaleta 1/100,00 sf, min 1/Lot - Geocomposite: 2 ft x RW - Geonet: 1 ft x RW - Geotextile: 3 ft x RW				
0116-013388	2022-02-10	DNN610771	2330-543194	2330-543057
0116-013389	2022-02-10	DNN610771	2330-543194	2330-543057
0116-013390	2022-02-10	DNN610771	2330-543194	2330-543057
0116-013391	2022-02-10	DNN610771	2330-543194	2330-543057
0116-013392	2022-02-11	DNN610771	2330-543194	2330-543175
0116-013393	2022-02-11	DNN610771	2330-543194	2330-543175
0116-013394	2022-02-11	DNN610771	2330-543194	2330-543175
0116-013395	2022-02-11	DNN610771	2330-543196	2330-543175
0116-013396	2022-02-11	DNN610771	2330-543196	2330-543175
0116-013397	2022-02-11	DNN610771	2330-543196	2330-543175
0116-013398	2022-02-11	DNN610771	2330-543196	2330-543176
0116-013399	2022-02-11	DNN610771	2330-543196	2330-543176
0116-013400	2022-02-11	DNN610771	2330-543191	2330-543176
0116-013401	2022-02-11	DNN610771	2330-543191	2330-543176
0116-013402	2022-02-11	DNN610771	2330-543191	2330-543176
0116-013403	2022-02-11	DNN610771	2330-543191	2330-543176
0116-013404	2022-02-11	DNN610771	2330-543191	2330-543193
0116-013405	2022-02-11	DNN610771	2330-543191	2330-543193
0116-013408	2022-02-11	DNN610771	2330-543067	2330-543193

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX.COM

24 Feb 2022

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013409	2022-02-11	DNN610771	2330-543067	2330-543193
0116-013410	2022-02-11	DNN610771	2330-543067	2330-543193
0116-013411	2022-02-11	DNN610771	2330-543065	2330-543100
0116-013412	2022-02-11	DNN610771	2330-543065	2330-543100
0116-013413	2022-02-11	DNN610771	2330-543065	2330-543100
0116-013414	2022-02-11	DNN610771	2330-543065	2330-543100
0116-013418	2022-02-11	DNN610771	2330-543180	2330-543100
0116-013419	2022-02-11	DNN610771	2330-543180	2330-543100
0116-013420	2022-02-11	DNN610771	2330-543180	2330-543100
0116-013421	2022-02-11	DNN610771	2330-543180	2330-543100
0116-013422	2022-02-11	DNN610771	2330-543183	2330-543162
0116-013423	2022-02-11	DNN610771	2330-543186	2330-543162
0116-013424	2022-02-11	DNN610771	2330-543186	2330-543162
0116-013425	2022-02-11	DNN610771	2330-543186	2330-543162
0116-013426	2022-02-11	DNN610771	2330-543186	2330-543162
0116-013427	2022-02-11	DNN610771	2330-543186	2330-543185
0116-013428	2022-02-11	DNN610771	2330-543186	2330-543185
0116-013430	2022-02-11	DNN610771	2330-543186	2330-543185
0116-013431	2022-02-11	DNN610771	2330-543186	2330-543185
0116-013432	2022-02-11	DNN610771	2330-543186	2330-543185
0116-013433	2022-02-12	DNN610771	2330-543186	2330-543185
0116-013434	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013435	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013436	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013437	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013438	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013439	2022-02-12	DNN610771	2330-543099	2330-543055
0116-013440	2022-02-12	DNN610771	2330-543192	2330-543270
0116-013441	2022-02-12	DNN610771	2330-543192	2330-543270

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013442	2022-02-12	DNN610771	2330-543192	2330-543270
0116-013443	2022-02-12	DNN610771	2330-543192	2330-543270
0116-013444	2022-02-12	DNN610771	2330-543192	2330-543270
0116-013445	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013446	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013447	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013448	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013449	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013450	2022-02-12	DNN610771	2330-543195	2330-543190
0116-013451	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013452	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013453	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013454	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013455	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013456	2022-02-12	DNN610771	2330-543093	2330-543091
0116-013457	2022-02-12	DNN610771	2330-543090	2330-543052
0116-013458	2022-02-12	DNN610771	2330-543090	2330-543052
0116-013459	2022-02-12	DNN610771	2330-543090	2330-543052
0116-013460	2022-02-12	DNN610771	2330-543090	2330-543052
0116-013461	2022-02-12	DNN610771	2330-543090	2330-543052
0116-013462	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013463	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013464	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013465	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013466	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013467	2022-02-12	DNN610771	2330-543276	2330-543153
0116-013468	2022-02-12	DNN610771	2330-543187	2330-543275
0116-013469	2022-02-12	DNN610771	2330-543187	2330-543275
0116-013472	2022-02-12	DNN610771	2330-543187	2330-543275

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PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013473	2022-02-12	DNN610771	2330-543187	2330-543275
0116-013474	2022-02-12	DNN610771	2330-543187	2330-543275
0116-013475	2022-02-13	DNN610771	2330-543271	2330-543266
0116-013476	2022-02-13	DNN610771	2330-543271	2330-543266
0116-013477	2022-02-13	DNN610771	2330-543271	2330-543266
0116-013478	2022-02-13	DNN610771	2330-543271	2330-543268
0116-013479	2022-02-13	DNN610771	2330-543272	2330-543268
0116-013480	2022-02-13	DNN610771	2330-543272	2330-543268
0116-013481	2022-02-13	DNN610771	2330-543272	2330-543268
0116-013482	2022-02-13	DNN610771	2330-543272	2330-543268
0116-013483	2022-02-13	DNN610771	2330-543272	2330-543043
0116-013484	2022-02-13	DNN610771	2330-543050	2330-543043
0116-013485	2022-02-13	DNN610771	2330-543050	2330-543043
0116-013486	2022-02-13	DNN610771	2330-543050	2330-543043
0116-013487	2022-02-13	DNN610771	2330-543050	2330-543043
0116-013488	2022-02-13	DNN610771	2330-543050	2330-543043
0116-013489	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013490	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013491	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013492	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013493	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013494	2022-02-13	DNN610771	2330-543155	2330-543040
0116-013495	2022-02-13	DNN610771	2330-543063	2330-543040
0116-013496	2022-02-13	DNN610771	2330-543063	2330-543040
0116-013497	2022-02-13	DNN610771	2330-543063	2330-543040
0116-013498	2022-02-13	DNN610771	2330-543063	2330-543040
0116-013505	2022-02-13	DNN610771	2330-543056	2330-543269
0116-013506	2022-02-13	DNN610771	2330-543056	2330-543269
0116-013507	2022-02-13	DNN610771	2330-543056	2330-543269

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PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013508	2022-02-13	DNN610771	2330-543056	2330-543269
0116-013509	2022-02-13	DNN610771	2330-543056	2330-543269
0116-013510	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013511	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013512	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013513	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013514	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013515	2022-02-13	DNN610771	2330-543019	2330-543047
0116-013518	2022-02-14	DNN610771	2330-543157	2330-543038
0116-013519	2022-02-14	DNN610771	2330-543157	2330-543038
0116-013520	2022-02-14	DNN610771	2330-543157	2330-543038
0116-013521	2022-02-14	DNN610771	2330-543044	2330-543038
0116-013522	2022-02-14	DNN610771	2330-543044	2330-543068
0116-013523	2022-02-14	DNN610771	2330-543044	2330-543068
0116-013524	2022-02-14	DNN610771	2330-543044	2330-543068
0116-013525	2022-02-14	DNN610771	2330-543044	2330-543068
0116-013526	2022-02-14	DNN610771	2330-543061	2330-543068
0116-013527	2022-02-14	DNN610771	2330-543061	2330-543068
0116-013528	2022-02-14	DNN610771	2330-543061	2330-543041
0116-013529	2022-02-14	DNN610771	2330-543061	2330-543041
0116-013530	2022-02-14	DNN610771	2330-543061	2330-543041
0116-013531	2022-02-14	DNN610771	2330-543064	2330-543041
0116-013532	2022-02-14	DNN610771	2330-543064	2330-543041
0116-013533	2022-02-14	DNN610771	2330-543064	2330-543041
0116-013534	2022-02-14	DNN610771	2330-543064	2330-543101
0116-013535	2022-02-14	DNN610771	2330-543064	2330-543101
0116-013536	2022-02-14	DNN610771	2330-543064	2330-543101
0116-013537	2022-02-14	DNN610771	2330-543059	2330-543101
0116-013538	2022-02-14	DNN610770	2330-543059	2330-543101

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PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013539	2022-02-14	DNN610770	2330-543059	2330-543101
0116-013540	2022-02-14	DNN610770	2330-543059	2330-543046
0116-013541	2022-02-14	DNN610770	2330-543059	2330-543046
0116-013542	2022-02-14	DNN610770	2330-543059	2330-543046
0116-013547	2022-02-14	DNN610770	2330-543062	2330-543046
0116-013548	2022-02-14	DNN610770	2330-543062	2330-543046
0116-013549	2022-02-14	DNN610770	2330-543062	2330-543045
0116-013550	2022-02-14	DNN610770	2330-543062	2330-543045
0116-013551	2022-02-14	DNN610770	2330-543062	2330-543045
0116-013554	2022-02-15	DNN610770	2330-543062	2330-543045
0116-013555	2022-02-15	DNN610770	2330-543062	2330-543051
0116-013556	2022-02-15	DNN610770	2330-543062	2330-543051
0116-013557	2022-02-15	DNN610770	2330-543062	2330-543051
0116-013558	2022-02-15	DNN610770	2330-543062	2330-543051
0116-013559	2022-02-15	DNN610770	2330-543026	2330-543051
0116-013560	2022-02-15	DNN610770	2330-543026	2330-543051
0116-013567	2022-02-15	DNN610770	2330-543026	2330-543060
0116-013568	2022-02-15	DNN610770	2330-543026	2330-543060
0116-013569	2022-02-15	DNN610770	2330-543026	2330-543060
0116-013570	2022-02-15	DNN610770	2330-543026	2330-543060
0116-013571	2022-02-15	DNN610770	2330-543026	2330-543060
0116-013572	2022-02-15	DNN610770	2330-543213	2330-543018
0116-013573	2022-02-15	DNN610770	2330-543213	2330-543018
0116-013574	2022-02-15	DNN610770	2330-543213	2330-543018
0116-013575	2022-02-15	DNN610770	2330-543197	2330-543018
0116-013576	2022-02-15	DNN610770	2330-543197	2330-543018
0116-013577	2022-02-15	DNN610770	2330-543197	2330-543018
0116-013578	2022-02-15	DNN610770	2330-543197	2330-543188
0116-013579	2022-02-15	DNN610770	2330-543197	2330-543188

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PROJECT NUMBER: 21119-E972725 (Rev-1
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PROJECT NAME : NORTH RANCH LANDFILL

0116-013580	2022-02-15	DNN610770	2330-543042	2330-543188
0116-013581	2022-02-15	DNN610770	2330-543199	2330-543188
0116-013582	2022-02-15	DNN610770	2330-543199	2330-543188
0116-013583	2022-02-15	DNN610770	2330-543199	2330-543188
0116-013584	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013585	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013586	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013587	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013588	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013589	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013590	2022-02-15	DNN610770	2330-543042	2330-543199
0116-013591	2022-02-15	DNN610770	2330-543025	2330-543110
0116-013592	2022-02-15	DNN610770	2330-543025	2330-543110
0116-013593	2022-02-15	DNN610770	2330-543025	2330-543110
0116-013594	2022-02-16	DNN610770	2330-543025	2330-543037
0116-013595	2022-02-16	DNN610770	2330-543025	2330-543037
0116-013596	2022-02-16	DNN610770	2330-543025	2330-543037
0116-013597	2022-02-16	DNN610770	2330-543025	2330-543037
0116-013598	2022-02-16	DNN610770	2330-543029	2330-543037
0116-013599	2022-02-16	DNN610770	2330-543029	2330-543189
0116-013600	2022-02-16	DNN610770	2330-543029	2330-543189
0116-013601	2022-02-16	DNN610770	2330-543029	2330-543189
0116-013602	2022-02-16	DNN610770	2330-543029	2330-543189
0116-013603	2022-02-16	DNN610770	2330-543029	2330-543189
0116-013604	2022-02-16	DNN610770	2330-543036	2330-543189
0116-013605	2022-02-16	DNN610770	2330-543036	2330-543142
0116-013606	2022-02-16	DNN610770	2330-543036	2330-543142
0116-013607	2022-02-16	DNN610770	2330-543036	2330-543142
0116-013608	2022-02-16	DNN610770	2330-543036	2330-543142

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PROJECT NUMBER: 21119-E972725 (Rev-1
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PROJECT NAME : NORTH RANCH LANDFILL

0116-013609	2022-02-16	DNN610770	2330-543036	2330-543142
0116-013610	2022-02-16	DNN610770	2330-543108	2330-543094
0116-013611	2022-02-16	DNN610770	2330-543108	2330-543094
0116-013612	2022-02-16	DNN610770	2330-543108	2330-543094
0116-013615	2022-02-16	DNN610770	2330-543108	2330-543094
0116-013616	2022-02-16	DNN610770	2330-543108	2330-543094
0116-013617	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013618	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013619	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013620	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013621	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013622	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013623	2022-02-16	DNN610770	2330-543198	2330-541414
0116-013624	2022-02-16	DNN610770	2330-543141	2330-542046
0116-013625	2022-02-16	DNN610770	2330-543141	2330-542046
0116-013626	2022-02-16	DNN610770	2330-540459	2330-542046
0116-013627	2022-02-16	DNN610770	2330-540459	2330-542046
0116-013628	2022-02-16	DNN610770	2330-540459	2330-542046
0116-013629	2022-02-16	DNN610770	2330-542118	2330-542114
0116-013630	2022-02-16	DNN610770	2330-542118	2330-542114
0116-013631	2022-02-16	DNN610770	2330-542118	2330-542114
0116-013632	2022-02-16	DNN610770	2330-542118	2330-542114
0116-013633	2022-02-16	DNN610770	2330-542118	2330-541707
0116-013634	2022-02-16	DNN610770	2330-540969	2330-541707
0116-013635	2022-02-16	DNN610770	2330-540969	2330-541707
0116-013636	2022-02-16	DNN610770	2330-540969	2330-541707
0116-013637	2022-02-16	DNN610770	2330-540969	2330-541707
0116-013638	2022-02-16	DNN610770	J10579945	J10579944
0116-013639	2022-02-16	DNN610770	J10579945	J10579944

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PROJECT NUMBER: 21119-E972725 (Rev-1
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PROJECT NAME : NORTH RANCH LANDFILL

0116-013640	2022-02-16	DNN610770	J10579945	J10579944
0116-013641	2022-02-16	DNN610770	J10579945	J10579944
0116-013642	2022-02-16	DNN610770	J10579945	J10579944
0116-013643	2022-02-16	DNN610770	J10579945	J10579944
0116-013644	2022-02-16	DNN610770	J10579924	J10579923
0116-013645	2022-02-16	DNN610770	J10579924	J10579923
0116-013651	2022-02-17	DNN610770	J10579924	J10579923
0116-013652	2022-02-17	DNN610770	J10579924	J10579922
0116-013653	2022-02-17	DNN610770	J10579924	J10579922
0116-013654	2022-02-17	DNN610770	J10579924	J10579922
0116-013655	2022-02-17	DNN610770	J10579927	J10579935
0116-013656	2022-02-17	DNN610770	J10579927	J10579935
0116-013657	2022-02-17	DNN610770	J10579927	J10579935
0116-013658	2022-02-17	DNN610770	J10579927	J10579935
0116-013659	2022-02-17	DNN610770	J10579927	J10579935
0116-013660	2022-02-17	DNN610770	J10579937	J10579928
0116-013661	2022-02-17	DNN610770	J10579937	J10579928
0116-013662	2022-02-17	DNN610770	J10579937	J10579928
0116-013663	2022-02-17	DNN610770	J10579930	J10579934
0116-013664	2022-02-17	DNN610770	J10579930	J10579934
0116-013665	2022-02-17	DNN610770	J10579930	J10579934
0116-013666	2022-02-17	DNN610770	J10579930	J10579934
0116-013667	2022-02-17	DNN610770	J10579930	J10579934
0116-013668	2022-02-17	DNN610770	J10579931	J10579932
0116-013669	2022-02-17	DNN610770	J10579931	J10579932
0116-013670	2022-02-17	DNN610770	J10579931	J10579932
0116-013671	2022-02-17	DNN610770	J10579942	J10579932
0116-013672	2022-02-17	DNN610770	J10579942	J10579929
0116-013673	2022-02-17	DNN610770	J10579942	J10579929

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013674	2022-02-17	DNN610770	J10579942	J10579929
0116-013675	2022-02-17	DNN610770	J10579936	J10579929
0116-013680	2022-02-18	DNN610770	J10579936	J10579919
0116-013681	2022-02-18	DNN610770	J10579936	J10579919
0116-013682	2022-02-18	DNN610770	J10579936	J10579921
0116-013683	2022-02-18	DNN610770	J10579926	J10579921
0116-013684	2022-02-18	DNN610770	J10579926	J10579921
0116-013685	2022-02-18	DNN610770	J10579926	J10579921
0116-013686	2022-02-18	DNN610770	J10579926	J10579941
0116-013687	2022-02-18	DNN610770	J10579925	J10579941
0116-013688	2022-02-18	DNN610770	J10579925	J10579941
0116-013689	2022-02-18	DNN610770	J10579925	J10579933
0116-013690	2022-02-18	DNN610770	J10579925	J10579933
0116-013691	2022-02-18	DNN610770	J10579925	J10579933
0116-013692	2022-02-18	DNN610770	J10579925	J10579933
0116-013693	2022-02-18	DNN610770	J10579920	J10579940
0116-013696	2022-02-18	DNN610770	J10579939	J10579940
0116-013697	2022-02-18	DNN610770	J10579939	J10579940
0116-013698	2022-02-18	DNN610770	J10579939	J10579940
0116-013699	2022-02-18	DNN610770	J10579939	J10579940
0116-013700	2022-02-18	DNN610770	J10579939	J10579940
0116-013701	2022-02-18	DNN610770	2330-542107	2330-541707
0116-013702	2022-02-18	DNN610770	2330-542107	2330-540805
0116-013703	2022-02-18	DNN610770	2330-542107	2330-540805
0116-013704	2022-02-18	DNN610770	2330-542107	2330-540805
0116-013705	2022-02-18	DNN610770	2330-542107	2330-540805
0116-013712	2022-02-18	DNN610770	2330-540804	2330-540805
0116-013713	2022-02-18	DNN610770	2330-540804	2330-540805
0116-013714	2022-02-18	DNN610770	2330-540804	2330-540920

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SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013715	2022-02-18	DNN610770	2330-540804	2330-540920
0116-013716	2022-02-18	DNN610770	2330-540804	2330-540920
0116-013717	2022-02-18	DNN610770	2330-540869	2330-540920
0116-013718	2022-02-18	DNN610770	2330-540869	2330-540920
0116-013729	2022-02-19	DNN610770	2330-540916	2330-542109
0116-013730	2022-02-19	DNN610770	2330-540916	2330-542109
0116-013731	2022-02-19	DNN610770	2330-540916	2330-542109
0116-013732	2022-02-19	DNN610770	2330-540916	2330-542109
0116-013733	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013734	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013735	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013736	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013737	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013738	2022-02-19	DNN610770	2330-540803	2330-541717
0116-013884	2022-02-22	dnn610692	2330-543149	2330-543168
0116-013885	2022-02-22	dnn610692	2330-543149	2330-543168
0116-013886	2022-02-22	dnn610692	2330-543149	2330-543168
0116-013887	2022-02-22	dnn610692	2330-543149	2330-543168
0116-013888	2022-02-22	dnn610692	2330-543149	2330-543168
0116-013889	2022-02-22	dnn610692	2330-543207	2330-543169
0116-013890	2022-02-22	dnn610692	2330-543207	2330-543169
0116-013891	2022-02-22	dnn610692	2330-543207	2330-543169
0116-013892	2022-02-22	dnn610692	2330-543207	2330-543169
0116-013893	2022-02-22	dnn610692	2330-543207	2330-543169
0116-013894	2022-02-22	dnn610692	2330-543160	2330-543154
0116-013895	2022-02-22	dnn610692	2330-543160	2330-543154
0116-013896	2022-02-22	dnn610692	2330-543160	2330-543154
0116-013897	2022-02-23	dnn610692	2330-543160	2330-543154
0116-013898	2022-02-23	dnn610692	2330-543160	2330-543154

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24 Feb 2022

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

0116-013899	2022-02-23	dnn610692	2330-543160	2330-543154
0116-013900	2022-02-23	dnn610692	2330-543220	2330-543146

QUANTITY (ROLLS): 311

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1106375
FabriNet 200 mil, Double Sided 8 oz/yd², Nonwoven
Cal.

Test	Property	Direction	Test Method	Frequency	Unit
1	Thickness (min. avg.)		ASTM D5199	1/50,000 ft²	mils
2	Carbon Black Content		ASTM D4218	1/50,000 ft²	%
3	Density (min.)		ASTM D792	1/50,000 ft²	g/cc
4	Tensile Stength (MD)	MD	ASTM D7179	1/50,000 ft²	lbf/in
5	Ply Adhesion Average (min. avg.)	Top	ASTM D7005	1/50,000 ft²	lbf/in
6	Ply Adhesion Average (min. avg.)	Bottom	ASTM D7005	1/50,000 ft²	lbf/in
7	Transmissivity ($x10^{-3}$)		ASTM D4716	1/540,000 ft²	m²/sec
8	Transmissivity ($x10^{-3}$)		ASTM D4716	1/Shift	m²/sec

Test	1	2	3	4	5	6	7	8
SPECIFICATIONS	**200**	**2.0**	**0.94**	**45**	**1.0**	**1.0**	**0.1**	**2**
0116-013388	224.00	2.39	0.953	77	5.4	3.88	0.15	4.62
0116-013389	224.00	2.39	0.953	77	5.4	3.88	0.15	4.62
0116-013390	224.00	2.39	0.953	77	5.4	3.88	0.15	4.62
0116-013391	224.00	2.39	0.953	77	5.4	3.88	0.15	4.62
0116-013392	224.00	2.39	0.953	77	5.4	3.88	0.15	4.62
0116-013393	222.60	2.38	0.953	77	5.4	3.88	0.15	4.62
0116-013394	222.60	2.38	0.953	77	5.4	3.88	0.15	4.62
0116-013395	222.60	2.38	0.953	77	5.4	3.88	0.15	4.62
0116-013396	222.60	2.38	0.953	77	5.4	3.88	0.15	4.62
0116-013397	222.60	2.38	0.953	77	5.4	3.88	0.15	4.62
0116-013398	219.00	2.17	0.952	69	2.1	2.65	1.68	3.83
0116-013399	219.00	2.17	0.952	69	2.1	2.65	1.68	3.83
0116-013400	219.00	2.17	0.952	69	2.1	2.65	1.68	3.83
0116-013401	219.00	2.17	0.952	69	2.1	2.65	1.68	3.83
0116-013402	219.00	2.16	0.952	69	2.1	2.65	1.68	3.83
0116-013403	225.30	2.16	0.952	69	2.1	2.65	1.68	3.83
0116-013404	225.30	2.16	0.952	69	2.1	2.65	1.68	3.83
0116-013405	225.30	2.16	0.952	69	2.1	2.65	1.68	3.83
0116-013408	233.20	2.27	0.955	79	4.5	2.25	2.90	3.83
0116-013409	233.20	2.27	0.955	79	4.5	2.25	2.90	3.83
0116-013410	233.20	2.27	0.955	79	4.5	2.25	2.90	3.83
0116-013411	233.20	2.27	0.955	79	4.5	2.25	2.90	3.83

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013412	233.20	2.27	0.955	79	4.5	2.25	2.90	3.83
0116-013413	227.10	2.35	0.955	79	4.5	2.25	0.23	6.19
0116-013414	227.10	2.35	0.955	79	4.5	2.25	0.23	6.19
0116-013418	202.50	2.38	0.954	60	1.7	4.94	0.23	6.19
0116-013419	202.50	2.38	0.954	60	1.7	4.94	0.23	6.19
0116-013420	202.50	2.38	0.954	60	1.7	4.94	0.23	6.19
0116-013421	202.50	2.38	0.954	60	1.7	4.94	0.23	6.19
0116-013422	202.50	2.38	0.954	60	1.7	4.94	0.23	6.19
0116-013423	206.80	2.35	0.954	60	1.7	4.94	0.23	6.19
0116-013424	206.80	2.35	0.954	60	1.7	4.94	0.23	6.19
0116-013425	206.80	2.35	0.954	60	1.7	4.94	0.23	6.19
0116-013426	206.80	2.35	0.954	60	1.7	4.94	0.23	6.19
0116-013427	206.80	2.35	0.954	60	1.7	4.94	0.23	6.19
0116-013428	205.10	2.31	0.953	64	3.0	2.07	0.23	6.19
0116-013430	205.10	2.31	0.953	64	3.0	2.07	0.23	6.19
0116-013431	205.10	2.31	0.953	64	3.0	2.07	0.23	6.19
0116-013432	205.10	2.31	0.953	64	3.0	2.07	0.23	6.19
0116-013433	217.90	2.87	0.953	64	3.0	2.07	0.23	6.19
0116-013434	217.90	2.87	0.953	64	3.0	2.07	0.23	6.19
0116-013435	217.90	2.87	0.953	64	3.0	2.07	0.23	6.19
0116-013436	217.90	2.87	0.953	64	3.0	2.07	0.23	6.19
0116-013437	217.90	2.87	0.953	64	3.0	2.07	0.23	6.19
0116-013438	224.20	2.26	0.954	71	4.0	2.83	4.38	6.28
0116-013439	224.20	2.26	0.954	71	4.0	2.83	4.38	6.28
0116-013440	224.20	2.26	0.954	71	4.0	2.83	4.38	6.28
0116-013441	224.20	2.26	0.954	71	4.0	2.83	4.38	6.28
0116-013442	224.20	2.26	0.954	71	4.0	2.83	4.38	6.28
0116-013443	219.00	2.51	0.954	71	4.0	2.83	4.38	6.28
0116-013444	219.00	2.51	0.954	71	4.0	2.83	4.38	6.28
0116-013445	219.00	2.51	0.954	71	4.0	2.83	4.38	6.28
0116-013446	219.00	2.51	0.954	71	4.0	2.83	4.38	6.28
0116-013447	219.00	2.51	0.954	71	4.0	2.83	4.38	6.28
0116-013448	228.60	2.88	0.954	74	2.1	1.47	4.38	6.28
0116-013449	228.60	2.88	0.954	74	2.1	1.47	4.38	6.28
0116-013450	228.60	2.88	0.954	74	2.1	1.47	4.38	6.28
0116-013451	228.60	2.88	0.954	74	2.1	1.47	4.38	6.28

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013452	228.60	2.88	0.954	74	2.1	1.47	4.38	6.28
0116-013453	230.00	2.72	0.954	74	2.1	1.47	4.38	6.28
0116-013454	230.00	2.72	0.954	74	2.1	1.47	4.38	6.28
0116-013455	230.00	2.72	0.954	74	2.1	1.47	4.38	6.28
0116-013456	230.00	2.72	0.954	74	2.1	1.47	4.38	6.28
0116-013457	230.00	2.72	0.954	74	2.1	1.47	4.38	6.28
0116-013458	215.80	2.52	0.952	69	1.8	1.6	4.38	6.28
0116-013459	215.80	2.52	0.952	69	1.8	1.6	4.38	6.28
0116-013460	215.80	2.52	0.952	69	1.8	1.6	4.38	6.28
0116-013461	215.80	2.52	0.952	69	1.8	1.6	4.38	6.28
0116-013462	215.80	2.52	0.952	69	1.8	1.6	4.38	6.28
0116-013463	226.00	2.81	0.952	69	1.8	1.6	0.41	6.54
0116-013464	226.00	2.81	0.952	69	1.8	1.6	0.41	6.54
0116-013465	226.00	2.81	0.952	69	1.8	1.6	0.41	6.54
0116-013466	226.00	2.81	0.952	69	1.8	1.6	0.41	6.54
0116-013467	226.00	2.81	0.952	69	1.8	1.6	0.41	6.54
0116-013468	230.00	2.76	0.956	79	2.3	2.85	0.41	6.54
0116-013469	230.00	2.76	0.956	79	2.3	2.85	0.41	6.54
0116-013472	234.00	2.54	0.956	79	2.3	2.85	0.30	6.54
0116-013473	234.00	2.54	0.956	79	2.3	2.85	0.30	6.54
0116-013474	234.00	2.54	0.956	79	2.3	2.85	0.30	6.54
0116-013475	234.00	2.54	0.956	79	2.3	2.85	0.30	6.54
0116-013476	234.00	2.54	0.956	79	2.3	2.85	0.30	6.54
0116-013477	230.00	2.54	0.956	79	2.3	2.85	0.30	3.33
0116-013478	230.00	2.54	0.956	79	2.3	2.85	0.30	3.33
0116-013479	230.00	2.54	0.956	79	2.3	2.85	0.30	3.33
0116-013480	230.00	2.54	0.956	79	2.3	2.85	0.30	3.33
0116-013481	230.00	2.54	0.956	79	2.3	2.85	0.30	3.33
0116-013482	225.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013483	225.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013484	225.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013485	225.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013486	225.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013487	229.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013488	229.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013489	229.00	2.59	0.952	76	2.5	1.2	0.30	3.33

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013490	229.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013491	229.00	2.59	0.952	76	2.5	1.2	0.30	3.33
0116-013492	235.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013493	235.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013494	235.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013495	235.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013496	235.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013497	230.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013498	230.00	2.60	0.954	78	3.5	4.25	0.30	3.33
0116-013505	222.00	2.53	0.954	75	4.5	2.98	0.23	7.91
0116-013506	222.00	2.53	0.954	75	4.5	2.98	0.23	7.91
0116-013507	222.00	2.53	0.954	75	4.5	2.98	0.23	7.91
0116-013508	222.00	2.53	0.954	75	4.5	2.98	0.23	7.91
0116-013509	222.00	2.53	0.954	75	4.5	2.98	0.23	7.91
0116-013510	234.00	2.57	0.954	75	4.5	2.98	0.23	7.91
0116-013511	234.00	2.57	0.954	75	4.5	2.98	0.23	7.91
0116-013512	234.00	2.57	0.954	75	4.5	2.98	0.23	7.91
0116-013513	234.00	2.57	0.954	75	4.5	2.98	0.23	7.91
0116-013514	234.00	2.57	0.954	75	4.5	2.98	0.23	7.91
0116-013515	226.00	2.56	0.954	72	3.9	4.01	0.23	7.91
0116-013518	226.00	2.56	0.954	72	3.9	4.01	0.23	7.91
0116-013519	226.00	2.56	0.954	72	3.9	4.01	0.23	7.91
0116-013520	225.00	2.56	0.954	72	3.9	4.01	0.38	5.96
0116-013521	225.00	2.56	0.954	72	3.9	4.01	0.38	5.96
0116-013522	225.00	2.56	0.954	72	3.9	4.01	0.38	5.96
0116-013523	225.00	2.56	0.954	72	3.9	4.01	0.38	5.96
0116-013524	225.00	2.56	0.954	72	3.9	4.01	0.38	5.96
0116-013525	224.00	2.50	0.955	75	1.8	1.5	0.38	5.96
0116-013526	224.00	2.50	0.955	75	1.8	1.5	0.38	5.96
0116-013527	224.00	2.50	0.955	75	1.8	1.5	0.38	5.96
0116-013528	224.00	2.50	0.955	75	1.8	1.5	0.38	5.96
0116-013529	224.00	2.50	0.955	75	1.8	1.5	0.38	5.96
0116-013530	237.00	2.52	0.955	75	1.8	1.5	0.38	5.96
0116-013531	237.00	2.52	0.955	75	1.8	1.5	0.38	5.96
0116-013532	237.00	2.52	0.955	75	1.8	1.5	0.38	5.96
0116-013533	237.00	2.52	0.955	75	1.8	1.5	0.38	5.96

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013534	237.00	2.52	0.955	75	1.8	1.5	0.38	5.96
0116-013535	230.00	2.52	0.949	77	2.6	1.4	0.38	5.96
0116-013536	230.00	2.52	0.949	77	2.6	1.4	0.38	5.96
0116-013537	230.00	2.52	0.949	77	2.6	1.4	0.38	5.96
0116-013538	230.00	2.52	0.949	77	2.6	1.4	0.38	5.96
0116-013539	230.00	2.52	0.949	77	2.6	1.4	0.38	5.96
0116-013540	229.00	2.61	0.949	77	2.6	1.4	0.47	5.86
0116-013541	229.00	2.61	0.949	77	2.6	1.4	0.47	5.86
0116-013542	229.00	2.61	0.949	77	2.6	1.4	0.47	5.86
0116-013547	225.00	2.51	0.955	75	5.3	3.94	0.47	5.86
0116-013548	225.00	2.51	0.955	75	5.3	3.94	0.47	5.86
0116-013549	225.00	2.51	0.955	75	5.3	3.94	0.47	5.86
0116-013550	225.60	2.51	0.955	75	5.3	3.94	0.47	5.86
0116-013551	225.60	2.51	0.955	75	5.3	3.94	0.47	5.86
0116-013554	223.00	2.51	0.955	75	5.3	3.94	0.19	6.61
0116-013555	223.00	2.51	0.955	75	5.3	3.94	0.19	6.61
0116-013556	223.00	2.51	0.955	75	5.3	3.94	0.19	6.61
0116-013557	223.00	2.51	0.955	75	5.3	3.94	0.19	6.61
0116-013558	223.00	2.51	0.955	75	5.3	3.94	0.19	6.61
0116-013559	226.00	2.58	0.956	74	3.2	4.007	0.19	6.61
0116-013560	226.00	2.58	0.956	74	3.2	4.007	0.19	6.61
0116-013567	236.90	2.71	0.955	83	2.9	3.4	0.53	6.25
0116-013568	236.90	2.71	0.955	83	2.9	3.4	0.53	6.25
0116-013569	236.90	2.71	0.955	83	2.9	3.4	0.53	6.25
0116-013570	236.90	2.71	0.955	83	2.9	3.4	0.53	6.25
0116-013571	236.90	2.71	0.955	83	2.9	3.4	0.53	6.25
0116-013572	230.10	2.64	0.955	83	2.9	3.4	0.53	6.25
0116-013573	230.10	2.64	0.955	83	2.9	3.4	0.53	6.25
0116-013574	230.10	2.64	0.955	83	2.9	3.4	0.53	6.25
0116-013575	230.10	2.64	0.955	83	2.9	3.4	0.53	6.25
0116-013576	230.10	2.64	0.955	83	2.9	3.4	0.53	6.25
0116-013577	240.10	2.80	0.956	86	1.6	1.61	0.53	6.25
0116-013578	240.10	2.80	0.956	86	1.6	1.61	0.53	6.25
0116-013579	240.10	2.80	0.956	86	1.6	1.61	0.53	6.25
0116-013580	240.10	2.80	0.956	86	1.6	1.61	0.53	6.25
0116-013581	240.10	2.80	0.956	86	1.6	1.61	0.53	6.25

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013582	234.40	2.84	0.956	86	1.6	1.61	0.53	6.25
0116-013583	234.40	2.84	0.956	86	1.6	1.61	0.53	6.25
0116-013584	234.40	2.84	0.956	86	1.6	1.61	0.53	6.25
0116-013585	234.40	2.84	0.956	86	1.6	1.61	0.53	6.25
0116-013586	234.40	2.84	0.956	86	1.6	1.61	0.53	6.25
0116-013587	234.70	2.77	0.954	77	1.7	1.87	0.53	6.25
0116-013588	234.70	2.77	0.954	77	1.7	1.87	0.53	6.25
0116-013589	234.70	2.77	0.954	77	1.7	1.87	0.53	6.25
0116-013590	234.70	2.77	0.954	77	1.7	1.87	0.53	6.25
0116-013591	234.70	2.77	0.954	77	1.7	1.87	0.53	6.25
0116-013592	237.80	2.86	0.954	77	1.7	1.87	0.53	6.25
0116-013593	237.80	2.86	0.954	77	1.7	1.87	0.53	6.25
0116-013594	237.80	2.86	0.954	77	1.7	1.87	0.53	6.25
0116-013595	237.80	2.86	0.954	77	1.7	1.87	0.53	6.25
0116-013596	237.80	2.86	0.954	77	1.7	1.87	0.53	6.25
0116-013597	232.60	2.67	0.955	79	1.9	2.07	4.52	6.76
0116-013598	232.60	2.67	0.955	79	1.9	2.07	4.52	6.76
0116-013599	232.60	2.67	0.955	79	1.9	2.07	4.52	6.76
0116-013600	232.60	2.67	0.955	79	1.9	2.07	4.52	6.76
0116-013601	232.60	2.67	0.955	79	1.9	2.07	4.52	6.76
0116-013602	239.00	2.69	0.955	79	1.9	2.07	4.52	6.76
0116-013603	239.00	2.69	0.955	79	1.9	2.07	4.52	6.76
0116-013604	239.00	2.69	0.955	79	1.9	2.07	4.52	6.76
0116-013605	239.00	2.69	0.955	79	1.9	2.07	4.52	6.76
0116-013606	239.00	2.69	0.955	79	1.9	2.07	4.52	6.76
0116-013607	235.60	2.80	0.958	82	3.4	1.59	4.52	6.76
0116-013608	235.60	2.80	0.958	82	3.4	1.59	4.52	6.76
0116-013609	235.60	2.80	0.958	82	3.4	1.59	4.52	6.76
0116-013610	235.60	2.80	0.958	82	3.4	1.59	4.52	6.76
0116-013611	235.60	2.80	0.958	82	3.4	1.59	4.52	6.76
0116-013612	232.60	2.81	0.958	82	3.4	1.59	4.52	6.76
0116-013615	238.80	2.70	0.954	82	3.6	2.94	5.30	6.76
0116-013616	238.80	2.70	0.954	82	3.6	2.94	5.30	6.76
0116-013617	238.80	2.70	0.954	82	3.6	2.94	5.30	6.76
0116-013618	238.80	2.70	0.954	82	3.6	2.94	5.30	6.76
0116-013619	238.80	2.70	0.954	82	3.6	2.94	5.30	6.76

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013620	236.00	2.45	0.954	82	3.6	2.94	5.30	6.76
0116-013621	236.00	2.45	0.954	82	3.6	2.94	5.30	6.76
0116-013622	236.00	2.45	0.954	82	3.6	2.94	5.30	6.76
0116-013623	236.00	2.45	0.954	82	3.6	2.94	5.30	6.76
0116-013624	236.00	2.45	0.954	82	3.6	2.94	5.30	6.76
0116-013625	229.00	2.88	0.952	76	3.1	1.65	0.21	5.1
0116-013626	229.00	2.88	0.952	76	3.1	1.65	0.21	5.1
0116-013627	229.00	2.88	0.952	76	3.1	1.65	0.21	5.1
0116-013628	229.00	2.88	0.952	76	3.1	1.65	0.21	5.1
0116-013629	229.00	2.88	0.952	76	3.1	1.65	0.21	5.1
0116-013630	226.70	2.84	0.952	76	3.1	1.65	0.21	5.1
0116-013631	226.70	2.84	0.952	76	3.1	1.65	0.21	5.1
0116-013632	226.70	2.84	0.952	76	3.1	1.65	0.21	5.1
0116-013633	226.70	2.84	0.952	76	3.1	1.65	0.21	5.1
0116-013634	226.70	2.84	0.952	76	3.1	1.65	0.21	5.1
0116-013635	217.80	2.58	0.954	76	3.6	3.96	0.21	5.1
0116-013636	217.80	2.58	0.954	76	3.6	3.96	0.21	5.1
0116-013637	217.80	2.58	0.954	76	3.6	3.96	0.21	5.1
0116-013638	217.80	2.58	0.954	76	3.6	3.96	0.21	5.1
0116-013639	217.80	2.58	0.954	76	3.6	3.96	0.21	5.1
0116-013640	216.90	2.61	0.954	76	3.6	3.96	0.21	5.1
0116-013641	216.90	2.61	0.954	76	3.6	3.96	0.21	5.1
0116-013642	216.90	2.61	0.954	76	3.6	3.96	0.21	5.1
0116-013643	216.90	2.61	0.954	76	3.6	3.96	0.21	5.1
0116-013644	216.90	2.61	0.954	76	3.6	3.96	0.21	5.1
0116-013645	213.50	2.52	0.951	72	4.0	3.06	1.62	5.09
0116-013651	215.30	2.52	0.951	63	7.3	5.74	1.45	5.09
0116-013652	215.30	2.52	0.951	63	7.3	5.74	1.45	5.09
0116-013653	215.30	2.52	0.951	63	7.3	5.74	1.45	5.09
0116-013654	215.30	2.52	0.951	63	7.3	5.74	1.45	5.09
0116-013655	215.30	2.52	0.951	63	7.3	5.74	1.45	5.09
0116-013656	214.80	2.29	0.951	63	7.3	5.74	1.45	5.09
0116-013657	214.80	2.29	0.951	63	7.3	5.74	1.45	5.09
0116-013658	214.80	2.29	0.951	63	7.3	5.74	1.45	5.09
0116-013659	214.80	2.29	0.951	63	7.3	5.74	1.45	5.09
0116-013660	214.80	2.29	0.951	63	7.3	5.74	1.45	5.09

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013661	220.80	2.29	0.950	77	5.7	3.26	1.45	5.09
0116-013662	220.80	2.29	0.950	77	5.7	3.26	1.45	5.09
0116-013663	220.80	2.29	0.950	77	5.7	3.26	1.45	5.09
0116-013664	220.80	2.29	0.950	77	5.7	3.26	1.45	5.09
0116-013665	220.80	2.29	0.950	77	5.7	3.26	1.45	5.09
0116-013666	204.60	2.43	0.950	77	5.7	3.26	1.82	5.09
0116-013667	204.60	2.43	0.950	77	5.7	3.26	1.82	5.09
0116-013668	204.60	2.43	0.950	77	5.7	3.26	1.82	5.09
0116-013669	204.60	2.43	0.950	77	5.7	3.26	1.82	5.09
0116-013670	204.60	2.43	0.950	77	5.7	3.26	1.82	5.09
0116-013671	212.00	2.52	0.950	71	3.9	2.8	0.35	5.09
0116-013672	212.00	2.52	0.950	71	3.9	2.8	0.35	5.09
0116-013673	212.00	2.52	0.950	71	3.9	2.8	0.35	5.09
0116-013674	212.00	2.52	0.950	71	3.9	2.8	0.35	5.09
0116-013675	212.00	2.52	0.950	71	3.9	2.8	0.35	5.09
0116-013680	212.30	2.45	0.952	70	2.8	2.55	0.37	9.24
0116-013681	212.30	2.45	0.952	70	2.8	2.55	0.37	9.24
0116-013682	212.30	2.45	0.952	70	2.8	2.55	0.37	9.24
0116-013683	212.30	2.45	0.952	70	2.8	2.55	0.37	9.24
0116-013684	212.30	2.45	0.952	70	2.8	2.55	0.37	9.24
0116-013685	211.70	2.71	0.952	70	2.8	2.55	0.37	9.24
0116-013686	211.70	2.71	0.952	70	2.8	2.55	0.37	9.24
0116-013687	211.70	2.71	0.952	70	2.8	2.55	0.37	9.24
0116-013688	211.70	2.71	0.952	70	2.8	2.55	0.37	9.24
0116-013689	211.70	2.71	0.952	70	2.8	2.55	0.37	9.24
0116-013690	231.70	2.45	0.949	85	2.6	2.41	0.37	9.24
0116-013691	231.70	2.45	0.949	85	2.6	2.41	0.37	9.24
0116-013692	231.70	2.45	0.949	85	2.6	2.41	0.37	9.24
0116-013693	231.70	2.45	0.949	85	2.6	2.41	0.37	9.24
0116-013696	231.70	2.45	0.949	85	2.6	2.41	0.37	9.24
0116-013697	229.70	2.67	0.949	85	2.6	2.41	0.37	9.24
0116-013698	229.70	2.67	0.949	85	2.6	2.41	0.37	9.24
0116-013699	229.70	2.67	0.949	85	2.6	2.41	0.37	9.24
0116-013700	229.70	2.67	0.949	85	2.6	2.41	0.37	9.24
0116-013701	229.70	2.67	0.949	85	2.6	2.41	0.37	9.24
0116-013702	232.30	2.45	0.949	87	3.9	2.81	0.21	4.83

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013703	232.30	2.45	0.949	87	3.9	2.81	0.21	4.83
0116-013704	232.30	2.45	0.949	87	3.9	2.81	0.21	4.83
0116-013705	232.30	2.45	0.949	87	3.9	2.81	0.21	4.83
0116-013712	233.00	2.58	0.952	80	2.8	2.55	0.21	4.83
0116-013713	233.00	2.58	0.952	80	2.8	2.55	0.21	4.83
0116-013714	233.00	2.58	0.952	80	2.8	2.55	0.21	4.83
0116-013715	233.00	2.58	0.952	80	2.8	2.55	0.21	4.83
0116-013716	233.00	2.58	0.952	80	2.8	2.55	0.21	4.83
0116-013717	230.00	2.45	0.952	80	2.8	2.55	0.21	4.83
0116-013718	230.00	2.45	0.952	80	2.8	2.55	0.21	4.83
0116-013729	247.30	2.30	0.948	82	4.9	5.14	0.50	8.01
0116-013730	247.30	2.30	0.948	82	4.9	5.14	0.50	8.01
0116-013731	247.30	2.30	0.948	82	4.9	5.14	0.50	8.01
0116-013732	247.30	2.30	0.948	82	4.9	5.14	0.50	8.01
0116-013733	247.30	2.30	0.948	82	4.9	5.14	0.50	8.01
0116-013734	247.00	2.58	0.948	82	4.9	5.14	0.50	8.01
0116-013735	247.00	2.58	0.948	82	4.9	5.14	0.50	8.01
0116-013736	247.00	2.58	0.948	82	4.9	5.14	0.50	8.01
0116-013737	247.00	2.58	0.948	82	4.9	5.14	0.50	8.01
0116-013738	247.00	2.58	0.948	82	4.9	5.14	0.50	8.01
0116-013884	232.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013885	232.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013886	232.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013887	232.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013888	232.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013889	231.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013890	231.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013891	231.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013892	231.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013893	231.30	2.51	0.952	82	3.3	4.31	0.12	3.08
0116-013894	232.30	2.51	0.952	80	2.2	2.738	0.12	3.08
0116-013895	232.30	2.51	0.952	80	2.2	2.738	0.12	3.08
0116-013896	232.30	2.51	0.952	80	2.2	2.738	0.12	3.08
0116-013897	232.30	2.51	0.952	80	2.2	2.738	0.12	3.08
0116-013898	232.30	2.51	0.952	80	2.2	2.738	0.12	3.08
0116-013899	228.00	2.60	0.952	80	2.2	2.738	0.27	4.99

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8
0116-013900	228.00	2.60	0.952	80	2.2	2.738	0.27	4.99

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

PRODUCT: 1106375
FabriNet 200 mil, Double Sided 8 oz/yd², Nonwoven Cal.

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/90,000 ft²	oz/yd²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/90,000 ft²	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%
6	Trapezoidal Tear Strength	MD	ASTM D4533	1/90,000 ft²	lbf
7	Trapezoidal Tear Strength	TD	ASTM D4533	1/90,000 ft²	lbf
8	Puncture Resistance		ASTM D4833	1/90,000 ft²	lbf
9	CBR Puncture Strength		ASTM D6241	1/540,000 ft²	lbf
10	Apparent Opening Size (max.)		ASTM D4751	1/540,000 ft²	mm
11	Permittivity		ASTM D4491	1/540,000 ft²	sec^{-1}
12	Water Flow Rate		ASTM D4491	1/540,000 ft²	gpm/ft²

Test	1	2	3	4	5	6	7	8	9	10	11
Specification	**8**	**220**	**220**	**50**	**50**	**95**	**95**	**120**	**575**	**0.180**	**1.3**
2330-540459	11.2	262	373	126	146	126	189	193	874	0.150	1.5
2330-540803	8.7	243	285	79	129	118	164	161	752	0.180	1.9
2330-540804	8.7	243	285	79	129	118	164	161	752	0.180	1.9
2330-540869	8.8	254	313	84	110	128	175	160	749	0.180	1.9
2330-540916	8.8	246	320	103	113	120	155	154	760	0.180	1.8
2330-540969	8.8	259	277	83	107	112	129	171	777	0.180	1.8
2330-542107	8.6	241	247	84	113	101	146	139	681	0.180	1.8
2330-542118	8.7	253	260	81	127	110	115	133	672	0.180	1.9
2330-543019	8.9	264	313	87	126	131	168	156	754	0.180	1.8
2330-543025	8.6	268	305	97	131	145	161	143	734	0.180	2.1
2330-543026	8.6	261	279	87	122	128	168	165	731	0.180	2.1
2330-543029	8.6	261	279	87	122	128	168	165	731	0.180	2.1
2330-543036	8.8	263	304	86	143	123	169	152	706	0.180	1.6
2330-543042	8.8	246	278	87	135	125	173	148	688	0.180	1.7
2330-543044	9.0	268	298	86	124	132	164	147	709	0.180	1.7
2330-543050	8.5	253	301	103	131	118	171	157	693	0.180	2.0

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MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8	9	10	11
2330-543056	8.5	243	282	85	132	129	169	164	683	0.180	2.0
2330-543059	8.6	256	272	94	115	123	145	151	638	0.180	1.5
2330-543061	8.6	256	272	94	115	123	145	151	638	0.180	1.5
2330-543062	8.6	256	272	94	115	123	145	151	638	0.180	1.5
2330-543063	8.4	237	265	89	131	115	150	156	719	0.180	1.7
2330-543064	8.4	237	265	89	131	115	150	156	719	0.180	1.7
2330-543065	8.4	237	265	89	131	115	150	156	719	0.180	1.7
2330-543067	9.1	258	280	91	133	123	148	161	708	0.180	1.7
2330-543090	8.4	228	262	74	107	137	168	145	666	0.180	1.9
2330-543093	8.6	243	264	89	125	144	156	150	720	0.180	1.9
2330-543099	8.5	240	270	80	142	118	144	146	753	0.180	1.9
2330-543108	8.6	228	267	84	168	120	136	157	732	0.180	1.8
2330-543141	9.2	261	274	79	118	109	166	185	732	0.180	1.6
2330-543149	8.9	254	271	90	114	120	154	171	712	0.180	1.8
2330-543155	8.4	251	259	78	116	115	149	148	674	0.180	1.8
2330-543157	8.7	258	241	84	109	122	146	149	703	0.180	1.8
2330-543160	8.7	258	241	84	109	122	146	149	703	0.180	1.8
2330-543180	8.5	283	289	68	117	113	159	154	713	0.180	1.7
2330-543183	8.4	245	248	80	99	109	149	146	717	0.180	1.6
2330-543186	8.8	275	265	69	100	110	152	154	709	0.180	1.8
2330-543187	8.8	275	265	69	100	110	152	154	709	0.180	1.8
2330-543191	8.5	280	275	72	96	123	136	146	772	0.180	1.8
2330-543192	8.5	280	275	72	96	123	136	146	772	0.180	1.8
2330-543194	8.5	249	272	88	118	119	141	160	806	0.180	1.8
2330-543195	8.5	249	272	88	118	119	141	160	806	0.180	1.8
2330-543196	8.5	249	272	88	118	119	141	160	806	0.180	1.8
2330-543197	8.5	269	266	69	111	119	178	152	729	0.180	1.9
2330-543198	8.5	269	266	69	111	119	178	152	729	0.180	1.9
2330-543199	8.5	269	266	69	111	119	178	152	729	0.180	1.9
2330-543207	9.1	266	307	73	114	110	167	159	781	0.180	1.6
2330-543213	8.4	259	263	89	96	113	146	148	813	0.180	1.6
2330-543220	8.5	228	244	72	123	101	139	153	688	0.180	1.9
2330-543271	9.0	255	238	72	103	145	169	149	673	0.180	2.1
2330-543272	9.0	255	238	72	103	145	169	149	673	0.180	2.1
2330-543276	9.0	247	260	87	117	138	150	157	718	0.180	2.0

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8	9	10	11
Specification	**8**	**220**	**220**	**50**	**50**	**95**	**95**	**120**	**575**	**0.180**	**1.3**
2330-540805	8.7	243	285	79	129	118	164	161	752	0.180	1.9
2330-540920	8.6	247	271	107	116	127	166	152	760	0.180	1.9
2330-541414	8.5	232	258	85	144	114	127	181	794	0.180	1.8
2330-541707	8.7	267	283	86	112	131	161	166	785	0.180	1.8
2330-541717	8.6	243	278	76	110	118	153	186	778	0.180	1.7
2330-542046	8.7	243	284	101	134	114	141	154	635	0.180	1.9
2330-542109	8.5	237	264	73	111	114	155	190	679	0.180	1.9
2330-542114	8.9	255	245	79	104	112	139	151	675	0.180	1.7
2330-543018	8.9	264	313	87	126	131	168	156	754	0.180	1.8
2330-543037	8.8	263	304	86	143	123	169	152	706	0.180	1.6
2330-543038	8.8	263	304	86	143	123	169	152	706	0.180	1.6
2330-543040	8.8	246	278	87	135	125	173	148	688	0.180	1.7
2330-543041	8.8	246	278	87	135	125	173	148	688	0.180	1.7
2330-543043	9.0	268	298	86	124	132	164	147	709	0.180	1.7
2330-543045	9.0	268	298	86	124	132	164	147	709	0.180	1.7
2330-543046	9.0	268	298	86	124	132	164	147	709	0.180	1.7
2330-543047	8.5	253	301	103	131	118	171	157	693	0.180	2.0
2330-543051	8.3	254	303	100	133	139	156	161	698	0.180	2.0
2330-543052	8.3	254	303	100	133	139	156	161	698	0.180	2.0
2330-543055	8.5	243	282	85	132	129	169	164	683	0.180	2.0
2330-543057	8.5	243	282	85	132	129	169	164	683	0.180	2.0
2330-543060	8.6	256	272	94	115	123	145	151	638	0.180	1.5
2330-543068	9.1	258	280	91	133	123	148	161	708	0.180	1.7
2330-543091	8.6	243	264	89	125	144	156	150	720	0.180	1.9
2330-543094	8.6	243	264	89	125	144	156	150	720	0.180	1.9
2330-543100	8.5	240	270	80	142	118	144	146	753	0.180	1.9
2330-543101	8.5	240	270	80	142	118	144	146	753	0.180	1.9
2330-543110	8.5	259	300	79	107	103	143	182	807	0.180	1.9
2330-543142	9.2	261	274	79	118	109	166	185	732	0.180	1.6
2330-543146	9.1	253	288	99	108	121	179	174	681	0.180	1.6
2330-543153	8.4	251	259	78	116	115	149	148	674	0.180	1.8
2330-543154	8.4	251	259	78	116	115	149	148	674	0.180	1.8
2330-543162	8.3	240	262	67	116	125	164	150	692	0.180	1.8
2330-543168	8.6	261	268	72	99	132	139	143	739	0.180	1.9
2330-543169	8.4	235	252	74	120	115	151	154	721	0.180	1.6

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SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1

SALES ORDER: SO-092987

PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8	9	10	11
2330-543175	8.6	235	257	65	107	109	146	167	733	0.180	1.7
2330-543176	8.6	235	257	65	107	109	146	167	733	0.180	1.7
2330-543185	8.8	275	265	69	100	110	152	154	709	0.180	1.8
2330-543188	8.8	275	265	69	100	110	152	154	709	0.180	1.8
2330-543189	8.5	280	275	72	96	123	136	146	772	0.180	1.8
2330-543190	8.5	280	275	72	96	123	136	146	772	0.180	1.8
2330-543193	8.5	249	272	88	118	119	141	160	806	0.180	1.8
2330-543266	9.0	277	269	84	117	156	182	163	690	0.180	2.0
2330-543268	9.0	277	269	84	117	156	182	163	690	0.180	2.0
2330-543269	9.0	255	238	72	103	145	169	149	673	0.180	2.1
2330-543270	9.0	255	238	72	103	145	169	149	673	0.180	2.1
2330-543275	9.0	247	260	87	117	138	150	157	718	0.180	2.0

Test	12
Specification	**95**
2330-540459	110
2330-540803	139
2330-540804	139
2330-540869	143
2330-540916	132
2330-540969	131
2330-542107	136
2330-542118	142
2330-543019	134
2330-543025	159
2330-543026	159
2330-543029	159
2330-543036	119
2330-543042	127
2330-543044	127
2330-543050	151
2330-543056	151
2330-543059	116
2330-543061	116
2330-543062	116
2330-543063	130

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	**12**
2330-543064	130
2330-543065	130
2330-543067	124
2330-543090	143
2330-543093	140
2330-543099	140
2330-543108	134
2330-543141	120
2330-543149	138
2330-543155	138
2330-543157	138
2330-543160	138
2330-543180	130
2330-543183	116
2330-543186	134
2330-543187	134
2330-543191	134
2330-543192	134
2330-543194	134
2330-543195	134
2330-543196	134
2330-543197	139
2330-543198	139
2330-543199	139
2330-543207	120
2330-543213	120
2330-543220	143
2330-543271	155
2330-543272	155
2330-543276	148
Specification	**95**
2330-540805	139
2330-540920	145
2330-541414	132
2330-541707	134

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	12
2330-541717	130
2330-542046	140
2330-542109	143
2330-542114	128
2330-543018	134
2330-543037	119
2330-543038	119
2330-543040	127
2330-543041	127
2330-543043	127
2330-543045	127
2330-543046	127
2330-543047	151
2330-543051	151
2330-543052	151
2330-543055	151
2330-543057	151
2330-543060	116
2330-543068	124
2330-543091	140
2330-543094	140
2330-543100	140
2330-543101	140
2330-543110	141
2330-543142	120
2330-543146	119
2330-543153	138
2330-543154	138
2330-543162	138
2330-543168	139
2330-543169	120
2330-543175	124
2330-543176	124
2330-543185	134
2330-543188	134
2330-543189	134

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	12
2330-543190	134
2330-543193	134
2330-543266	151
2330-543268	151
2330-543269	155
2330-543270	155
2330-543275	148

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/90,000 ft^2	oz/yd^2
	Grab Tensile Properties (min. avg)		ASTM D4632	1/90,000 ft^2	
2	Strength (MD)				lbf
3	Strength (TD)				lbf
4	Elongation (MD)				%
5	Elongation (TD)				%
6	Trapezoidal Tear Strength	MD	ASTM D4533	1/90,000 ft^2	lbf
7	Trapezoidal Tear Strength	TD	ASTM D4533	1/90,000 ft^2	lbf
8	Puncture Resistance		ASTM D4833	1/90,000 ft^2	lbf
9	CBR Puncture Strength		ASTM D6241	1/540,000 ft^2	lbf
10	Apparent Opening Size (max.)		ASTM D4751	1/540,000 ft^2	mm
11	Permittivity		ASTM D4491	1/540,000 ft^2	sec^{-1}
12	Water Flow Rate		ASTM D4491	1/540,000 ft^2	gpm/ft^2

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TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	1	2	3	4	5	6	7	8	9	10	11
Specification	**8**	**220**	**220**	**50**	**50**	**95**	**95**	**120**	**575**	**0.180**	**1.3**
J10579920	9.0	281	263	66	91	114	105	128	774	0.140	1.7
J10579924	9.0	281	263	66	91	114	105	131	774	0.140	1.7
J10579925	9.0	281	271	65	92	104	106	128	764	0.140	1.6
J10579926	9.0	281	271	65	92	104	106	135	764	0.140	1.6
J10579927	9.0	281	271	65	92	104	106	130	764	0.140	1.6
J10579930	9.0	281	271	65	92	104	106	130	764	0.140	1.6
J10579931	9.0	292	279	67	91	103	105	134	779	0.140	1.6
J10579936	8.0	289	253	64	92	105	110	130	758	0.100	1.6
J10579937	8.0	289	253	64	92	105	110	128	758	0.100	1.6
J10579939	8.0	289	253	64	92	105	110	135	758	0.140	1.6
J10579942	8.0	280	260	62	89	105	103	125	770	0.100	1.6
J10579945	8.0	280	260	62	89	105	103	136	770	0.100	1.6
Specification	**8**	**220**	**220**	**50**	**50**	**95**	**95**	**120**	**575**	**0.180**	**1.3**
J10579919	8.0	287	256	62	94	102	102	126	761	0.140	1.7
J10579921	9.0	281	263	66	91	114	105	126	774	0.140	1.7
J10579922	9.0	281	263	66	91	114	105	129	774	0.140	1.7
J10579923	9.0	281	263	66	91	114	105	129	774	0.140	1.7
J10579928	9.0	281	271	65	92	104	106	130	764	0.140	1.6
J10579929	9.0	281	271	65	92	104	106	130	764	0.140	1.6
J10579932	9.0	292	279	67	91	103	105	131	779	0.140	1.6
J10579933	9.0	292	279	67	91	103	105	132	779	0.140	1.6
J10579934	9.0	292	279	67	91	103	105	128	779	0.140	1.6
J10579935	9.0	292	279	67	91	103	105	128	779	0.140	1.6
J10579940	8.0	289	253	64	92	105	110	128	758	0.140	1.6
J10579941	9.0	285	243	64	88	112	108	129	756	0.140	1.6
J10579944	8.0	280	260	62	89	105	103	128	770	0.100	1.6

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

SOLMAX

MANUFACTURING QUALITY CONTROL

SOLMAX APPROVED QUALITY ASSURANCE

TEST RESULTS - ROLLS

PROJECT NUMBER: 21119-E972725 (Rev-1
SALES ORDER: SO-092987
PACKING SLIP NUMBER: Pre-SO-092987-4

PROJECT NAME : NORTH RANCH LANDFILL

Test	**12**
Specification	**95**
J10579920	126
J10579924	126
J10579925	118
J10579926	118
J10579927	118
J10579930	118
J10579931	118
J10579936	118
J10579937	118
J10579939	118
J10579942	120
J10579945	120
Specification	**95**
J10579919	126
J10579921	126
J10579922	126
J10579923	126
J10579928	118
J10579929	118
J10579932	118
J10579933	118
J10579934	118
J10579935	118
J10579940	118
J10579941	118
J10579944	120

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

CoA Date: 12/22/2021

Certificate of Analysis

Shipped To: SOLMAX GEOSYNTHETICS, LLC
19103 GUNDLE ROAD
HOUSTON TX 77073
USA

Recipient: Morales
Fax:

Delivery #: 80580920
PO #: PO-604231
Weight: 202950.000 LB
Ship Date: 12/22/2021
Package: BULK
Mode: Hopper Car
Car #: HLTX006055
Seal No: 273895

Product:
MARLEX HHM 5502BN POLYETHYLENE in Bulk

Lot Number: DNN610771

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.33	g/10min
Density	D1505	0.9556	g/cm3
Production date		20211220	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 12/22/2021

Certificate of Analysis

Shipped To: SOLMAX GEOSYNTHETICS, LLC
19103 GUNDLE ROAD
HOUSTON TX 77073
USA

Recipient: Hickman
Fax:

Delivery #: 80580919
PO #: PO-604231
Weight: 207050.000 LB
Ship Date: 12/22/2021
Package: BULK
Mode: Hopper Car
Car #: HLTX006301
Seal No: 273922

Product:
MARLEX HHM 5502BN POLYETHYLENE in Bulk

Lot Number: DNN610770

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.33	g/10min
Density	D1505	0.9556	g/cm3
Production date		20211220	

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AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 12/22/2021

Certificate of Analysis

Shipped To: SOLMAX GEOSYNTHETICS, LLC
19103 GUNDLE ROAD
HOUSTON TX 77073
USA

Recipient: Morales
Fax:

Delivery #: 80580922
PO #: PO-604231
Weight: 208050.000 LB
Ship Date: 12/22/2021
Package: BULK
Mode: Hopper Car
Car #: HLTX007521
Seal No: 274376

Product:
MARLEX HHM 5502BN POLYETHYLENE in Bulk

Lot Number: DNN610692

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10min
Density	D1505	0.9539	g/cm3
Production date		20211219	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

SCS ENGINEERS Environmental Consultants & Contractors

March 23, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #17 – Solmax Concrete Polylock Embedment Strip

Submitted Date: 3/23/22

Information Submitted:

SCS Engineers have received material submittal for an alternative to the concrete batten strip concrete wall/geomembrane anchoring shown on Detail D on Drawing 9TW.

SCS Response:

SCS approves use of Solmax Polylock as an alternative to the batten bar anchoring.

copy:

PRODUCT SHEET

CONCRETE EMBEDMENT STRIP

We are the first company to develop an extruded HDPE concrete embedment strip for geomembrane attachment. PolyLock is a rugged, durable HDPE profile that can be cast-in-place or inserted horizontally into wet concrete, leaving the welding surface exposed upon completion of concrete preparation.

The embedment of anchor fingers provides a high strength mechanical anchor to the concrete. When properly installed and utilized with a geomembrane, PolyLock provides an outstanding barrier to leakage. PolyLock is the most effective and economical cast-in-place mechanical anchor system for HDPE.

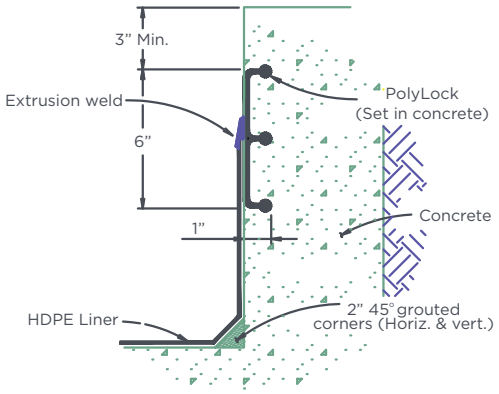


PolyLock System

PolyLock Dimensions	
Standard length, ft (m)	10 (3)
Width, in (cm)	6 (15)
Anchor Finger Length, in (cm)	1 (2.5)
Chemical Resistance	Excellent
Tensile Strength, lb/in² (MPa)	>4,000 (28)
Low Temperature Brittleness,°F (°C)	<-120 (<-84)

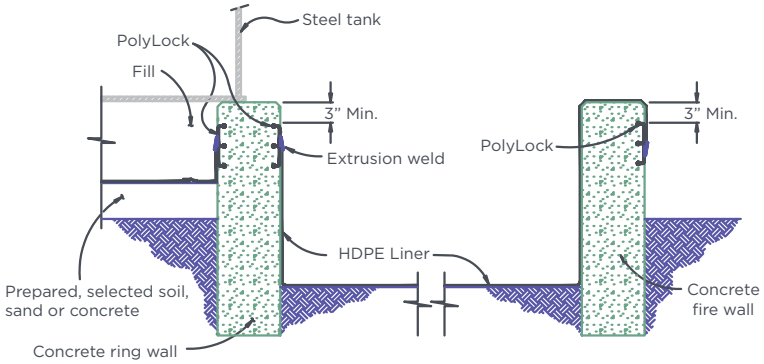
THE POLYLOCK SYSTEM PROVIDES:

- An exposed welding surface
- Anchor fingers for strength
- A mechanical anchor system that is effective and economical
- Outstanding leakage barrier



PolyLock Attachment
Not to scale

(Typical PolyLock Attachment)



Typical Secondary Containment Lining
Not to scale

(Typical secondary containment with attached PolyLock)

SOLMAX.COM

SOLMAX

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

SCS ENGINEERS Environmental Consultants & Contractors

March 28, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #18 – East and West Drying Pads Secondary Geomembrane Testing

Requested Date: March 28, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for secondary layer at East and West Drying Pads.

SCS Response:

Certifying Engineer has reviewed the pertinent data. Two destructive samples were taken from each the east and west drying pad secondary 60-mil HDPE geomembrane installations. These samples were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

Therefore, the Certifying Engineer approved the installation of the secondary 60-mil HDPE geomembrane layer for the East and West Drying Pads. Subsequent overlying layers may be installed at this time.

copy:

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-03-28

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**70900**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 70900

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: ESDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	157	138	142	154	161	**150**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	122	131	127	129	128	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	175	177	182	171	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: ESDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	137	142	140	145	142	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	120	126	147	120	141	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	178	176	182	180	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-03-28

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**70901**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 70901

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: WSDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	157	142	148	139	148	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	142	146	141	146	143	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	178	180	174	175	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: WSDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	126	130	142	133	148	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	145	155	149	145	142	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	176	180	182	175	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-03-28

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1008 Southview Circle
Center , TX , 75935

Bill To:

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22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**70943**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

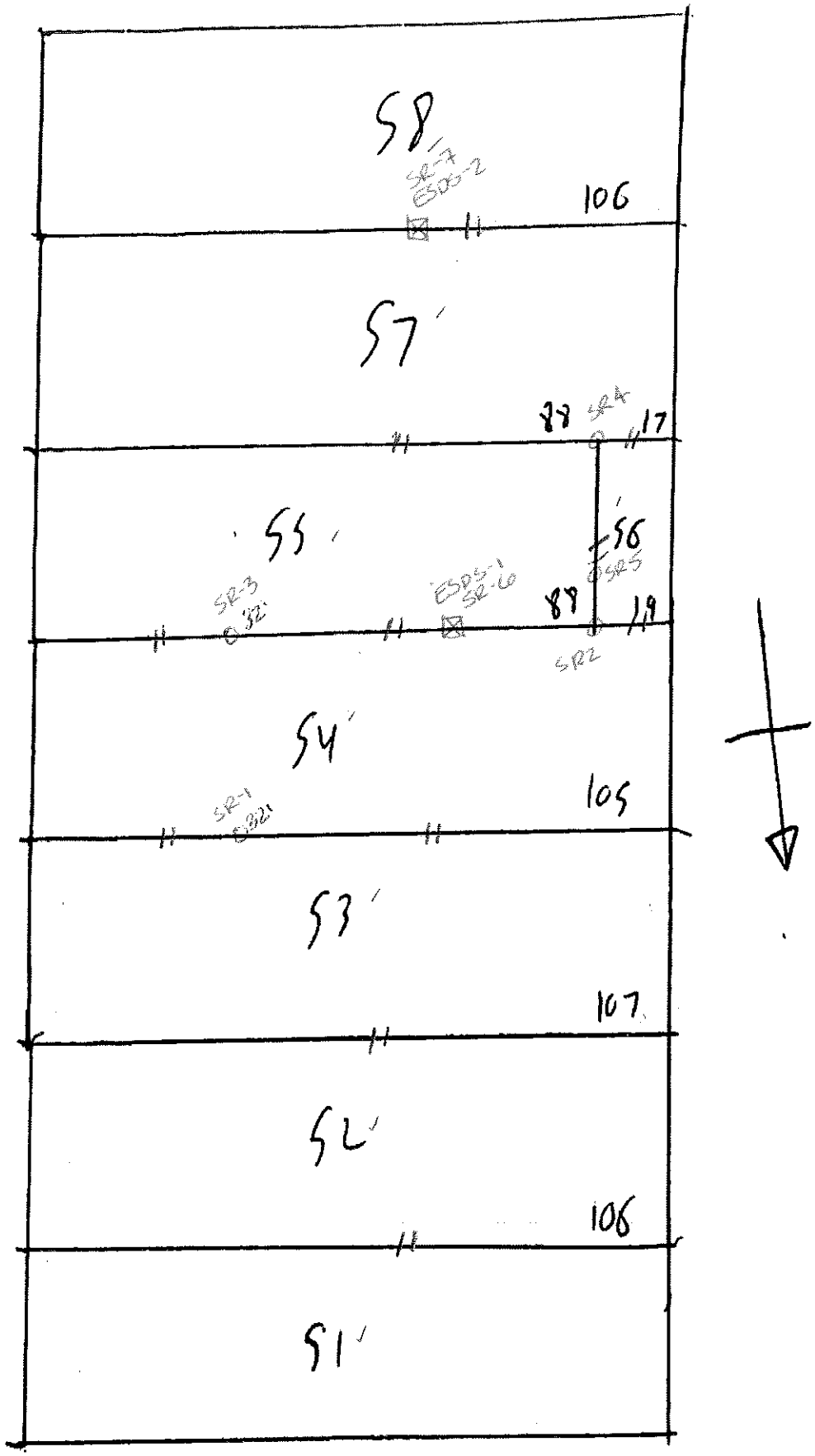
Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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22-SCS-NRL-01

East Drying Pad Secondary

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 7
Date: 3/23/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: EOP Secondary Material Type: HDPE Thickness: 60 Mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
S1	0102-20 4018	1308	106	23	2438	106	22.5	2,385	Floor	XAJS	
S2	0102-20 4018	1310	107	23	2461	107	22.5	2,407.5	Floor	XAJS	
S3	0102-20 4018	1317	107	23	2461	106	22.5	2,385	Floor	XAJS	
S4	0102-20 4018	1321	107	23	2461	106	22.5	2,385	Floor	XAJS	
S5	0102-20 4018	1326	88	23	2,024	88	22.5	1980	Floor	XAJS	
S6	0102-20 4019	1341	19	23	437	18	22.5	405	Floor	XAJS	
S7	0102-20 4019	1345	106	23	2438	106	22.5	2,385	Floor	XAJS	
S8	0102-20 4019	1352	106	23	2438	106	22.5	2,385	Floor	XAJS	
				Total SF (Page)	17,158		Total SF (Page)	16,717.5			
				Total SF (Project)	17,158		Total SF (Project)	16,717.5			

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 7
Date 7/23/22
Rev. Date: _____

SEAMING RECORD

Layer: LDP Secondary

Welder Initials: CK
Welder Number: _____

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S2	S3	CK	W82	1329	1341	0	107	107	107	—	XAIS	
S5	S4	CK	W82	1424	1455	88	0	88	195	ESDS1	XAIS	
S6	S5	CK	W82	1455	1509	19	0	19	214	—	XAIS	CAP @ 32
S6	S5	CK	W82	1414	1417	0	22	22	236	—	XAIS	
S7	S6	CK	W82	1430	1437	17	0	17	253	—	XAIS	
S7	S5	CK	W82	1437	1452	88	0	88	341	—	XAIS	

Total LF (Page)	341	Total DS (Page)	1	Total DS Needed (Page)	0.7	Over/Under (Page)	+0.3
Total LF (Project)	341	Total DS (Project)	1	Total DS Needed (Project)	0.7	Over/Under (Project)	+0.3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: 22-SCS-NRL-01
Project Number: North Ranch

Sheet 4 of 7
Date 3/23/21
Rev. Date:

SEAMING RECORD

Layer: EDP Secondary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
51	52	SL	W2	1314	1332	0	106	106	106		XAIS	
53	54	SL	W2	1341	1359	0	105	105	211		XAIS	CAP @ 32
58	57	SL	W2	1427	1442	106	0	106	317	BDS 2	XAIS	

Total LF (Page)	317	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	317	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH KNOLL
Project Number: 22-SCS-NKL-01

Sheet 5 of 7
Date: 7/13/22
Rev. Date: _____

NON-DESTRUCTIVE TEST LOG

Layer: EPP Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S1	S2	0	EOS	Full	30	30	1345	1350	P	–	LL	XAIS	–	
APT	S2	S3	0	EOS	Full	30	30	1348	1353	P	–	LL	XAIS	–	
APT	S3	S4	0	32	32	30	30	1350	1355	P	–	LL	XAIS	–	
APT	S3	S4	32	EOS	Full	30	30	1352	1357	P	–	LL	XAIS	–	
APT	S4	S6	0	EOS	Full	30	30	1435	1440	P	–	LL	XAIS	–	
APT	S4	S5	0	32	32	30	30	1427	1432	P	–	LL	XAIS	–	
APT	S4	S5	32	EOS	Full	30	30	1500	1500	P	–	LL	XAIS	–	
APT	S6	S5	0	EOS	Full	30	30	1422	1427	P	–	LL	XAIS	–	
APT	S7	S6	0	EOS	Full	30	30	1420	1425	P	–	LL	XAIS	–	
APT	S7	S8	0	EOS	Full	30	30	1540	1545	P	–	LL	XAIS	–	
APT	S8	S7	0	EOS	Full	30	30	1550	1555	P	–	LL	XAIS	–	

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: 35
Minimum Starting Pressure: 30 Test Duration: 5 min
Maximum Allowable Loss: 3

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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-02

CQA SOLUTIONS

Sheet 6 of 7
Date: 3/24/23
Rev. Date: ---

DESTRUCTIVE SAMPLE LOG

Layer: _____

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
ESDS1	S4/S5	62'	3/24	3/24	CK	W82	3/23	P		
ESDS2	S7/S8	96'	3/24	3/24	SL	W 2	3/23	P		
WSDS1	S2/S3	55'	3/24	3/24	SL	W2	3/24	P		
WSDS2	S1/S2	26'	3/24	3/24	SCK	W82	3/24	P		

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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-02

Sheet 7 of 7
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

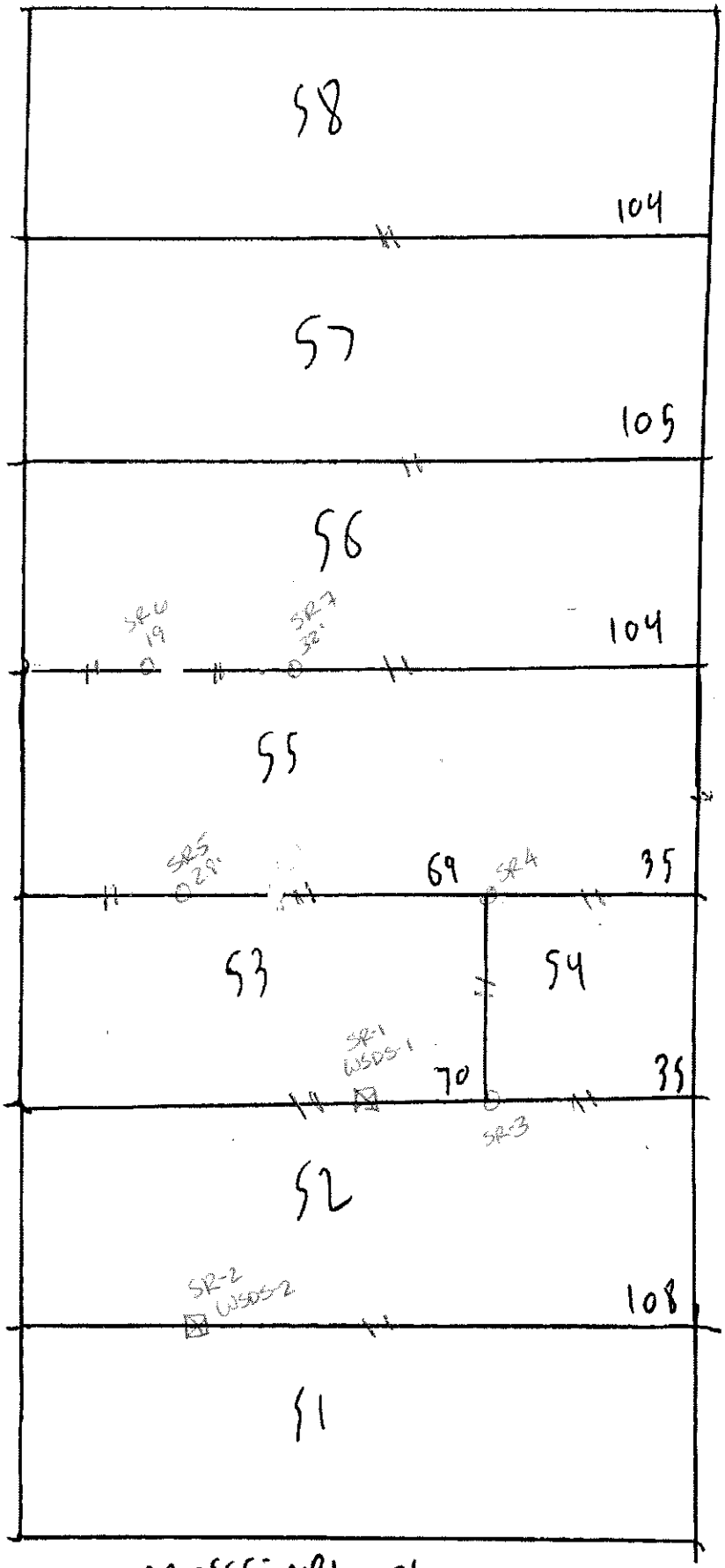
Layer: CDP Secondary

Repair #	Damage									Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location			Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular			Width	Length						Tech	Date	P/F	Observer
SR1	S3	S4				CAP	32	-		P	2	7	18	3/24	0915	MM	G-44	JA	3/24	P	XAIS
SR2	S4	S6	S5			Int	-	-		P	2	2	8	3/24	0836	MM	G-44	JA	3/24	P	XAIS
SR3	S4	S5				CAP	32	-		P	2	7	22	3/24	0905	MM	G-44	JA	3/24	P	XAIS
SR4	S5	S6	S7			Int	-	-		P	2	2	8	3/24	0830	MM	G-44	JA	3/24	P	XAIS
SR5	S6	S7				Bo	14	-		P	2	3	10	3/24	0807	MM	G-44	JA	3/24	P	XAIS
SR6	S4	S5				ESDS 1	62	-		P	2	6	16	3/24	900	MM	G-44	JA	3/24	P	XAIS
SR7	S7	S8				ESDS 2	56	-		P	2	5	14	3/24	0815	MM	G-44	JA	3/24	P	XAIS

Total (Page)	96
Total (Project)	96

Notes: _____

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22-SCS-NRL-01

West Drying Pad Secondary

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 7
Date: 7/21/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: WDP Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
51	0102-204019	0749	108	23	2,484	108	22.5	2,430	Floor	XAIS	
52	0102-204019	0752	108	23	2,484	107	22.5	2,407.5	Floor	XAIS	
53	0102-204019	0759	70	23	1,610	70	22.5	1,575	Floor	XAIS	
54	0102-204002	0801	35	23	805	35	22.5	787.5	Floor	XAIS	
55	0102-204002	0806	105	23	2,415	105	22.5	2,362.5	Floor	XAIS	
56	0102-204002	0812	105	23	2,415	105	22.5	2,362.5	Floor	XAIS	
57	0102-204002	0816	105	23	2,415	105	22.5	2,362.5	Floor	XAIS	
58	0102-204002	0822	104	23	2,392	104	22.5	2,340	Floor	XAIS	
				Total SF (Page)	17,020		Total SF (Page)	16,627.5			
				Total SF (Project)	17,020		Total SF (Project)	16,627.5			

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRC-01

CQA SOLUTIONS

Sheet 3 of 7
Date 3/24/22
Rev. Date:

SEAMING RECORD

Layer: WDP Secondary

Welder Initials: JL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S2	S3	SL	W2	0811	0819	0	70	70	70	WSDS1	XAJS	
S2	S4	SL	W2	0819	0824	0	75	75	105		XAJS	
S3	S4	SL	W2	0805	0807	0	22	22	127		XAJS	
S6	S5	SL	W2	0826	0841	104	0	104	211		XAJS	CAP @ 3L, AO @ 14
S8	S7	SL	W2	0847	0900	104	0	104	315		XAJS	

Total LF (Page)	315	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	315	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

Sheet 4 of 7
Date 7/14/22
Rev. Date:

SEAMING RECORD

Layer: WDD Secondary

Welder Initials: CK
Welder Number:

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S1	S2	CK	W82	0800	0816	0	108	108	108	WSDS2	XAIS	
S7	S5	CK	W82	0822	0834	0	69	69	177		XAIS	CAP @ 14
S4	S5	CK	W82	0834	0838	0	35	35	212		XAIS	
S7	S6	CK	W82	0845	0902	105	0	105	317		XAIS	

Total LF (Page)	317	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	317	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

Sheet 5 of 7
Date: 7/14/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: WDD Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S1	SL	0	ECS	Full	30	30	0825	0830	P		LL	XAIS		
APT	SL	S3	0	ECS	Full	30	30	0830	0835	P		LL	XAIS		
APT	S2	S4	0	ECS	Full	30	30	0832	0837	P		LL	XAIS		
APT	S3	S4	0	ECS	Full	30	30	0835	0840	P		LL	XAIS		
APT	S4	25	0	ECS	Full	30	30	0846	0853	P		LL	XAIS		
APT	S3	S5	0	29	29	30	30	0839	0844	P		LL	XAIS		
APT	S3	S5	29	ECS	Full	30	30	0837	0846	P		LL	XAIS		
APT	S6	S4	0	19	19	30	30	0845	0850	P		LL	XAIS		
APT	S6	S5	19	32	13	30	30	0847	0852	P		LL	XAIS		
APT	S6	S5	32	ECS	Full	30	30	0850	0855	P		LL	XAIS		
APT	S7	S6	0	ECS	Full	30	30	0900	0905	P		LL	XAIS		
APT	S8	S7	0	ECS	Full	30	30	0902	0907	P		LL	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-02

CQA SOLUTIONS

Sheet 6 of 7
Date: VARIES
Rev. Date: _____

DESTRUCTIVE SAMPLE LOG

Layer: _____

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
ESDS1	S4/S5	61'	3/24	3/24	CK	W82	3/23	P		
ESDS2	S7/S8	96'	3/24	3/24	SL	W 2	3/23	P		
WSDS1	S2/S3	51'	3/24	3/24	SL	W2	3/24	P		
WSDS2	S1/S2	26'	3/24	3/24	SCK	W82	3/24	P		

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRC-01

CQA SOLUTIONS

Sheet 1 of 2
Date 3/24/22
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: WDP Secondary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
SR1	S1	S3				WSDS1	55	-	P	2	5	14	3/24	0955	MM	44	JA	3/24	P	XAIS
SR2	S1	S2				WSDS2	26	-	P	2	5	14	3/24	0947	MM	44	JA	3/24	P	XAIS
SR3	S2	S3	S4			Int	-	-	P	2	2	8	3/24	0940	MM	44	JA	3/24	P	XAIS
SR4	S3	S4	S5			Int	-	-	P	2	2	8	3/24	0937	MM	44	JA	3/24	P	XAIS
SR5	S3	S8				CAP	29	-	P	2	7	18	3/24	0935	MM	44	JA	3/24	P	XAIS
SR6	S6	S6				Bo	19	-	P	2	2	8	3/24	0920	MM	44	JA	3/24	P	XAIS
SR7	S5	S6				CAP	33	-	P	3	7	20	3/24	0910	MM	41	JA	3/24	P	XAIS

Total (Page)	90
Total (Project)	90

Notes: _____

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SCS ENGINEERS Environmental Consultants & Contractors

March 29, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #19 – Truck Wash Pad Secondary Geomembrane Testing

Requested Date: March 29, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for secondary layer at Truck Wash Pad.

SCS Response:

Certifying Engineer has reviewed the pertinent data. Two destructive samples were taken from each the truck wash pad secondary 60-mil HDPE geomembrane installation. These samples were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

Therefore, the Certifying Engineer approved the installation of the secondary 60-mil HDPE geomembrane layer for the Truck Wash Pad. Subsequent overlying layers may be installed at this time.

copy:

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-03-28

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**70943**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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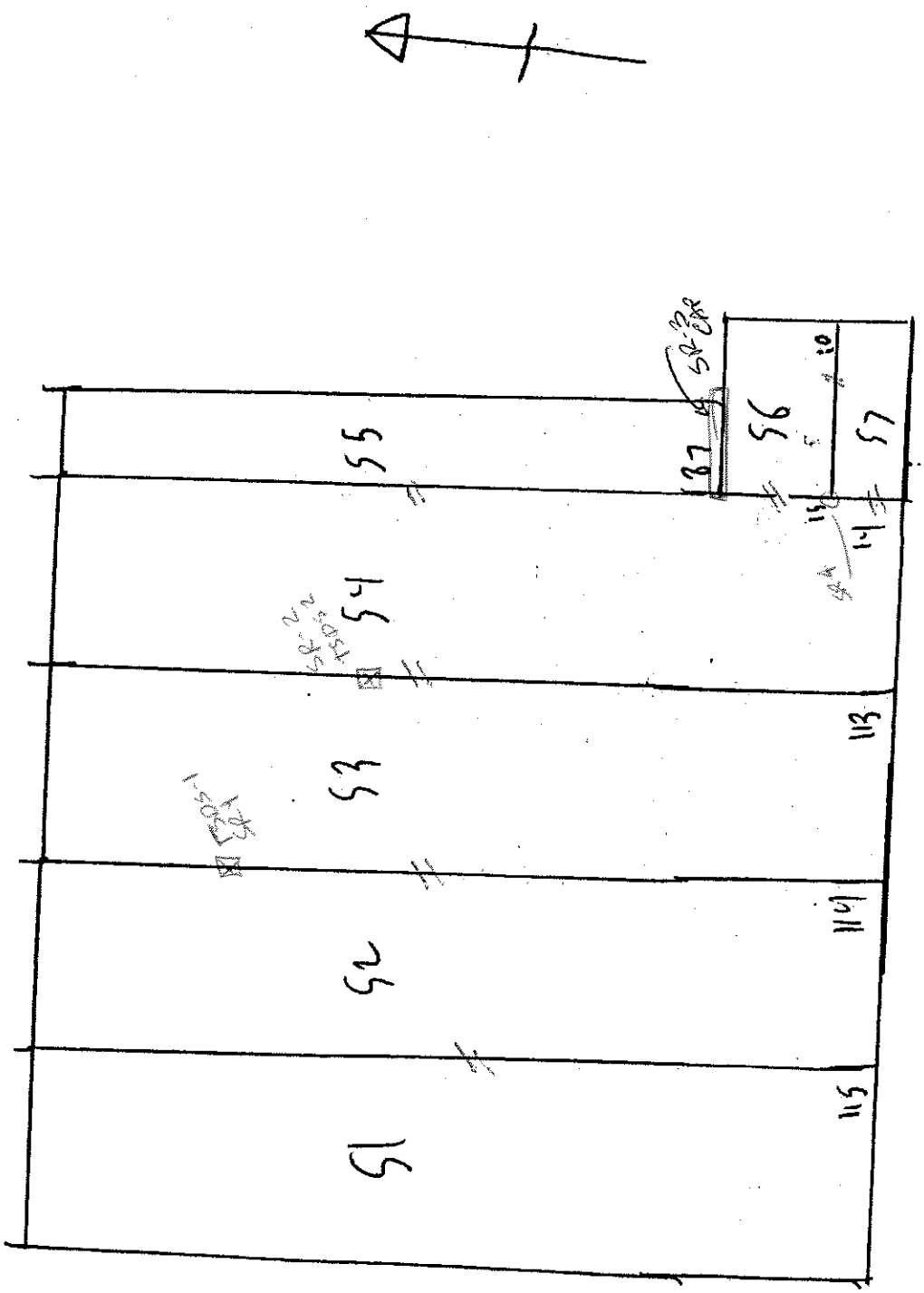
DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 70943

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TSDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	129	145	135	135	135	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	131	126	129	133	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	175	173	180	183	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: TSDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	137	135	132	123	129	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	126	117	119	121	**121**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	175	177	182	183	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101



Truck Wash Secondary

22-SCS-NAL-01

Pg 1 of 7

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 7
Date: 3/15/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Truck wash Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
S1	0102-203997	0900	115	23	2645	115	22.5	2587.5	Floor	XAIS	
S2	0102-203997	0905	115	23	2645	115	22.5	2587.5	Floor	XAIS	
S3	0102-203997	0930	114	23	2622	114	22.5	2565	Floor	XAIS	
S4	0102-203997	0935	116	23	2668	115	22.5	2587.5	Floor	XAIS	
S5	0102-203997	0939	87	5	435	87	4	348	Floor	XAIS	
S6	0102-203997	0945	15	10	150	15	10	150	Floor	XAIS	
S7	0102-203997	0950	14	10	140	14	10	140	Floor	XAIS	
				Total SF (Page)	11,205		Total SF (Page)	10,965.5			
				Total SF (Project)	11,205		Total SF (Project)	10,965.5			

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 2 of 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 02-155-NRL-01

CQA SOLUTIONS

Sheet 3 of 7
Date 7/13/22
Rev. Date: _____

SEAMING RECORD

Layer: Truck Wash Secondary

Welder Initials: CK
Welder Number: _____
Machine ID: WB2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S2	S3	CK	WB2	0912	0927	0	114	114	114	TSDS1	XAIS	
S3	S4	CK	WB2	0933	0940	87	0	87	201	–	XAIS	

Total LF (Page)	201	Total DS (Page)	1	Total DS Needed (Page)	0.4	Over/Under (Page)	+0.6
Total LF (Project)	201	Total DS (Project)	1	Total DS Needed (Project)	0.4	Over/Under (Project)	+0.6

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PG 3 of 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-021-01

CQA

Sheet 4 of 7
Date 3/15/22
Rev. Date: .

SEAMING RECORD

Layer: Trench Wash Secondary

Welder Initials: SL
Welder Number:

Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S1	S2	SL	W2	0906	0918	0	115	115	115	-	XAIS	
S3	S4	SL	W2	0923	0937	0	113	113	228	TSDS1	XAIS	
S7	S4	SL	W2	0953	0955	14	0	14	242	-	XAIS	
S6	S7	SL	W2	0945	0947	10	0	10	252	-	XAIS	
S6	S4	SL	W2	0955	0958	15	0	15	267	-	XAIS	
S5	S6	-	-	-	-	-	-	-	-	-	-	CAPPED BY SR-3

Total LF (Page)	267	Total DS (Page)	1	Total DS Needed (Page)	0.5	Over/Under (Page)	+0.5
Total LF (Project)	267	Total DS (Project)	1	Total DS Needed (Project)	0.5	Over/Under (Project)	+0.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 4 of 7

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Animas Landfill
Project Number: 03-325-VAL-01

Sheet: 5 of 7
Date: 7/11/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Arroyo Wash Fecondary

Test Type	Seam # Top	Seam # Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail API	Pass/Fail VE	QC Tech	Observer	To be capped?	Notes
API	S1	S2	0	EOS	Full	30	30	0926	0931	P	—	LL	XAIS	—	
API	S2	S3	0	EOS	Full	30	30	0933	0934	P	—	LL	XAIS	—	
API	S3	S4	0	EOS	Full	30	30	0940	0945	P	—	LL	XAIS	—	
API	S5	S4	0	EOS	Full	30	30	0945	0950	P	—	LL	XAIS	—	
API	S6	S4	0	EOS	Full	30	30	1002	1007	P	—	LL	XAIS	—	
API	S7	S4	0	EOS	Full	30	30	1030	1035	P	—	LL	XAIS	—	
API	S6	S7	0	EOS	Full	30	30	1032	1037	P	—	LL	XAIS	—	
—	S5	S6	0	EOS	—	—	—	—	—	—	—	—	—	YES	SR6

Specs: Pre-testing stabilization time: >MIP
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 2

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PG 5 OF 7

Page 279 of 813

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landf: 11
Project Number: 92-SCS-NRL-01

CQA SOLUTIONS

Sheet 6 of 7
Date: 3/25/22
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Truck Wash Secondary

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
TSDS1	S2/S3	37	3/25	3/25	SL	WL	3/25	P	P	Shipped 3/25
TSDS2	S7/S9	SL	3/25	3/25	CK	W82	3/25	P	P	Shipped 3/25

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 6 OF 7

Page 280 of 813

Client: SCS Engineering
Project: North Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 7 of 7
Date 3/25/22
Rev. Date:

GEOMEMBRANE REPAIR LOG

Layer: Truck Wash Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR1	S2	S3				TSDS1	37	-	P	2	6	16	3/25	[illegible]35	MM	644	MS	3/25	P	YA35
SR2	S3	S4				TSDS2	52	-	P	2	7	18	3/25	1027	MM	644	MS	3/25	P	YA35
SR3	S4	S5	S8			Int	-	-	P	2	4	12	3/25	632	MM	644	MS	3/25	P	YA35
SR4	S4	S6	S7			Int	-	-	P	2	2	8	3/25	618	MM	644	MS	3/25	P	YA35

Total (Page)	54
Total (Project)	54

Notes:

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 7 of 7

SCS ENGINEERS Environmental Consultants & Contractors

April 4, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #21 – East and West Drying Pads, and Truck Wash Primary Geomembrane Testing

Requested Date: April 4, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for primary layer at East and West Drying Pads and Truck Wash Pad.

SCS Response:

Certifying Engineer has reviewed the pertinent data and observed the completed installation in person of the 60-mil HDPE primary geomembrane layer at the East and West Drying Pads and the Truck Wash Pad. Two fusion weld destructive samples and two extrusion weld destructive samples were taken from each of the three pad's primary 60-mil HDPE geomembrane installations. These destructive samples were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

Therefore, the Certifying Engineer approves the installation of the primary 60-mil HDPE geomembrane layer for the East and West Drying Pads and Truck Wash Pad. Subsequent overlying layers may be installed at this time.

copy:

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AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-03-31

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71041**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71041

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: EPDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	135	130	141	130	135	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	127	129	126	129	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	181	176	181	182	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: EPDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	132	141	140	130	135	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	120	151	151	153	149	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	169	173	171	168	170	**170**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-03-31

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71043**
Material(s) Tested:	(2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71043

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: EODS-1 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	129	131	136	127	138	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	180	183	182	190	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: EODS-2 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	117	128	109	97	116	**113**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	172	171	183	180	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-03-31

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High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71044**
Material(s) Tested:	(2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
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FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

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Sincerely,

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Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71044

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: WODS-1 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	142	138	139	143	144	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	176	181	180	182	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: WODS-2 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	164	149	151	167	160	**158**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	179	177	182	180	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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e-mail:
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Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71045**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
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Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71045

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TPDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	138	139	130	131	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	153	147	138	150	139	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	173	178	176	173	181	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: TPDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	145	144	144	153	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	137	135	135	136	132	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	173	174	177	175	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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Date: 2022-03-31

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22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71046**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71046

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: WPDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	125	124	123	124	124	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	137	136	137	152	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	180	176	176	177	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: WPDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	129	131	123	118	138	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	136	132	132	131	134	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	171	173	176	160	168	**170**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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East Drying Pad Primary
West Drying Pad Primary
21-22-NM-1st

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 2
Date: 3/26/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: EDP Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Width	Gross Area (SF)	Installed Measurements Length	Installed Width	Installed Area (SF)	Location	Observer	Comments
P1	0102-202999	0850	109	23	2507	109	22.5	2452.5	Floor	XAIS	
P2	0102-202999	0855	109	23	2507	108	22.5	2430	Floor	XAIS	
P3	0102-202999	0900	81	23	1863	81	22.5	1822.5	Floor	XAIS	
P4	0102-204003	0910	28	23	644	27	22.5	607.5	Floor	XAIS	
P5	0102-204003	0915	108	23	2484	106	22.5	2385	Floor	XAIS	
P6	0102-204003	0921	105	23	2415	105	22.5	2362.5	Floor	XAIS	
P7	0102-204003	0925	105	23	2415	105	22.5	2362.5	Floor	XAIS	
P8	0102-204003	0932	104	23	2392	104	22.5	2340	Floor	XAIS	

	Gross		Installed
Total SF (Page)	17,227	Total SF (Page)	16,762.5
Total SF (Project)	17,227	Total SF (Project)	16,762.5

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PG 2 of 7

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: M-SCS-WRL-01

CQA SOLUTIONS

Sheet 3 of 7
Date 7/26/22
Rev. Date: —

SEAMING RECORD

Layer: EDP Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P2	P3	CK	W82	0908	0917	0 ✓	81 ✓	81 ✓	81 ✓	—	XAIS	
P2	P4	CK	W82	0918	0921	0 ✓	26 ✓	26 ✓	107 ✓	—	XAIS	
P3	P5	CK	W82	0923	0933	0 ✓	80 ✓	80 ✓	187 ✓	EPDS1	XAIS	CAP @ 70
P4	P5	CK	W82	0934	0937	0 ✓	28 ✓	28 ✓	215 ✓	—	XAIS	
P7	P6	CK	W82	0939	0951	105 ✓	0 ✓	105 ✓	320 ✓	—	XAIS	

Total LF (Page)	320 ✓	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	320 ✓	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

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PG 3 of 7

Released to Imaging: 8/24/2022 3:35:23 PM

Client: SCS Engineering
Project: North Ranch
Project: Number: 22-SCS-NRL-01

CQA

Sheet 4 of 7
Date: 3/16
Rev. Date

NON-DESTRUCTIVE TEST LOG

Layer: EDP Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P1	P2	0	EOS	Full	30	30	1000	1005	P	—	LL	XAIS	—	
APT	P2	P3	0	EOS	Full	30	30	1002	1007	P	—	LL	YAIS	—	
APT	P2	P4	0	EOS	Full	30	30	1005	1010	P	—	LL	XAIS	—	
APT	P3	P5	0	EOS	Full	30	30	1007	1012	P	—	LL	XAIS	—	
APT	P3	P5	30	EOS	30	30	30	1009	1013	P	—	LL	XAIS	—	
APT	P4	P5	0	EOS	Full	30	30	1015	1020	P	—	LL	XAIS	—	
APT	P5	P6	0	35	Full	30	30	1017	1022	P	—	LL	XAIS	—	
APT	P5	P6	35	EOS	35	30	30	1027	1032	P	—	LL	XAIS	—	
APT	P6	P7	0	EOS	Full	30	30	1029	1034	P	—	LL	XAIS	—	
APT	P7	P8	0	EOS	Full	30	30	1035	1040	P	—	LL	XAIS	—	
APT	P3	P4	0	EOS	Full	30	30	1005	1010	P	—	LL	XAIS	—	

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 25
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 2

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 02SCS-00202-01

CQA SOLUTIONS

Sheet 5 of 7
Date 3/26/22
Rev. Date: ____

SEAMING RECORD

Layer: EDP Primary

Welder Initials: SL
Welder Number: ____

Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P1	P2	SL	W2	0901	0914	0	109	109	109	—	XAIS	
P4	P3	SL	W2	0917	0920	0	22	22	131	—	XAIS	
P6	P5	SL	W2	0926	0934	104	0	104	235	—	XAIS	
P8	P7	SL	W2	0943	0955	104	0	104	339	EPDS2	XAIS	

Total LF (Page)	339	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	339	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

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Client: SCS Engineering
Project: North Parish Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 6 of 7
Date: JAN 25
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: PRIMARY

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
TPDS1	P1/P7	16	3/29	3/29	SL	W2	3/29	P	P	
TPDS2	P3/P4	61	3/29	3/29	CK	W02	3/29	P	P	
WPDS1	P8/P7	66	3/26	3/26	SL	W2	3/26	P	P	
WPDS2	P1/P2	32	3/26	3/26	CK	W02	3/26	P	P	
EPDS1	P3/P5	56	3/26	3/26	CK	W02	3/26	P	P	
EPDS2	P7/P8	26	3/26	3/26	SL	W2	3/26	P	P	

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PG 6 OF 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Cell 11
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet ____ of ____
Date 3/26
Rev. Date: ____

GEOMEMBRANE REPAIR LOG

Layer: EDP Primary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
PR1	P3	P5	–	–	–	EPDS 1	56	–	P	.3	5	16	3/26	1100	SL	G-744	JA	3/26	P	XAES
PR2	P7	P8	–	–	–	EPDS2	26	–	P	2	6	16	3/26	1134	SL	G-744	JA	3/26	P	XAES
PR3	P2	P3	P4	–	–	Int	–	–	P	2	2	8	3/26	1051	SL	G44	JA	3/26	P	XAES
PR4	P3	P4	P5	–	–	Int	–	–	P	2	2	8	3/26	1049	SL	G-744	JA	3/26	P	XAES
PR5	P3	P5	–	–	–	CAP	30	–	P	2	6	16	3/26	1109	SL	G-744	JA	3/26	P	XAES
PR6	P5	P6	–	–	–	CAP	36	–	P	2	7	18	3/26	1120	SL	G-744	JA	3/26	P	XAES

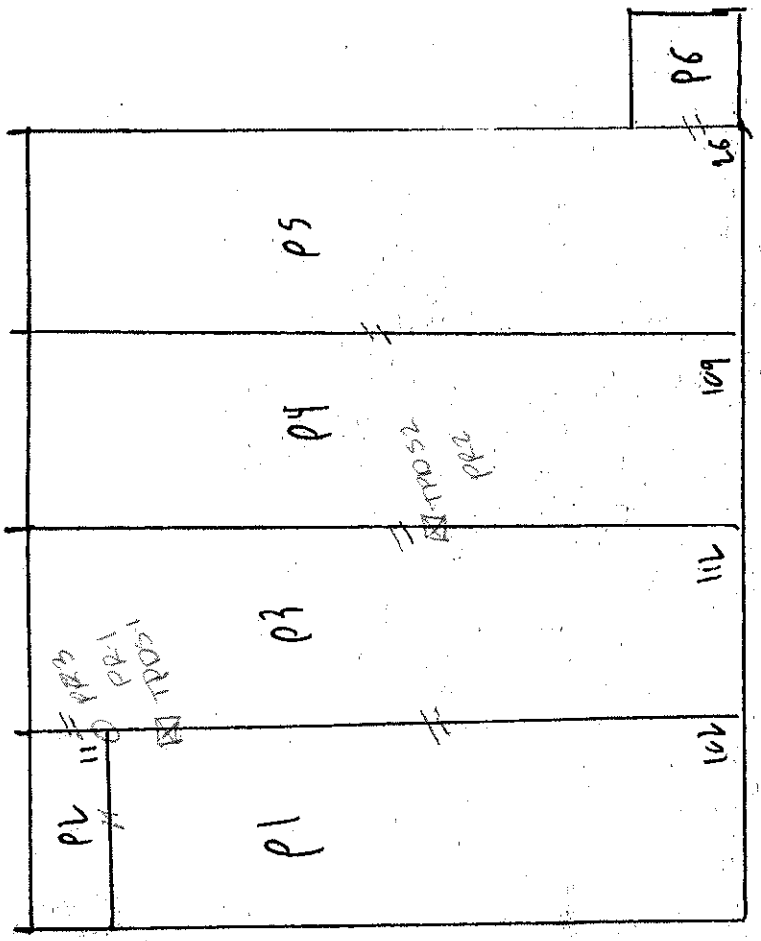
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Total (Project)	72

Notes: ____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 7 of 7

Pg 1 of 1



Truck Wash Primary
32.515-NAD-01

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 7
Date: 3/29/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Truck Wash Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Width	Area (SF)	Installed Measurements Length	Width	Area (SF)	Location	Observer	Comments
P1	0102-20 4003	0745	102	23	2346	102	22.5	2295	Floor	YAIS	
P2	0102-20 4020	07	11	23	253	11	22.5	247.5	Floor	YAIS	
P3	0102-204020	075	113	23	2599	113	22.5	2542.5	Floor	YAIS	
P4	0102-204020	0755	112	23	2576	111	22.5	2497.5	Floor	YAIS	
P5	0102-204020	0802	109	23	2507	109	22.5	2452.5	Floor	YAIS	
P6	0102-203997	0807	26	10	260	26	10	260	Floor	YAIS	

Total SF (Page)	10,541	Total SF (Page)	10,295
Total SF (Project)	10,541	Total SF (Project)	10,295

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 2 OF 7

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 7
Date 3/31/22
Rev. Date: —

SEAMING RECORD

Layer: Truck Wash Primary

Welder Initials: SL
Welder Number: —
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft.	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P2	P3	SL	WL	0746	0753	0'	11'	11	11'	—	XAIS	
P1	P3	SL	WL	0753	0759	0'	102'	102	113'	TP051	XAIS	
P4	P5	SL	WL	0805	0813	0	109'	109	222'	—	XAIS	

Total LF (Page)	222	Total DS (Page)	1	Total DS Needed (Page)	0.4	Over/Under (Page)	+0.6
Total LF (Project)	222	Total DS (Project)	1	Total DS Needed (Project)	0.4	Over/Under (Project)	+0.6

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Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-VAL-01

CQA SOLUTIONS

Sheet 4 of 7
Date 7/19/22
Rev. Date:

SEAMING RECORD

Layer: Truck Lach Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P2	P1	CK	W82	0744	0752	0	22	22	22		KAIS	
P3	P4	CK	W82	0800	0817	0	112	112	134	TPDS2	KAIS	
P5	P6	CK	W82	0819	0821	0	26	26	160		KAIS	

Total LF (Page)	160	Total DS (Page)	1	Total DS Needed (Page)	0.3	Over/Under (Page)	+0.7
Total LF (Project)	160	Total DS (Project)	1	Total DS Needed (Project)	0.3	Over/Under (Project)	+0.7

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SES Engineering
Project: South Basin Tank #1
Project Number: 22SES-PRL-01

Sheet 5 of 7
Date: 7/28/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG
Layer: Trench Wash Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P2	P1	0	EOS	Full	30	30	807	812	P	-	LL	XAIS	-	
APT	P2	P3	0	EOS	Full	30	30	805	810	P	-	LL	XAIS	-	
APT	P1	P3	0	EOS	Full	30	30	809	814	P	-	LL	XAIS	-	
APT	P3	P4	0	EOS	Full	30	30	820	825	P	-	LL	XAIS	-	
APT	P4	P5	0	EOS	Full	30	30	822	827	P	-	LL	XAIS	-	
APT	P5	P6	0	EOS	Full	30	30	824	829	P	-	LL	XAIS	-	

Specs: Pre-testing stabilization time: 5 Maximum Starting Pressure: 35 Maximum Allowable Loss:
Minimum Starting Pressure: 30 Test Duration: 5

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PG 5 OF 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 6 of 7
Date: 3/29/22
Rev. Date: -

DESTRUCTIVE SAMPLE LOG

Layer: _____

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
TPDS1	P1/P3	16	3/29	3/29	SL	W2	3/29	P	P	
TPDS2	P3/P4	61	3/29	3/29	CK	W02	3/29	P	P	
WPDS1	P8/P7	66	3/26	3/26	SL	W2	3/26	P	P	
WPDS2	P1/P2	32	3/26	3/26	CK	W02	3/26	P	P	
EPDS1	P3/P5	56	3/26	3/26	CK	W02	3/26	P	P	
EPDS2	P7/P8	26	3/26	3/26	SL	W2	3/26	P	P	

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PG 6 OF 7

Page 305 of 813

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 7 of 7
Date 3/29/22
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Truck Wash Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR1	P1	P3				TPDS1	14	–	P	2	5	14	3/29	904	SL	744	JA	3/29	P	YAIS
PR2	P3	P4				TPDS2	61	–	P	2	6	16	3/29	859	SL	744	JA	3/29	P	YAIS
PR3	P1	P2	P3			Ent	–	–	P	2	2	8	3/29	852	SL	744	JA	3/29	P	YAIS

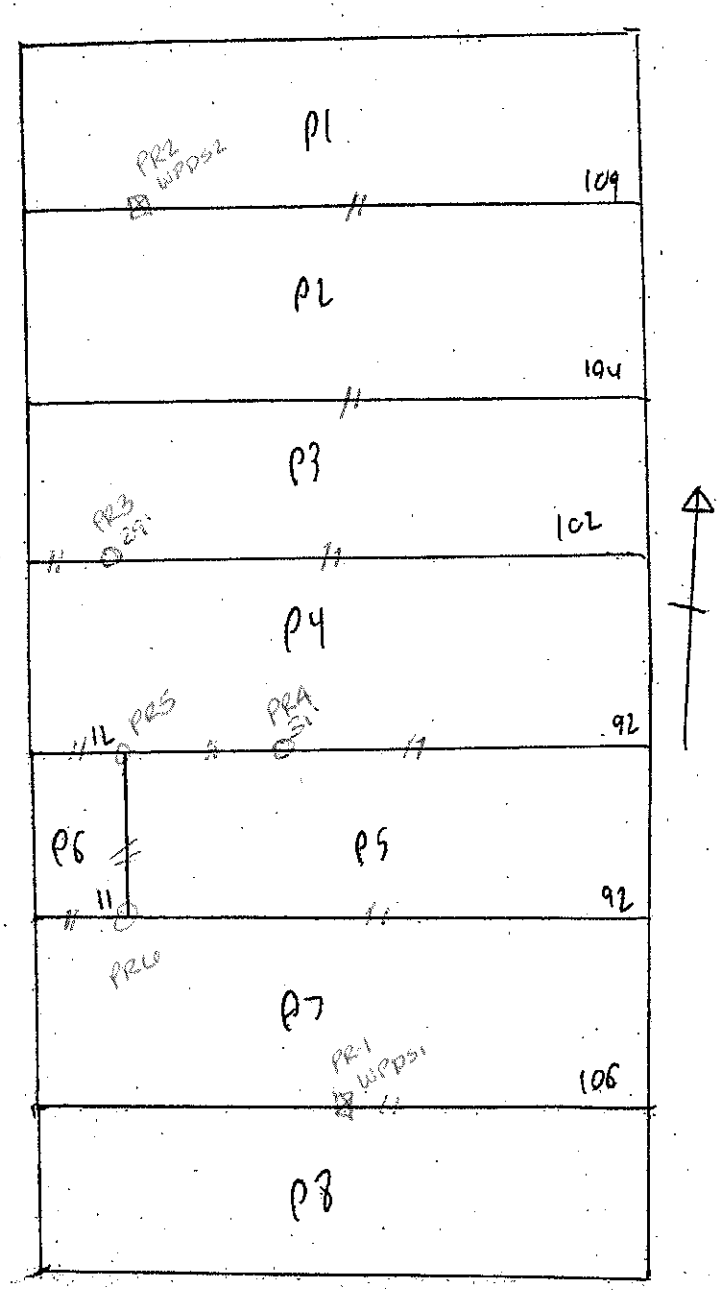
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Total (Project)	38

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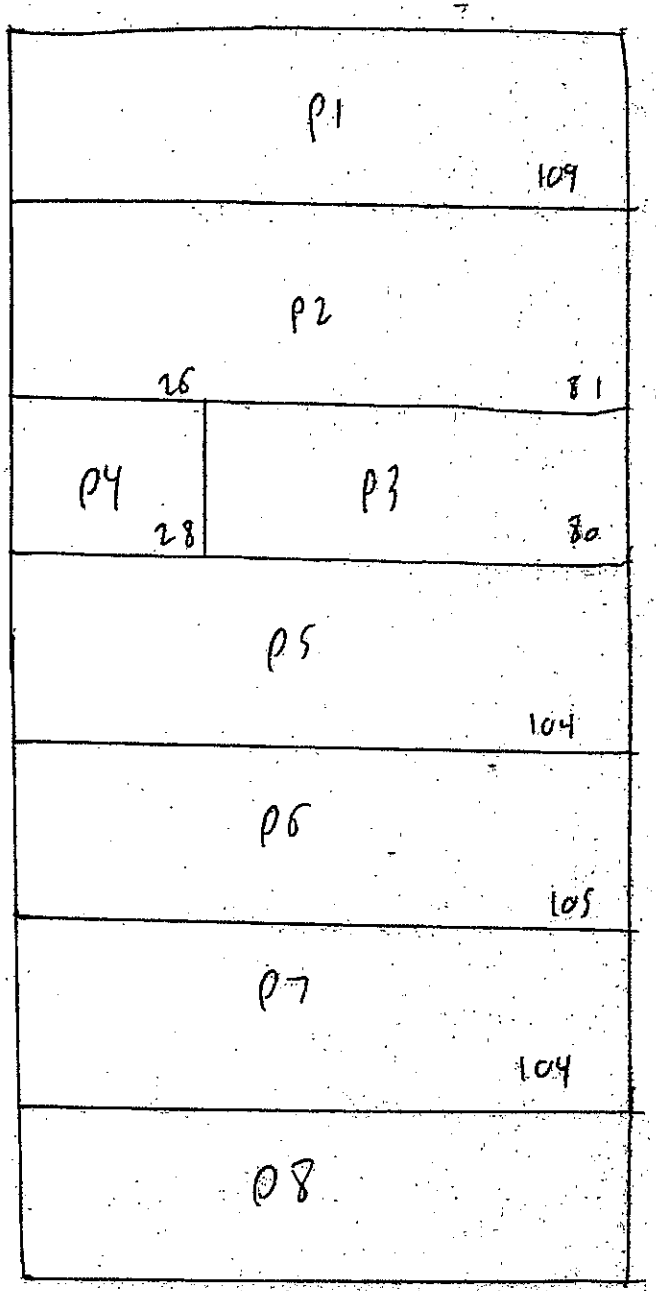
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PG 7 of 7

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Received by OCD: 8/24/2022 3:28:34 PM



West Drying Pad Primary



East Drying Pad Primary

22-505-NAL-01

Page 307 of 813

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-C1

CQA SOLUTIONS

Sheet 2 of 7
Date: 3/26/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: WDP Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
P1	0102-203995	0750	109	23	2507	109	22.5	2452.5	Floor	XAIS	
P2	0102-203995	0755	109	23	2507	107	22.5	2407.5	Floor	XAIS	
P3	0102-203995	0803	104	23	2392	103	22.5	2317.5	Floor	XAIS	
P4	0102-203995	0809	104	23	2392	103	22.5	2317.5	Floor	XAIS	
P5	0102-203995	08[illegible]	92	23	2116	92	22.5	2070	Floor	XAIS	
P6	0102-203999	0830	12	23	276	12	22.5	270	Floor	XAIS	
P7	0102-203999	0837	106	23	2438	105	22.5	2362.5	Floor	XAIS	
P8	0102-203999	0842	106	23	2438	106	22.5	2385	Floor	XAIS	
				Total SF (Page)	17,066		Total SF (Page)	16,402.5			
				Total SF (Project)	17,066		Total SF (Project)	16,402.5			

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PG 2 OF 7

Received by OCD: 8/24/2022 3:28:34 PM

Released to Imaging: 8/24/2022 3:35:23 PM

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 32-SCS-22L-01

CQA SOLUTIONS

Sheet 3 of 7
Date 3/16/22
Rev. Date: _____

SEAMING RECORD

Layer: VDP Primary

Welder Initials: CK
Welder Number: _____
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P1	P2	CR	W82	0818	0831	0	104	104	104	VPDS2	XAES	
P2	P3	CK	W82	0804	0816	0	104	104	213	—	XAES	
P3	P5	CK	W82	0834	0836	4	0	11	224	—	XAES	
P7	P5	CK	W82	0836	0842	92	0	92	316	—	XAES	

Total LF (Page)	316	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	316	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	10.4

Submit to COAS Project Manager by 7AM EST following the date of any updated information

Pg 3 of 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-NR-04

CQA SOLUTIONS

Sheet 4 of 7
Date 3/16/22
Rev. Date:

SEAMING RECORD

Layer: WDP Primary

Welder Initials: SL
Welder Number:
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P3	P4	SL	WZ	0810	0820	0	102	102	102	-	KAES	CAP @ 29
P6	P4	SL	WZ	0825	0827	12	0	12	114	-	KAES	
P5	P4	SL	WZ	0827	0834	92	0	92	206	-	KAES	CAP @ 31
P6	P5	SL	WZ	0821	0824	0	22	22	228	-	KAES	
P8	P7	SL	WZ	0839	0847	106	0	106	334	VPDSI	KAES	

Total LF (Page)	334	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	334	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 4 of 7

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SES Environmental
Project: WDP Liner
Project Number: 20-SES-[illegible]

CQA

Sheet 5 of 7
Date: 7/21/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: WDP Primary

Test Type	Seams: Top	Seams: Bottom	Stations: Begin	Stations: End	Tested Length	Pressure: Begin	Pressure: End	Time: Begin	Time: End	Pass/Fail: APT	Pass/Fail: VT	QC Tech	Observer	To be repaired?	Notes
APT	51	52	0	EOS	Full	30	30	839	843	P	–	LL	XAES	–	
APT	52	53	0	EOS	Full	30	30	840	845	P	–	LL	XAES	–	
APT	53	54	0	29	29	30	30	842	847	P	–	LL	XAES	–	
APT	54	55	0	31	31	30	30	851	857	P	–	LL	XAES	–	
APT	54	56	0	EOS	Full	30	30	840	845	P	–	LL	XAES	–	
APT	55	56	0	EOS	Full	30	30	842	847	P	–	LL	XAES	–	
APT	55	57	0	EOS	Full	30	30	849	854	P	–	LL	XAES	–	
APT	56	57	0	EOS	Full	30	30	845	850	P	–	LL	XAES	–	
APT	57	58	0	EOS	Full	30	30	850	855	P	–	LL	XAES	–	
APT	53	54	29	EOS	Full	30	30	844	849	P	–	LL	XAES	–	
APT	54	55	31	EOS	Full	30	30	850	855	P	–	LL	XAES	–	

Equipment: Pre-testing Calibration Done: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQA's Project Manager by 7 AM EST following the date of any additional information.

PC 5 of 7

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Parish Landfill
Project Number: 22-SCS-NPL-01

CQA SOLUTIONS

Sheet 6 of 7
Date: VARIES
Rev. Date: —

DESTRUCTIVE SAMPLE LOG

Layer: PRIMARY

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
TPDS1	P1/P7	16	7/29	7/29	SL	W2	7/29	P	P	
TPDS2	P7/P4	61	7/29	7/29	CK	W02	7/29	P	P	
WPDS1	P8/P7	66	7/26	7/26	SL	W2	7/26	P	P	
WPDS2	P1/P2	32	7/26	7/26	CK	W02	7/26	P	P	
EPDS1	P3/P5	56	7/26	7/26	CK	W02	7/26	P	P	
EPDS2	P7/P8	26	7/26	7/26	SL	W2	7/26	P	P	

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 6 OF

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineering
Project: North Ranch Landfill
Project Number: 22-SCS-6RL.01

CQA SOLUTIONS

Sheet 7 of 7
Date 3/26/22
Rev. Date:

GEOMEMBRANE REPAIR LOG

Layer: LDP Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR1	P8	P7				WPDS1	66	-	P	2	6	16	3/26	1046	MM	G44	JA	3/26	P	XAES
PR2	P1	P2				WPDS2	72	-	P	2	6	16	3/26	1032	MM	G44	JA	3/26	P	XAES
PR3	P3	P4				CAP	29	-	P	2	12	28	3/26	1035	MM	G44	JA	3/26	P	XAES
PR4	P4	P5				CAP	31	-	P	2	12	28	3/26	1040	MM	G44	JA	3/26	P	XAES
PR5	P4	P5	P6			Int	-	-	P	2	2	8	3/26	1040	MM	G44	JA	3/26	P	XAES
PR6	P5	P6	P7			Int	-	-	P	2	2	8	3/26	1042	MM	G44	JA	3/26	P	XAES

Total (Page)	104
Total (Project)	104

Notes:

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 7 OF 7

April 6, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction
Response to Construction Material Submittal #22 R1 – Collection System Gravel

Submitted Date: 4/6/22

Information Submitted:

Mustang requests to be allowed to leave the Submittal #22 rejected collection system rock within the drying pad leak detection sump.

SCS Response:

Considering the location of the already placed rock. This rock has been installed within the leak detection layer and within the sump only at the east and west drying pads. The leak detection layer will rest under a 12-inch thick concrete pad, 2-ft of bedding, and a 60-mil HDPE primary membrane.

In otherwords, this rock is not a component of a primary drainage feature and will not likely every see significant or appreciable volumes of fluid. It is simply a rock bedding/gravel pack for the leak detection zone's witness pipe.

Therefore, Engineer approves the request that this rejected rock material be allowed to remain as installed in the leak detection sump of the east and west drying pads.

In general, this is the only exception approved to the overall prohibition of this material for use on this project as a drainage component in any form.

April 19, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction Response to Construction Material Submittal #22a – Collection System Gravel - Second Sample

Submitted Date: 4/5/22

Information Submitted:

Collection System Gravel Sample #2.

SCS Response:

Engineer has received an alternative rock sample for use as Collection System Gravel (Sample #2). Rock was sampled from source on 4/8/22 and delivered to the lab for the following testing on 4/15/22, test results in **BOLD CAPS**:

1. Permeability (ASTM D2334) – **PASSED with 1.4 cm/s average permeability**
2. Gradation (ASTM D422) – **PASSED with 100% retained at ¾" sieve.**
3. Calcium Carbonate (ASTM 4373) – **FAILED with 25% average $CaCO_3$ Content (>15%)**

Engineer has discussed the $CaCO_3$ content failure with the owner. Engineer is overriding the $CaCO_3$ test failure, and approving gravel Sample #2 for use in the Cell E-1 collection system. This waiver is due to multiple factors such as:

- This sample is only 10% over the specified $CaCO_3$ maximum. Sample #1 was 50% too high. Engineer deems this exceedance acceptable.
- Due to the location's arid climate and nature of the waste, $CaCO_3$ precipitation is not a high concern in long term operations as the collection system will not be exposed to much moisture.
- $CaCO_3$ content does not affect the structural stability or operations of the landfill. Owner has been informed of the long term potential of scaling in the leachate collection and removal systems. This scaling potential when known about in advance can be added to

routine site maintenance protocol for treatment and cleaning using readily available industry products intended for this common issue.

- The onsite routine operational soils and bottom protective cover material will likely contain levels of $CaCO_3$ over the specified 15% maximum, thus will likely contribute to the issue at a greater rate even in spite of the collection system gravel's compliance with the specification.
- Due to the regional geology there is scarce availability of rock with low $CaCO_3$ content within an economical hauling distance. The closest potential quarry identified was 250 miles away and could not commit to delivery over that distance.

Beyond Engineering & Testing, LLC
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

Rigid Wall Constant Head Permeability

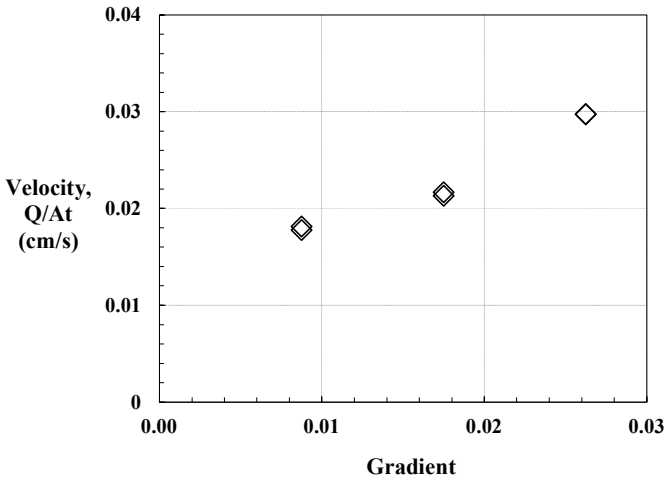
Client: CQA Solutions
Beyond Project No: WT2202047

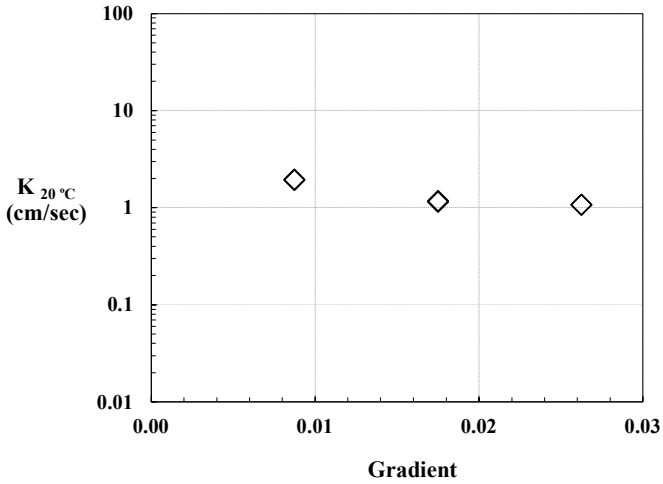
Project: North Ranch
Test Method: ASTM D2434

Sample: PB Material (date sampled 4/8 at Odessa, Texas)
Test Date: 04/15/22

Manometer Reading (cm) 1	Manometer Reading (cm) 2	Gradient	Flow Volume, Q (ml)	Flow Time, t (s)	Temperature (°C)	Flow Rate (cm^3/s)	Velocity, Q/At (cm/s)	System Permeability (cm/s)	System Permeability @ 20 °C, $K_{20°C}$ (cm/s)	Average System Permeability @ 20 °C (cm/s)
Gradient No. 1										
44.8	44.5	0.026	183.1	60	22.4	3.05	0.0297	1.13	1.07	**1.1**
46.1	45.8	0.026	183.0	60	22.4	3.05	0.0297	1.13	1.07	
Gradient No. 2										
43.2	43.0	0.017	133.5	60	22.4	2.23	0.0217	1.24	1.17	**1.2**
42.6	42.4	0.017	131.2	60	22.4	2.19	0.0213	1.22	1.15	
Gradient No. 3										
42.1	42.0	0.009	109.3	60	22.4	1.82	0.0178	2.03	1.92	**1.9**
42.1	42.0	0.009	111.7	60	22.4	1.86	0.0181	2.07	1.96	

Average Permeability @ 20 °C (cm/s): 1.4





Note 1: Soil specimen was tamped in place with a total density about 109.5 pcf.

Note 2: Tap water was used.

HuaMiao Cao, P.E. 4/18/22
Quality Review/Date

Tested by: T.W.

The results shown on this report are for the exclusive use of the client for whom they were obtained and apply only to the sample tested and / or inspected. They are not intended to be indicative of qualities of apparently identical products. The use of our name must recieve prior written approval. Reports must be reproduced in their entirety. Unauthorized use or copying of this document is strictly prohibited by anyone other than the client for the specific project.

BEYOND Engineering & Testing

www.BeyondET.com
Central Texas
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

TO: CQA Solutions

PROJECT: North Ranch

PROJECT NO.: WT2202047
DATE: April 18, 2022

Test By: TeAn Wang
Test Date: April 15, 2022

REPORT NO.: 202047.0408.6694
REVISION: --

MATERIAL QUALIFICATIONS - Soils

Test Procedure:	ASTM D422 & D4318
Sample ID:	PB Material (date sampled 4/8)
Sample Location	Odessa, Texas
Material Description	Gravels
Sample By:	Beyond
Sample Date:	3/25/2022
Sample Received:	3/29/2022

Sieve Size	Cumulative Percent Retained	Specifications
3"	0	--
2"	0	-
1 1/2"	4	-
1"	91	-
3/4 "	100	90 minimum
3/8 "	100	-
No. 4	100	-

Atterberg Limits

Parameter	Results	Specifications
LL	--	N/A
LL	--	N/A
PI	NP	N/A

Remarks: USCS classification is GP based on ASTM D2487

Beyond Engineering and Testing, LLC

HuaMiao Cao
Quality Review

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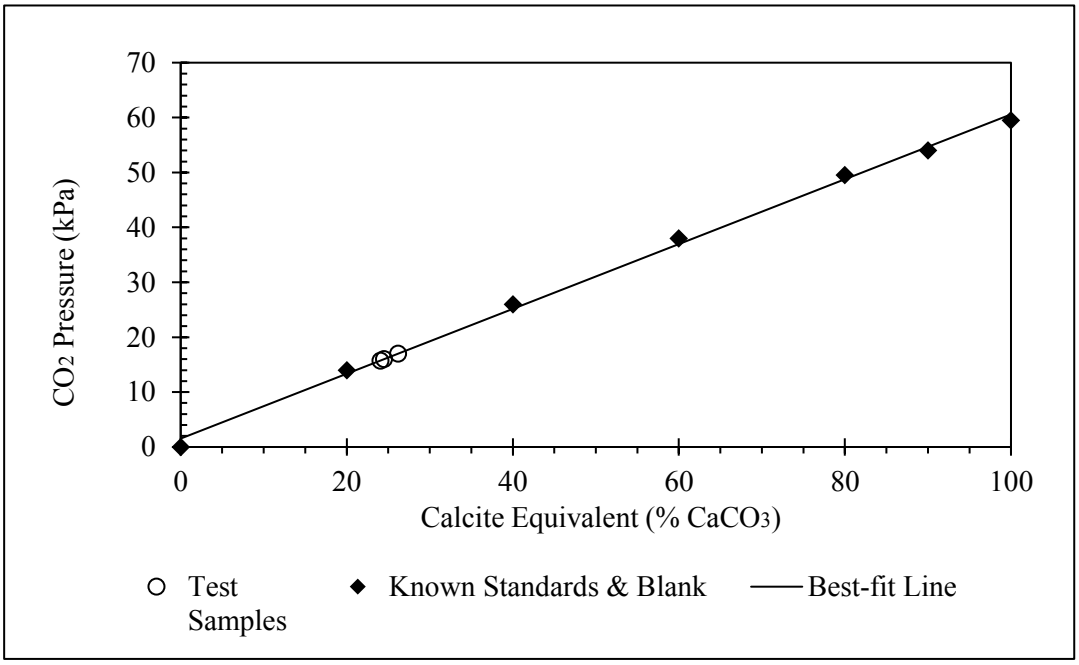
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Beyond Engineering & Testing, LLC
3801 Doris Lane, Suite B
Round Rock, TX 78664
(512) 358-6048

Carbonate Content of Soils

Client: CQA Solutions
Project: North Ranch
Sample: PB Material (date sampled 4/8)

Beyond Project No.: WT2202047
Test Method: ASTM D4373
Test Date: 4/13/2022



Average Carbonate Content, %: 25

Te-An Wang, EIT, 04/13/22
Analysis & Quality Review/Date
Specimen prepared by: T.W.

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SCS ENGINEERS Environmental Consultants & Contractors

April 15, 2022
File No. 01222034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction
Response to Construction Material Submittal #23 – Cell E-1 Subgrade Certification

Submitted Date: 4/14/22

Information Submitted:

Certification data for Cell E-1 subgrade construction and request approval to deploy liner in Cell E-1.

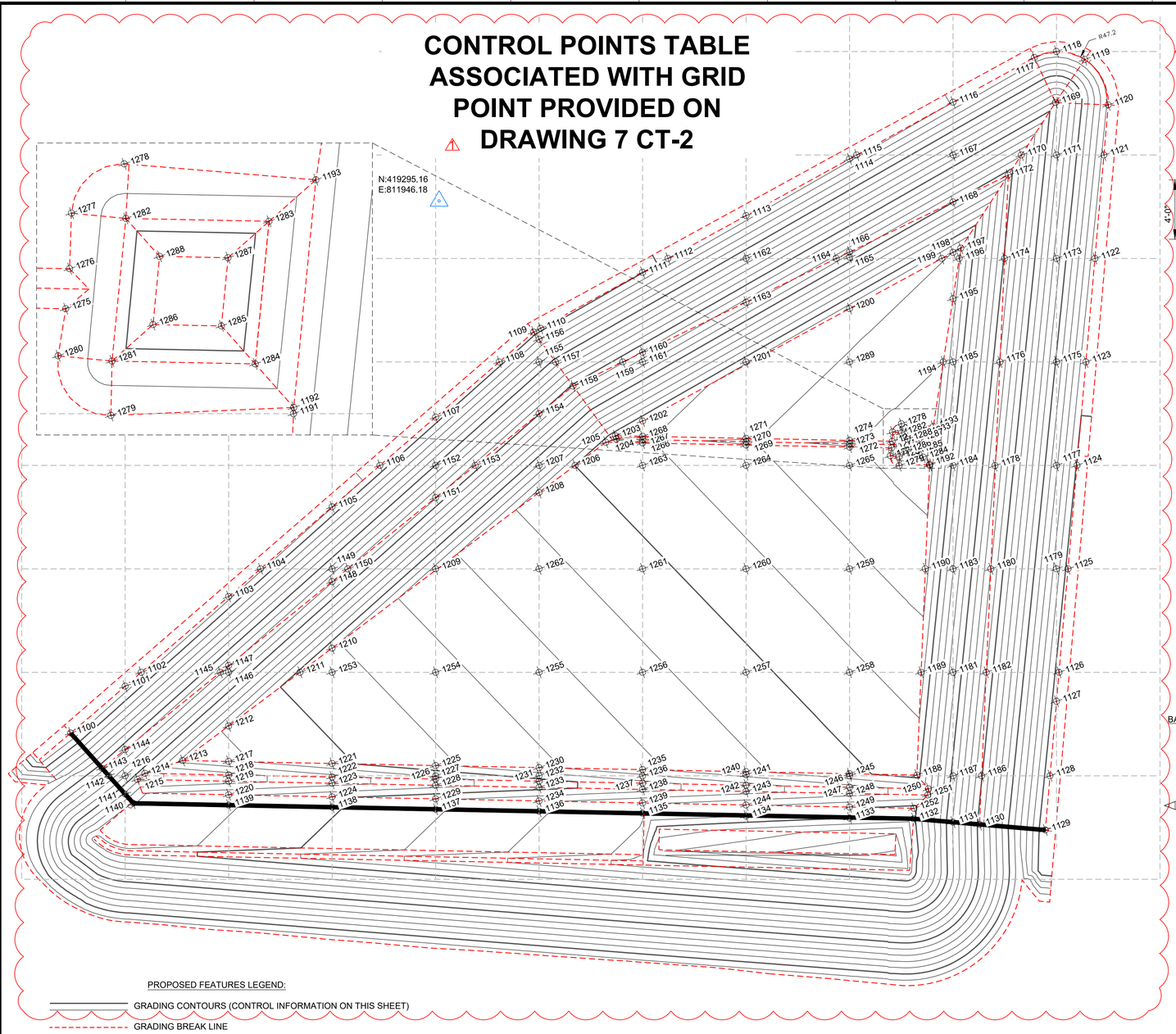
SCS Response:

Certifying Engineer has reviewed the grading as-built survey as well as the CQA monitor's field soil density testing logs for the above native grade structural containment berm. Based on the required data provided the Cell E-1 Subgrade construction has met specifications and are ready to receive liner. Engineer approves the CQA monitor to perform the liner subgrade surface inspection and certification form for Cell E-1 subgrade. Once the CQA Monitor has approved the subgrade surface, liner may be deployed.

Attached is the associate design grade tolerance verification table associated with the certification points provided on Drawing 7CT1 and 7CT2 and the field soil density log for the structural fill compaction effort for containment berm construction.

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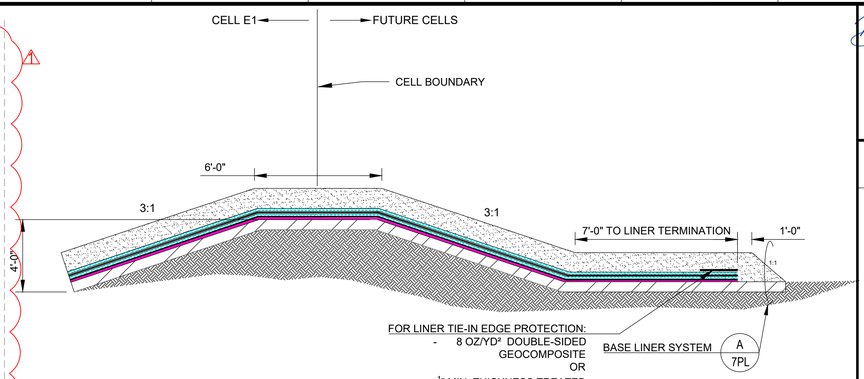
CONTROL POINTS TABLE ASSOCIATED WITH GRID POINT PROVIDED ON DRAWING 7 CT-2



PROPOSED FEATURES LEGEND:

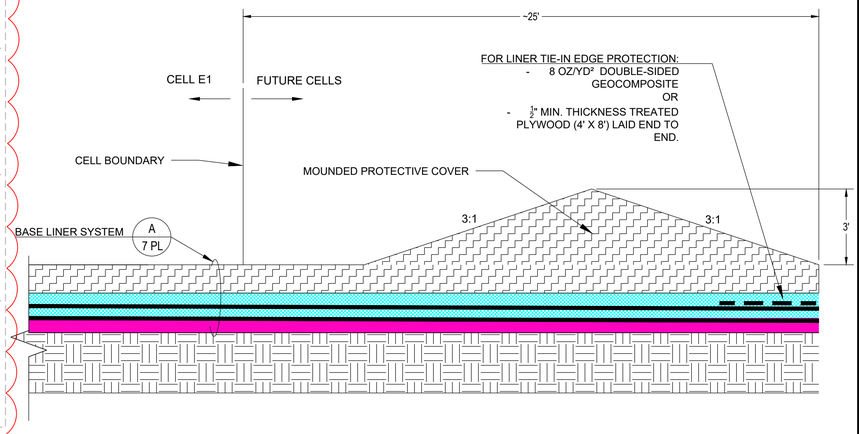
- GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- GRADING BREAK LINE
- LINER CERTIFICATION GRID LINES

30 0 15 30



FLOOR CELL DIVIDER BERM AND LINER TERMINATION

DETAIL H
N.T.S. 7CT-1



SIDE SLOPE CELL DIVIDER BERM AND LINER TERMINATION

DETAIL I
N.T.S. 7CT-1

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER
3/15/22

NO.	REVISION	DATE
	REVISED CERTIFICATION GRID	3/15/22

SHEET TITLE: DISPOSAL CELL E-1 CERTIFICATION GRID AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
2970 MAIN STREET, SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

PROJ. NO: 01222034.00
DSN. BY: MPB
DWN. BY: MPB
CHK. BY:
APP. BY: MPB
FILED: P:\ENGINEERS

DATE: 02-16-2022
SCALE: AS SHOWN
SHEET: 7CT-1

Received by OCD: 8/24/2022 3:26:34 PM
Released to Imaging: 8/24/2022 3:35:23 PM
C:\Users\3268mpb\OneDrive - SCS Engineers\Desktop\WORK\North Ranch\McClay\CEL F-1\PLANS\007-CEL 01 GRADING PLAN.dwg Mar 15, 2022 - 4:3pm By: 3268mpb

Page 322 of 813

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1100	418924.94	811442.14	3353.86	3353.86	CERT POINT
1101	418950.56	811506.63	3353.51	3353.51	CERT POINT
1102	418958.23	811525.69	3353.41	3353.41	CERT POINT
1103	418999.98	811629.41	3352.85	3352.85	CERT POINT
1104	419015.24	811667.30	3352.65	3352.65	CERT POINT
1105	419049.40	811752.18	3352.19	3352.19	CERT POINT
1106	419072.24	811808.91	3351.89	3351.89	CERT POINT
1107	419098.83	811874.96	3351.53	3351.53	CERT POINT
1108	419129.24	811950.52	3351.13	3351.13	CERT POINT
1109	419145.70	811991.41	3350.88	3350.88	CERT POINT
1110	419146.99	811998.91	3350.82	3350.82	CERT POINT
1111	419165.98	812109.61	3350.10	3350.10	CERT POINT
1112	419170.72	812137.22	3349.93	3349.93	CERT POINT
1113	419185.26	812222.01	3349.39	3349.39	CERT POINT
1114	419204.55	812334.42	3348.69	3348.69	CERT POINT
1115	419205.89	812342.23	3348.64	3348.64	CERT POINT
1116	419223.83	812446.82	3347.98	3347.98	CERT POINT
1117	419238.99	812535.14	3347.42	3347.42	CERT POINT
1118	419237.61	812557.25	3347.65	3347.65	CERT POINT
1119	419221.46	812580.62	3347.95	3347.95	CERT POINT
1120	419172.51	812587.78	3348.49	3348.49	CERT POINT
1121	419128.13	812568.06	3348.74	3348.74	CERT POINT
1122	419036.40	812527.30	3349.24	3349.24	CERT POINT
1123	418944.67	812486.54	3349.74	3349.74	CERT POINT
1124	418852.94	812445.79	3350.24	3350.24	CERT POINT
1125	418761.22	812405.03	3350.74	3350.74	CERT POINT
1126	418669.49	812364.27	3351.25	3351.25	CERT POINT
1127	418643.81	812352.86	3351.39	3351.39	CERT POINT
1128	418577.76	812323.51	3351.75	3351.75	CERT POINT
1129	418529.64	812302.13	3352.01	3351.96	CERT POINT
1130	418555.51	812243.74	3330.72	3331.06	CERT POINT
1131	418565.91	812220.28	3322.17	3322.48	CERT POINT
1132	418581.38	812185.35	3309.44	3309.70	CERT POINT
1133	418602.21	812127.02	3310.00	3310.00	CERT POINT
1134	418636.61	812033.10	3312.00	3312.00	CERT POINT
1135	418671.65	811939.40	3314.21	3314.56	CERT POINT
1136	418706.08	811845.49	3316.21	3316.56	CERT POINT
1137	418740.51	811751.59	3318.21	3318.56	CERT POINT
1138	418774.94	811657.68	3320.21	3320.56	CERT POINT
1139	418809.37	811563.77	3322.21	3322.56	CERT POINT
1140	418841.12	811477.20	3324.06	3324.06	CERT POINT
1141	418851.94	811472.67	3327.59	3327.59	CERT POINT
1142	418873.89	811463.49	3335.52	3335.52	CERT POINT
1143	418882.88	811459.73	3338.77	3338.77	CERT POINT
1144	418892.74	811486.72	3338.31	3340.42	CERT POINT
1145	418933.36	811597.94	3336.44	3338.55	CERT POINT
1146	418930.73	811605.56	3334.65	3336.76	CERT POINT
1147	418936.92	811607.69	3336.28	3338.39	CERT POINT
1148	418981.10	811728.67	3334.24	3336.35	CERT POINT
1149	418992.73	811732.67	3337.29	3339.40	CERT POINT
1150	418987.80	811746.99	3333.93	3336.04	CERT POINT
1151	419025.28	811849.64	3332.20	3334.31	CERT POINT
1152	419054.72	811859.78	3339.94	3342.05	CERT POINT
1153	419042.23	811896.05	3331.42	3333.53	CERT POINT
1154	419069.47	811970.62	3330.16	3332.27	CERT POINT
1155	419116.72	811986.89	3342.58	3344.69	CERT POINT
1156	419137.34	811993.99	3347.98	3350.09	CERT POINT
1157	419111.54	812001.92	3339.03	3341.14	CERT POINT
1158	419083.99	812010.39	3329.47	3331.59	CERT POINT
1159	419090.37	812063.41	3328.23	3330.34	CERT POINT
1160	419092.90	812084.45	3327.74	3329.85	CERT POINT
1161	419084.16	812081.44	3325.07	3327.18	CERT POINT
1162	419146.16	812208.55	3337.43	3339.54	CERT POINT
1163	419106.17	812194.78	3325.19	3327.30	CERT POINT
1164	419117.75	812291.04	3322.97	3325.08	CERT POINT
1165	419114.69	812303.47	3321.19	3323.30	CERT POINT
1166	419119.44	812305.11	3322.65	3324.76	CERT POINT
1167	419175.59	812430.21	3333.22	3335.33	CERT POINT
1168	419132.72	812415.44	3320.10	3322.21	CERT POINT
1169	419191.29	812540.33	3331.48	3333.59	CERT POINT
1170	419154.09	812492.67	3322.29	3324.40	CERT POINT
1171	419143.04	812524.76	3333.55	3335.66	CERT POINT
1172	419139.80	812474.37	3318.75	3320.86	CERT POINT
1173	419048.49	812492.20	3336.93	3339.04	CERT POINT
1174	419064.82	812444.77	3320.29	3322.40	CERT POINT
1175	418953.93	812459.65	3340.31	3342.42	CERT POINT
1176	418971.71	812408.02	3322.20	3324.31	CERT POINT

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1177	418859.38	812427.09	3343.68	3345.79	CERT POINT
1178	418878.49	812370.87	3324.00	3326.11	CERT POINT
1179	418764.83	812394.53	3347.06	3349.17	CERT POINT
1180	418785.49	812334.52	3326.01	3328.12	CERT POINT
1181	418702.83	812267.42	3317.27	3319.38	CERT POINT
1182	418692.39	812297.77	3327.92	3330.03	CERT POINT
1183	418797.39	812299.98	3313.90	3316.01	CERT POINT
1184	418891.94	812332.54	3310.52	3312.63	CERT POINT
1185	418986.49	812365.09	3307.14	3309.25	CERT POINT
1186	418599.28	812261.02	3329.83	3331.94	CERT POINT
1187	418608.28	812234.87	3320.65	3322.76	CERT POINT
1188	418620.28	812202.09	3309.12	3311.23	CERT POINT
1189	418712.87	812238.27	3307.09	3309.16	CERT POINT
1190	418806.09	812274.70	3305.05	3307.14	CERT POINT
1191	418899.31	812311.13	3303.01	3305.12	CERT POINT
1192	418900.24	812311.49	3302.99	3305.10	CERT POINT
1193	418933.74	812326.79	3302.93	3305.04	CERT POINT
1194	418989.56	812356.18	3304.01	3306.12	CERT POINT
1195	419044.28	812384.99	3305.07	3307.18	CERT POINT
1196	419079.09	812403.32	3305.75	3307.86	CERT POINT
1197	419088.00	812408.01	3305.92	3308.03	CERT POINT
1198	419086.59	812399.56	3305.99	3308.10	CERT POINT
1199	419084.56	812387.44	3306.08	3308.19	CERT POINT
1200	419067.77	812287.32	3306.84	3308.95	CERT POINT
1201	419051.60	812175.99	3308.50	3310.61	CERT POINT
1202	419030.14	812062.84	3308.54	3310.65	CERT POINT
1203	419025.21	812033.43	3308.77	3310.88	CERT POINT
1204	419021.86	812033.21	3307.68	3310.84	CERT POINT
1205	419022.29	812022.60	3308.95	3311.06	CERT POINT
1206	419010.83	811987.24	3309.99	3312.10	CERT POINT
1207	419022.17	811954.33	3317.73	3319.84	CERT POINT
1208	418997.41	811945.81	3311.22	3313.33	CERT POINT
1209	418960.17	811827.22	3315.08	3317.19	CERT POINT
1210	418920.27	811707.72	3318.24	3320.35	CERT POINT
1211	418908.29	811670.74	3319.34	3321.45	CERT POINT
1212	418881.70	811588.68	3321.76	3323.87	CERT POINT
1213	418864.57	811535.80	3323.32	3325.43	CERT POINT
1214	418864.77	811497.19	3328.37	3330.48	CERT POINT
1215	418861.58	811488.48	3328.51	3330.62	CERT POINT
1216	418868.73	811478.47	3332.00	3334.07	CERT POINT
1217	418849.27	811577.51	3322.43	3324.54	CERT POINT
1218	418836.89	811573.25	3326.75	3328.75	CERT POINT
1219	418831.21	811571.29	3326.74	3328.74	CERT POINT
1220	418818.83	811567.03	3322.42	3324.53	CERT POINT
1221	418814.84	811671.42	3320.43	3322.54	CERT POINT
1222	418802.46	811667.15	3324.75	3326.75	CERT POINT
1223	418796.78	811665.20	3324.74	3326.74	CERT POINT
1224	418784.40	811660.94	3320.42	3322.53	CERT POINT
1225	418780.41	811765.33	3318.43	3320.54	CERT POINT
1226	418771.07	811762.11	3321.69	3323.80	CERT POINT
1227	418768.03	811761.06	3322.75	3324.75	CERT POINT
1228	418762.35	811759.11	3322.74	3324.74	CERT POINT
1229	418749.97	811754.84	3318.42	3320.52	CERT POINT
1230	418745.98	811859.23	3316.43	3318.54	CERT POINT
1231	418738.51	811856.66	3319.03	3321.14	CERT POINT
1232	418733.60	811854.97	3320.75	3322.75	CERT POINT
1233	418727.92	811853.01	3320.74	3322.74	CERT POINT
1234	418715.54	811848.75	3316.42	3318.52	CERT POINT
1235	418711.55	811953.14	3314.43	3316.54	CERT POINT
1236	418705.95	811951.21	3316.38	3318.49	CERT POINT
1237	418699.17	811948.87	3318.74	3320.74	CERT POINT
1238	418693.49	811946.92	3318.74	3320.74	CERT POINT
1239	418681.11	811942.66	3314.42	3316.52	CERT POINT
1240	418677.12	812047.05	3312.43	3314.54	CERT POINT
1241	418674.29	812046.07	3313.42	3315.53	CERT POINT
1242	418664.74	812042.78	3316.74	3318.74	CERT POINT
1243	418659.06	812040.83	3316.74	3318.74	CERT POINT
1244	418646.68	812036.56	3312.41	3314.52	CERT POINT
1245	418642.69	812140.95	3310.43	3312.54	CERT POINT
1246	418640.84	812140.32	3311.07	3313.18	CERT POINT
1247	418630.31	812136.69	3314.74	3316.74	CERT POINT
1248	418624.63	812134.73	3314.74	3316.74	CERT POINT
1249	418612.25	812130.47	3310.41	3312.52	CERT POINT
1250	418604.04	812208.33	3313.22	3315.33	CERT POINT
1251	418598.56	812205.83	3313.23	3315.34	CERT POINT
1252	418590.84	812188.85	3309.17	3311.28	CERT POINT
1253	418898.18	811700.11	3318.70	3320.70	CERT POINT
1254	418865.62	811794.66	3316.66	3318.66	CERT POINT

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1255	418833.06	811889.22	3314.62	3316.62	CERT POINT
1256	418800.51	811983.77	3312.58	3314.58	CERT POINT
1257	418767.95	812078.32	3310.54	3312.54	CERT POINT
1258	418735.39	812172.87	3308.49	3310.51	CERT POINT
1259	418829.94	812205.43	3306.53	3308.55	CERT POINT
1260	418862.50	812110.88	3308.58	3310.58	CERT POINT
1261	418895.06	812016.33	3310.62	3312.62	CERT POINT
1262	418927.61	811921.77	3312.66	3314.66	CERT POINT
1263	418989.61	812048.88	3308.66	3310.66	CERT POINT
1264	418957.05	812143.43	3306.62	3308.62	CERT POINT
1265	418924.50	812237.99	3304.57	3306.59	CERT POINT
1266	419010.09	812055.93	3308.24	3310.30	CERT POINT
1267	419013.14	812056.98	3307.18	3310.29	CERT POINT
1268	419016.19	812058.03	3308.24	3310.31	CERT POINT
1269	418975.66	812149.84	3306.24	3308.24	CERT POINT
1270	418978.71	812150.89	3305.18	3308.18	CERT POINT
1271	418981.76	812151.94	3306.24	3308.24	CERT POINT
1272	418941.23	812243.75	3304.24	3306.24	CERT POINT
1273	418944.28	812244.80	3303.18	3306.18	CERT POINT
1274	418947.33	812245.85	3304.24	3306.24	CERT POINT
1275	418927.22	812281.95	3303.43	3305.43	CERT POINT
1276	418933.11	812284.63	3303.42	3305.42	CERT POINT
1277	418941.47	812287.83	3303.59	3305.59	CERT POINT
1278	418946.21	812298.44	3303.59	3305.59	CERT POINT
1279	418908.61	812283.23	3303.61	3305.61	CERT POINT
1280	418920.46	812278.32	3303.60	3305.60	CERT POINT
1281	418916.84	812286.24	3300.69	3305.44	CERT POINT
1282	418937.82	812295.83	3300.66	3305.40	CERT POINT
1283	418929.88	812317.49	3300.66	3304.94	CERT POINT
1284	418908.89	812307.90	3300.69	3304.98	CERT POINT
1285	418916.44	812304.75	3298.66	3304.97	CERT POINT
1286	418920.24	812294.40	3298.66	3305.19	CERT POINT
1287	418926.47	812309.34	3298.66	3304.95	CERT POINT
1288	418930.27	812298.98	3298.66	3305.17	CERT POINT
1289	419019.05	812270.54	3305.79	3307.79	CERT POINT



NO.	REVISION	DATE
1	REVISED CERTIFICATION GRID	3/15/22

SHEET TITLE: DISPOSAL CELL E-1 CERTIFICATION GRID TABLES

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
ENVIRONMENTAL SCIENTISTS
2211 W. PINNACLE PEAK ROAD, SUITE 118
PHOENIX, ARIZONA 85023
(602) 840-2596

PROJ. NO.: 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: P:\ENGINEERS

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 7CT-2

nm811 Know what's below. Call before you dig.

ISSUED FOR CONSTRUCTION

C:\Users\326rach\OneDrive - SCS Engineers\Desktop\WORK\North Ranch\McGlory\CELL F-1\PLANS\007-CELL F1 GRADING PLAN.dwg Mar 15, 2022 - 4:30pm By: 326rach
Received by OCD: 8/24/2022 3:28:34 PM
Released to Imaging: 8/24/2022 3:35:23 PM

CELL E1 CERTIFICATION POINTS TABLE						
ID	NORTHING	EASTING	SUBGRADE EL DESIGN	SUBGRADE EL AS BUILT 041422	Variance	Check (0.0'<Variance<+0.2')
1100	418924.94	811442.14	3353.86	3353.97	0.11	TRUE
1101	418950.56	811506.63	3353.51	3353.66	0.15	TRUE
1102	418958.23	811525.69	3353.41	3353.52	0.11	TRUE
1103	418999.98	811629.41	3352.85	3352.91	0.06	TRUE
1104	419015.24	811667.30	3352.65	3352.74	0.09	TRUE
1105	419049.40	811752.18	3352.19	3352.22	0.03	TRUE
1106	419072.24	811808.91	3351.89	3351.92	0.03	TRUE
1107	419098.83	811874.96	3351.53	3351.68	0.15	TRUE
1108	419129.24	811950.52	3351.13	3351.16	0.03	TRUE
1109	419145.70	811991.41	3350.88	3350.92	0.04	TRUE
1110	419146.99	811998.91	3350.82	3350.90	0.08	TRUE
1111	419165.98	812109.61	3350.10	3350.18	0.08	TRUE
1112	419170.72	812137.22	3349.93	3349.97	0.04	TRUE
1113	419185.26	812222.01	3349.39	3349.50	0.11	TRUE
1114	419204.55	812334.42	3348.69	3348.74	0.05	TRUE
1115	419205.89	812342.23	3348.64	3348.73	0.09	TRUE
1116	419223.83	812446.82	3347.98	3348.04	0.06	TRUE
1117	419238.99	812535.14	3347.42	3347.50	0.08	TRUE
1118	419237.61	812557.25	3347.65	3347.71	0.06	TRUE
1119	419221.46	812580.62	3347.95	3347.95	0.00	TRUE
1120	419172.51	812587.78	3348.49	3348.50	0.01	TRUE
1121	419128.13	812568.06	3348.74	3348.78	0.04	TRUE
1122	419036.40	812527.30	3349.24	3349.27	0.03	TRUE
1123	418944.67	812486.54	3349.74	3349.84	0.10	TRUE
1124	418852.94	812445.79	3350.24	3350.40	0.16	TRUE
1125	418761.22	812405.03	3350.74	3350.87	0.13	TRUE
1126	418669.49	812364.27	3351.25	3351.39	0.14	TRUE
1127	418643.81	812352.86	3351.39	3351.49	0.10	TRUE
1128	418577.76	812323.51	3351.75	3351.80	0.05	TRUE
1129	418529.64	812302.13	3352.01	3352.16	0.15	TRUE
1130	418555.51	812243.74	3330.72	3330.86	0.14	TRUE
1131	418565.91	812220.28	3322.17	3322.26	0.09	TRUE
1132	418581.38	812185.35	3309.44	3309.61	0.17	TRUE
1133	418602.21	812127.02	3310.00	3310.13	0.13	TRUE
1134	418636.61	812033.10	3312.00	3312.09	0.09	TRUE
1135	418671.65	811939.40	3314.21	3314.33	0.12	TRUE
1136	418706.08	811845.49	3316.21	3316.26	0.05	TRUE
1137	418740.51	811751.59	3318.21	3318.31	0.10	TRUE
1138	418774.94	811657.68	3320.21	3320.37	0.16	TRUE
1139	418809.37	811563.77	3322.21	3322.27	0.06	TRUE
1140	418841.12	811477.20	3324.06	3324.13	0.07	TRUE
1141	418851.94	811472.67	3327.59	3327.67	0.08	TRUE
1142	418873.89	811463.49	3335.52	3335.63	0.11	TRUE
1143	418882.88	811459.73	3338.77	3338.84	0.07	TRUE
1144	418892.74	811486.72	3338.31	3338.37	0.06	TRUE
1145	418933.36	811597.94	3336.44	3336.46	0.02	TRUE
1146	418930.73	811605.56	3334.65	3334.67	0.02	TRUE
1147	418936.92	811607.69	3336.28	3336.37	0.09	TRUE
1148	418981.10	811728.67	3334.24	3334.33	0.09	TRUE
1149	418992.73	811732.67	3337.29	3337.35	0.06	TRUE
1150	418987.80	811746.99	3333.93	3334.02	0.09	TRUE
1151	419025.28	811849.64	3332.20	3332.22	0.02	TRUE
1152	419054.72	811859.78	3339.94	3340.00	0.06	TRUE
1153	419042.23	811896.05	3331.42	3331.49	0.07	TRUE
1154	419069.47	811970.62	3330.16	3330.23	0.07	TRUE
1155	419116.72	811986.89	3342.58	3342.66	0.08	TRUE
1156	419137.34	811993.99	3347.98	3348.14	0.16	TRUE
1157	419111.54	812001.92	3339.03	3339.16	0.13	TRUE
1158	419083.99	812010.39	3329.47	3329.53	0.06	TRUE
1159	419090.37	812063.41	3328.23	3328.32	0.09	TRUE
1160	419092.90	812084.45	3327.74	3327.80	0.06	TRUE
1161	419084.16	812081.44	3325.07	3325.08	0.01	TRUE
1162	419146.16	812208.55	3337.43	3337.53	0.10	TRUE
1163	419106.17	812194.78	3325.19	3325.38	0.18	TRUE
1164	419117.75	812291.04	3322.97	3323.13	0.16	TRUE
1165	419114.69	812303.47	3321.19	3321.28	0.09	TRUE
1166	419119.44	812305.11	3322.65	3322.79	0.14	TRUE
1167	419175.59	812430.21	3333.22	3333.33	0.11	TRUE

1168	419132.72	812415.44	3320.10	3320.16	0.06	TRUE
1169	419191.29	812540.33	3331.48	3331.61	0.13	TRUE
1170	419154.09	812492.67	3322.29	3322.41	0.12	TRUE
1171	419143.04	812524.76	3333.55	3333.62	0.07	TRUE
1172	419139.80	812474.37	3318.75	3318.84	0.09	TRUE
1173	419048.49	812492.20	3336.93	3337.00	0.07	TRUE
1174	419064.82	812444.77	3320.29	3320.45	0.16	TRUE
1175	418953.93	812459.65	3340.31	3340.41	0.10	TRUE
1176	418971.71	812408.02	3322.20	3322.31	0.11	TRUE
1177	418859.38	812427.09	3343.68	3343.70	0.02	TRUE
1178	418878.49	812370.87	3324.00	3324.05	0.05	TRUE
1179	418764.83	812394.53	3347.06	3347.17	0.11	TRUE
1180	418785.49	812334.52	3326.01	3326.15	0.14	TRUE
1181	418702.83	812267.42	3317.27	3317.43	0.16	TRUE
1182	418692.39	812297.77	3327.92	3328.08	0.16	TRUE
1183	418797.39	812299.98	3313.90	3314.05	0.15	TRUE
1184	418891.94	812332.54	3310.52	3310.68	0.16	TRUE
1185	418986.49	812365.09	3307.14	3307.31	0.17	TRUE
1186	418599.28	812261.02	3329.83	3329.99	0.16	TRUE
1187	418608.28	812234.87	3320.65	3320.79	0.14	TRUE
1188	418620.28	812202.09	3309.12	3309.27	0.15	TRUE
1189	418712.87	812238.27	3307.09	3307.20	0.11	TRUE
1190	418806.09	812274.70	3305.05	3305.20	0.15	TRUE
1191	418899.31	812311.13	3303.01	3303.14	0.13	TRUE
1192	418900.24	812311.49	3302.99	3303.09	0.10	TRUE
1193	418933.74	812326.79	3302.93	3303.06	0.13	TRUE
1194	418989.56	812356.18	3304.01	3304.09	0.08	TRUE
1195	419044.28	812384.99	3305.07	3305.25	0.18	TRUE
1196	419079.09	812403.32	3305.75	3305.91	0.16	TRUE
1197	419088.00	812408.01	3305.92	3306.08	0.16	TRUE
1198	419086.59	812399.56	3305.99	3306.01	0.02	TRUE
1199	419084.56	812387.44	3306.08	3306.07	-0.01	FALSE
1200	419067.77	812287.32	3306.84	3307.01	0.17	TRUE
1201	419051.60	812175.99	3308.50	3308.63	0.13	TRUE
1202	419030.14	812062.84	3308.54	3308.65	0.11	TRUE
1203	419025.21	812033.43	3308.77	3308.82	0.05	TRUE
1204	419021.86	812033.21	3307.68	3307.79	0.11	TRUE
1205	419022.29	812022.60	3308.95	3309.08	0.13	TRUE
1206	419010.83	811987.24	3309.99	3310.17	0.18	TRUE
1207	419022.17	811954.33	3317.73	3317.84	0.11	TRUE
1208	418997.41	811945.81	3311.22	3311.39	0.17	TRUE
1209	418960.17	811827.22	3315.08	3315.15	0.07	TRUE
1210	418920.27	811707.72	3318.24	3318.36	0.12	TRUE
1211	418908.29	811670.74	3319.34	3319.54	0.19	TRUE
1212	418881.70	811588.68	3321.76	3321.89	0.13	TRUE
1213	418864.57	811535.80	3323.32	3323.51	0.19	TRUE
1214	418864.77	811497.19	3328.37	3328.46	0.09	TRUE
1215	418861.58	811488.48	3328.51	3328.70	0.19	TRUE
1216	418868.73	811478.47	3332.00	3332.14	0.14	TRUE
1217	418849.27	811577.51	3322.43	3322.50	0.07	TRUE
1218	418836.89	811573.25	3326.75	3326.85	0.10	TRUE
1219	418831.21	811571.29	3326.74	3326.90	0.16	TRUE
1220	418818.83	811567.03	3322.42	3322.59	0.17	TRUE
1221	418814.84	811671.42	3320.43	3320.56	0.13	TRUE
1222	418802.46	811667.15	3324.75	3324.87	0.12	TRUE
1223	418796.78	811665.20	3324.74	3324.79	0.05	TRUE
1224	418784.40	811660.94	3320.42	3320.59	0.17	TRUE
1225	418780.41	811765.33	3318.43	3318.55	0.12	TRUE
1226	418771.07	811762.11	3321.69	3321.83	0.14	TRUE
1227	418768.03	811761.06	3322.75	3322.90	0.15	TRUE
1228	418762.35	811759.11	3322.74	3322.83	0.09	TRUE
1229	418749.97	811754.84	3318.42	3318.55	0.13	TRUE
1230	418745.98	811859.23	3316.43	3316.53	0.10	TRUE
1231	418738.51	811856.66	3319.03	3319.14	0.11	TRUE
1232	418733.60	811854.97	3320.75	3320.84	0.09	TRUE
1233	418727.92	811853.01	3320.74	3320.78	0.04	TRUE
1234	418715.54	811848.75	3316.42	3316.59	0.17	TRUE
1235	418711.55	811953.14	3314.43	3314.51	0.08	TRUE
1236	418705.95	811951.21	3316.38	3316.46	0.08	TRUE
1237	418699.17	811948.87	3318.74	3318.76	0.02	TRUE
1238	418693.49	811946.92	3318.74	3318.78	0.04	TRUE
1239	418681.11	811942.66	3314.42	3314.54	0.11	TRUE

1240	418677.12	812047.05	3312.43	3312.50	0.07	TRUE
1241	418674.29	812046.07	3313.42	3313.46	0.04	TRUE
1242	418664.74	812042.78	3316.74	3316.79	0.05	TRUE
1243	418659.06	812040.83	3316.74	3316.75	0.01	TRUE
1244	418646.68	812036.56	3312.41	3312.56	0.15	TRUE
1245	418642.69	812140.95	3310.43	3310.53	0.10	TRUE
1246	418640.84	812140.32	3311.07	3311.14	0.07	TRUE
1247	418630.31	812136.69	3314.74	3314.83	0.09	TRUE
1248	418624.63	812134.73	3314.74	3314.76	0.02	TRUE
1249	418612.25	812130.47	3310.41	3310.54	0.13	TRUE
1250	418604.04	812208.33	3313.22	3313.42	0.20	TRUE
1251	418598.56	812205.83	3313.23	3313.41	0.18	TRUE
1252	418590.84	812188.85	3309.17	3309.26	0.09	TRUE
1253	418898.18	811700.11	3318.70	3318.76	0.06	TRUE
1254	418865.62	811794.66	3316.66	3316.77	0.11	TRUE
1255	418833.06	811889.22	3314.62	3314.66	0.04	TRUE
1256	418800.51	811983.77	3312.58	3312.60	0.02	TRUE
1257	418767.95	812078.32	3310.54	3310.56	0.02	TRUE
1258	418735.39	812172.87	3308.49	3308.55	0.06	TRUE
1259	418829.94	812205.43	3306.53	3306.58	0.05	TRUE
1260	418862.50	812110.88	3308.58	3308.65	0.07	TRUE
1261	418895.06	812016.33	3310.62	3310.69	0.07	TRUE
1262	418927.61	811921.77	3312.66	3312.77	0.11	TRUE
1263	418989.61	812048.88	3308.66	3308.74	0.08	TRUE
1264	418957.05	812143.43	3306.62	3306.64	0.02	TRUE
1265	418924.50	812237.99	3304.57	3304.57	0.00	TRUE
1266	419010.09	812055.93	3308.24	3308.30	0.06	TRUE
1267	419013.14	812056.98	3307.18	3307.33	0.15	TRUE
1268	419016.19	812058.03	3308.24	3308.29	0.05	TRUE
1269	418975.66	812149.84	3306.24	3306.29	0.05	TRUE
1270	418978.71	812150.89	3305.18	3305.36	0.18	TRUE
1271	418981.76	812151.94	3306.24	3306.34	0.10	TRUE
1272	418941.23	812243.75	3304.24	3304.27	0.03	TRUE
1273	418944.28	812244.80	3303.18	3303.36	0.18	TRUE
1274	418947.33	812245.85	3304.24	3304.29	0.05	TRUE
1275	418927.22	812281.95	3303.43	3303.54	0.11	TRUE
1276	418933.11	812284.63	3303.42	3303.48	0.06	TRUE
1277	418941.47	812287.83	3303.59	3303.66	0.07	TRUE
1278	418946.21	812298.44	3303.59	3303.70	0.11	TRUE
1279	418908.61	812283.23	3303.61	3303.72	0.11	TRUE
1280	418920.46	812278.32	3303.60	3303.74	0.14	TRUE
1281	418916.84	812286.24	3300.69	3300.76	0.07	TRUE
1282	418937.82	812295.83	3300.66	3300.78	0.12	TRUE
1283	418929.88	812317.49	3300.66	3300.85	0.19	TRUE
1284	418908.89	812307.90	3300.69	3300.73	0.04	TRUE
1285	418916.44	812304.75	3298.66	3298.71	0.05	TRUE
1286	418920.24	812294.40	3298.66	3298.71	0.05	TRUE
1287	418926.47	812309.34	3298.66	3298.80	0.14	TRUE
1288	418930.27	812298.98	3298.66	3298.70	0.04	TRUE
1289	419019.05	812270.54	3305.79	3305.88	0.09	TRUE

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Modifed compaction spec	PASS / FAIL	Tech. Initials
CB-L1-01	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	112.0	15.00	13.39	97.56	127.0	0.09	5.56	PASS	XAIS
CB-L1-02	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	105.7	12.00	11.35	92.07	117.7	-1.95	0.07	PASS	XAIS
CB-L1-03	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	107.1	12.20	11.39	93.29	119.3	-1.91	1.29	PASS	XAIS
CB-L1-04	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	105.9	12.10	11.43	92.25	118.0	-1.87	0.25	PASS	XAIS
CB-L1-05	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	107.7	12.30	11.42	93.82	120.0	-1.88	1.82	PASS	XAIS
CB-L1-06	N/A	1	1	3/24/2022	SF1-M	13.3	114.8	108.2	14.20	13.12	94.25	122.4	-0.18	2.25	PASS	XAIS
CB-L1-07	N/A	1	2	3/25/2022	SF1-M	13.3	114.8	106.0	14.80	13.96	92.33	120.8	0.66	0.33	PASS	XAIS
CB-L1-08	N/A	1	2	3/25/2022	SF1-M	13.3	114.8	107.7	14.60	13.56	93.82	122.3	0.26	1.82	PASS	XAIS
CB-L1-09	N/A	1	2	3/25/2022	SF1-M	13.3	114.8	112.4	13.70	12.19	97.91	126.1	-1.11	5.91	PASS	XAIS
CB-L1-10	N/A	1	2	3/25/2022	SF1-M	13.3	114.8	111.5	13.50	12.11	97.13	125.0	-1.19	5.13	PASS	XAIS
CB-L1-11	N/A	1	2	3/25/2022	SF1-M	13.3	114.8	109.0	16.10	14.77	94.95	125.1	1.47	2.95	PASS	XAIS
CB-L1-12	N/A	1	3	3/26/2022	SF1-M	13.3	114.8	114.5	13.60	11.88	99.74	128.1	-1.42	7.74	PASS	XAIS
CB-L1-13	N/A	1	3	3/26/2022	SF1-M	13.3	114.8	106.8	12.70	11.89	93.03	119.5	-1.41	1.03	PASS	XAIS
CB-L1-14	N/A	1	3	3/26/2022	SF1-M	13.3	114.8	112.3	14.30	12.73	97.82	126.6	-0.57	5.82	PASS	XAIS
CB-L1-15	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	109.3	12.50	11.44	95.21	121.8	-1.86	3.21	PASS	XAIS
CB-L1-16	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.2	16.10	15.16	92.51	122.3	1.86	0.51	PASS	XAIS
CB-L1-17	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	110.2	15.40	13.97	95.99	125.6	0.67	3.99	PASS	XAIS

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CB-L1-18	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.1	14.50	13.54	93.29	121.6	0.24	1.29	PASS	XAIS
CB-L1-19	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.9	16.50	15.29	93.99	124.4	1.99	1.99	PASS	XAIS
CB-L1-20	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	105.9	16.10	15.20	92.25	122.0	1.90	0.25	PASS	XAIS
CB-L1-21	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.2	12.70	11.96	92.51	118.9	-1.34	0.51	PASS	XAIS
CB-L1-22	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.1	14.10	13.29	92.42	120.2	-0.01	0.42	PASS	XAIS
CB-L1-23	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.0	13.90	12.99	93.21	120.9	-0.31	1.21	PASS	XAIS
CB-L1-24	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	105.8	16.00	15.12	92.16	121.8	1.82	0.16	PASS	XAIS
CB-L1-25	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.3	15.90	14.96	92.60	122.2	1.66	0.60	PASS	XAIS
CB-L1-26	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.1	16.10	15.03	93.29	123.2	1.73	1.29	PASS	XAIS
CB-L1-27	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.4	16.20	15.23	92.68	122.6	1.93	0.68	PASS	XAIS
CB-L1-28	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	109.9	14.90	13.56	95.73	124.8	0.26	3.73	PASS	XAIS
CB-L1-29	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	108.4	16.50	15.22	94.43	124.9	1.92	2.43	PASS	XAIS
CB-L1-30	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	105.9	15.90	15.01	92.25	121.8	1.71	0.25	PASS	XAIS
CB-L1-31	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.6	15.80	14.68	93.73	123.4	1.38	1.73	PASS	XAIS
CB-L1-32	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	108.4	15.70	14.48	94.43	124.1	1.18	2.43	PASS	XAIS
CB-L1-33	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	109.7	15.00	13.67	95.56	124.7	0.37	3.56	PASS	XAIS
CB-L1-34	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	106.8	15.70	14.70	93.03	122.5	1.40	1.03	PASS	XAIS
CB-L1-35	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.2	16.00	14.93	93.38	123.2	1.63	1.38	PASS	XAIS
CB-L1-36	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.9	16.10	14.92	93.99	124.0	1.62	1.99	PASS	XAIS

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CB-L1-37	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.8	16.20	15.03	93.90	124.0	1.73	1.90	PASS	XAIS
CB-L1-38	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	108.1	15.70	14.52	94.16	123.8	1.22	2.16	PASS	XAIS
CB-L1-39	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.9	15.70	14.55	93.99	123.6	1.25	1.99	PASS	XAIS
CB-L1-40	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	107.5	15.10	14.05	93.64	122.6	0.75	1.64	PASS	XAIS
CB-L1-41	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	108.2	15.00	13.86	94.25	123.2	0.56	2.25	PASS	XAIS
CB-L1-42	N/A	1	4	3/26/2022	SF1-M	13.3	114.8	108.0	14.90	13.80	94.08	122.9	0.50	2.08	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L2-01	N/A	2	1	3/26/2022	SF1-M	13.3	114.8	107.7	16.00	14.86	93.82	123.7	1.56	1.82	PASS	XAIS
CB-L2-02	N/A	2	1	3/26/2022	SF1-M	13.3	114.8	106.7	16.20	15.18	92.94	122.9	1.88	0.94	PASS	XAIS
CB-L2-03	N/A	2	1	3/26/2022	SF1-M	13.3	114.8	106.6	14.40	13.51	92.86	121.0	0.21	0.86	PASS	XAIS
CB-L2-04	N/A	2	2	3/28/2022	SF1-M	13.3	114.8	107.1	13.90	12.98	93.29	121.0	-0.32	1.29	PASS	XAIS
CB-L2-05	N/A	2	2	3/28/2022	SF1-M	13.3	114.8	106.2	15.00	14.12	92.51	121.2	0.82	0.51	PASS	XAIS
CB-L2-06	N/A	2	2	3/28/2022	SF1-M	13.3	114.8	105.8	12.10	11.44	92.16	117.9	-1.86	0.16	PASS	XAIS
CB-L2-07	N/A	2	2	3/28/2022	SF1-M	13.3	114.8	106.3	16.10	15.15	92.60	122.4	1.85	0.60	PASS	XAIS
CB-L2-08	N/A	2	2	3/28/2022	SF1-M	13.3	114.8	106.1	16.00	15.08	92.42	122.1	1.78	0.42	PASS	XAIS
CB-L2-09	N/A	2	3	3/28/2022	SF1-M	13.3	114.8	109.4	14.50	13.25	95.30	123.9	-0.05	3.30	PASS	XAIS
CB-L2-10	N/A	2	3	3/28/2022	SF1-M	13.3	114.8	108.9	14.30	13.13	94.86	123.2	-0.17	2.86	PASS	XAIS
CB-L2-11	N/A	2	3	3/28/2022	SF1-M	13.3	114.8	108.5	15.20	14.01	94.51	123.7	0.71	2.51	PASS	XAIS
CB-L2-12	N/A	2	3	3/28/2022	SF1-M	13.3	114.8	110.1	14.80	13.44	95.91	124.9	0.14	3.91	PASS	XAIS
CB-L2-13	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	109.4	15.60	14.26	95.30	125.0	0.96	3.30	PASS	XAIS
CB-L2-14	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.0	15.60	14.05	96.69	126.6	0.75	4.69	PASS	XAIS
CB-L2-15	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	110.6	14.90	13.47	96.34	125.5	0.17	4.34	PASS	XAIS
CB-L2-16	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	107.7	16.30	15.13	93.82	124.0	1.83	1.82	PASS	XAIS
CB-L2-17	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	107.3	16.10	15.00	93.47	123.4	1.70	1.47	PASS	XAIS

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CB-L2-18	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	107.6	16.30	15.15	93.73	123.9	1.85	1.73	PASS	XAIS
CB-L2-19	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	106.4	16.10	15.13	92.68	122.5	1.83	0.68	PASS	XAIS
CB-L2-20	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	106.1	16.00	15.08	92.42	122.1	1.78	0.42	PASS	XAIS
CB-L2-21	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	106.8	16.20	15.17	93.03	123.0	1.87	1.03	PASS	XAIS
CB-L2-22	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	107.5	16.10	14.98	93.64	123.6	1.68	1.64	PASS	XAIS
CB-L2-23	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	114.1	14.90	13.06	99.39	129.0	-0.24	7.39	PASS	XAIS
CB-L2-24	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	110.4	14.10	12.77	96.17	124.5	-0.53	4.17	PASS	XAIS
CB-L2-25	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	109.5	16.10	14.70	95.38	125.6	1.40	3.38	PASS	XAIS
CB-L2-26	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.2	15.40	13.60	98.61	128.6	0.30	6.61	PASS	XAIS
CB-L2-27	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	110.3	15.10	13.69	96.08	125.4	0.39	4.08	PASS	XAIS
CB-L2-28	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.8	15.20	13.60	97.39	127.0	0.30	5.39	PASS	XAIS
CB-L2-29	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.4	15.90	14.15	97.91	128.3	0.85	5.91	PASS	XAIS
CB-L2-30	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.4	15.40	13.58	98.78	128.8	0.28	6.78	PASS	XAIS
CB-L2-31	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.7	14.90	13.34	97.30	126.6	0.04	5.30	PASS	XAIS
CB-L2-32	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.4	14.80	13.17	97.91	127.2	-0.13	5.91	PASS	XAIS
CB-L2-33	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.8	15.00	13.30	98.26	127.8	0.00	6.26	PASS	XAIS
CB-L2-34	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.2	15.20	13.55	97.74	127.4	0.25	5.74	PASS	XAIS
CB-L2-35	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.4	14.00	12.35	98.78	127.4	-0.95	6.78	PASS	XAIS
CB-L2-36	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.8	14.80	13.24	97.39	126.6	-0.06	5.39	PASS	XAIS

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CB-L2-37	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.9	14.60	12.93	98.34	127.5	-0.37	6.34	PASS	XAIS
CB-L2-38	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.2	14.90	13.16	98.61	128.1	-0.14	6.61	PASS	XAIS
CB-L2-39	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.7	15.10	13.40	98.17	127.8	0.10	6.17	PASS	XAIS
CB-L2-40	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	112.1	14.80	13.20	97.65	126.9	-0.10	5.65	PASS	XAIS
CB-L2-41	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.5	15.00	13.45	97.13	126.5	0.15	5.13	PASS	XAIS
CB-L2-42	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.4	15.10	13.32	98.78	128.5	0.02	6.78	PASS	XAIS
CB-L2-43	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	114.2	15.60	13.66	99.48	129.8	0.36	7.48	PASS	XAIS
CB-L2-44	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	111.6	14.80	13.26	97.21	126.4	-0.04	5.21	PASS	XAIS
CB-L2-45	N/A	2	4	3/29/2022	SF1-M	13.3	114.8	113.8	15.40	13.53	99.13	129.2	0.23	7.13	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L3-01	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	106.5	12.70	11.92	92.77	119.2	-1.38	0.77	PASS	XAIS
CB-L3-02	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	106.0	12.00	11.32	92.33	118.0	-1.98	0.33	PASS	XAIS
CB-L3-03	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	106.4	12.10	11.37	92.68	118.5	-1.93	0.68	PASS	XAIS
CB-L3-04	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	107.1	12.50	11.67	93.29	119.6	-1.63	1.29	PASS	XAIS
CB-L3-05	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	107.2	12.40	11.57	93.38	119.6	-1.73	1.38	PASS	XAIS
CB-L3-06	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	108.8	15.10	13.88	94.77	123.9	0.58	2.77	PASS	XAIS
CB-L3-07	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	109.1	16.20	14.85	95.03	125.3	1.55	3.03	PASS	XAIS
CB-L3-08	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	106.8	16.30	15.26	93.03	123.1	1.96	1.03	PASS	XAIS
CB-L3-09	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	109.1	16.40	15.03	95.03	125.5	1.73	3.03	PASS	XAIS
CB-L3-10	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	108.7	16.40	15.09	94.69	125.1	1.79	2.69	PASS	XAIS
CB-L3-11	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	108.9	15.90	14.60	94.86	124.8	1.30	2.86	PASS	XAIS
CB-L3-12	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	112.1	14.70	13.11	97.65	126.8	-0.19	5.65	PASS	XAIS
CB-L3-13	N/A	3	1	3/30/2022	SF1-M	13.3	114.8	110.6	16.90	15.28	96.34	127.5	1.98	4.34	PASS	XAIS
CB-L3-14	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	107.8	16.40	15.21	93.90	124.2	1.91	1.90	PASS	XAIS
CB-L3-15	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	107.3	16.30	15.19	93.47	123.6	1.89	1.47	PASS	XAIS
CB-L3-16	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	109.4	16.40	14.99	95.30	125.8	1.69	3.30	PASS	XAIS
CB-L3-17	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	107.7	16.30	15.13	93.82	124.0	1.83	1.82	PASS	XAIS

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CB-L3-18	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	107.0	16.00	14.95	93.21	123.0	1.65	1.21	PASS	XAIS
CB-L3-19	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	106.5	16.10	15.12	92.77	122.6	1.82	0.77	PASS	XAIS
CB-L3-20	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	106.6	16.30	15.29	92.86	122.9	1.99	0.86	PASS	XAIS
CB-L3-21	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	107.2	16.00	14.93	93.38	123.2	1.63	1.38	PASS	XAIS
CB-L3-22	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	109.3	15.40	14.09	95.21	124.7	0.79	3.21	PASS	XAIS
CB-L3-23	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	108.3	15.90	14.68	94.34	124.2	1.38	2.34	PASS	XAIS
CB-L3-24	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	108.7	14.40	13.25	94.69	123.1	-0.05	2.69	PASS	XAIS
CB-L3-25	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	109.4	13.90	12.71	95.30	123.3	-0.59	3.30	PASS	XAIS
CB-L3-26	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	108.9	15.20	13.96	94.86	124.1	0.66	2.86	PASS	XAIS
CB-L3-27	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	110.1	15.60	14.17	95.91	125.7	0.87	3.91	PASS	XAIS
CB-L3-28	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	110.0	16.20	14.73	95.82	126.2	1.43	3.82	PASS	XAIS
CB-L3-29	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	111.4	14.90	13.38	97.04	126.3	0.08	5.04	PASS	XAIS
CB-L3-30	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	110.5	15.70	14.21	96.25	126.2	0.91	4.25	PASS	XAIS
CB-L3-31	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	112.2	16.40	14.62	97.74	128.6	1.32	5.74	PASS	XAIS
CB-L3-32	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	112.0	15.80	14.11	97.56	127.8	0.81	5.56	PASS	XAIS
CB-L3-33	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	113.0	16.20	14.34	98.43	129.2	1.04	6.43	PASS	XAIS
CB-L3-34	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	113.2	16.40	14.49	98.61	129.6	1.19	6.61	PASS	XAIS
CB-L3-35	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	112.6	15.90	14.12	98.08	128.5	0.82	6.08	PASS	XAIS
CB-L3-36	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	112.3	16.30	14.51	97.82	128.6	1.21	5.82	PASS	XAIS

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CB-L3-37	N/A	3	2	3/30/2022	SF1-M	13.3	114.8	113.5	16.80	14.80	98.87	130.3	1.50	6.87	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L4-01	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	112.3	14.50	12.91	97.82	126.8	-0.39	5.82	PASS	XAIS
CB-L4-02	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	112.0	14.90	13.30	97.56	126.9	0.00	5.56	PASS	XAIS
CB-L4-03	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	111.4	15.20	13.64	97.04	126.6	0.34	5.04	PASS	XAIS
CB-L4-04	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	111.7	14.70	13.16	97.30	126.4	-0.14	5.30	PASS	XAIS
CB-L4-05	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	110.4	16.50	14.95	96.17	126.9	1.65	4.17	PASS	XAIS
CB-L4-06	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	110.9	16.70	15.06	96.60	127.6	1.76	4.60	PASS	XAIS
CB-L4-07	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	109.4	16.20	14.81	95.30	125.6	1.51	3.30	PASS	XAIS
CB-L4-08	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	110.5	14.30	12.94	96.25	124.8	-0.36	4.25	PASS	XAIS
CB-L4-09	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	111.9	15.90	14.21	97.47	127.8	0.91	5.47	PASS	XAIS
CB-L4-10	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	113.8	16.80	14.76	99.13	130.6	1.46	7.13	PASS	XAIS
CB-L4-11	N/A	4	1	3/31/2022	SF1-M	13.3	114.8	110.1	16.60	15.08	95.91	126.7	1.78	3.91	PASS	XAIS
CB-L4-12	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.9	16.60	15.24	94.86	125.5	1.94	2.86	PASS	XAIS
CB-L4-13	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	109.3	16.70	15.28	95.21	126.0	1.98	3.21	PASS	XAIS
CB-L4-14	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	110.1	16.50	14.99	95.91	126.6	1.69	3.91	PASS	XAIS
CB-L4-15	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	110.5	16.20	14.66	96.25	126.7	1.36	4.25	PASS	XAIS
CB-L4-16	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.1	16.50	15.26	94.16	124.6	1.96	2.16	PASS	XAIS
CB-L4-17	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.4	16.40	15.13	94.43	124.8	1.83	2.43	PASS	XAIS

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CB-L4-18	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	109.4	16.70	15.27	95.30	126.1	1.97	3.30	PASS	XAIS
CB-L4-19	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	110.2	14.60	13.25	95.99	124.8	-0.05	3.99	PASS	XAIS
CB-L4-20	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	110.5	14.80	13.39	96.25	125.3	0.09	4.25	PASS	XAIS
CB-L4-21	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	106.6	16.30	15.29	92.86	122.9	1.99	0.86	PASS	XAIS
CB-L4-22	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-23	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-24	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-25	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-26	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-27	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-28	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.2	15.70	14.65	93.38	122.9	1.35	1.38	PASS	XAIS
CB-L4-29	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.4	15.80	14.58	94.43	124.2	1.28	2.43	PASS	XAIS
CB-L4-30	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.3	16.20	14.96	94.34	124.5	1.66	2.34	PASS	XAIS
CB-L4-31	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.2	16.40	15.16	94.25	124.6	1.86	2.25	PASS	XAIS
CB-L4-32	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	108.0	16.50	15.28	94.08	124.5	1.98	2.08	PASS	XAIS
CB-L4-33	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.9	15.40	14.27	93.99	123.3	0.97	1.99	PASS	XAIS
CB-L4-34	N/A	4	2	3/31/2022	SF1-M	13.3	114.8	107.4	15.40	14.34	93.55	122.8	1.04	1.55	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L5-01	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	106.6	7.90	7.41	93.84	114.5	-1.79	1.84	PASS	XAIS
CB-L5-02	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	108.1	12.10	11.19	95.16	120.2	1.99	3.16	PASS	XAIS
CB-L5-03	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	104.8	11.70	11.16	92.25	116.5	1.96	0.25	PASS	XAIS
CB-L5-04	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	105.4	11.50	10.91	92.78	116.9	1.71	0.78	PASS	XAIS
CB-L5-05	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	105.6	11.80	11.17	92.96	117.4	1.97	0.96	PASS	XAIS
CB-L5-06	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	104.9	11.70	11.15	92.34	116.6	1.95	0.34	PASS	XAIS
CB-L5-07	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	107.4	10.40	9.68	94.54	117.8	0.48	2.54	PASS	XAIS
CB-L5-08	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	106.1	11.80	11.12	93.40	117.9	1.92	1.40	PASS	XAIS
CB-L5-09	N/A	5	1	4/1/2022	SF3-M	9.2	113.6	105.9	11.70	11.05	93.22	117.6	1.85	1.22	PASS	XAIS
CB-L5-10	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	105.5	11.60	11.00	92.87	117.1	1.80	0.87	PASS	XAIS
CB-L5-11	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	107.1	11.30	10.55	94.28	118.4	1.35	2.28	PASS	XAIS
CB-L5-12	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	106.5	11.40	10.70	93.75	117.9	1.50	1.75	PASS	XAIS
CB-L5-13	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	108.1	9.90	9.16	95.16	118.0	-0.04	3.16	PASS	XAIS
CB-L5-14	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	107.3	11.20	10.44	94.45	118.5	1.24	2.45	PASS	XAIS
CB-L5-15	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	107.8	11.40	10.58	94.89	119.2	1.38	2.89	PASS	XAIS
CB-L5-16	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	107.1	11.50	10.74	94.28	118.6	1.54	2.28	PASS	XAIS
CB-L5-17	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	109.9	10.60	9.65	96.74	120.5	0.45	4.74	PASS	XAIS

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CB-L5-18	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	110.1	10.40	9.45	96.92	120.5	0.25	4.92	PASS	XAIS
CB-L5-19	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.5	10.90	9.78	98.15	122.4	0.58	6.15	PASS	XAIS
CB-L5-20	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	110.4	10.90	9.87	97.18	121.3	0.67	5.18	PASS	XAIS
CB-L5-21	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	112.5	11.20	9.96	99.03	123.7	0.76	7.03	PASS	XAIS
CB-L5-22	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	110.9	11.80	10.64	97.62	122.7	1.44	5.62	PASS	XAIS
CB-L5-23	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.4	11.90	10.68	98.06	123.3	1.48	6.06	PASS	XAIS
CB-L5-24	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.9	12.40	11.08	98.50	124.3	1.88	6.50	PASS	XAIS
CB-L5-25	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.2	12.30	11.06	97.89	123.5	1.86	5.89	PASS	XAIS
CB-L5-26	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	110.4	12.10	10.96	97.18	122.5	1.76	5.18	PASS	XAIS
CB-L5-27	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.4	11.50	10.32	98.06	122.9	1.12	6.06	PASS	XAIS
CB-L5-28	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	111.3	11.80	10.60	97.98	123.1	1.40	5.98	PASS	XAIS
CB-L5-29	N/A	5	2	4/1/2022	SF3-M	9.2	113.6	110.4	12.00	10.87	97.18	122.4	1.67	5.18	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L6-01	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	112.2	10.20	9.09	98.77	122.4	-0.11	6.77	PASS	XAIS
CB-L6-02	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	111.7	10.80	9.67	98.33	122.5	0.47	6.33	PASS	XAIS
CB-L6-03	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	110.1	11.40	10.35	96.92	121.5	1.15	4.92	PASS	XAIS
CB-L6-04	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	110.4	11.10	10.05	97.18	121.5	0.85	5.18	PASS	XAIS
CB-L6-05	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	112.8	9.90	8.78	99.30	122.7	-0.42	7.30	PASS	XAIS
CB-L6-06	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	109.7	10.50	9.57	96.57	120.2	0.37	4.57	PASS	XAIS
CB-L6-07	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	109.9	10.10	9.19	96.74	120.0	-0.01	4.74	PASS	XAIS
CB-L6-08	N/A	6	1	4/1/2022	SF3-M	9.2	113.6	105.5	11.50	10.90	92.87	117.0	1.70	0.87	PASS	XAIS
CB-L6-09	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	105.7	11.70	11.07	93.05	117.4	1.87	1.05	PASS	XAIS
CB-L6-10	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.3	11.30	10.63	93.57	117.6	1.43	1.57	PASS	XAIS
CB-L6-11	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	108.8	10.50	9.65	95.77	119.3	0.45	3.77	PASS	XAIS
CB-L6-12	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	107.9	10.90	10.10	94.98	118.8	0.90	2.98	PASS	XAIS
CB-L6-13	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	108.1	10.10	9.34	95.16	118.2	0.14	3.16	PASS	XAIS
CB-L6-14	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	104.9	11.50	10.96	92.34	116.4	1.76	0.34	PASS	XAIS
CB-L6-15	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	105.2	11.50	10.93	92.61	116.7	1.73	0.61	PASS	XAIS
CB-L6-16	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.1	11.60	10.93	93.40	117.7	1.73	1.40	PASS	XAIS
CB-L6-17	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.0	10.80	10.19	93.31	116.8	0.99	1.31	PASS	XAIS

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CB-L6-18	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	105.9	10.90	10.29	93.22	116.8	1.09	1.22	PASS	XAIS
CB-L6-19	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	105.6	11.50	10.89	92.96	117.1	1.69	0.96	PASS	XAIS
CB-L6-20	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.0	11.60	10.94	93.31	117.6	1.74	1.31	PASS	XAIS
CB-L6-21	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.8	10.80	10.11	94.01	117.6	0.91	2.01	PASS	XAIS
CB-L6-22	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.1	10.90	10.35	92.69	116.2	1.15	0.69	PASS	XAIS
CB-L6-23	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	105.3	11.00	10.31	93.93	117.7	1.11	1.93	PASS	XAIS
CB-L6-24	N/A	6	2	4/1/2022	SF3-M	9.2	113.6	106.7	11.10	10.40	93.93	117.8	1.20	1.93	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L7-01	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	108.1	11.00	10.18	95.16	119.1	0.98	3.16	PASS	XAIS
CB-L7-02	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	108.8	10.30	9.47	95.77	119.1	0.27	3.77	PASS	XAIS
CB-L7-03	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	107.9	10.40	9.64	94.98	118.3	0.44	2.98	PASS	XAIS
CB-L7-04	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	110.1	9.90	8.99	96.92	120.0	-0.21	4.92	PASS	XAIS
CB-L7-05	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	110.2	10.20	9.26	97.01	120.4	0.06	5.01	PASS	XAIS
CB-L7-06	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	105.5	11.40	10.81	92.87	116.9	1.61	0.87	PASS	XAIS
CB-L7-07	N/A	7	1	4/1/2022	SF3-M	9.2	113.6	106.7	11.50	10.78	93.93	118.2	1.58	1.93	PASS	XAIS
CB-L7-08	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	107.1	11.40	10.64	94.28	118.5	1.44	2.28	PASS	XAIS
CB-L7-09	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	107.9	11.70	10.84	94.98	119.6	1.64	2.98	PASS	XAIS
CB-L7-10	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	106.6	11.20	10.51	93.84	117.8	1.31	1.84	PASS	XAIS
CB-L7-11	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	109.2	10.90	9.98	96.13	120.1	0.78	4.13	PASS	XAIS
CB-L7-12	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	108.8	10.80	9.93	95.77	119.6	0.73	3.77	PASS	XAIS
CB-L7-13	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	107.2	12.00	11.19	94.37	119.2	1.99	2.37	PASS	XAIS
CB-L7-14	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	109.1	12.10	11.09	96.04	121.2	1.89	4.04	PASS	XAIS
CB-L7-15	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	110.5	12.00	10.86	97.27	122.5	1.66	5.27	PASS	XAIS
CB-L7-16	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	111.0	11.80	10.63	97.71	122.8	1.43	5.71	PASS	XAIS
CB-L7-17	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	109.8	11.50	10.47	96.65	121.3	1.27	4.65	PASS	XAIS

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CB-L7-18	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	109.6	11.90	10.86	96.48	121.5	1.66	4.48	PASS	XAIS
CB-L7-19	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	109.8	11.20	10.20	96.65	121.0	1.00	4.65	PASS	XAIS
CB-L7-20	N/A	7	2	4/1/2022	SF3-M	9.2	113.6	110.4	11.60	10.51	97.18	122.0	1.31	5.18	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L8-01	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	112.4	10.40	9.25	98.94	122.8	0.05	6.94	PASS	XAIS
CB-L8-02	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	112.0	9.90	8.84	98.59	121.9	-0.36	6.59	PASS	XAIS
CB-L8-03	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	111.7	10.30	9.22	98.33	122.0	0.02	6.33	PASS	XAIS
CB-L8-04	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	111.9	10.50	9.38	98.50	122.4	0.18	6.50	PASS	XAIS
CB-L8-05	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	112.2	10.60	9.45	98.77	122.8	0.25	6.77	PASS	XAIS
CB-L8-06	N/A	8	1	4/2/2022	SF3-M	9.2	113.6	109.9	11.20	10.19	96.74	121.1	0.99	4.74	PASS	XAIS
CB-L8-07	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	110.3	10.80	9.79	97.10	121.1	0.59	5.10	PASS	XAIS
CB-L8-08	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	110.8	10.50	9.48	97.54	121.3	0.28	5.54	PASS	XAIS
CB-L8-09	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	110.0	10.40	9.45	96.83	120.4	0.25	4.83	PASS	XAIS
CB-L8-10	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	109.3	11.20	10.25	96.21	120.5	1.05	4.21	PASS	XAIS
CB-L8-11	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	109.5	12.00	10.96	96.39	121.5	1.76	4.39	PASS	XAIS
CB-L8-12	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	108.9	11.10	10.19	95.86	120.0	0.99	3.86	PASS	XAIS
CB-L8-13	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	108.4	11.20	10.33	95.42	119.6	1.13	3.42	PASS	XAIS
CB-L8-14	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	108.6	11.60	10.68	95.60	120.2	1.48	3.60	PASS	XAIS
CB-L8-15	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	108.2	12.10	11.18	95.25	120.3	1.98	3.25	PASS	XAIS
CB-L8-16	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	108.0	11.90	11.02	95.07	119.9	1.82	3.07	PASS	XAIS
CB-L8-17	N/A	8	2	4/2/2022	SF3-M	9.2	113.6	107.9	11.40	10.57	94.98	119.3	1.37	2.98	PASS	XAIS

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Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L9-01	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	107.2	9.60	8.96	94.37	116.8	-0.24	2.37	PASS	XAIS
CB-L9-02	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	105.4	11.50	10.91	92.78	116.9	1.71	0.78	PASS	XAIS
CB-L9-03	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	108.3	12.10	11.17	95.33	120.4	1.97	3.33	PASS	XAIS
CB-L9-04	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	106.0	10.50	9.91	93.31	116.5	0.71	1.31	PASS	XAIS
CB-L9-05	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	108.0	10.50	9.72	95.07	118.5	0.52	3.07	PASS	XAIS
CB-L9-06	N/A	9	1	4/2/2022	SF3-M	9.2	113.6	109.6	12.10	11.04	96.48	121.7	1.84	4.48	PASS	XAIS
CB-L9-07	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	106.4	11.40	10.71	93.66	117.8	1.51	1.66	PASS	XAIS
CB-L9-08	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	106.6	11.60	10.88	93.84	118.2	1.68	1.84	PASS	XAIS
CB-L9-09	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	107.0	11.90	11.12	94.19	118.9	1.92	2.19	PASS	XAIS
CB-L9-10	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	107.2	11.70	10.91	94.37	118.9	1.71	2.37	PASS	XAIS
CB-L9-11	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	109.0	11.80	10.83	95.95	120.8	1.63	3.95	PASS	XAIS
CB-L9-12	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	107.2	11.20	10.45	94.37	118.4	1.25	2.37	PASS	XAIS
CB-L9-13	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	106.9	11.40	10.66	94.10	118.3	1.46	2.10	PASS	XAIS
CB-L9-14	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	107.5	11.60	10.79	94.63	119.1	1.59	2.63	PASS	XAIS
CB-L9-15	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	107.2	11.80	11.01	94.37	119.0	1.81	2.37	PASS	XAIS
CB-L9-16	N/A	9	2	4/2/2022	SF3-M	9.2	113.6	108.1	11.10	10.27	95.16	119.2	1.07	3.16	PASS	XAIS

Frequency: 12 tests/lift/acre
Compaction Spec: 92 % of Modified Proctor (Per CQA Plan)
Moisture Spec: 2% below OM to 2% above OM

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Loose Lift Thickness: 8 inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L10-01	N/A	10	1	4/4/2022	SF3-M	9.2	113.6	110.4	11.90	10.78	97.18	122.3	1.58	5.18	PASS	XAIS
CB-L10-02	N/A	10	1	4/4/2022	SF3-M	9.2	113.6	105.5	11.70	11.09	92.87	117.2	1.89	0.87	PASS	XAIS
CB-L10-03	N/A	10	1	4/4/2022	SF3-M	9.2	113.6	105.4	11.80	11.20	92.78	117.2	2.00	0.78	PASS	XAIS
CB-L10-04	N/A	10	1	4/4/2022	SF3-M	9.2	113.6	106.7	10.40	9.75	93.93	117.1	0.55	1.93	PASS	XAIS
CB-L10-05	N/A	10	1	4/4/2022	SF3-M	9.2	113.6	104.6	11.60	11.09	92.08	116.2	1.89	0.08	PASS	XAIS
CB-L10-06	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	108.8	10.90	10.02	95.77	119.7	0.82	3.77	PASS	XAIS
CB-L10-07	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	107.6	11.80	10.97	94.72	119.4	1.77	2.72	PASS	XAIS
CB-L10-08	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	107.7	11.90	11.05	94.81	119.6	1.85	2.81	PASS	XAIS
CB-L10-09	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	107.4	11.40	10.61	94.54	118.8	1.41	2.54	PASS	XAIS
CB-L10-10	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	106.9	11.20	10.48	94.10	118.1	1.28	2.10	PASS	XAIS
CB-L10-11	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	106.4	11.00	10.34	93.66	117.4	1.14	1.66	PASS	XAIS
CB-L10-12	N/A	10	2	4/4/2022	SF3-M	9.2	113.6	107.0	11.90	11.12	94.19	118.9	1.92	2.19	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L11-01	N/A	11	1	4/4/2022	SF3-M	9.2	113.6	107.1	11.70	10.92	94.28	118.8	1.72	2.28	PASS	XAIS
CB-L11-02	N/A	11	1	4/4/2022	SF3-M	9.2	113.6	109.5	12.20	11.14	96.39	121.7	1.94	4.39	PASS	XAIS
CB-L11-03	N/A	11	1	4/4/2022	SF3-M	9.2	113.6	105.0	11.60	11.05	92.43	116.6	1.85	0.43	PASS	XAIS
CB-L11-04	N/A	11	1	4/4/2022	SF3-M	9.2	113.6	106.5	11.40	10.70	93.75	117.9	1.50	1.75	PASS	XAIS
CB-L11-05	N/A	11	2	4/4/2022	SF3-M	9.2	113.6	106.1	11.50	10.84	93.40	117.6	1.64	1.40	PASS	XAIS
CB-L11-06	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	107.2	11.60	10.82	94.37	118.8	1.62	2.37	PASS	XAIS
CB-L11-07	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	106.4	11.00	10.34	93.66	117.4	1.14	1.66	PASS	XAIS
CB-L11-08	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	107.0	11.20	10.47	94.19	118.2	1.27	2.19	PASS	XAIS
CB-L11-09	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	106.0	11.80	11.13	93.31	117.8	1.93	1.31	PASS	XAIS
CB-L11-10	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	106.5	11.60	10.89	93.75	118.1	1.69	1.75	PASS	XAIS
CB-L11-11	N/A	11	3	4/5/2022	SF3-M	9.2	113.6	106.8	11.40	10.67	94.01	118.2	1.47	2.01	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L12-01	N/A	12	1	4/6/2022	SF3-M	9.2	113.6	107.7	10.30	9.56	94.81	118.0	0.36	2.81	PASS	XAIS
CB-L12-02	N/A	12	1	4/6/2022	SF3-M	9.2	113.6	104.8	10.80	10.31	92.25	115.6	1.11	0.25	PASS	XAIS
CB-L12-03	N/A	12	1	4/6/2022	SF3-M	9.2	113.6	105.1	10.80	10.28	92.52	115.9	1.08	0.52	PASS	XAIS
CB-L12-04	N/A	12	2	4/6/2022	SF3-M	9.2	113.6	104.6	10.10	9.66	92.08	114.7	0.46	0.08	PASS	XAIS
CB-L12-05	N/A	12	2	4/6/2022	SF3-M	9.2	113.6	105.1	11.00	10.47	92.52	116.1	1.27	0.52	PASS	XAIS
CB-L12-06	N/A	12	2	4/6/2022	SF3-M	9.2	113.6	105.2	10.80	10.27	92.61	116.0	1.07	0.61	PASS	XAIS
CB-L12-07	N/A	12	2	4/6/2022	SF3-M	9.2	113.6	105.2	10.40	9.89	92.61	115.6	0.69	0.61	PASS	XAIS
CB-L12-08	N/A	12	2	4/6/2022	SF3-M	9.2	113.6	104.8	11.20	10.69	92.25	116.0	1.49	0.25	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

Released to Imaging: 8/24/2022 3:35:23 PM
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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L13-01	N/A	13	1	4/7/2022	SF3-M	9.2	113.6	106.9	11.80	11.04	94.10	118.7	1.84	2.10	PASS	XAIS
CB-L13-02	N/A	13	1	4/7/2022	SF3-M	9.2	113.6	108.1	11.90	11.01	95.16	120.0	1.81	3.16	PASS	XAIS
CB-L13-03	N/A	13	2	4/7/2022	SF3-M	9.2	113.6	105.5	11.60	11.00	92.87	117.1	1.80	0.87	PASS	XAIS
CB-L13-04	N/A	13	2	4/7/2022	SF3-M	9.2	113.6	106.2	11.20	10.55	93.49	117.4	1.35	1.49	PASS	XAIS
CB-L13-05	N/A	13	2	4/7/2022	SF3-M	9.2	113.6	105.3	11.40	10.83	92.69	116.7	1.63	0.69	PASS	XAIS
CB-L13-06	N/A	13	2	4/7/2022	SF3-M	9.2	113.6	105.7	11.30	10.69	93.05	117.0	1.49	1.05	PASS	XAIS
CB-L13-07	N/A	13	2	4/7/2022	SF3-M	9.2	113.6	105.2	11.00	10.46	92.61	116.2	1.26	0.61	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L14-01	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.6	11.80	11.07	93.84	118.4	1.87	1.84	PASS	XAIS
CB-L14-02	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.0	11.40	10.75	93.31	117.4	1.55	1.31	PASS	XAIS
CB-L14-03	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.2	11.20	10.55	93.49	117.4	1.35	1.49	PASS	XAIS
CB-L14-04	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.4	10.50	9.87	93.66	116.9	0.67	1.66	PASS	XAIS
CB-L14-05	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	105.4	10.90	10.34	92.78	116.3	1.14	0.78	PASS	XAIS
CB-L14-06	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.3	11.10	10.44	93.57	117.4	1.24	1.57	PASS	XAIS
CB-L14-07	N/A	14	1	4/7/2022	SF3-M	9.2	113.6	106.7	11.50	10.78	93.93	118.2	1.58	1.93	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

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NORTH RANCH CELL E-1 - PERIMETER CONTAINMENT BERM SOIL COMPACTION DENSITY LOG

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	106.3	11.50	10.82	93.57	117.8	1.62	1.57	PASS	XAIS
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	106.9	11.40	10.66	94.10	118.3	1.46	2.10	PASS	XAIS
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	106.4	11.20	10.53	93.66	117.6	1.33	1.66	PASS	XAIS
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	106.3	11.40	10.72	93.57	117.7	1.52	1.57	PASS	XAIS
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	107.2	11.80	11.01	94.37	119.0	1.81	2.37	PASS	XAIS
CB-L15-01	N/A	15	1	4/8/2022	SF3-M	9.2	113.6	107.0	11.40	10.65	94.19	118.4	1.45	2.19	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		2% below OM to 2% above OM
Loose Lift Thickness:	8	inches

SCS ENGINEERS Environmental Consultants & Contractors

April 15, 2022
File No. 01222034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction
Response to Construction Material Submittal #24 – HDPE Leachate Collection and Leak Detection System Riser Pipes

Submitted Date: 4/14/22

Information Submitted:

6-inch HDPE SDR-11 from Georg Fischer Central Plastics, LLC, 12-inch HDPE SDR-17 from Pipeline Plastics, and 18-inch SDR-11 from Pipeline Plastics

SCS Response:

Engineer has reviewed the pipeline submittals for 6, 12, and 18-inch piping to be installed within the various leachate collection and leak detection systems on this project.

Engineer approves the proposed materials with no comment.

Georg Fischer Central Plastics, LLC
4949 Joseph Hardin Drive
Dallas, TX 75236
972-641-2080
800-449-6927

Material Certification

Customer: Milford / 600763

Customer PO / SO: P-ORD010712 / 258003466

Ship Date: 4/11/22

Project Name: Delivery # 196377585

Product: 360062625 PIPE,6,IPS,DR11,BLK,NON,YEL,F2619,50FT

Quantity: Approx. 7800ft

This is to certify that the product described above and shipped on the above order has been sampled and tested in accordance with the applicable requirements of the specification(s) indicated below:

(✓) ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
(✓) Cell Classification 445574C (Black and Gray, High Density PE4710) Country of Origin: USA
( ) ASTM D3035 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR_ Based on Controlled Outside Diameter (1/2" - 3")
(✓) ASTM F714 Standard Specification for 4” to 63” OD Controlled Polyethylene Pipe
( ) ASTM D2513-11 - Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings
(✓) ASTM F2619 Standard Specification for High-Density Polyethylene (PE) Line Pipe.
( ) ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
( ) ASTM F2206 - Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipe, Fittings, Sheet Stock, Plate Stock, or Block Stock
( ) ASTM F2880 - Standard Specification for Lap-Joint Type Flange Adapters for Polyethylene Pressure Pipe in Nominal Pipe Sizes 3⁄4 in. to 65 in
( ) ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
(✓) AWWA C901-20/C906-15 – Polyethylene (PE) Pressure Pipe and Fittings, sizes ½” through 63”, for Water Distribution
(✓) NSF-61-G - Drinking Water System Components - Health Effects
( ) FM Standard 1613 (Factory Mutual Approved)
( ) ASTM A536 - Standard Specification for Ductile Iron Material (MJ Glands Only) – Country of Origin: USA/China
( ) ASTM A536 - Standard Specification for Ductile Iron Material (DF Bolt Rings Only) – Country of Origin: China
( ) ASTM A351-CF8M - Standard Specification for 316 Stainless Steel (DF Bolt Rings Only) – Country Of Origin: China
( ) AWWA C207 - CL 150 / B, D & E (DF Bolt Rings Only)
( ) ASME / ANSI B16.5 CL 150, B16.47 Ser. A - CL 150, B16.1- CL 125 (DF Bolt Rings Only)
( ) Other:

Date: 4/14/22

Yee Huat (Sam) Ho
Engineering Manager
Georg Fischer Central Plastics LLC
Pipe & Fabrication

PIPELINE PLASTICS

CERTIFICATE OF CONFORMANCE

Date:	4/14/2022
Customer:	MPS Enterprises, Inc.
Purchase Order No.:	P-ORD011735
Product:	Pipeline Plastics Water/Industrial/FM Pipe
Origin of Product:	Levelland, TX, USA
Nominal Size:	18" IPS DR 11
Material:	PE4710
Standard Specifications(s):	ANSI/AWWA C906/ASTM F714/FM
FM Approval Class:	Certified to FM 1613, PC200
Potable Water Contact:	NSF/ANSI Standard 14 Certified
Cell Classification per ASTM D3350:	PE445574C
PPI TR4 Hydrostatic Design Basis @ 73°F:	1600 psi
PPI TR-4 Hydrostatic Design Stress @ 73°F:	1000 psi
PPI TR4 Hydrostatic Design Basis @ 140°F:	1000 psi

Pipeline Plastics, LLC confirms product(s) listed above meet or exceed the requirements as stated.

FM Approvals 1613, "Polyethylene Pipe and Fittings for Underground Fire Protection Service."

Standard specification refers to most current version at time of production, unless stated otherwise.

Signature: _____

Title: _____

Date: _____

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PIPELINE PLASTICS

CERTIFICATE OF CONFORMANCE

Date:	4/14/2022
Customer:	MPS Enterprises, Inc.
Purchase Order No.:	P-ORD010101
Product:	Pipeline Plastics Energy Pipe
Origin of Product:	Levelland, TX, USA
Nominal Size:	12" IPS DR 17
Material:	PE4710
Standard Specifications(s):	ASTM F2619, API 15LE
Cell Classification per ASTM D3350:	PE445574C
PPI TR4 Hydrostatic Design Basis @ 73°F:	1600 psi
PPI TR-4 Hydrostatic Design Stress @ 73°F:	1000 psi
PPI TR4 Hydrostatic Design Basis @ 140°F:	1000 psi

Pipeline Plastics, LLC confirms product(s) listed above meet or exceed the requirements as stated.

Standard specification refers to most current version at time of production, unless stated otherwise.

Signature: _____

Title: _____

Date: _____

SCS ENGINEERS Environmental Consultants & Contractors

May 6, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #25 – Cell E-1 Secondary 60-mil HDPE Installation

Requested Date: May 5, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for secondary layer at Cell E-1

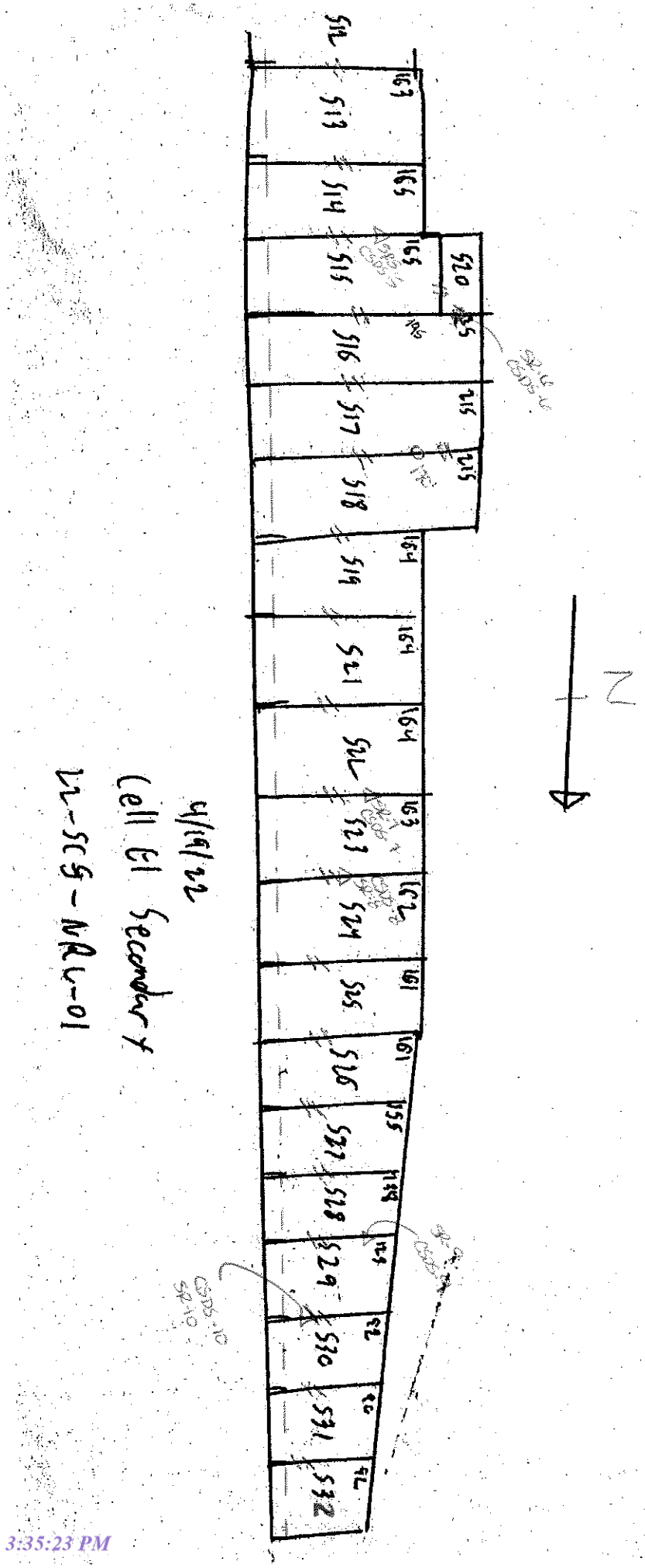
SCS Response:

Certifying Engineer has reviewed the pertinent data and observed the completed installation in person of the 60-mil HDPE secondary geomembrane layer at Cell E-1. All but two destructive samples that were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. CSDS-29 and CSDS-39 failed initial testing and supplemental samples A-B were taken at each location. Supplemental samples at these two locations met specifications. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

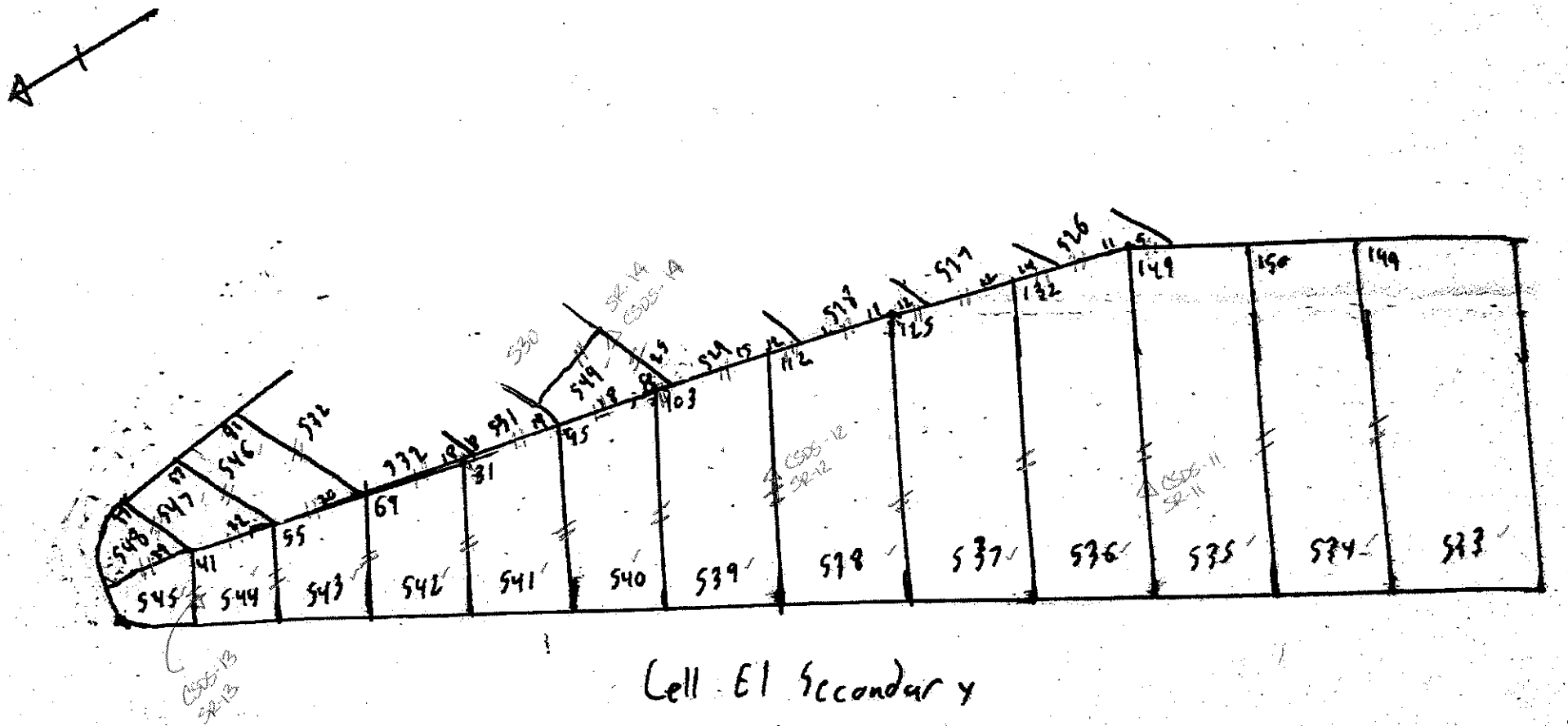
Therefore, the Certifying Engineer approves the installation of the secondary 60-mil HDPE geomembrane layer for the Cell E-1. Subsequent overlying layers may be installed at this time.

Attached is all pertinent data.

Cell 19 Secondary
22-555-MRL-01
4/18/22
N
SDD3 SP.3
SDD1 SP.1
SDD4 SP.4
SDD2 SP.2


N
4/18/22
Cell 61 Secondary
22-SCS-NRV-01

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Cell E1 Secondary

4/20/22

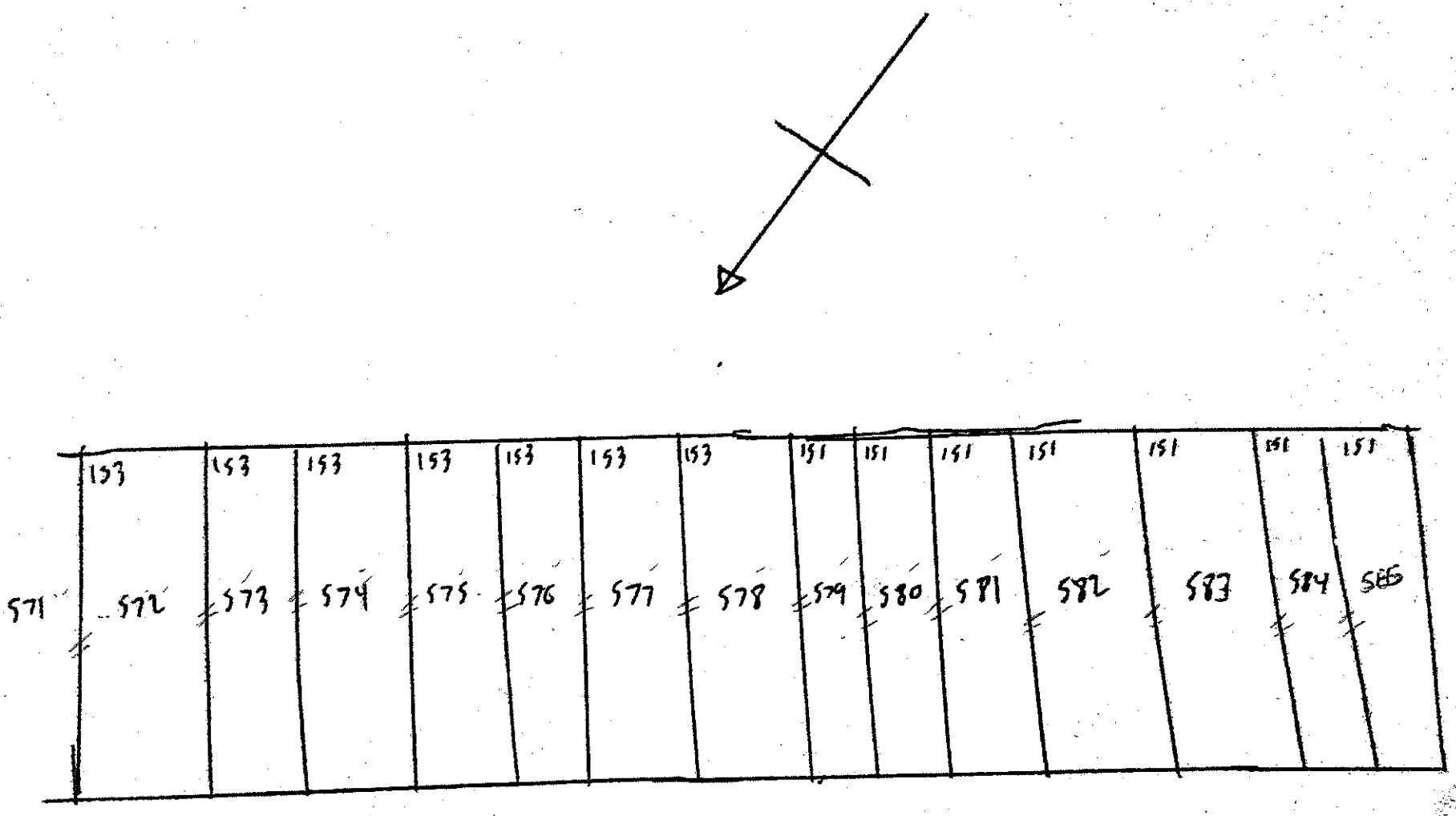
2L-SCS-NRL-01

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4/13/22

Cell E1 Secondary

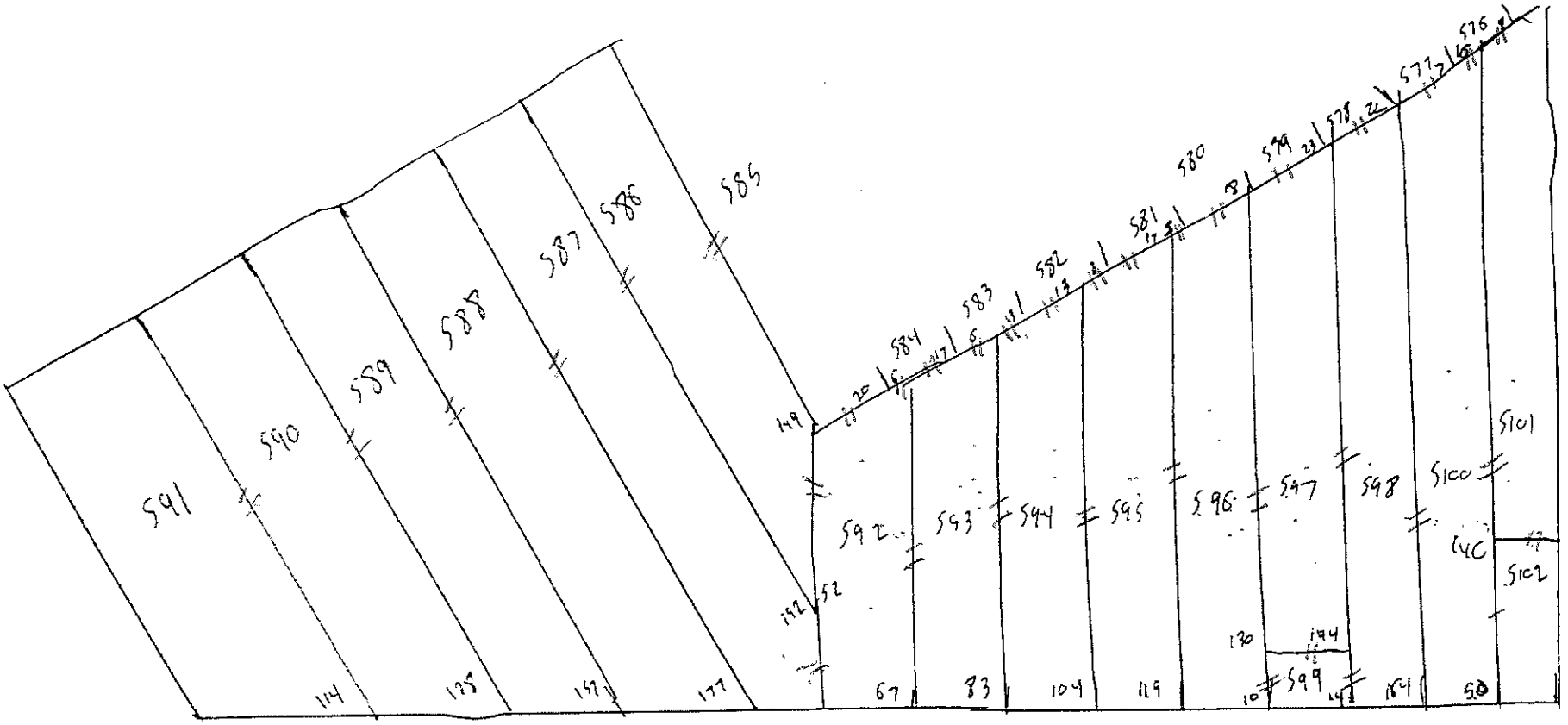
22-SCS-NRL-01

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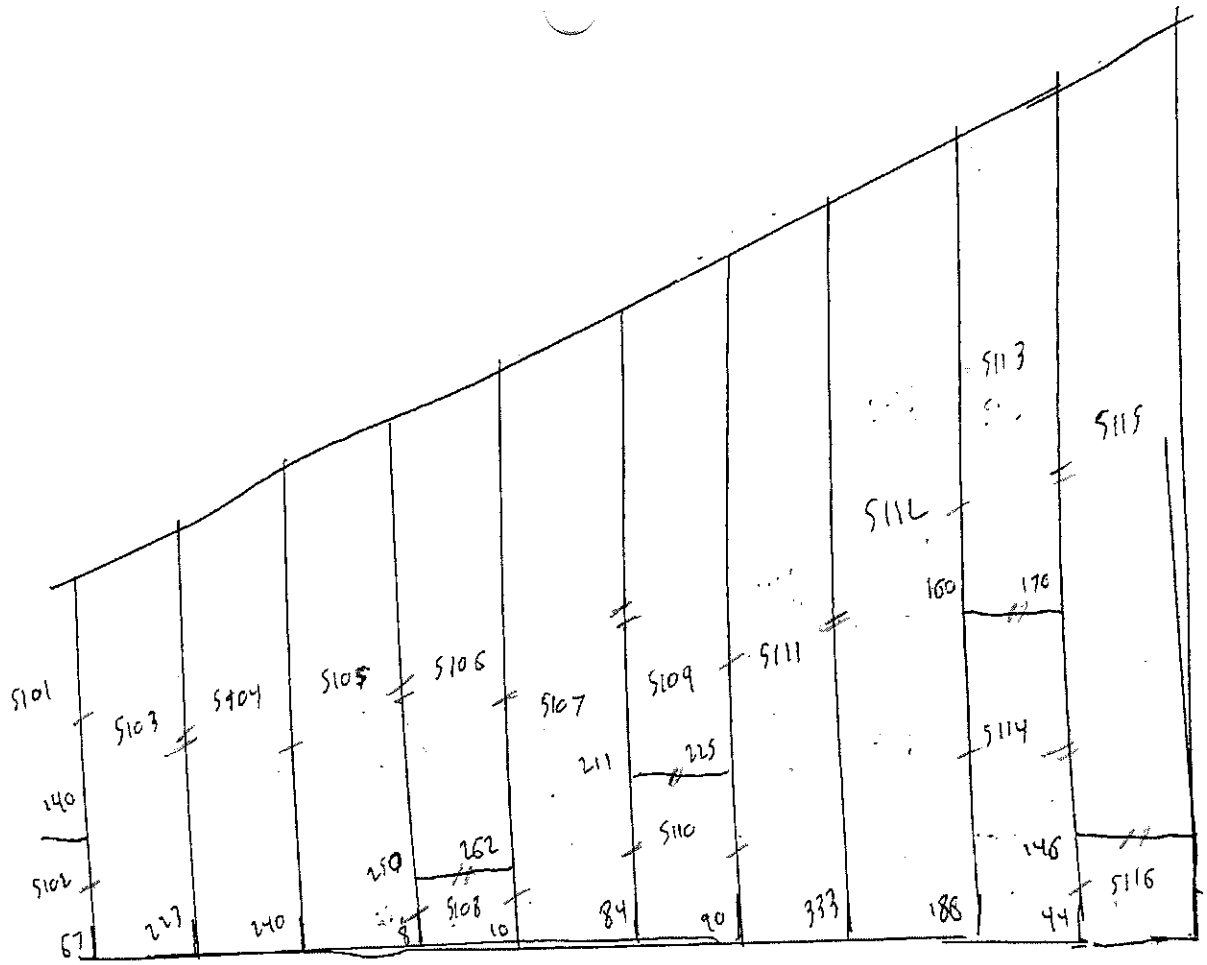
4/25/22
27-SCS-NRL-01
Gell El Secondary

PG (6) OF (10)

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4/26/22

22-SCS-NRL-01

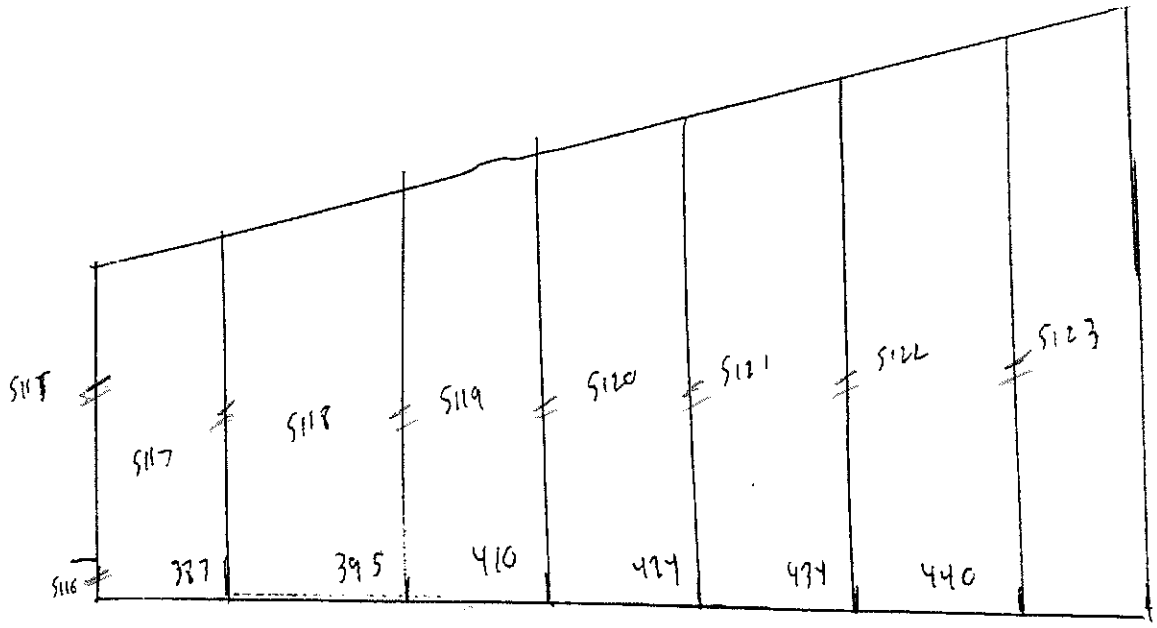
Cell E1 Secondary

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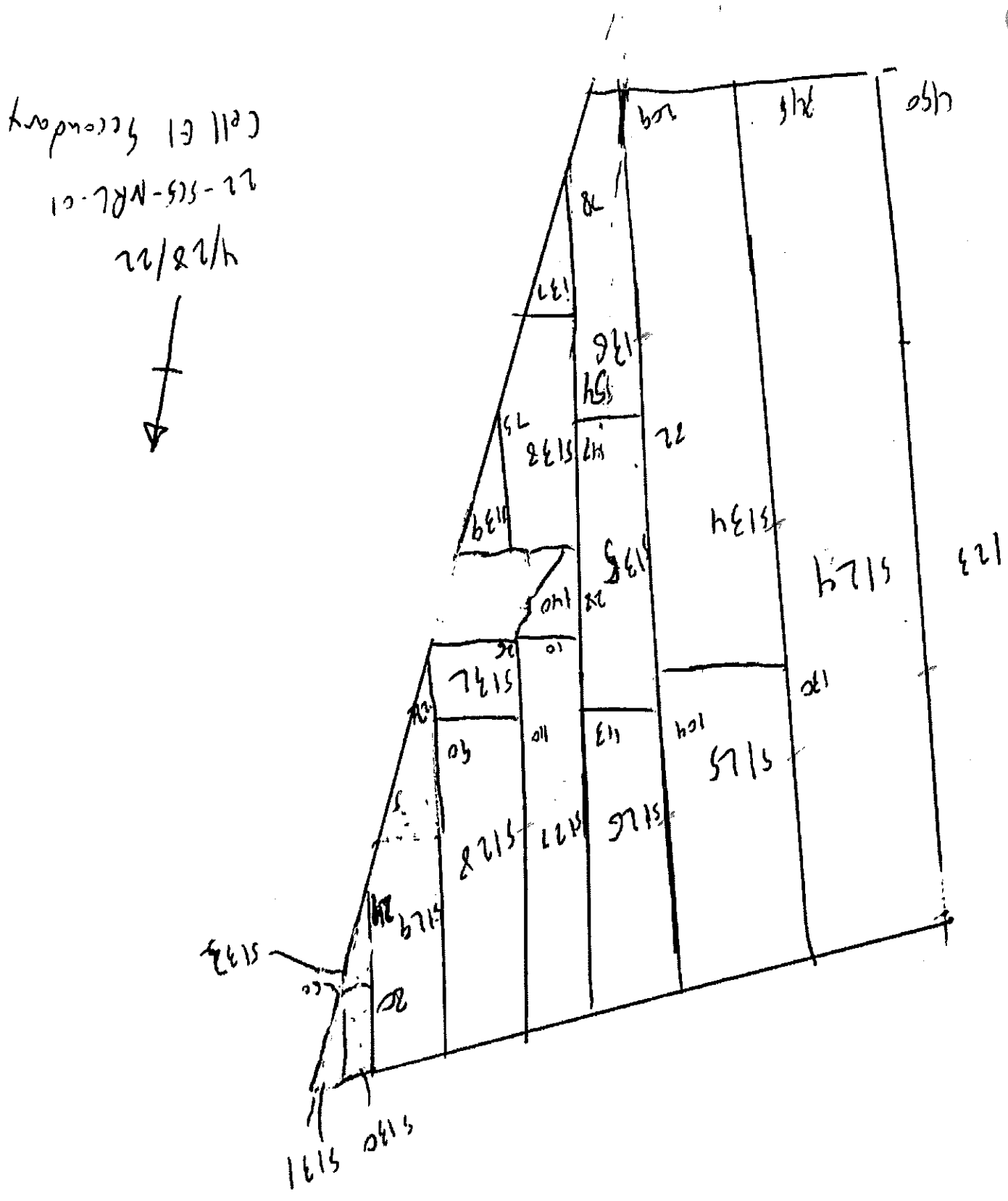


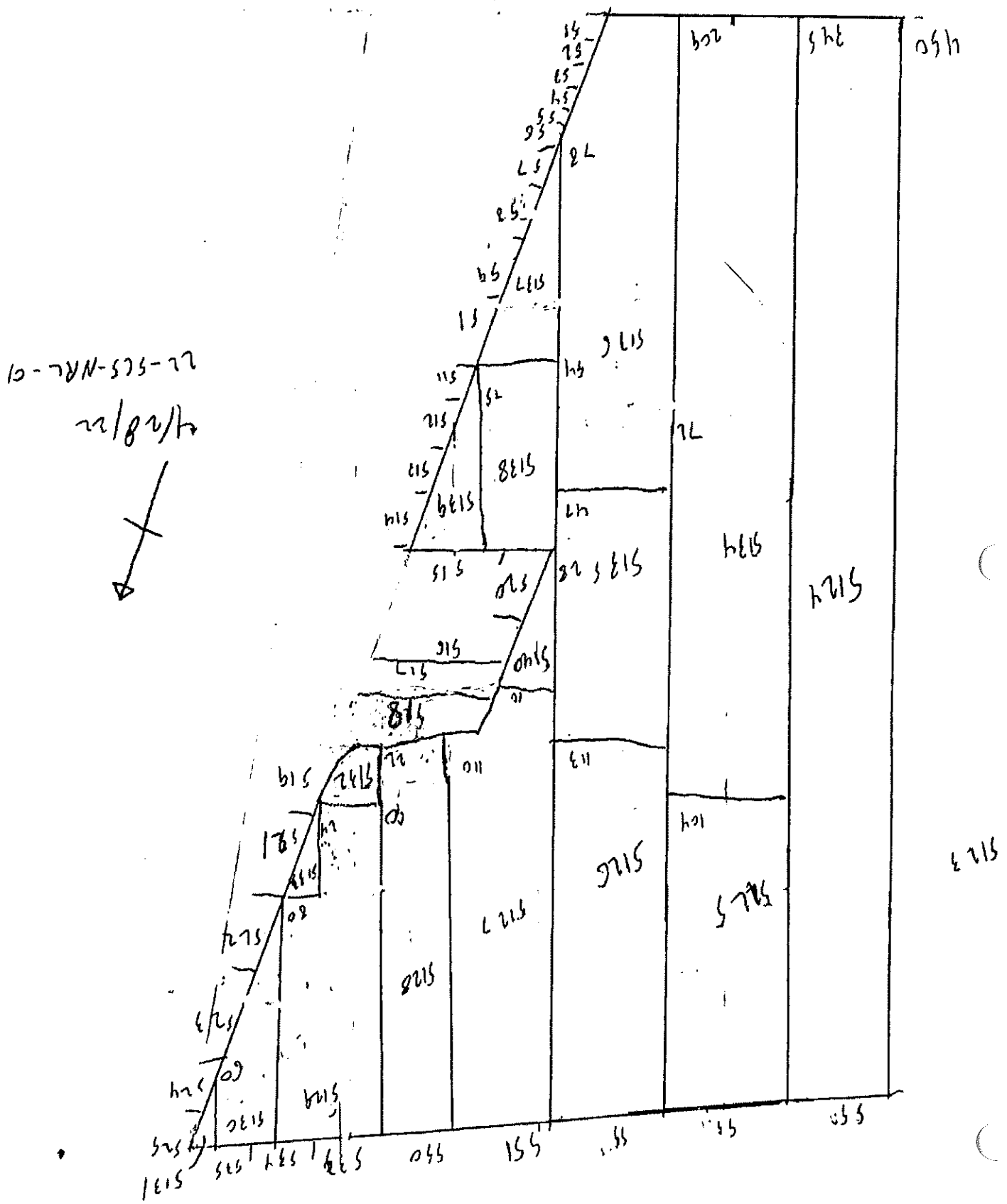
4/27/22
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Cell E1 Secondary

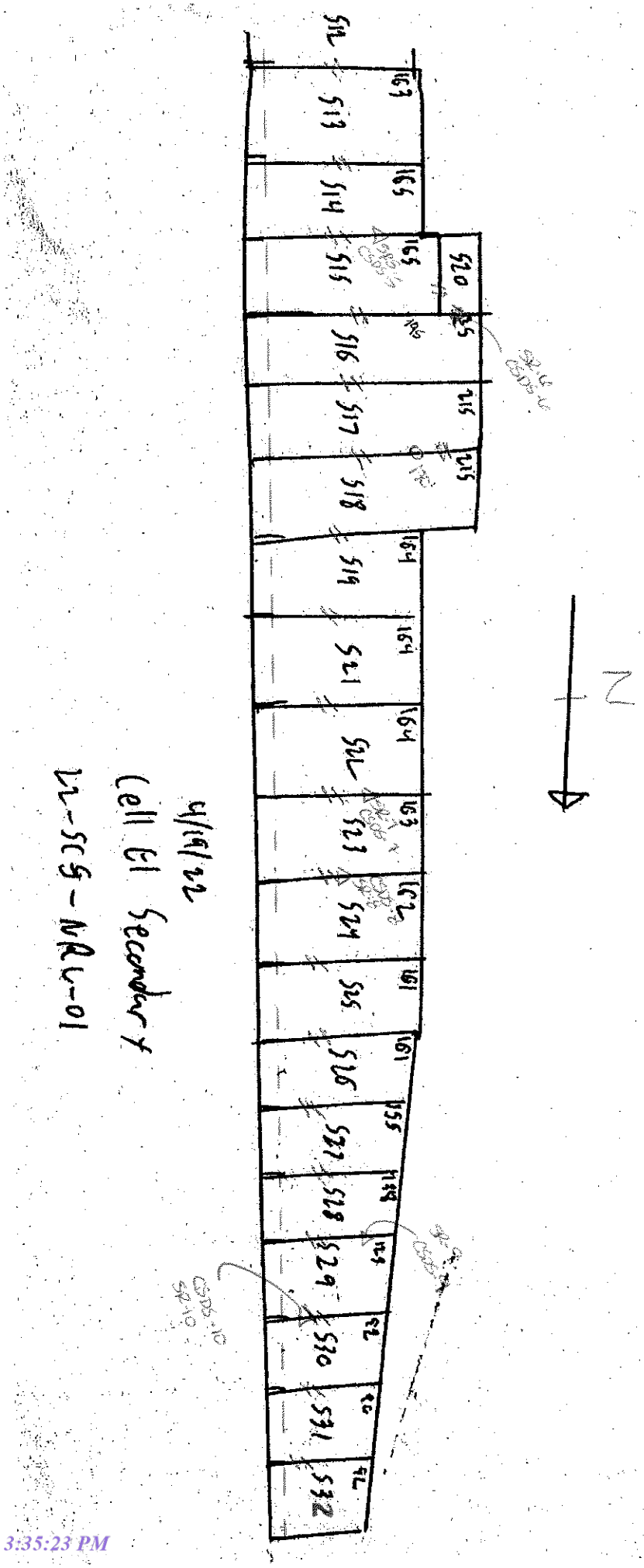
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Cell E1 Secondary
22-SCS-NRL-01
4/28/22



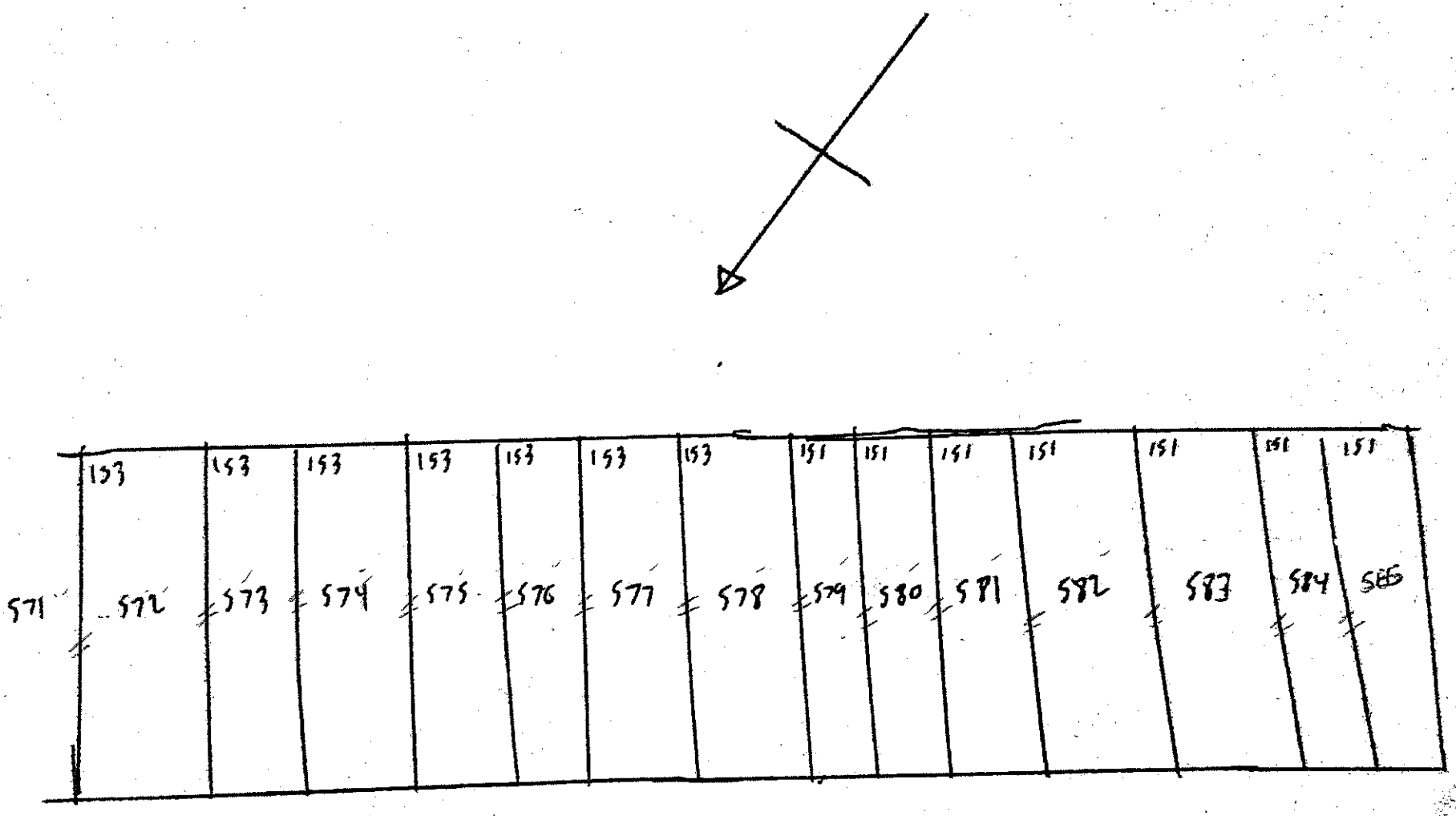
Cell 61 Secondary
22-555-MRL-01
4/18/22
N
SS01-1 SP.1
SS01-3 SP.3
SS01-2 SP.2
SS01-4 SP.4
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68


N
6/16/22
Cell 61 Secondary
22-SCS-NRV-01

Cell El Secondary
4/20/22
22-525-NRL-01

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4/13/22

Cell E1 Secondary

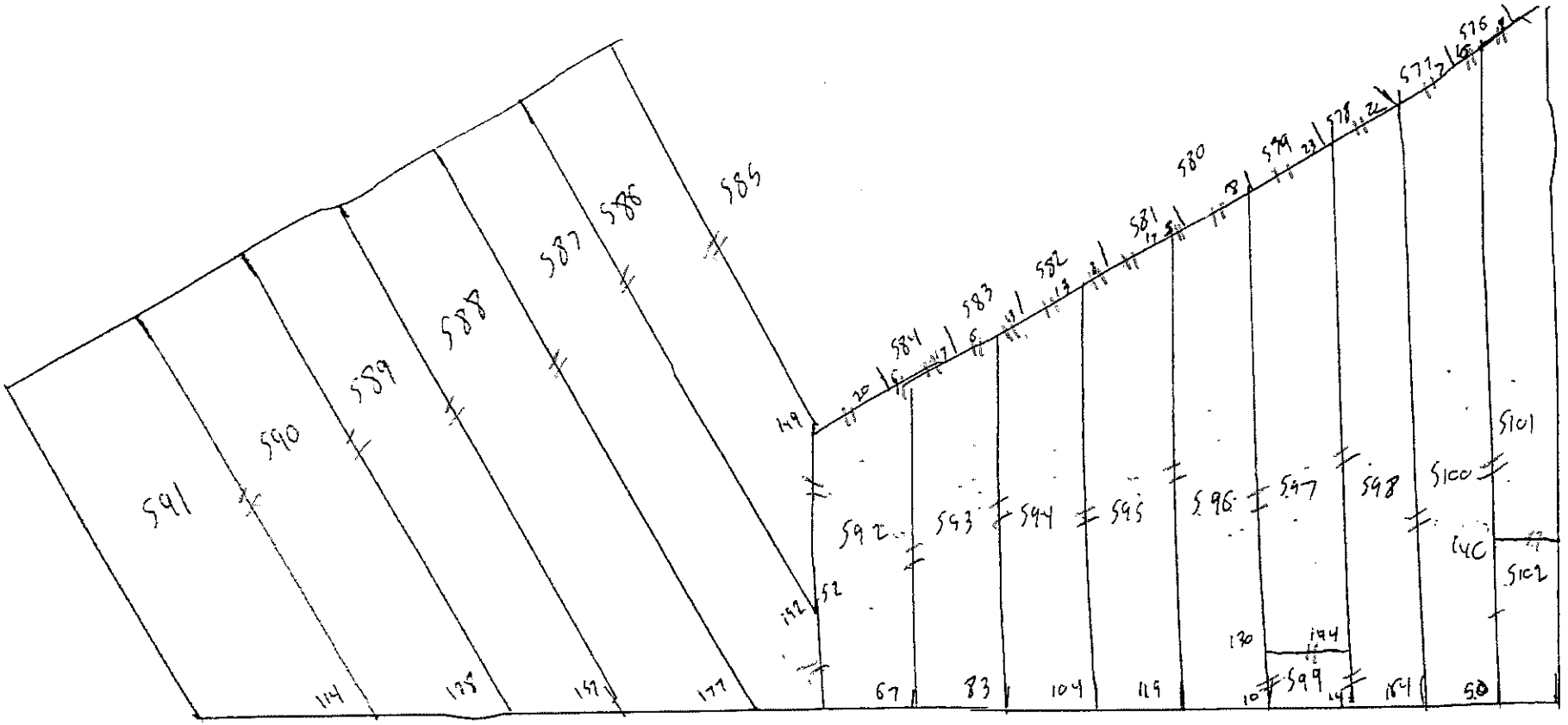
22-SCS-NRL-01

PG 5 OF 10

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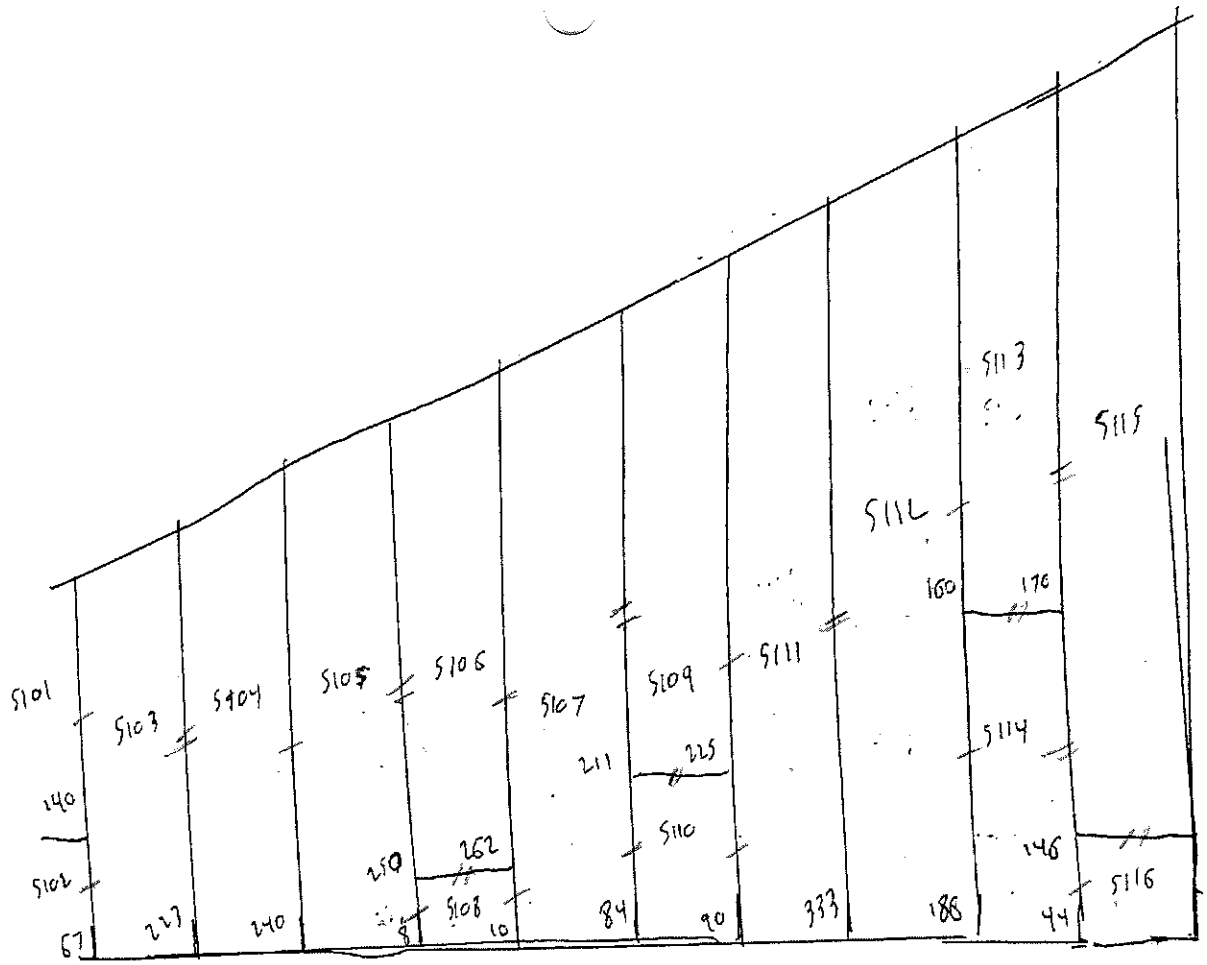
4/25/22
27-SCS-NRL-01
Gell El Secondary

PG (6) OF (10)

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4/26/22

22-SCS-NRL-01

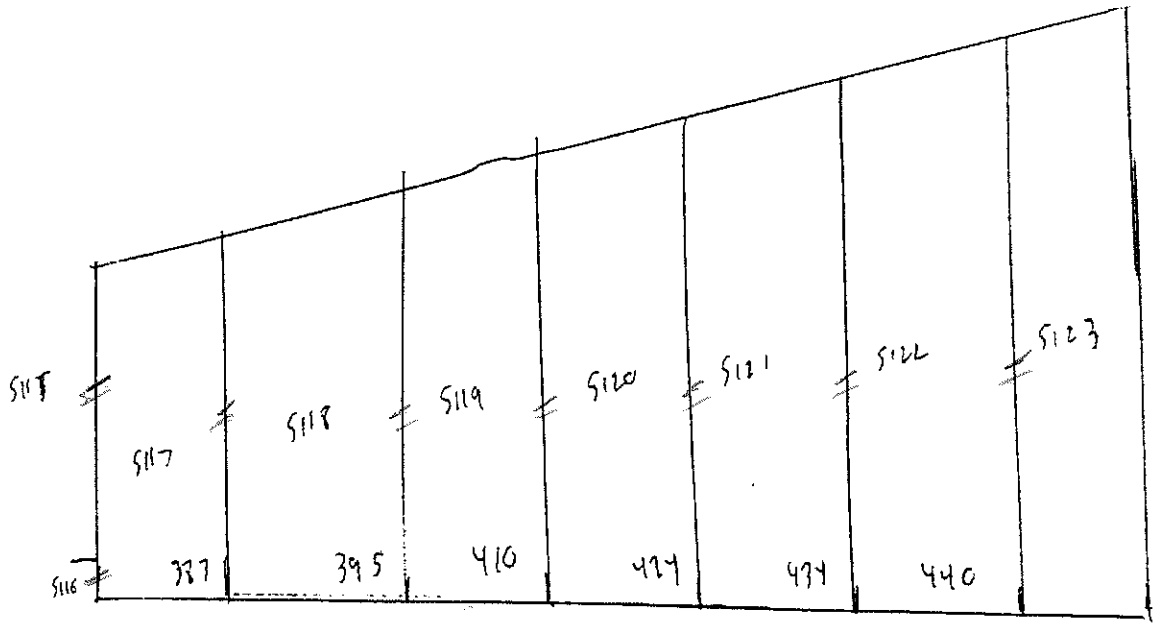
Cell E1 Secondary

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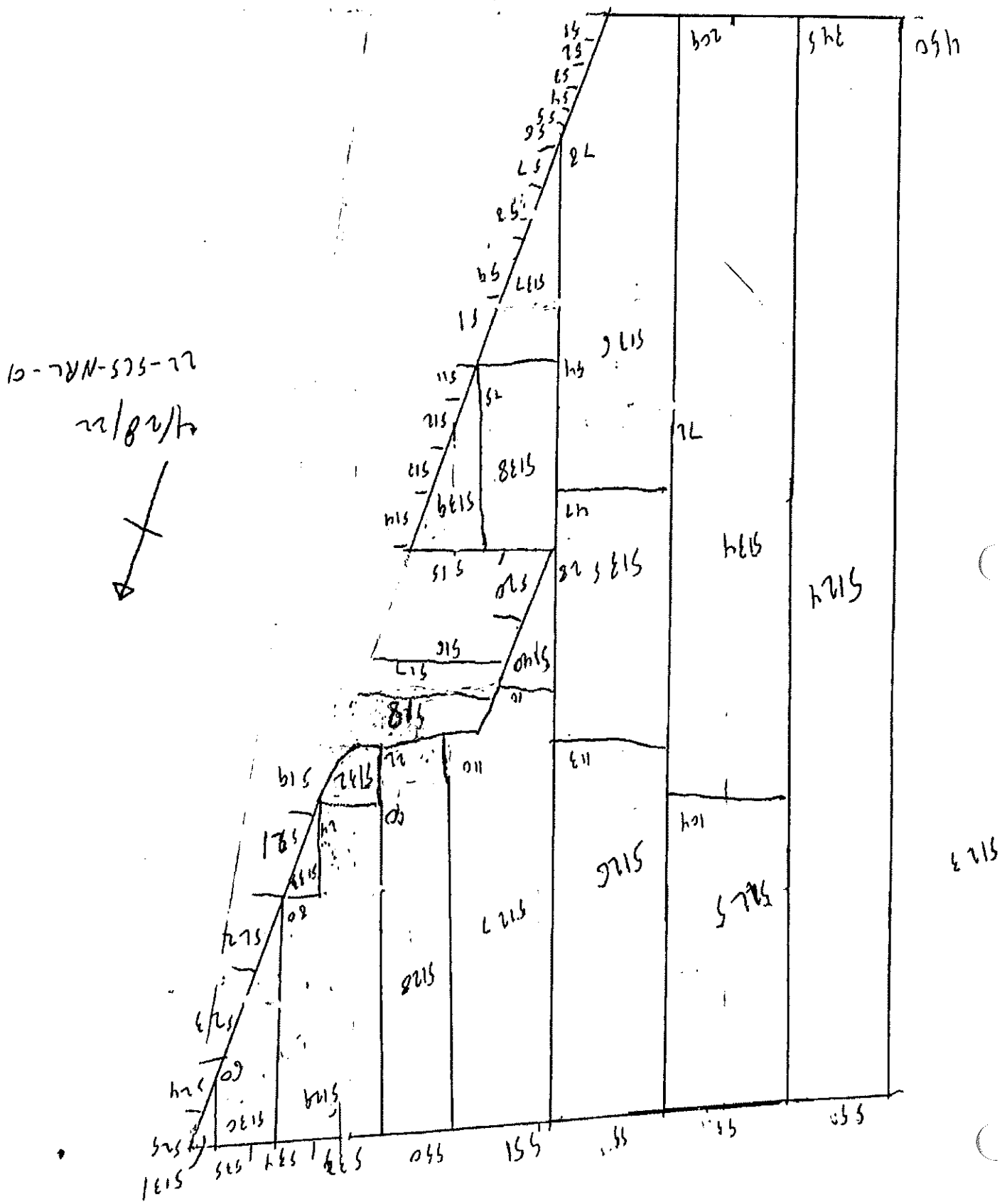
4/27/22
22-SCS-NRL-01

Cell E1 Secondary

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Cell 61 Secondary
22-505-NRL-01
4/28/22



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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 1 of 9
Date: 4/18/22
Rev. Date:

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1 Secondary

Liner Installer: Mustang

Subgrade covered by panels: S1-S12

Approximate Area (SF): 44160

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments:

Liner Installer's Signature — Date: 4/18/22

Quality Technician's Signature — Date: 4/18/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 2 of 6
Date: 4/19/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 513 – 532

Approximate Area (SF): 69414

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/19/22

Quality Technician's Signature — Date: 4/19/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Received by OCD: 8/24/2022 3:28:34 PM

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 3 of 4
Date: 4/20/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 533 - 549

Approximate Area (SF): 36347.5

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Sketch of Approved Area

SEE AS-BUILT SKETCH

4/20/22
Liner Installer's Signature Date

4/20/22
Quality Technician's Signature Date

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 4 of 9
Date: 4/21/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 550 – 571

Approximate Area (SF): 74442

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/21/22

Quality Technician's Signature — Date: 4/21/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 9 of 9
Date: 4/23/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 572 - 585

Approximate Area (SF): 48944

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date 4/23/22

Quality Technician's Signature — Date 4/23/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-0

Sheet 6 of 9
Date: 4/25/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 586 - 602

Approximate Area (SF): 50 255

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/25/22

Quality Technician's Signature — Date: 4/25/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Date: 4/26/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 5109 - 5116

Approximate Area (SF): 68784

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/26/22

Quality Technician's Signature — Date: 4/26/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 8 of 9
Date: 4/27/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E

Liner Installer: Mustang

Subgrade covered by panels: S17 - S123

Approximate Area (SF): 67 790

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Sketch of Approved Area

SEE AS-BUILT SKETCH

Liner Installer's Signature — Date: 4/27/22

Quality Technician's Signature — Date: 4/27/22

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 9 of 9
Date: 4/29/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 5124 - 5140

Approximate Area (SF): 48,283

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

4/29/22
Liner Installer's Signature — Date

/Dompke 4/28/22
Quality Technician's Signature — Date

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Date: 4/18/22
Rev. Date:

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1 Secondary

Liner Installer: Mustang

Subgrade covered by panels: S1-S12

Approximate Area (SF): 44160

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments:

Liner Installer's Signature — Date: 4/18/22

Quality Technician's Signature — Date: 4/18/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 2 of 6
Date: 4/19/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 513 – 532

Approximate Area (SF): 69414

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/19/22

Quality Technician's Signature — Date: 4/19/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Received by OCD: 8/24/2022 3:28:34 PM

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 3 of 4
Date: 4/20/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 533 - 549

Approximate Area (SF): 36347.5

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Sketch of Approved Area

SEE AS-BUILT SKETCH

4/20/22
Liner Installer's Signature Date

4/20/22
Quality Technician's Signature Date

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 4 of 9
Date: 4/21/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 550 – 571

Approximate Area (SF): 74442

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Tim Smith 4/21/22
Liner Installer's Signature Date

Tim Smith 4/21/22
Quality Technician's Signature Date

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 1 of 9
Date: 4/23/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 572 - 585

Approximate Area (SF): 48944

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date 4/23/22

Quality Technician's Signature — Date 4/23/22

Sketch of Approved Area

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Client: SCS Engineers
Project: " North Ranch Landfill
Project Number: 22-SCS-NRL-0

Sheet 6 of 9
Date: 4/25/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 586 - 602

Approximate Area (SF): 50 255

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/25/22

Quality Technician's Signature — Date: 4/25/22

Sketch of Approved Area

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 7 of 9
Date: 4/26/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 5109 - 5116

Approximate Area (SF): 68784

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

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Liner Installer's Signature — Date: 4/26/22

Quality Technician's Signature — Date: 4/26/22

Sketch of Approved Area

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 8 of 9
Date: 4/27/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E

Liner Installer: Mustang

Subgrade covered by panels: S17 - S123

Approximate Area (SF): 67 790

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Sketch of Approved Area

SEE AS-BUILT SKETCH

Liner Installer's Signature — Date: 4/27/22

Quality Technician's Signature — Date: 4/27/22

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 9 of 9
Date: 4/29/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Cell E1

Liner Installer: Mustang

Subgrade covered by panels: 5124 - 5140

Approximate Area (SF): 48,283

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Liner Installer's Signature — Date: 4/29/22

Quality Technician's Signature — Date: 4/28/22

Sketch of Approved Area

SEE AS-BUILT SKETCH

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet (1) of ___
Date: 4/18/20

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell H Re Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
S1	0102-207960	1316	152	23	3496	152	22.5	3,420	E. Berm	XAIS	
S2	0102-207960	1309	158	23	3634	155	22.5	3,487.5	E. Berm	XAIS	
S3	0102-207960	1340	158	23	3634	158	22.5	3555	E. Berm	XAIS	
S4	0102-207955	1400	160	23	3680	159	22.5	3577.5	E. Berm	XAIS	
S5	0102-207955	1405	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S6	0102-207955	1411	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S7	0102-207959	1422	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S8	0102-207959	1427	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S9	0102-207959	1430	163	23	3749	162	22.5	3645	E. Berm	XAIS	
S10	0102-207961	1445	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S11	0102-207961	1451	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S12	0102-207961	1456	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	

	Gross	Installed
Total SF (Page)	44160	43087.5
Total SF (Project)	44160	43087.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (1) of (9)

Released to Imaging: 8/24/2022 3:35:23 PM

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of ____
Date: 4/19/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 61 Secondary Material Type: HDPE Thickness: 80mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S13	3991	1319	165	23	3795	164	22.5	3690	E. Berm	XAIS	
S14	3971	1324	165	23	3795	164	22.5	3690	E. Berm	XAIS	
S15	3971	1329	190	23	4370	178	22.5	4005	E. Berm	XAIS	
S16	3956	1345	215	23	4945	215	22.5	4837.5	E. Berm	YAIS	
S17	3956	1352	215	23	4945	219	22.5	4927.5	E. Berm	XAIS	
S18	3956	1357	212	23	4876	183	22.5	4230	E. Berm	XAIS	
S19	3944	1410	164	23	3772	164	22.5	3690	E. Berm	XAIS	
S20	3992	1421	25	23	575	25	22.5	562.5	Floor	XAIS	
S21	3972	1426	164	23	3772	164	22.5	3690	E. Berm	YAIS	
S22	3932	1431	164	23	3772	164	22.5	3690	E. Berm	XAIS	
S23	3992	1437	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S24	3939	1452	162	23	3726	162	22.5	3645	E. Berm	XAIS	
S25	3939	1457	161	23	3709	161	22.5	3622.5	E. Berm	XAIS	
S26	3979	1504	161	23	3703	158	22.5	3555	E. Berm	XAIS	
S27	3926	1510	155	23	3565	147	22.5	3307.5	E. Berm	XAIS	
S28	3926	1516	138	23	3174	132	22.5	2970	E. Berm	XAIS	
S29	3926	1521	125	23	2875	109	22.5	2430	E. Berm	XAIS	
S30	3926	1529	92	23	2116	91	22.5	2047.5	E. Berm	XAIS	
S31	3931	1532	92	23	2116	91	22.5	2047.5	E. Berm	XAIS	
S32	3931	1539	90	23	2070	90	22.5	2025	E. Berm	XAIS	
			Total SF (Page)		69,419		Total SF (Page)		66510		
			Total SF (Project)		113,574		Total SF (Project)		109,597.5		

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

RG (2) of (9)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22 SCS NRE 01

CQA SOLUTIONS

Sheet 2 of
Date: 4/20/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell F1 Secondary Material Type: HDPE Thickness: 60 MIL Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
537	3931	1315	149	23	3427	149	22.5	3352.5	N. Berm	XAIS	
534	3931	1325	150	23	3450	150	22.5	3375	N. Berm	XAIS	
535	3911	1341	150	23	3450	150	22.5	3375	N. Berm	XAIS	
536	3911	1400	149	23	3427	141	22.5	3172.5	N. Berm	XAIS	
537	3911	1419	132	23	3036	129	22.5	2902.5	N. Berm	XAIS	
538	4008	1430	125	23	2875	119	22.5	2677.5	N. Berm	XAIS	
539	4008	1455	112	23	2576	108	22.5	2430	N. Berm	XAIS	
540	4008	1501	103	23	2369	99	22.5	2227.5	N. Berm	XAIS	
541	4008	1506	95	23	2185	99	22.5	1980	N. Berm	XAIS	
542	3909	1521	91	23	1893	75	22.5	1687.5	N. Berm	XAIS	
543	3909	1527	69	23	1587	62	22.5	1395	N. Berm	XAIS	
544	3909	1533	55	23	1265	48	22.5	1080	N. Berm	XAIS	
545	3909	1541	41	23	943	41	22.5	922.5	N. Berm	XAIS	
546	3909	1555	70	23	1610	64	22.5	1440	E. Berm	XAIS	
547	3909	1609	57	23	1311	47	22.5	1057.5	E. Berm	XAIS	
548	3909	1612	37	23	1425.5	32	22.5	360	E. Berm	XAIS	Triangle
549	3931	1628	25	23	575	18	22.5	405	E. Berm	XAIS	

Total SF (Page)	36,347.5	Total SF (Page)	33,940
Total SF (Project)	144,921.5	Total SF (Project)	141,437.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 3 of 9

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22 SCS NRL-01

CQA SOLUTIONS

Sheet 4 of ____
Date: 7/21/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
550	3915	1118	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
551	3915	1322	154	23	3542	154	22.5	3465	N. Berm	XAIS	
552	3915	1330	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
553	3894	1351	153	23	3519	152	22.5	3420	N. Berm	XAIS	
554	3894	1356	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
555	3894	1409	154	23	3542	154	22.5	3465	N. Berm	XAIS	
556	3920	1410	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
557	3920	1416	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
558	3920	1420	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
559	3917	1433	154	23	3542	154	22.5	3465	N. Berm	XAIS	
560	3917	1440	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
561	3917	1506	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
562	3918	1515	152	23	3496	152	22.5	3420	N. Berm	XAIS	
563	3918	1522	152	23	3496	152	22.5	3420	N. Berm	XAIS	
564	3918	1529	152	23	3496	152	22.5	3420	N. Berm	XAIS	
565	3942	1540	152	23	3496	151	22.5	3397.5	N. Berm	XAIS	
566	3942	1545	150	23	3450	149	22.5	3352.5	N. Berm	XAIS	
567	3942	1551	153	23	3519	151	22.5	3397.5	N. Berm	XAIS	
568	3974	1554	153	23	3565	154	22.5	3465	N. Berm	XAIS	
569	3974	1620	74	12	474	79	12	474	N. Berm	XAIS	Triangle
570	3974	1627	155	23	3565	154	22.5	3465	N. Berm	XAIS	
571	3974	1634	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
			Total SF (Page)		74442		Total SF (Page)		72609		
			Total SF (Project)		224767.5		Total SF (Project)		216048.5		

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 4 of 9

Client: XS
Project: NORTH RANCH LF
Project Number: 22-SCS-NRL-21

CQA SOLUTIONS

Sheet ____
Date: 4/1/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Width	Area (SF)	Installed Measurements Length	Width	Area (SF)	Location	Observer	Comments
572	3929	0800	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
573	3929	0805	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
574	3929	0809	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
575	3937	0830	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
576	3937	0837	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
577	3937	0842	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
578	3427	0915	153	23	3519	152	22.5	3420	N. Berm	XAIS	
579	3427	0921	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
580	3427	0926	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
581	3934	1030	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
582	3934	1035	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
583	3934	1042	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
584	3896	1300	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
585	3896	1305	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
				Total SF (Page)	48944		Total SF (Page)	47857.5			
				Total SF (Project)	273107.5		Total SF (Project)	263904			

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 5 of 9

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet ____ of ____
Date: 4/25/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 61 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S76		0800	192	23	4416	171	22.5	3847.5	N. Berm	XAIS	
S77		0815	192	23	4416	185	22.5	4162.5	N. Berm	XAIS	
S78		0830	177	23	4071	167	22.5	3757.5	N. Berm	XAIS	
S79		0845	157	23	3611	148	22.5	3330	N. Berm	XAIS	
S80		0900	138	23	3174	126	22.5	2835	N. Berm	XAIS	
S81		0915	114	23	2622	114	22.5	2565	N. Berm	XAIS	
S82		1330	67	23	1541	60	22.5	1350	Floor	XAIS	
S83		1335	83	23	1909	75	22.5	1687.5	Floor	XAIS	
S84		1345	101	23	2323	94	22.5	2115	Floor	XAIS	
S85		1400	119	23	2737	112	22.5	2520	Floor	XAIS	
S86		1415	140	23	3220	130	22.5	2925	Floor	XAIS	
S87		1430	134	23	3312	137	22.5	3082.5	Floor	XAIS	
S88		1445	167	23	3772	161	22.5	3622.5	Floor	XAIS	
S89		1500	14	23	322	12	22.5	270	Floor	XAIS	
S100		1515	190	23	4370	177	22.5	3982.5	Floor	XAIS	
S101		1530	140	23	3220	140	22.5	3150	Floor	XAIS	
S102		1545	50	23	1150	50	22.5	1125	Floor	XAIS	

Total SF (Page)	50255	Total SF (Page)	46327.5
Total SF (Project)	923,562.5	Total SF (Project)	310,291.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Page 401 of 813

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Ranch
Project Number: 22-SCS-NRL-01

Sheet ___ of ___
Date: 7/26/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell F1 Sump/Liner Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S103	3430	1310	223	23	5129	215	22.5	4837.5	Floor	XAIS	
S104	3350	1315	240	23	5520	272	22.5	5220	Floor	XAIS	
S105	3673	1340	257	23	5911	249	22.5	5602.5	Floor	XAIS	
S106	3976	1345	262	23	6026	256	22.5	5760	Floor	XAIS	
S107		1420	293	23	6739	283	22.5	6367.5	Floor	XAIS	
S108		1425	10	23	230	9	22.5	202.5	Floor	XAIS	
S109		1440	225	23	5175	218	22.5	4905	Floor	XAIS	
S110		1449	90	23	2070	97	22.5	1957.5	Floor	XAIS	
S111		1520	333	23	7659	326	22.5	7335	Floor	XAIS	
S112		1550	345	23	7935	339	22.5	7627.5	Floor	XAIS	
S113		1610	170	23	3910	165	22.5	3712.5	Floor	XAIS	
S114		1650	190	23	4370	188	22.5	4230	Floor	XAIS	
S115		1645	316	23	7268	316	22.5	7110	Floor	XAIS	
S116		1700	44	23	1012	44	22.5	990	Floor	XAIS	
			Total SF (Page)		68784	Total SF (Page)		65857.5			
			Total SF (Project)		341,346.5	Total SF (Project)		336,039			

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Client: SCS
Project: North Ranch
Project Number: 22-SCS-NRL-Ø1

CQA SOLUTIONS

Sheet ___ of ___
Date: 4/27/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
5117	3446	1300	387	23	8901	358	22.5	8055	Floor	XAIS	
5118	3447	1315	395	23	9085	391	22.5	8797.5	Floor	XAIS	
5119	3449	1330	410	23	9430	402	22.5	9045	Floor	XAIS	
5120	3454	1345	424	23	9752	417	22.5	9382.5	Floor	XAIS	
5121	3458	1400	434	23	9982	429	22.5	9652.5	Floor	XAIS	
5122	3461	1415	440	23	10120	437	22.5	9832.5	Floor	XAIS	
5123	3473	1435	440	23	10120	440	22.5	9900	Floor	XAIS	
				Total SF (Page)	67,390		Total SF (Page)	64,665			
				Total SF (Project)	459,736.5		Total SF (Project)	440,754			

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project:
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet ____ of ____
Date: 4/27/30

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 01 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S114	3945	1506	450	23	10,350	445	22.5	10012.5	Floor	XAIS	
S115	3946	1309	135	23	3,105	130	22.5	2925	Floor	XAIS	
S116	3899	1309	113	23	2,599	109	22.5	2452.5	Floor	XAIS	
S117	3947	1314	113	23	2,599	112	22.5	2520	Floor	XAIS	
S118	3944	1318	112	23	2,576	111	22.5	2497.5	Floor	XAIS	
S119	3914	1330	104	23	2,392	97	22.5	2182.5	Floor	XAIS	
S120	3958	1345	80	23	1840	60	22.5	1350	Floor	XAIS	
S121		1350	40	12	480	40	12	480	Floor	XAIS	Triangle
S122		1357	26	23	598	24	22.5	540	Floor	XAIS	
S123		1406	24	23	552	24	22.5	540	Floor	XAIS	Triangle
S124		1419	347	23	7981	34.6	22.5	7785	Floor	XAIS	
S125		1430	117	23	2691	114	22.5	2565	Floor	XAIS	
S126		1439	201	23	4623	166	22.5	3735	Floor	XAIS	
S127		1446	78	23	1794	78	22.5	1755	Floor	XAIS	Triangle
S128		1457	101	23	2323	88	22.5	1980	Floor	XAIS	
S129		1506	75	20	1500	75	20	1506	Floor	XAIS	Triangle
S140		1530	28	10	280	28	10	256	Floor	XAIS	Triangle
			Total SF (Page)		48,283		Total SF (Page)		45,100		
			Total SF (Project)				Total SF (Project)				

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PG 9 of 9

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet (1) of ____
Date: 4/18/20

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell H Re Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
S1	0102-207960	1316	152	23	3496	152	22.5	3,420	E. Berm	XAIS	
S2	0102-207960	1309	158	23	3634	155	22.5	3,487.5	E. Berm	XAIS	
S3	0102-207960	1340	158	23	3634	158	22.5	3555	E. Berm	XAIS	
S4	0102-207955	1400	160	23	3680	159	22.5	3577.5	E. Berm	XAIS	
S5	0102-207955	1405	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S6	0102-207955	1411	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S7	0102-207959	1422	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S8	0102-207959	1427	160	23	3680	160	22.5	3600	E. Berm	XAIS	
S9	0102-207959	1430	163	23	3749	162	22.5	3645	E. Berm	XAIS	
S10	0102-207961	1445	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S11	0102-207961	1451	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S12	0102-207961	1456	163	23	3749	163	22.5	3667.5			
				Total SF (Page)	44160		Total SF (Page)	43087.5			
				Total SF (Project)	44160		Total SF (Project)	43087.5			

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PG (1) of (9)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of
Date: 4/19/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 6 Secondary Material Type: HDPE Thickness: 80mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S13	3991	1319	165	23	3795	164	22.5	3690	E. Berm	XAIS	
S14	3971	1324	165	23	3795	164	22.5	3690	E. Berm	XAIS	
S15	3971	1329	190	23	4370	178	22.5	4005	E. Berm	XAIS	
S16	3956	1345	215	23	4945	215	22.5	4837.5	E. Berm	YAIS	
S17	3956	1352	215	23	4945	219	22.5	4927.5	E. Berm	XAIS	
S18	3956	1357	212	23	4876	183	22.5	4230	E. Berm	XAIS	
S19	3944	1410	164	23	3772	164	22.5	3690	E. Berm	XAIS	
S20	3992	1421	25	23	575	25	22.5	562.5	Floor	XAIS	
S21	3972	1426	164	23	3772	164	22.5	3690	E. Berm	YAIS	
S22	3932	1431	164	23	3772	164	22.5	3690	E. Berm	XAIS	
S23	3992	1437	163	23	3749	163	22.5	3667.5	E. Berm	XAIS	
S24	3939	1452	162	23	3726	162	22.5	3645	E. Berm	XAIS	
S25	3939	1457	161	23	3703	161	22.5	3622.5	E. Berm	XAIS	
S26	3979	1504	161	23	3703	158	22.5	3555	E. Berm	XAIS	
S27	3926	1520	155	23	3565	147	22.5	3307.5	E. Berm	XAIS	
S28	3926	1526	138	23	3174	132	22.5	2970	E. Berm	XAIS	
S29	3926	1531	125	23	2875	169	22.5	2430	E. Berm	XAIS	
S30	3926	1539	92	23	2116	91	22.5	2047.5	E. Berm	XAIS	
S31	3931	1592	92	23	2116	91	22.5	2047.5	E. Berm	XAIS	
S32	3931	1559	90	23	2070	90	22.5	2025	E. Berm	XAIS	
			Total SF (Page)		69,419		Total SF (Page)		66510		
			Total SF (Project)		113,574		Total SF (Project)		109,597.5		

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PG (2) OF (9)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22 SCS NRE 01

CQA SOLUTIONS

Sheet 2 of
Date: 4/20/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell F1 Secondary Material Type: HDPE Thickness: 60 MIL Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
537	3931	1315	149	23	3427	149	22.5	3352.5	N. Berm	XAIS	
534	3931	1325	150	23	3450	150	22.5	3375	N. Berm	XAIS	
535	3911	1341	150	23	3450	150	22.5	3375	N. Berm	XAIS	
536	3911	1400	149	23	3427	141	22.5	3172.5	N. Berm	XAIS	
537	3911	1419	132	23	3036	129	22.5	2902.5	N. Berm	XAIS	
538	4008	1430	125	23	2875	119	22.5	2677.5	N. Berm	XAIS	
539	4008	1455	112	23	2576	108	22.5	2430	N. Berm	XAIS	
540	4008	1501	103	23	2369	99	22.5	2227.5	N. Berm	XAIS	
541	4008	1506	95	23	2185	99	22.5	1980	N. Berm	XAIS	
542	3909	1521	91	23	1893	75	22.5	1687.5	N. Berm	XAIS	
543	3909	1527	69	23	1587	62	22.5	1395	N. Berm	XAIS	
544	3909	1533	55	23	1265	48	22.5	1080	N. Berm	XAIS	
545	3909	1541	41	23	943	41	22.5	922.5	N. Berm	XAIS	
546	3909	1555	70	23	1610	64	22.5	1440	E. Berm	XAIS	
547	3909	1609	57	23	1311	47	22.5	1057.5	E. Berm	XAIS	
548	3909	1612	37	23	1425.5	32	22.5	360	E. Berm	XAIS	Triangle
549	3931	1628	25	23	575	18	22.5	405	E. Berm	XAIS	

Total SF (Page)	36,347.5	Total SF (Page)	33,940
Total SF (Project)	144,921.5	Total SF (Project)	141,437.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 3 of 9

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22 SCS NRL-01

CQA SOLUTIONS

Sheet 4 of ____
Date: 7/21/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
550	3915	1118	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
551	3915	1322	154	23	3542	154	22.5	3465	N. Berm	XAIS	
552	3915	1330	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
553	3894	1351	153	23	3519	152	22.5	3420	N. Berm	XAIS	
554	3894	1356	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
555	3894	1409	154	23	3542	154	22.5	3465	N. Berm	XAIS	
556	3920	1410	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
557	3920	1416	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
558	3920	1420	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
559	3917	1433	154	23	3542	154	22.5	3465	N. Berm	XAIS	
560	3917	1440	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
561	3917	1506	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
562	3918	1515	152	23	3496	152	22.5	3420	N. Berm	XAIS	
563	3918	1522	152	23	3496	152	22.5	3420	N. Berm	XAIS	
564	3918	1529	152	23	3496	152	22.5	3420	N. Berm	XAIS	
565	3942	1540	152	23	3496	151	22.5	3397.5	N. Berm	XAIS	
566	3942	1545	150	23	3450	149	22.5	3352.5	N. Berm	XAIS	
567	3942	1551	153	23	3519	151	22.5	3397.5	N. Berm	XAIS	
568	3974	1554	153	23	3565	154	22.5	3465	N. Berm	XAIS	
569	3974	1620	74	12	474	79	12	474	N. Berm	XAIS	Triangle
570	3974	1627	155	23	3565	154	22.5	3465	N. Berm	XAIS	
571	3974	1634	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
			Total SF (Page)		74442		Total SF (Page)		72609		
			Total SF (Project)		224767.5		Total SF (Project)		216048.5		

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PG 4 OF 9

Client: XS
Project: NORTH RANCH LF
Project Number: 22-SCS-NRL-21

CQA SOLUTIONS

Sheet ___
Date: 4/1/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
572	3929	0800	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
573	3929	0805	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
574	3929	0809	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
575	3937	0830	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
576	3937	0837	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
577	3937	0842	153	23	3519	153	22.5	3442.5	N. Berm	XAIS	
578	3927	0915	153	23	3519	152	22.5	3420	N. Berm	XAIS	
579	3927	0921	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
580	3927	0926	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
581	3934	1030	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
582	3934	1035	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
583	3934	1042	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
584	3896	1300	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	
585	3896	1305	151	23	3473	151	22.5	3397.5	N. Berm	XAIS	

	Gross	Installed
Total SF (Page)	48944	47857.5
Total SF (Project)	273107.5	263904

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PG (5) of (9)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

Sheet ____ of ____
Date: 4/25/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 61 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S76		0800	192	23	4416	171	22.5	3847.5	N. Berm	XAIS	
S77		0815	192	23	4416	185	22.5	4162.5	N. Berm	XAIS	
S78		0830	177	23	4071	167	22.5	3757.5	N. Berm	XAIS	
S79		0845	157	23	3611	148	22.5	3330	N. Berm	XAIS	
S80		0900	138	23	3174	126	22.5	2835	N. Berm	XAIS	
S81		0915	114	23	2622	114	22.5	2565	N. Berm	XAIS	
S82		1330	67	23	1541	60	22.5	1350	Floor	XAIS	
S83		1335	83	23	1909	75	22.5	1687.5	Floor	XAIS	
S84		1345	101	23	2323	94	22.5	2115	Floor	XAIS	
S85		1400	119	23	2737	112	22.5	2520	Floor	XAIS	
S86		1415	140	23	3220	130	22.5	2925	Floor	XAIS	
S87		1430	134	23	3312	137	22.5	3082.5	Floor	XAIS	
S88		1445	167	23	3772	161	22.5	3622.5	Floor	XAIS	
S89		1500	14	23	322	12	22.5	270	Floor	XAIS	
S100		1515	190	23	4370	177	22.5	3982.5	Floor	XAIS	
S101		1530	140	23	3220	140	22.5	3150	Floor	XAIS	
S102		1545	50	23	1150	50	22.5	1125	Floor	XAIS	

Total SF (Page)	50255	Total SF (Page)	46327.5
Total SF (Project)	923,562.5	Total SF (Project)	310,291.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Ranch
Project Number: 22-SCS-NRL-01

Sheet ___ of ___
Date: 7/26/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell F1 Sump Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S103	3430	1310	223	23	5129	215	22.5	4837.5	Floor	XAIS	
S104	3350	1315	240	23	5520	272	22.5	5220	Floor	XAIS	
S105	3273	1340	257	23	5911	249	22.5	5602.5	Floor	XAIS	
S106	3196	1345	262	23	6026	256	22.5	5760	Floor	XAIS	
S107		1420	293	23	6739	283	22.5	6367.5	Floor	XAIS	
S108		1425	10	23	230	9	22.5	202.5	Floor	XAIS	
S109		1440	225	23	5175	218	22.5	4905	Floor	XAIS	
S110		1449	90	23	2070	97	22.5	1957.5	Floor	XAIS	
S111		1520	333	23	7659	326	22.5	7335	Floor	XAIS	
S112		1550	345	23	7935	339	22.5	7627.5	Floor	XAIS	
S113		1610	170	23	3910	165	22.5	3712.5	Floor	XAIS	
S114		1630	190	23	4370	188	22.5	4230	Floor	XAIS	
S115		1645	316	23	7268	316	22.5	7110	Floor	XAIS	
S116		1700	44	23	1012	44	22.5	990	Floor	XAIS	
			Total SF (Page)		68784		Total SF (Page)		65857.5		
			Total SF (Project)		342,346.5		Total SF (Project)		336,039		

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Ranch
Project Number: 22-SCS-NRL-Ø1

CQA SOLUTIONS

Sheet ___ of ___
Date: 4/27/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Width	Gross Area (SF)	Installed Measurements Length	Installed Width	Installed Area (SF)	Location	Observer	Comments
5117	3446	1300	387	23	8901	358	22.5	8055	Floor	XAIS	
5118	3447	1315	395	23	9085	391	22.5	8797.5	Floor	XAIS	
5119	3449	1330	410	23	9430	402	22.5	9045	Floor	XAIS	
5120	3454	1345	424	23	9752	417	22.5	9382.5	Floor	XAIS	
5121	3458	1400	434	23	9982	429	22.5	9652.5	Floor	XAIS	
5122	3461	1415	440	23	10120	437	22.5	9832.5	Floor	XAIS	
5123	3473	1435	440	23	10120	440	22.5	9900	Floor	XAIS	
				Total SF (Page)	67,390		Total SF (Page)	64,665			
				Total SF (Project)	459,736.5		Total SF (Project)	440,754			

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Client: SCS Engineers
Project:
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet ____ of ____
Date: 4/27/30

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 01 Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S114	3945	1506	450	23	10,350	445	22.5	10012.5	Floor	XAIS	
S115	3946	1309	135	23	3,105	130	22.5	2925	Floor	XAIS	
S116	3899	1309	113	23	2,599	109	22.5	2452.5	Floor	XAIS	
S117	3947	1314	113	23	2,599	112	22.5	2520	Floor	XAIS	
S118	3944	1318	112	23	2,576	111	22.5	2497.5	Floor	XAIS	
S119	3914	1330	104	23	2,392	97	22.5	2182.5	Floor	XAIS	
S120	3958	1345	80	23	1840	60	22.5	1350	Floor	XAIS	
S121		1350	40	12	480	40	12	480	Floor	XAIS	Triangle
S122		1357	26	23	598	24	22.5	540	Floor	XAIS	
S123		1406	24	23	552	24	22.5	540	Floor	XAIS	Triangle
S124		1419	347	23	7981	34.6	22.5	7785	Floor	XAIS	
S125		1430	117	23	2691	114	22.5	2565	Floor	XAIS	
S126		1439	201	23	4623	166	22.5	3735	Floor	XAIS	
S127		1446	78	23	1794	78	22.5	1755	Floor	XAIS	Triangle
S128		1457	101	23	2323	88	22.5	1980	Floor	XAIS	
S129		1506	75	20	1500	75	20	1506	Floor	XAIS	Triangle
S140		1530	28	10	280	28	10	256	Floor	XAIS	Triangle
			Total SF (Page)		48,283		Total SF (Page)		45,100		
			Total SF (Project)				Total SF (Project)				

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

Sheet 1 of 13
Date: 4/18/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong. %	Pass/Fail	Observer	Comments
72	WL	SL	1320	F	S	S	850	6	—	—	107	-	121	-	140	-	P	XATS	
											118	-	125	-	146	-			
											98	-	108	-	138	-			
											112	-	126	-	130	-			
											121	-	120	-	142	-			
72	WL	CK	1325	F	S	S	850	6			119	-	127	-	135	-	P	XATS	
											121	-	109	-	140	-			
											108	-	118	-	138	-			
											106	-	117	-	137	-			
											124	-	115	-	146	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22C25-NRL-01

CQA

Sheet 2 of 13
Date: 4/19/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong. %	Pass/Fail	Observer	Comments
73	W2	SL	1305	F	S	S	850	6			108	-	126	-	144	-	P	XAJS	
											107	-	120	-	140	-			
											116	-	108	-	134	-			
											94	-	117	-	146	-			
											127	-	121	-	142	-			
73	W8L	CK	1308	F	S	S	850	6			117	-	117	-	144	-	P	XAJS	
											115	-	126	-	147	-			
											112	-	119	-	130	-			
											121	-	124	-	139	-			
											125	-	118	-	145	-			
75	W8L	CK	1425	F	T	T	850	6			107	-	121	-	140	-	P	XAJS	
											108	-	106	-	145	-			
											112	-	120	-	138	-			
											110	-	125	-	142	-			
											123	-	119	-	147	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Received by OCD: 8/24/2022 3:28:34 PM

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRC-01

Sheet 3 of 13
Date: 4/20/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong %	Pass/Fail	Observer	Comments
74	WL	SC	1310	F	5	5	350	6			109	-	121	-	145	-	P	XXXS	
											117	-	105	-	150	-			
											123	-	106	-	149	-			
											99	-	99	-	137	-			
											107	-	111	-	130	-			
74	WL	SC	1314	F	T	T	350	5			109	-	120	-	136	-	P	XXXS	
											117	-	118	-	190	-			
											124	-	102	-	138	-			
											98	-	107	-	141	-			
											106	-	116	-	144	-			
74	WL	SC	1312	F	5	T	350	5			109	-	115	-	140	-	P	XXXS	
											117	-	128	-	143	-			
											106	-	122	-	130	-			
											113	-	114	-	139	-			
											110	-	119	-	146	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 27-5C1-WR01-01

CQA

Sheet 4 of 13
Date: 11/21/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong %	Pass/Fail	Observer	Comments
87	WL	SL	1316	F	S	S	850	6			107	-	114	-	145	-	P	XAIS	
											112	-	109	-	130	-			
											124	-	106	-	146	-			
											101	-	116	-	151	-			
											116	-	114	-	133	-			
87	WL	CK	1307	F	S	S	850	6			117	-	115	-	150	-	P	XAIS	
											119	-	121	-	145	-			
											114	-	128	-	137	-			
											112	-	122	-	136	-			
											111	-	123	-	125	-			
87	WL	SL	1312	F	S	T	850	6			113	-	111	-	134	-	P	XAIS	
											109	-	121	-	138	-			
											119	-	116	-	145	-			
											118	-	123	-	141	-			
											102	-	122	-	146	-			
87	WL	CK	1310	F	S	T	850	6			109	-	112	-	133	-	P	XAIS	
											113	-	116	-	151	-			
											115	-	115	-	147	-			
											107	-	101	-	129	-			
											108	-	124	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Cli SES Engineers
Project: North Ranch Lwr. II
Project Number: 22-SES-NRL-01

CQA SOLUTIONS

Sheet 5 of 13
Date: 4/21/
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
87	M2	SL	1311	F	T	T	850	5			109	-	114	-	138	-	P	XAJS	
											105	-	126	-	143	-			
											116	-	118	-	144	-			
											126	-	121	-	135	-			
											119	-	115	-	137	-			
82	W82	CK	1319	F	T	T	850	5			102	-	121	-	141	-	P	XAJS	
											103	-	126	-	131	-			
											112	-	114	-	144	-			
											109	-	110	-	145	-			
											124	-	119	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Received by OCD: 8/24/2022 3:28:34 PM

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Client: DCS Engineers
Project: North Ranch Lynch II
Project Number: 22-SCS-NAL-01

CQA SOLUTIONS

Sheet 6 of 13
Date: 4/22/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
61	6744	MM	0725	E	T	T			550	550	109	-			141	-	P	xAIS	
											115	-			147	-			
											127	-			136	-			
											106	-			149	-			
											118	-			141	-			
61	6744	CK	0738	E	T	T			550	550	105	-			144	-	P	xAIS	
											116	-			141	-			
											107	-			130	-			
											116	-			137	-			
											122				139	-			
84	6744	MM	1310	E	T	T			550	550	102	-			135	-	P	xAIS	
											108	-			145	-			
											117	-			131	-			
											110	-			133	-			
											122	-			146	-			
84	6744	CK	1307	E	T	T			550	550	109	-			137	-	P	xAIS	
											111	-			142	-			
											122	-			148	-			
											109	-			137	-			
											112	—			136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: Wcrin Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 7 of 13
Date: 4/27/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
50	W2	SL	0955	F	S	S	850	6			103	-	118	-	143	-	P	XAIS	
											113	-	110	-	144	-			
											114	-	126	-	140	-			
											102	-	119	-	135	-			
											98	-	111	-	137	-			
60	W2	CK	0850	F	S	S	850	6			113	-	116	-	133	-	P	XAIS	
											109	-	105	-	147	-			
											115	-	124	-	145	-			
											117	-	123	-	135	-			
											107	-	116	-	132	-			
86	W2	SL	1305	F	S	S	850	6			113	-	117	-	131	-	P	XAIS	
											118	-	102	-	133	-			
											106	-	114	-	141	-			
											124	-	119	-	146	-			
											107	-	112	-	147	-			
86	W2	CK	1307	F	S	S	850	6			119	-	120	-	138	-	P	XAIS	
											105	-	109	-	147	-			
											116	-	117	-	139	-			
											108	-	125	-	142	-			
											103	-	119	-	144	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: S Engineers
Project: North Ranch Landfill
Project Number: LL-SES-NRL-01

CQAS SOLUTIONS

Sheet 8 of 13
Date: 4/23/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
86	W82	CH	1308	F			850	6			102	-	112	-	141	-	P	XAIS	
											107	-	110	-	133	-			
											106	-	119	-	146	-			
											116	-	123	-	132	-			
											115	-	127	-	130	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-[illegible]-[illegible]

CQA

Date: 4/13,22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
57	W2	SL	0350	F	S	S	850	6			118	-	109	-	146	-	P	XAIS	
											107	-	117	-	142	-			
											110	-	112	-	130	-			
											119	-	108	-	135	-			
											110	-	115	-	137	-			
79	W2	SL	1305	F	S	S	850	6			109	-	114	-	140	-	P	XAIS	
											117	-	118	-	145	-			
											120	-	102	-	139	-			
											121	-	115	-	140	-			
											120	-	114	-	137	-			
79	W2	CA	1310	F	S	S	850	6			108	-	112	-	140	-	P	XAIS	
											114	-	121	-	139	-			
											119	-	117	-	146	-			
											115	-	116	-	141	-			
											119	-	120	-	148	-			
79	W2	CA	1312	F	T	T	850	5			109	-	121	-	137	-	P	XAIS	
											108	-	118	-	136	-			
											119	-	117	-	146	-			
											117	-	105	-	138	-			
											115	-	109	-	149	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Clie SCS Engineers
Project: North Ranch Landfill
Project Number: 21-SCS-WRL-01

CQA

Sheet 10 of 13
Date: 4/26/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
82	W2	SC	1307	F	S	S	850	6			110	-	116	-	140	-	P	XAIS	
											117	-	106	-	148	-			
											98	-	111	-	140	-			
											99	-	102	-	137	-			
											109	-	116	-	138	-			
82	W2	SC	1310	F	T	T	850	5			102	-	112	-	135	-	P	XAIS	
											109	-	119	-	142	-			
											119	-	111	-	152	-			
											108	-	113	-	131	-			
											105	-	116	-	136	-			
82	W82	CK	1312	F	S	S	850	6			116	-	105	-	147	-	P	XAIS	
											117	-	115	-	153	-			
											110	-	116	-	131	-			
											119	-	121	-	138	-			
											108	-	120	-	137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 22-SCS-NRL-01

Sheet 11 of 18
Date: 4/27/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
75	WL	SL	1310	F	S	S	850	6			118	-	121	-	131	-	P	XAIS	
											124	-	120	-	130	-			
											109	-	117	-	141	-			
											117	-	114	-	147	-			
											103	-	125	-	136	-			
75	WL	SL	1312	F	T	T	850	5			110	-	118	-	141	-	P	XAIS	
											113	-	119	-	138	-			
											109	-	121	-	141	-			
											117	-	120	-	132	-			
											102	-	113	-	136	-			
75	WSL	CK	1314	F	S	S	850	6			102	-	110	-	130	-	P	XAIS	
											105	-	113	-	128	-			
											119	-	126	-	148	-			
											111	-	124	-	141	-			
											124	-	118	-	137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS
Project: North Ranch II
Project Number: 22-SCS NRL-01

CQA SOLUTIONS

Sheet 12 of 13
Date: 4/28/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
75	V8L	CK	1307	F	S	S	890	C			127	–	117	–	147	–	P	XAES	
											119	–	115	–	139	–			
											121	–	121	–	143	–			
											107	–	123	–	144	–			
											111	–	109	–	140	–			
75	WL	SL	1305	F	S	S	880	6			109	–	123	–	128	–	P	MES	
											111	–	126	–	137	–			
											107	–	108	–	130	–			
											117	–	115	–	132	–			
											111	"	118	"	134	"			
75	WL	SL	1307	F	S	T	89	5			125	–	119	–	129	–	P	XAES	
											120	–	126	–	139	–			
											129	–	118	–	136	–			
											123	–	119	–	130	–			
											117	"	117	"	140	"			
75	V2	SL	1310	F	T	T	850	5			109								

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS
Project: North Knoll
Project Number: 22-SCS NRC 3

CQA SOLUTIONS

Sheet 13 of 13
Date: 4/28
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
80	G44	MM	1450	E	T	T			550	550	110	-			135	-	P	XATS	
											105	-			142	-			
											107	-			141	-			
											108	-			147	-			
											111	-			144	-			
80	G744	SC	0700	E	T	T			550	550	101	-			129	-	P	XATS	
											107	-			135	-			
											95	-			132	-			
											100	-			138	-			
											102	-			140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

Sheet 1 of 13
Date: 4/18/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong. %	Pass/Fail	Observer	Comments
72	WL	SL	1320	F	S	S	850	6	—	—	107	-	121	-	140	-	P	XATS	
											118	-	129	-	146	-			
											98	-	108	-	138	-			
											112	-	126	-	130	-			
											121	-	120	-	142	-			
72	WL	CK	1325	F	S	S	850	6			119	-	127	-	135	-	P	XATS	
											121	-	109	-	140	-			
											108	-	118	-	138	-			
											106	-	117	-	137	-			
											124	-	115	-	146	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22C25-NRL-01

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Sheet 2 of 13
Date: 4/19/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong. %	Pass/Fail	Observer	Comments
73	W2	SL	1305	F	S	S	850	6			108	-	126	-	144	-	P	XAJS	
											107	-	120	-	140	-			
											116	-	108	-	134	-			
											94	-	117	-	146	-			
											127	-	121	-	142	-			
73	W8L	CK	1308	F	S	S	850	6			117	-	117	-	144	-	P	XAJS	
											115	-	126	-	147	-			
											112	-	119	-	130	-			
											121	-	124	-	139	-			
											125	-	118	-	145	-			
75	W8L	CK	1425	F	T	T	850	6			107	-	121	-	140	-	P	XAJS	
											108	-	106	-	145	-			
											112	-	120	-	138	-			
											110	-	125	-	142	-			
											123	-	119	-	147	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRC-01

Sheet 3 of 13
Date: 4/12/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside: PPI	Peel: Coupon Inside: %	Peel: Coupon Outside: PPI	Peel: Coupon Outside: %	Shear: Coupon: PPI	Shear: Coupon: Elong %	Pass/Fail	Observer	Comments
74	WL	SC	1310	F	5	5	350	6			109	-	121	-	145	-	P	XXXS	
											117	-	105	-	150	-			
											123	-	106	-	149	-			
											99	-	99	-	137	-			
											107	-	111	-	130	-			
74	WL	SC	1314	F	T	T	350	5			109	-	120	-	136	-	P	XXXS	
											117	-	118	-	190	-			
											124	-	102	-	138	-			
											98	-	107	-	141	-			
											106	-	116	-	144	-			
74	WL	SC	1312	F	5	T	350	5			109	-	115	-	140	-	P	XXXS	
											117	-	128	-	143	-			
											106	-	122	-	130	-			
											113	-	114	-	139	-			
											110	-	119	-	146	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 27-5C1-WR1-01

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Sheet 4 of 13
Date: 11/21/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong %	Pass/Fail	Observer	Comments
87	WL	SL	1316	F	S	S	850	6			107	-	114	-	145	-	P	XAIS	
											112	-	109	-	130	-			
											124	-	106	-	146	-			
											101	-	116	-	151	-			
											116	-	114	-	133	-			
87	WL	CK	1307	F	S	S	850	6			117	-	115	-	150	-	P	XAIS	
											119	-	121	-	145	-			
											114	-	128	-	137	-			
											112	-	122	-	136	-			
											111	-	123	-	125	-			
87	WL	SL	1312	F	S	T	850	6			113	-	111	-	134	-	P	XAIS	
											109	-	121	-	138	-			
											119	-	116	-	145	-			
											118	-	123	-	141	-			
											102	-	122	-	146	-			
87	WL	CK	1310	F	S	T	850	6			109	-	112	-	133	-	P	XAIS	
											113	-	116	-	151	-			
											115	-	115	-	147	-			
											107	-	121	-	129	-			
											108	-	124	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Received by OCD: 8/24/2022 3:28:34 PM

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Cli SES Engineers
Project: North Ranch Unit #11
Project Number: 22-SES-NR1.01

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Date: 4/21/
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
87	M2	SL	1311	F	T	T	850	5			109	-	114	-	138	-	P	XAJS	
											105	-	116	-	143	-			
											116	-	118	-	144	-			
											126	-	121	-	135	-			
											119	-	115	-	137	-			
8L	W82	CK	1319	F	T	T	850	5			102	-	121	-	141	-	P	XAJS	
											103	-	126	-	131	-			
											112	-	114	-	144	-			
											109	-	110	-	145	-			
											124	-	119	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Received by OCD: 8/24/2022 3:28:34 PM

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Client: DCS Engineers
Project: North Ranch Lynch II
Project Number: 22-SCS-NAL-01

CQA SOLUTIONS

Sheet 6 of 13
Date: 4/22/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
61	6744	MM	0725	E	T	T			550	550	109	-			141	-	P	xAIS	
											115	-			147	-			
											127	-			136	-			
											106	-			149	-			
											118	-			141	-			
61	6744	CK	0718	E	T	T			550	550	105	-			144	-	P	xAIS	
											116	-			141	-			
											107	-			130	-			
											116	-			137	-			
											122				139	-			
84	6744	MM	1310	E	T	T			550	550	102	-			135	-	P	xAIS	
											108	-			145	-			
											117	-			131	-			
											110	-			133	-			
											122	-			146	-			
84	6744	CK	1307	E	T	T			550	550	109	-			137	-	P	xAIS	
											111	-			142	-			
											122	-			148	-			
											109	-			137	-			
											112	—			136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 7 of 13
Date: 4/27/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
50	W2	SL	0955	F	S	S	850	6			103	-	118	-	143	-	P	XAIS	
											113	-	110	-	144	-			
											114	-	126	-	140	-			
											102	-	119	-	135	-			
											98	-	111	-	137	-			
60	W2	CK	0850	F	S	S	850	6			113	-	116	-	133	-	P	XAIS	
											109	-	105	-	147	-			
											115	-	124	-	145	-			
											117	-	123	-	135	-			
											107	-	116	-	132	-			
86	W2	SL	1305	F	S	S	850	6			113	-	117	-	131	-	P	XAIS	
											118	-	102	-	133	-			
											106	-	114	-	141	-			
											124	-	119	-	146	-			
											107	-	112	-	147	-			
85	W82	CK	1307	F	S	S	850	6			119	-	120	-	138	-	P	XAIS	
											105	-	109	-	147	-			
											116	-	117	-	139	-			
											108	-	125	-	142	-			
											103	-	119	-	144	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: S Engineers
Project: North Ranch Landfill
Project Number: LL-SES-NRL-01

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Date: 4/23/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
86	W82	CH	1308	F			850	6			102	-	112	-	141	-	P	XAIS	
											107	-	110	-	133	-			
											106	-	119	-	146	-			
											116	-	123	-	132	-			
											115	-	127	-	130	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-[illegible]-[illegible]

CQA

Sheet 9 of 13
Date: 4/[illegible]/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
57	W2	SL	0350	F	S	S	850	6			118	-	109	-	140	-	P	XAIS	
											107	-	117	-	142	-			
											110	-	112	-	130	-			
											119	-	108	-	135	-			
											110	-	115	-	137	-			
79	W2	SL	1305	F	S	S	850	6			109	-	114	-	140	-	P	XAIS	
											117	-	118	-	145	-			
											120	-	102	-	139	-			
											121	-	115	-	140	-			
											120	-	114	-	137	-			
79	W82	CA	1310	F	S	S	850	6			108	-	112	-	140	-	P	XAIS	
											114	-	121	-	139	-			
											119	-	117	-	146	-			
											115	-	116	-	141	-			
											119	-	120	-	148	-			
79	W82	CA	1312	F	T	T	850	5			109	-	121	-	137	-	P	XAIS	
											108	-	118	-	136	-			
											119	-	117	-	146	-			
											117	-	105	-	138	-			
											115	-	109	-	149	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Clie SCS Engineers
Project: North Ranch Landfill
Project Number: 21-SCS-WRL-01

CQA

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Date: 4/26/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
82	W2	SC	1307	F	S	S	850	6			110	-	116	-	140	-	P	XAIS	
											117	-	106	-	148	-			
											98	-	111	-	140	-			
											99	-	102	-	137	-			
											109	-	116	-	138	-			
82	W2	SC	1310	F	T	T	850	5			102	-	112	-	135	-	P	XAIS	
											109	-	119	-	142	-			
											119	-	111	-	152	-			
											108	-	113	-	131	-			
											105	-	116	-	136	-			
82	W82	CK	1312	F	S	S	850	6			116	-	105	-	147	-	P	XAIS	
											117	-	115	-	153	-			
											110	-	116	-	131	-			
											119	-	121	-	138	-			
											108	-	120	-	137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 22-SCS-NRL-01

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Date: 4/27/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
75	WL	SL	1310	F	S	S	850	6			118	-	121	-	131	-	P	XAIS	
											124	-	120	-	130	-			
											109	-	117	-	141	-			
											117	-	114	-	147	-			
											103	-	125	-	136	-			
75	WL	SL	1312	F	T	T	850	5			110	-	118	-	141	-	P	XAIS	
											113	-	119	-	138	-			
											109	-	121	-	141	-			
											117	-	120	-	132	-			
											102	-	113	-	136	-			
75	WSL	CK	1314	F	S	S	850	6			102	-	120	-	130	-	P	XAIS	
											105	-	113	-	128	-			
											119	-	126	-	148	-			
											111	-	124	-	141	-			
											124	-	118	-	137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: XCS
Project: North Ranch II
Project Number: 22-XCS-NRC-01

CQA SOLUTIONS

Sheet 12 of 13
Date: 4/28/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
75	V8L	CK	1307	F	S	S	890	C			127	–	117	–	147	–	P	XAES	
											119	–	115	–	139	–			
											121	–	121	–	143	–			
											107	–	123	–	144	–			
											111	–	109	–	140	–			
75	WL	SL	1305	F	S	S	850	6			109	–	123	–	128	–	P	MES	
											111	–	126	–	137	–			
											107	–	108	–	130	–			
											117	–	115	–	132	–			
											111	"	118	"	134	"			
75	WL	SL	1307	F	S	T	89	5			125	–	119	–	129	–	P	XAES	
											120	–	126	–	139	–			
											129	–	118	–	136	–			
											123	–	119	–	130	–			
											117	"	117	"	140	"			
75	V2	SL	1310	F	T	T	850	5			109								

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

(12) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Knoll
Project Number: 22-SCS NRC 3

CQA SOLUTIONS

Sheet 13 of 13
Date: 4/28
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
80	G44	MM	1450	E	T	T			550	550	110	-			135	-	P	XATS	
											105	-			142	-			
											107	-			141	-			
											108	-			147	-			
											111	-			144	-			
80	G744	SC	0700	E	T	T			550	550	101	-			129	-	P	XATS	
											107	-			135	-			
											95	-			132	-			
											100	-			138	-			
											102	-			140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

(13) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SWO ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of
Date 4/18/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 Secondary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S2	S3	CK	W82	1351	1405	158	0	158	158	—	XAIS	
S4	S5	CK	W82	1409	1425	160	0	160	318	CSDS3	XAIS	
S6	S7	CK	W82	1428	1442	160	0	160	478	—	XAIS	
S8	S9	CK	W82	1446	1501	160	0	160	638	—	XAIS	
S10	S11	CK	W82	1504	1520	163	0	163	801	CSDS4	XAIS	

Total LF (Page)	801	Total DS (Page)	2	Total DS Needed (Page)	1.6	Over/Under (Page)	+0.4
Total LF (Project)	801	Total DS (Project)	2	Total DS Needed (Project)	1.6	Over/Under (Project)	+0.4

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Pg 1 of 2

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22SCS-NRL-01

Sheet 2 of ____
Date 4/19/22
Rev. Date: ____

CQA SOLUTIONS

SEAMING RECORD

Layer: Cell F1 Secondary

Welder Initials: CK
Welder Number: ____
Machine ID: W92

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft.	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S13	S14	CK	W92	1332	1347	165 ✓	0 ✓	65 ✓	165 ✓	–	YAIS	
S15	S16	CK	W92	1359	1411	195 ✓	0 ✓	195 ✓	360 ✓	–	YAIS	
S18	S17	CK	W92	1424	1446	0 ✓	213 ✓	213 ✓	573 ✓	–	YAIS	
S20	S19	CK	W92	1508	1510	0 ✓	22 ✓	22 ✓	595 ✓	–	YAIS	
S20	S16	CK	W92	1500	1506	25 ✓	0 ✓	25 ✓	620 ✓	CSDS6	YAIS	
S12	S21	CK	W92	1518	1532	0 ✓	164 ✓	164 ✓	784 ✓	–	YAIS	
S24	S23	CK	W92	1540	1558	0 ✓	162 ✓	162 ✓	946 ✓	CSDS7	YAIS	
S26	S25	CK	W92	1605	1621	0 ✓	161 ✓	161 ✓	1107 ✓	–	YAIS	
S28	S27	CK	W92	1633	1648	0 ✓	138 ✓	138 ✓	1245 ✓	–	YAIS	
S30	S29	CK	W92	1700	1713	0 ✓	92 ✓	92 ✓	1337 ✓	CSDS8	YAIS	
S32	S31	CK	W92	1715	1727	0 ✓	92 ✓	92 ✓	1429 ✓	–	YAIS	

Total LF (Page)	1429 ✓	Total DS (Page)	3 ✓	Total DS Needed (Page)	2.9 ✓	Over/Under (Page)	+0.1 ✓
Total LF (Project)	2,230 ✓	Total DS (Project)	5 ✓	Total DS Needed (Project)	4.4 ✓	Over/Under (Project)	+0.6 ✓

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PG 2 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of ____
Date 4/21/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell 6 Secondary

Welder Initials: CK
Welder Number: ____

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
593	590	CK	W82	1322	1337	152	0	152	152	–	XAIS	
591	592	CK	W82	1343	1358	153	0	153	305	–	XAIS	
593	594	CK	W82	1403	1418	151	0	151	456	CSDS16	XAIS	
595	596	CK	W82	1424	1440	153	0	153	609	–	XAIS	
597	598	CK	W82	1446	1501	153	0	153	762	–	XAIS	
599	560	CK	W82	1508	1523	154	0	154	916	CSDS17	XAIS	
561	562	CK	W82	1534	1550	153	0	153	1069	–	XAIS	
564	563	CK	W82	1618	1633	0	151	151	1220	–	XAIS	
567	566	CK	W82	1644	1701	0	148	148	1368	CSDS19	XAIS	
569	568	CK	W82	1710	1720	0	75	75	1443	–	XAIS	
570	569	CK	W82	1722	1732	0	75	75	1518	–	XAIS	
570	568	CK	W82	1732	1743	0	80	80	1598	CSDS21	XAIS	

Total LF (Page)	1498	Total DS (Page)	4	Total DS Needed (Page)	3.2	Over/Under (Page)	+0.8
Total LF (Project)	3828	Total DS (Project)	9	Total DS Needed (Project)	7.7	Over/Under (Project)	+1.3

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PG 3 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22SCS-NRL01

Sheet 4 of ____
Date 4/13/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell E1 Secondary

Welder Initials: CK
Welder Number: ____

Machine ID: W92

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S71	S72	CK	W92	0820	0836	0	153	153	153	–	XAIS	
S73	S74	CK	W92	0842	0857	0	153	153	306	–	XAIS	
S75	S76	CK	W92	0908	0923	0	153	153	459	CSDS22	XAIS	
S77	S78	CK	W92	0950	1005	0	153	153	612	–	XAIS	
S79	S80	CK	W92	1014	1030	0	151	151	763	–	XAIS	
S81	S82	CK	W92	1045	1101	0	151	151	914	CSDS23	XAIS	
S84	S85	CK	W92	1320	1336	0	151	151	1065	–	XAIS	

Total LF (Page)	1065	Total DS (Page)	2	Total DS Needed (Page)	2.1	Over/Under (Page)	-0.1
Total LF (Project)	4893	Total DS (Project)	4	Total DS Needed (Project)	9.8	Over/Under (Project)	+1.2

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Pg 4 of 8

Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet ___ of ___
Date 4/29/22
Rev. Date: ___

SEAMING RECORD

Layer: Cell C1 Secondary

Welder Initials: CK
Welder Number: ___

Machine ID: W8L

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
592	593	CK	W8L	1354	1358	0	67	67	67		XAIS	
594	595	CK	W8L	1407	1420	0	104	104	171		XAIS	
596	597	CK	W8L	1427	1431	0	30	30	201	CSDS28	XAIS	
598	599	CK	W8L	1452	1453	0	10	10	211		XAIS	
598	5100	CK	W8L	1500	1516	0	164	164	375		XAIS	

Total LF (Page)	375	Total DS (Page)	1	Total DS Needed (Page)	0.8	Over/Under (Page)	+0.2
Total LF (Project)	5168	Total DS (Project)	12	Total DS Needed (Project)	10.5	Over/Under (Project)	+1.5

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet ___ of ___
Date 4/26/22
Rev. Date: ___

SEAMING RECORD

Layer: Cell Secondary

Welder Initials: CK
Welder Number: ___

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S101	S103	CK	W82	1320	1338	0	140	140	140		XAIS	
S102	S103	CK	W82	1341	1347	0	67	67	207		XAIS	
S104	S105	CK	W82	1358	1425	0	240	240	447	CSD530	XAIS	
S106	S107	CK	W82	1429	1449	0	262	262	709		XAIS	
S108	S107	CK	W82	1459	1500	0	10	10	719		XAIS	
S109	S110	CK	W82	1504	1519	0	225	225	944	CSD533	XAIS	
S110	S111	CK	W82	1519	1527	0	90	90	1034		XAIS	
S112	S113	CK	W82	1547	1559	0	160	160	1194		XAIS	
S112	S114	CK	W82	1602	1612	0	86	86	1280	CSD537	XAIS	
S114	S116	CK	W82	1615	1619	0	44	44	1324		XAIS	

Total LF (Page)	1324	Total DS (Page)	3	Total DS Needed (Page)	2.6	Over/Under (Page)	+0.4
Total LF (Project)	6592	Total DS (Project)	15	Total DS Needed (Project)	13.2	Over/Under (Project)	+1.8

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet ___ of ___
Date 7/27/22
Rev. Date: ___

SEAMING RECORD

Layer: Cell 615

Welder Initials: CK
Welder Number: ___

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S115	S117	CK	W82	1314	1347	0	285	285	285	CSD537	XAIS	
S116	S117	CK	W82	1347	1352	0	45	45	330		XAIS	
S118	S119	CK	W82	1358	1440	0	395	395	725	CSD539	XAIS	
S120	S121	CK	W82	1447	1529	0	424	424	1149	CSD541	XAIS	
S122	S123	CK	W82	1535	1630	0	440	440	1589	CSD543	XAIS	

Total LF (Page)	1589	Total DS (Page)	4	Total DS Needed (Page)	3.2	Over/Under (Page)	10.8
Total LF (Project)	8181	Total DS (Project)	19	Total DS Needed (Project)	16.4	Over/Under (Project)	42.6

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SLS Engineers
Project: North Ranch Landfill
Project Number: 22-SLS-RRL-01

CQA SOLUTIONS

Sheet ____ of ____
Date 4/19/22
Rev. Date: ____

SEAMING RECORD

Layer: cell 61 Secondary

Welder Initials: CK
Welder Number: ____

Machine ID: WB2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S123	S124	CK	WB2	1302	1345	0	450	450	450	CSDS47	XAIS	
S124	S125	CK	WB2	1718	1402	0	130	130	580	CSDS48	XAIS	
S125	S126	CK	WB2	1408	1417	0	104	104	684		XAIS	
S127	S128	CK	WB2	1419	1425	0	110	110	794		XAIS	
S128	S172	CK	WB2	1428	1430	0	22	22	816		XAIS	
S124	S134	CK	WB2	1500	1544	0	345	345	1161		XAIS	
S134	S136	CK	WB2	1548	1612	6	209	209	1370		XAIS	

Total LF (Page)	1370	Total DS (Page)	1	Total DS Needed (Page)	2.7	Over/Under (Page)	-0.7
Total LF (Project)	9551	Total DS (Project)	21	Total DS Needed (Project)	19.1	Over/Under (Project)	+1.9

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-04

CQA SOLUTIONS

Sheet 1 of
Date 4/18/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 Secondary

Welder Initials: SL
Welder Number:
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S1	S2	SL	WZ	1342	1357	152	0	152	152	—	XAIS	
S3	S4	SL	WZ	1404	1419	158	0	158	310	—	XAIS	
S5	S6	SL	WZ	1420	1436	160	0	160	470	CSDS1	XAIS	
S7	S8	SL	WZ	1441	1456	160	0	160	630	—	XAIS	
S9	S10	SL	WZ	1503	1519	163	0	163	793	—	XAIS	
S11	S12	SL	WZ	1614	1630	166	0	166	959	CSDS2	XAIS	

Total LF (Page)	959	Total DS (Page)	2	Total DS Needed (Page)	1.9	Over/Under (Page)	+0.1
Total LF (Project)	959	Total DS (Project)	2	Total DS Needed (Project)	1.9	Over/Under (Project)	+0.1

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet 2 of ____
Date 4/15/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell FL Secondary

Welder Initials: SL
Welder Number: ____
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Ln. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S12	S13	SL	WZ	1329	1342	163	0	163	163	—	XAIS	
S14	S15	SL	WZ	1344	1400	165	0	165	328	CSDS5	XAIS	
S16	S17	SL	WZ	1425	1440	215	0	215	543	—	XAIS	
S18	S18	SL	WZ	1442	1459	0	164	164	707	—	XAIS	
S21	S19	SL	WZ	1501	1518	0	164	164	871	—	XAIS	
S23	S22	SL	WZ	1524	1541	0	163	163	1034	CSDS7	XAIS	
S25	S24	SL	WZ	1548	1604	0	161	161	1195	—	XAIS	
S27	S26	SL	WZ	1612	1629	0	155	155	1350	—	XAIS	
S29	S28	SL	WZ	1638	1654	0	125	125	1475	CSDS9	XAIS	
S31	S30	SL	WZ	1703	1715	0	90	90	1565	—	XAIS	

Total LF (Page)	1565	Total DS (Page)	3	Total DS Needed (Page)	3.1	Over/Under (Page)	-0.1
Total LF (Project)	2524	Total DS (Project)	5	Total DS Needed (Project)	5.0	Over/Under (Project)	0

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 2
Date 4/12/22
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
534	533	SL	WL	1330	1344	149	0	149	149		XAIS	
535	534	SL	WL	1347	1400	150	0	150	299		XAIS	
536	535	SL	WL	1404	1419	149	0	149	448	CJDS11	XAIS	
537	536	SL	WL	1422	1437	132	0	132	580		XAIS	
538	537	SL	WL	1444	1452	125	0	125	705		XAIS	
539	538	SL	WL	1457	1509	112	0	112	817	CSDS12	XAIS	
540	539	SL	WL	1514	1527	103	0	103	920		XAIS	
541	540	SL	WL	1529	154	95	0	95	1,015		XAIS	
542	541	SL	WL	1557	1604	81	0	81	1,096		XAIS	
543	542	SL	WL	1606	1612	69	0	69	1,165		XAIS	
544	543	SL	WL	1614	1619	55	0	55	1,220		XAIS	
545	544	SL	WL	1621	1626	41	0	41	1,261	GDS19	XAIS	
546	546	SL	WL	1631	1640	81	0	81	1,342		XAIS	
547	545	SL	WL	1644	1651	0	57	57	1,399		XAIS	
548	547	SL	WL	1655	1659	0	37	37	1,436		XAIS	
545	548	SL	WL	1700	1703	0	29	29	1,465		XAIS	
544	547	SL	WL	1704	1707	0	22	22	1,487		XAIS	
543	546	SL	WL	1707	1710	0	20	20	1,507		XAIS	
542	537	SL	WL	1710	1713	0	18	18	1,525		XAIS	
541	532	SL	WL	1713	1715	0	8	8	1,533		XAIS	
541	531	SL	WL	1715	1718	0	19	19	1,552		XAIS	
540	549	SL	WL	1718	1721	0	18	18	1,570		XAIS	
539	549	SL	WL	1721	1724	0	8	8	1,588		XAIS	
539	529	SL	WL	1724	1726	0	15	15	1,603		XAIS	

Total LF (Page)	1,603	Total DS (Page)	3	Total DS Needed (Page)	3.2	Over/Under (Page)	-0.2
Total LF (Project)	4,127	Total DS (Project)	8	Total DS Needed (Project)	8.3	Over/Under (Project)	-0.3

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Pg (3) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH LF
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 2
Date 4/20/22
Rev. Date:

SEAMING RECORD
Layer: Cell E1 Secondary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
S38	S29	SL	W2	1726	1729	0	12	12	12		XAIS	
S38	S28	SL	W2	1729	1732	0	13	13	25		XAIS	
S37	S28	SL	W2	1732	1734	0	12	12	37		XAIS	
S37	S27	SL	W2	1734	1736	0	12	12	49		XAIS	
S36	S27	SL	W2	1736	1739	0	14	14	63		XAIS	
S36	S26	SL	W2	1739	1742	0	11	11	74		XAIS	
S35	S26	SL	W2	1742	1749	0	5	5	79		XAIS	
S49	S29	SL	W2	1750	1753	0	25	25	104		XAIS	
S30	S49	SL	W2	1755	1800	0	22	22	126	CSDS14	XAIS	

Total LF (Page)	126	Total DS (Page)	1	Total DS Needed (Page)	0.3	Over/Under (Page)	+0.7
Total LF (Project)	4,253	Total DS (Project)	9	Total DS Needed (Project)	8.5	Over/Under (Project)	+0.5

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Pg (4) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-P1

CQA SOLUTIONS

Sheet 5 of
Date 4/21/22
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S60	S51	SL	W2	1328	1342	154	0	154	154	–	XAIS	
S52	S53	SL	W2	1356	1411	153	0	153	307	–	XAIS	
S54	S45	SL	W2	1416	1432	154	0	154	461	CSDS16	XAIS	
S56	S57	SL	W2	1440	1455	153	0	153	614	–	XAIS	
S58	S59	SL	W2	1506	1521	153	0	153	767	–	XAIS	
S60	S61	SL	W2	1527	1542	152	0	152	919	CSDS18	XAIS	
S64	S62	SL	W2	1559	1615	0	152	152	1071	–	XAIS	
S63	S64	SL	W2	1621	1636	0	152	152	1223	–	XAIS	
S66	S65	SL	W2	1643	1658	0	150	150	1373	CSDS20	XAIS	
S68	S67	SL	W2	1706	1721	0	153	153	1526	–	XAIS	
S71	S70	SL	W2	1727	1742	0	153	153	1679	–	XAIS	

Total LF (Page)	1679	Total DS (Page)	3	Total DS Needed (Page)	3.4	Over/Under (Page)	-0.4
Total LF (Project)	5,432	Total DS (Project)	12	Total DS Needed (Project)	11.8	Over/Under (Project)	+0.2

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Pg 5 of 13

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Ranch
Project Number: 22-SCS-NR-01

CQA SOLUTIONS

Sheet ___ of ___
Date 4/27/22
Rev. Date: ___

SEAMING RECORD

Layer: Cell E1 Secondary

Welder Initials: SL
Welder Number: ___
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
572	573	SL	W2	0826	0841	0	153	153	153	—	XAIS	
574	575	SL	W2	0855	0911	0	153	153	306	—	XAIS	
576	577	SL	W2	0914	0929	0	153	153	459	CSD523	XAIS	
578	579	SL	W2	0956	1012	0	151	151	610	—	XAIS	
580	581	SL	W2	1046	1100	0	151	151	761	CSD524	XAIS	
582	583	SL	W2	1104	1118	0	151	151	912	—	XAIS	
583	584	SL	W2	1310	1325	0	151	151	1063	—	XAIS	

Total LF (Page)	1063	Total DS (Page)	2	Total DS Needed (Page)	2.1	Over/Under (Page)	-0.1
Total LF (Project)	6995	Total DS (Project)	14	Total DS Needed (Project)	14	Over/Under (Project)	0

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 6 OF 13

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet 1 of 2
Date 4/25/22
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SL
Welder Number:

Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
586	585	SL	W2	0807	0823	0	149	149	149		XAIS	
587	588	SL	W2	0826	0845	0	192	192	341		XAIS	
588	587	SL	W2	0851	0908	0	177	177	518	CSD527	XAIS	
589	588	SL	W2	0911	0928	0	157	157	675		XAIS	
590	589	SL	W2	0935	0952	0	138	138	813		XAIS	
591	590	SL	W2	0956	1008	0	114	114	927	CSD526	XAIS	
587	592	SL	W2	1350	1355	0	52	52	979		XAIS	

Total LF (Page)	927	Total DS (Page)	2	Total DS Needed (Page)	1.9	Over/Under (Page)	+0.1
Total LF (Project)	7922	Total DS (Project)	16	Total DS Needed (Project)	16.8	Over/Under (Project)	+0.2

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (7) OF (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet ____ of ____
Date 4/25/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell E1 Secondary

Welder Initials: SL
Welder Number: ____

Machine ID: W16

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
586	592	SL	W16	1348	1350	0	42	42	42		XAIS	
593	594	SL	W16	1355	1411	0	83	83	125		XAIS	
595	596	SL	W16	1416	1155	0	119	119	244		XAIS	
597	598	SL	W16	1445	1457	0	144	144	388		XAIS	
597	599	SL	W16	1458	1500	0	22	22	410		XAIS	
599	598	SL	W16	1500	1502	0	14	14	424		XAIS	
5100	5101	SL	W16	1510	1520	0	140	140	564		XAIS	
5102	5101	SL	W16	1523	1525	0	27	27	591		XAIS	
5100	5102	SL	W16	1526	1529	0	30	30	621		XAIS	
592	585	SL	W16	1540	1543	0	20	20	641		XAIS	
592	584	SL	W16	1543	1544	0	6	6	647		XAIS	
593	584	SL	W16	1544	1546	0	17	17	664		XAIS	
593	583	SL	W16	1546	1547	0	6	6	670		XAIS	
594	583	SL	W16	1547	1549	0	13	13	683		XAIS	
594	582	SL	W16	1549	1551	0	13	13	696		XAIS	
595	582	SL	W16	1551	1553	0	8	8	704		XAIS	
595	581	SL	W16	1553	1555	0	17	17	721		XAIS	
596	581	SL	W16	1555	1556	0	5	5	726		XAIS	
596	580	SL	W16	1556	1558	0	18	18	744	CSD 529	XAIS	
597	579	SL	W16	1558	1601	0	13	13	757		XAIS	
598	578	SL	W16	1601	1604	0	22	22	779		XAIS	
5100	577	SL	W16	1604	1607	0	23	23	802		XAIS	
5100	576	SL	W16	1607	1608	0	7	7	809		XAIS	
5101	576	SL	W16	1608	1610	0	16	16	825		XAIS	

Total LF (Page)	825	Total DS (Page)	1	Total DS Needed (Page)	1.7	Over/Under (Page)	-0.7
Total LF (Project)	825	Total DS (Project)	1	Total DS Needed (Project)	1.7	Over/Under (Project)	-0.7

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PG (12) OF (13)

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Client:
Project:
Project Number:

CQA

Sheet 2 of 2
Date 4/25/22
Rev. Date:

SEAMING RECORD

Layer: Cell E1

Welder Initials: SL
Welder Number:
Machine ID: W16

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
5101	575	SL	W16	1610	1611	0	9	9	9		XAES	

Total LF (Page)	9	Total DS (Page)	0	Total DS Needed (Page)	0	Over/Under (Page)	0
Total LF (Project)	864	Total DS (Project)	1	Total DS Needed (Project)	1.7	Over/Under (Project)	-0.7

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: _____
Project: _____
Project Number: _____

Sheet 1 of 2
Date 4/25/22
Rev. Date: _____

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SL
Welder Number: _____

Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S103	S104	SL	W2	1328	1339	0	223	223	223		XAIS	
S105	S106	SL	W2	1405	1427	0	250	250	473	CSDS31	XAIS	
S10C	S108	SL	W2	1358	1400	0	22	22	495		XAIS	
S107	S10B	SL	W2	1417	1428	0	7	7	502		XAIS	
S107	S109	SL	W2	1439	1451	0	210	210	712	CSDS32	XAIS	
S107	S110	SL	W2	1451	1457	0	83	83	795		XAIS	
S109	S110	SL	W2	1450	1492	0	22	22	817		XAIS	
S111	S112	SL	W2	1518	1557	0	333	333	1150	CSDS34	XAIS	
S113	S115	SL	W2	1608	1617	0	170	170	1320		XAIS	
S113	S114	SL	W2	1602	1602	0	22	22	1342		XAIS	
S114	S115	SL	W2	1618	1628	0	146	146	1488	CSDS36	XAIS	
S116	S115	SL	W2	1632	1639	0	22	22	1510		XAIS	
S103	S75	SL	W2	1641	1642	0	12	12	1522		XAIS	
S103	S74	SL	W2	1642	1643	0	12	12	1534		XAIS	
S104	S74	SL	W2	1643	1644	0	8	8	1542		XAIS	
S104	S73	SL	W2	1644	1645	0	13	13	1555		XAIS	
S105	S73	SL	W2	1645	1646	0	3	3	1558		XAIS	
S105	S72	SL	W2	1646	1648	0	22	22	1580		XAIS	
S106	S71	SL	W2	1648	1651	0	22	22	1602		XAIS	
S107	S70	SL	W2	1651	1654	0	22	22	1624		XAIS	
S107	S68	SL	W2	1654	1655	0	5	5	1629		XAIS	
S104	S67	SL	W2	1655	1701	0	22	22	1651		XAIS	
S111	S66	SL	W2	1701	1704	0	24	24	1675		XAIS	
S111	S65	SL	W2	1704	1705	0	8	8	1683		XAIS	

Total LF (Page)	1683	Total DS (Page)	4	Total DS Needed (Page)	3.4	Over/Under (Page)	+0.6		
Total LF (Project)	9605	Total DS (Project)	20	Total DS Needed (Project)	19.2	Over/Under (Project)	+0.8		

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of
Date 4/28/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 Secondary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S126	S127	SL	W2	1403	1478	0	113	113	113		XAES	
S128	S129	SL	W2	1420	1429	0	90	90	253		XAES	
S129	S130	SL	W2	1431	1437	0	80	80	283	CSD549	XAES	
S129	S133	SL	W2	1438	1440	0	24	24	307		XAES	
S129	S132	SL	W2	1448	1451	0	22	22	329		XAES	
S134	S125	SL	W2	1504	1506	0	22	22	351		XAES	
S125	S135	SL	W2	1522	1526	0	35	35	386		XAES	
S134	S135	SL	W2	1526	1537	0	82	72	458	CSD550	XAES	
S126	S135	SL	W2	1554	1556	0	22	22	480		XAES	
S135	S138	SL	W2	1608	1611	0	47	47	527		XAES	
S136	S138	SL	W2	1611	1620	0	54	54	581		XAES	
S136	S137	SL	W2	1620	1626	0	78	78	659		XAES	
S134	S3	SL	W2	1641	1644	0	13	13	672		XAES	
S134	S2	SL	W2	1644	1647	0	21	21	693		XAES	
S134	S1	SL	W2	1647	1650	0	21	21	714		XAES	
S3	S136	SL	W2	1651	1652	0	7	7	721		XAES	
S4	S136	SL	W2	1652	1654	0	22	22	743		XAES	
S5	S136	SL	W2	1654	1657	0	22	22	765		XAES	
S6	S136	SL	W2	1657	1700	0	22	22	787		XAES	
S7	S137	SL	W2	1700	1702	0	22	22	809		XAES	
S8	S137	SL	W2	1702	1704	0	22	22	831		XAES	
S9	S137	SL	W2	1704	1706	0	22	22	853		XAES	
S10	S137	SL	W2	1706	1708	0	20	20	873	CSD552	XAES	
S138	S137	SL	W2	1711	1713	0	22	22	905		XAES	

Total LF (Page)	905	Total DS (Page)	3	Total DS Needed (Page)	1.8	Over/Under (Page)	+1.2
Total LF (Project)	11979	Total DS (Project)	27	Total DS Needed (Project)	24.0	Over/Under (Project)	+3

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NM-01

CQA SOLUTIONS

Sheet 2 of ____
Date 4/28/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SC
Welder Number: ____

Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S138	S139	SC	W2	1717	1720	0	30	30	80		XAIS	
S1	S139	SC	W2	1720	1721	0	7	7	87		XAIS	
S12	S139	SC	W2	1721	1723	0	22	22	109		XAIS	
S14	S139	SC	W2	1726	1728	0	22	22	131		XAIS	
S20	S138	SC	W2	1737	1739	0	22	22	153		XAIS	
S15	S138	SC	W2	1739	1740	0	5	5	158		XAIS	
S15	S139	SC	W2	1740	1741	0	12	12	170		XAIS	
S135	S16	SC	W2	1543	1545	0	17	17	187		XAIS	
S135	S20	SC	W2	1545	1547	0	22	22	209		XAIS	
S13	S139	SC	W2	1723	1726	0	22	22	231		XAIS	
S135	S140	SC	W2	1742	1745	0	28	28	259		XAIS	
S127	S140	SC	W2	1750	1751	0	7	7	266		XAIS	
S140	S17	SC	W2	1757	1758	0	8	8	274		XAIS	
S140	S16	SC	W2	1758	1759	0	5	5	279		XAIS	
S127	S18	SC	W2	1755	1757	0	20	20	299		XAIS	
S132	S18	SC	W2	1802	1804	0	20	20	319		XAIS	
S19	S132	SC	W2	1812	1814	0	22	22	341		XAIS	
S128	S18	SC	W2	1805	1807	0	22	22	363		XAIS	
S20	S133	SC	W2	1814	1817	0	20	20	383		XAIS	
S22	S130	SC	W2	1817	1819	0	22	22	405		XAIS	
S23	S130	SC	W2	1819	1821	0	22	22	427		XAIS	
S24	S130	SC	W2	1821	1822	0	10	10	437		XAIS	
S24	S131	SC	W2	1822	1825	0	12	12	449		XAIS	
S25	S131	SC	W2	1825	1827	0	22	22	471		XAIS	

Total LF (Page)	471	Total DS (Page)	0	Total DS Needed (Page)	.9	Over/Under (Page)	-0.9
Total LF (Project)	12450	Total DS (Project)	27	Total DS Needed (Project)	24.9	Over/Under (Project)	42.1

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of ____
Date 4/28/22
Rev. Date: ____

SEAMING RECORD

Layer: Cell 61 Secondary

Welder Initials: SL
Welder Number: ____
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
536	5131	SL	W2	1827	1828	0	5	5	5		XAIS	
5130	5131	SL	W2	1832	1832	0	40	40	45		XAIS	
535	5131	SL	W2	1836	1837	0	8	8	53		XAIS	
535	5130	SL	W2	1837	1837	0	7	7	60		XAIS	
534	5130	SL	W2	1838	1840	0	17	17	77		XAIS	
534	5129	SL	W2	1840	1841	0	5	5	82		XAIS	
533	5129	SL	W2	1841	1843	0	20	20	102		XAIS	
550	5128	SL	W2	1843	1846	0	21	21	123		XAIS	
551	5127	SL	W2	1846	1849	0	21	21	144		XAIS	
552	5126	SL	W2	1849	1853	0	15	15	159		XAIS	
553	5125	SL	W2	1853	1857	0	20	20	179		XAIS	
554	5124	SL	W2	1859	1900	0	20	20	199		XAIS	

Total LF (Page)	199	Total DS (Page)	0	Total DS Needed (Page)	0.4	Over/Under (Page)	-0.4
Total LF (Project)	12649	Total DS (Project)	27	Total DS Needed (Project)	25.3	Over/Under (Project)	+1.7

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg (13) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client:
Project: NORTH KNOLL
Project Number: 22-25-NKL-01

CQA

Sheet: of
Date: 4/11/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seams		Stations		Tested Length	Pressure		Time		Pass/Fail		QC Tech	Observer	To be capped?	Notes
	Top	Bottom	Begin	End		Begin	End	Begin	End	APT	VT				
APT	S1	S2	0	EOS	Full	30	30	1425	1430	P	–	W	XAIS	–	
APT	S2	S3	0	EOS	Full	30	30	1428	1433	P	–	W	XAIS	–	
APT	S3	S4	0	EOS	Full	30	30	1430	1435	P	–	W	XAIS	–	
APT	S4	S5	0	EOS	Full	30	30	1432	1437	P	–	W	XAIS	–	
APT	S5	S6	0	EOS	Full	30	30	1440	1445	P	–	W	XAIS	–	
APT	S6	S7	0	EOS	Full	30	30	1445	1450	P	–	W	XAIS	–	
APT	S7	S8	0	EOS	Full	30	30	1500	1505	P	–	W	XAIS	–	
APT	S8	S9	0	EOS	Full	30	30	1503	1509	P	–	W	XAIS	–	
APT	S9	S10	0	EOS	Full	30	30	1522	1527	P	–	W	XAIS	–	
APT	S10	S11	0	EOS	Full	30	30	1525	1530	P	–	W	XAIS	–	
APT	S11	S12	0	EOS	Full	30	30	1538	1543	P	–	W	XAIS	–	

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client:
Project: [illegible]
Project: Number: [illegible]

CQA SOLUTIONS

Sheet 2 of
Date: 4/19/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S12	S13	0	EOS	Full	30	30	1355	1400	P	–	W	XAIS	N	
APT	S13	S14	0	EOS	Full	30	30	1357	1402	P	–	W	XAIS	N	
APT	S14	S15	0	EOS	Full	30	30	1402	1407	P	–	W	XAIS	N	
APT	S15	S16	0	EOS	Full	30	30	1413	1418	P	–	W	XAIS	N	
APT	S20	S15	0	EOS	Full	30	30	1512	1517	P	–	W	XAIS	N	
APT	S20	S16	0	EOS	Full	30	30	1510	1515	P	–	W	XAIS	N	
APT	S16	S17	0	EOS	Full	30	30	1445	1450	P	–	W	XAIS	N	
APT	S17	S18	0	170	170	30	29	1455	1500	P	–	W	XAIS	N	
APT	S17	S18	170	EOS	Full	30	30	1457	1502	P	–	W	XAIS	N	
APT	S18	S19	0	EOS	Full	30	30	1500	1505	P	–	W	XAIS	N	
APT	S21	S19	0	EOS	Full	30	30	1530	1535	P	–	W	XAIS	N	
APT	S22	S21	0	EOS	Full	30	30	1533	1538	P	–	W	XAIS	N	
APT	S23	S22	0	EOS	Full	30	30	1540	1545	P	–	W	XAIS	N	
APT	S24	S23	0	EOS	Full	30	30	1543	1548	P	–	W	XAIS	N	
APT	S25	S24	0	EOS	Full	30	30	1547	1552	P	–	W	XAIS	N	
APT	S26	S25	0	EOS	Full	30	29	1600	1605	P	–	W	XAIS	N	
APT	S27	S26	0	EOS	Full	30	30	1605	1610	P	–	W	XAIS	N	
APT	S28	S27	0	EOS	Full	30	30	1609	1614	P	–	W	XAIS	N	
APT	S29	S28	0	EOS	Full	30	30	1630	1635	P	–	W	XAIS	N	
APT	S30	S29	0	EOS	Full	30	30	1633	1638	P	–	W	XAIS	N	
APT	S31	S30	0	EOS	Full	30	30	1636	1641	P	–	W	XAIS	N	
APT	S32	S31	0	EOS	Full	30	29	1644	1649	P	–	W	XAIS	N	

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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Pg (2) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM

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Sheet 1 2
Date 8/23-7/22
Rev. Date

CQA

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seams		Station		Tested Length	Pressure		Time		Pass/Fail		QC Tech	Observer	To be capped?	Notes
	Top	Bottom	Begin	End		Begin	End	Begin	End	APT	VT				
APT	533	534	C	EOS	Full	30	30	1557	1602	P		WS	XAIS		
APT	534	535	C	EOS	Full	30	30	1559	1604	P		WS	XAIS		
APT	535	536	C	EOS	Full	30	30	1603	1608	P		WS	XAIS		
APT	536	537	C	EOS	Full	30	29	1604	1609	P		WS	XAIS		
APT	537	538	C	EOS	Full	30	30	1607	1612	P		WS	XAIS		
APT	538	539	C	EOS	Full	30	30	1612	1617	P		WS	XAIS		
APT	539	540	C	EOS	Full	30	30	1617	1620	P		WS	XAIS		
APT	540	541	C	EOS	Full	30	30	1617	1622	P		WS	XAIS		
APT	541	542	C	EOS	Full	30	30	1623	1628	P		WS	XAIS		
APT	542	543	C	EOS	Full	30	30	1625	1630	P		WS	XAIS		
APT	543	544	C	EOS	Full	30	29	1628	1633	P		WS	XAIS		
APT	544	545	C	EOS	Full	30	30	1633	1638	P		WS	XAIS		
APT	546	532	C	EOS	Full	30	30	1636	1641	P		WS	XAIS		
APT	547	546	C	EOS	Full	30	30	1639	1644	P		WS	XAIS		
APT	543	547	C	EOS	Full	30	30	1645	1650	P		WS	XAIS		
APT	548	545	C	EOS	Full	30	30	1647	1652	P		WS	XAIS		
APT	549	550	C	EOS	Full	30	30	1649	1654	P		WS	XAIS		
APT	549	529	C	EOS	Full	30	30	1653	1658	P		WS	XAIS		
APT	544	547	C	EOS	Full	30	30	1657	1702	P		WS	XAIS		
APT	547	546	C	EOS	Full	30	30	1659	1704	P		WS	XAIS		
APT	542	512	C	EOS	Full	30	30	1704	1709	P		WS	XAIS		
APT	541	532	C	EOS	Full	30	30	1706	1711	P		WS	XAIS		
APT	541	531	C	EOS	Full	30	30	1709	1714	P		WS	XAIS		
APT	540	549	C	EOS	Full	30	30	1715	1720	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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PG (3) OF (13)

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Received by OCD: 8/24/2022 3:28:34 PM

Well: _____
Well: _____
Well Case: _____

CQA

Sheet 2 of 2
Date 4/20/22
Rev Date

NON-DESTRUCTIVE TEST LOG

Layer: Cell 6 Secondary

Test Type	Seams Top	Seams Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	539	540	0	EOS	Full	30	30	1717	1722	P		WS	XAIS		
APT	539	529	0	EOS	Full	30	30	1720	1725	P		WS	XAIS		
APT	538	529	0	EOS	Full	30	30	1725	1730	P		WS	XAIS		
APT	538	528	0	EOS	Full	30	30	1727	1732	P		WS	XAIS		
APT	537	528	0	EOS	Full	30	30	1729	1734	P		WS	XAIS		
APT	537	529	0	EOS	Full	30	30	1733	1738	P		WS	XAIS		
APT	536	529	0	EOS	Full	30	30	1735	1740	P		WS	XAIS		
APT	536	526	0	EOS	Full	30	30	1738	1743	P		WS	XAIS		
APT	535	526	0	EOS	Full	30	20	1742	1749	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (4) OF (13)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: _____
Project: _____
Project: Number: _____

CQA

Sheet ____ of ____
Date: 4/21/22
Rev. Date: _____

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	538	550	C	EOS	Full	30	30	1532	1537	P		WS	XAIS		
APT	540	541	C	EOS	Full	30	30	1535	1540	P		WS	XAIS		
APT	541	542	C	EOS	Full	30	30	1537	1542	P		WS	XAIS		
APT	542	543	C	EOS	Full	30	30	1548	1553	P		WS	XAIS		
APT	543	544	C	EOS	Full	30	30	1550	1555	P		WS	XAIS		
APT	544	545	C	EOS	Full	30	29	1552	1557	P		WS	XAIS		
APT	545	546	C	EOS	Full	30	30	1555	1600	P		WS	XAIS		
APT	546	547	C	EOS	Full	30	30	1557	1602	P		WS	XAIS		
APT	547	548	C	EOS	Full	30	30	1559	1604	P		WS	XAIS		
APT	548	549	C	EOS	Full	30	30	1603	1608	P		WS	XAIS		
APT	549	560	C	EOS	Full	30	30	1604	1609	P		WS	XAIS		
APT	560	561	C	EOS	Full	30	29	1607	1612	P		WS	XAIS		
APT	561	562	C	EOS	Full	30	30	1610	1615	P		WS	XAIS		
APT	562	563	C	EOS	Full	30	30	1612	1617	P		WS	XAIS		
APT	563	564	C	EOS	Full	30	30	1615	1620	P		WS	XAIS		
APT	564	565	C	EOS	Full	30	30	1618	1623	P		WS	XAIS		
APT	565	566	C	EOS	Full	30	30	1621	1626	P		WS	XAIS		
APT	566	567	C	EOS	Full	30	30	1624	1629	P		WS	XAIS		
APT	567	568	C	EOS	Full	30	30	1640	1645	P		WS	XAIS		
APT	568	569	C	EOS	Full	30	30	1642	1647	P		WS	XAIS		
APT	568	570	C	EOS	Full	30	30	1645	1650	P		WS	XAIS		
APT	569	570	C	EOS	Full	30	29	1651	1656	P		WS	XAIS		
APT	570	571	C	EOS	Full	30	30	1654	1658	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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PG (5) OF (13)

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Client: _____
Project: _____
Project. Number: _____

CQA

Sheet ____ of ____
Date: 4/23/22
Rev. Date: _____

NON-DESTRUCTIVE TEST LOG
Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	572	571	0	EOS	Full	30	30	1604	1609	P		WS	XAIS		
APT	573	572	0	EOS	Full	30	30	1606	1611	P		WS	XAIS		
APT	574	573	0	EOS	Full	30	30	1609	1614	P		WS	XAIS		
APT	575	574	0	EOS	Full	30	30	1612	1617	P		WS	XAIS		
APT	576	575	0	EOS	Full	30	30	1614	1619	P		WS	XAIS		
APT	577	576	0	EOS	Full	30	30	1616	1621	P		WS	XAIS		
APT	578	577	0	EOS	Full	30	29	1620	1625	P		WS	XAIS		
APT	579	578	0	EOS	Full	30	30	1622	1627	P		WS	XAIS		
APT	580	579	0	EOS	Full	30	30	1624	1629	P		WS	XAIS		
APT	581	580	0	EOS	Full	30	30	1626	1631	P		WS	XAIS		
APT	582	581	0	EOS	Full	30	30	1629	1634	P		WS	XAIS		
APT	583	582	0	EOS	Full	30	30	1631	1636	P		WS	XAIS		
APT	584	583	0	EOS	Full	30	30	1633	1638	P		WS	XAIS		
APT	585	584	0	EOS	Full	30	30	1635	1640	P		WS	XAIS		
APT	586	592	0	EOS	Full	30	30	1640	1645	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client:
Project:
Project: Number:

CQA

Date: 4/25/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	586	585	0	EOS	Full	30	29	1310	1315	P		WS	XAIS		
APT	587	586	0	EOS	Full	30	30	1312	1317	P		WS	XAIS		
APT	588	587	0	EOS	Full	30	30	1315	1320	P		WS	XAIS		
APT	589	588	0	EOS	Full	30	30	1320	1325	P		WS	XAIS		
APT	590	589	0	EOS	Full	30	30	1322	1327	P		WS	XAIS		
APT	591	590	0	EOS	Full	30	30	1335	1340	P		WS	XAIS		
APT	592	589	0	EOS	Full	30	30	1338	1343	P		WS	XAIS		
APT	592	593	0	EOS	Full	30	30	1341	1346	P		WS	XAIS		
APT	593	594	0	EOS	Full	30	29	1343	1348	P		WS	XAIS		
APT	594	595	0	EOS	Full	30	30	1557	1602	P		WS	XAIS		
APT	595	596	0	EOS	Full	30	30	1559	1604	P		WS	XAIS		
APT	596	597	0	EOS	Full	30	30	1602	1607	P		WS	XAIS		
APT	596	599	0	EOS	Full	30	30	1610	1615	P		WS	XAIS		
APT	597	599	0	EOS	Full	30	30	1613	1618	P		WS	XAIS		
APT	597	598	0	EOS	Full	30	30	1615	1620	P		WS	XAIS		
APT	599	598	0	EOS	Full	30	30	1618	1623	P		WS	XAIS		
APT	598	5100	0	EOS	Full	30	30	1630	1635	P		WS	XAIS		
APT	5100	5101	0	EOS	Full	30	30	1634	1639	P		WS	XAIS		
APT	5100	5102	0	EOS	Full	30	30	1637	1642	P		WS	XAIS		
APT	592	585	0	EOS	Full	30	29	1640	1645	P		WS	XAIS		
APT	592	584	0	EOS	Full	30	28	1643	1648	P		WS	XAIS		
APT	593	584	0	EOS	Full	30	30	1645	1650	P		WS	XAIS		
APT	593	583	0	EOS	Full	30	30	1647	1652	P		WS	XAIS		
APT	594	583	0	EOS	Full	30	30	1650	1655	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Client: _____
Project: _____
Project: Number: _____

CQA SOLUTIONS

Sheet 2 of 2
Date: 9/15/21
Rev. Date: _____

NON-DESTRUCTIVE TEST LOG

Layer: Cell 1 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	594	582	0	EOS	Full	30	30	1653	1658	P		WS	XAIS		
APT	595	582	0	EOS	Full	30	30	1655	1700	P		WS	XAIS		
APT	594	581	0	EOS	Full	30	30	1659	1704	P		WS	XAIS		
APT	596	581	0	EOS	Full	30	30	1702	1707	P		WS	XAIS		
APT	596	580	0	EOS	Full	30	30	1705	1710	P		WS	XAIS		
APT	597	579	0	EOS	Full	30	30	1707	1712	P		WS	XAIS		
APT	598	578	0	EOS	Full	30	30	1709	1714	P		WS	XAIS		
APT	5100	577	0	EOS	Full	30	30	1711	1717	P		WS	XAIS		
APT	5100	576	0	EOS	Full	30	30	1715	1720	P		WS	XAIS		
APT	5101	576	0	EOS	Full	30	29	1720	1725	P		WS	XAIS		
APT	5101	5102	0	EOS	Full	30	30	1639	1640	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client:
Project:
Project: Number:

Sheet 2 of 2
Date: 4/25/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S105	S73	0	EOS	Full	30	30	1730	1735	P		WS	XAIS		
APT	S104	S72	0	EOS	Full	30	30	1732	1737	P		WS	XAIS		
APT	S106	S71	0	EOS	Full	30	30	1735	1740	P		WS	XAIS		
APT	S107	S70	0	EOS	Full	30	30	1738	1743	P		WS	XAIS		
APT	S108	S68	0	EOS	Full	30	29	1740	1745	P		WS	XAIS		
APT	S109	S67	0	EOS	Full	30	30	1743	1748	P		WS	XAIS		
APT	S111	S66	0	EOS	Full	30	30	1746	1751	P		WS	XAIS		
APT	S111	S65	0	EOS	Full	30	30	1749	1754	P		WS	XAIS		
APT	S112	S65	0	EOS	Full	30	30	1751	1756	P		WS	XAIS		
APT	S112	S64	0	EOS	Full	30	30	1743	1758	P		WS	XAIS		
APT	S113	S64	0	EOS	Full	30	30	1756	1801	P		WS	XAIS		
APT	S113	S63	0	EOS	Full	30	30	1757	1802	P		WS	XAIS		
APT	S115	S63	0	EOS	Full	30	30	1759	1804	P		WS	XAIS		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client:
Project:
Project: Number:

Sheet ____ of ____
Date: 4/27/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S115	S117	0	EOS	Full	30	29	1549	1554	P		WS	XAIS		
APT	S116	S117	0	EOS	Full	30	30	1553	1558	P		WS	XAIS		
APT	S117	S118	0	EOS	Full	30	30	1555	1600	P		WS	XAIS		
APT	S118	S119	0	EOS	Full	30	30	1559	1604	P		WS	XAIS		
APT	S119	S120	0	EOS	Full	30	30	1601	1606	P		WS	XAIS		
APT	S120	S121	0	EOS	Full	30	30	1604	1609	P		WS	XAIS		
APT	S121	S122	0	EOS	Full	30	30	1607	1612	P		WS	XAIS		
APT	S122	S123	0	EOS	Full	30	30	1610	1615	P		WS	XAIS		
APT	S55	S123	0	EOS	Full	30	30	1613	1618	P		WS	XAIS		
APT	S56	S123	0	EOS	Full	30	30	1616	1621	P		WS	XAIS		
APT	S56	S122	0	EOS	Full	30	30	1618	1623	P		WS	XAIS		
APT	S57	S122	0	EOS	Full	30	30	1621	1626	P		WS	XAIS		
APT	S57	S121	0	EOS	Full	30	30	1624	1629	P		WS	XAIS		
APT	S58	S121	0	EOS	Full	30	30	1626	1631	P		WS	XAIS		
APT	S58	S120	0	EOS	Full	30	30	1629	1634	P		WS	XAIS		
APT	S59	S120	0	EOS	Full	30	29	1632	1637	P		WS	XAIS		
APT	S59	S119	0	EOS	Full	30	30	1635	1640	P		WS	XAIS		
APT	S60	S119	0	EOS	Full	30	30	1637	1642	P		WS	XAIS		
APT	S60	S118	0	EOS	Full	30	30	1639	1644	P		WS	XAIS		
APT	S61	S118	0	EOS	Full	30	30	1641	1646	P		WS	XAIS		
APT	S61	S117	0	EOS	Full	30	30	1646	1651	P		WS	XAIS		
APT	S62	S117	0	EOS	Full	30	30	1649	1654	P		WS	XAIS		
APT	S62	S115	0	EOS	Full	30	30	1653	1658	P		WS	XAIS		

Specs: Pre-testing stabilization time: ____ Maximum Starting Pressure: ____ Maximum Allowable Loss: ____
Minimum Starting Pressure: ____ Test Duration: ____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Ranch
Project: Number: 22-SCS[illegible]-01

CQA SOLUTIONS

Sheet 1 of
Date: 4/30/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S123	S124	0	EOS	Full	30	30	1527	1532	P	—	WS	YAES	N	
APT	S124	S125	C	EOS	Full	30	30	1530	1535	P		WS	YAES		
APT	S124	S134	C	EOS	Full	30	29	1533	1538	P		WS	YAES		
APT	S125	S134	0	EOS	Full	30	30	1536	1541	P		WS	YAES		
APT	S125	S126	0	EOS	Full	30	30	1539	1544	P		WS	YAES		
APT	S134	S126	0	EOS	Full	30	30	1541	1546	P		WS	YAES		
APT	S134	S135	0	EOS	Full	30	30	1544	1549	P		WS	YAES		
APT	S134	S136	0	EOS	Full	30	30	1547	1552	P		WS	YAES		
APT	S126	S135	0	EOS	Full	30	30	1550	1555	P		WS	YAES		
APT	S135	S136	0	EOS	Full	30	30	1552	1557	P		WS	YAES		
APT	S126	S127	0	EOS	Full	30	30	1555	1600	P		WS	YAES		
APT	S135	S127	0	EOS	Full	30	30	1600	1605	P		WS	YAES		
APT	S135	S138	0	EOS	Full	30	30	1602	1607	P		WS	YAES		
APT	S136	S137	0	EOS	Full	30	30	1605	1610	P		WS	YAES		
APT	S127	S18	0	EOS	Full	30	30	1607	1613	P		WS	YAES		
APT	S127	S140	0	EOS	Full	30	30	1610	1615	P		WS	YAES		
APT	S127	S17	0	EOS	Full	30	30	1612	1617	P		WS	YAES		
APT	S140	S17	0	EOS	Full	30	30	1616	1621	P		WS	YAES		
APT	S140	S16	0	EOS	Full	30	30	1619	1624	P		WS	YAES		
APT	S140	S20	0	EOS	Full	30	30	1622	1627	P		WS	YAES		
APT	S20	S138	0	EOS	Full	30	30	1625	1630	P		WS	YAES		
APT	S16	S138	C	EOS	Full	30	29	1628	1633	P		WS	YAES		
APT	S138	S137	0	EOS	Full	30	28	1630	1635	P		WS	YAES		
APT	S138	S139	0	EOS	Full	30	30	1634	1639	P		WS	YAES		

Specs: Pre-testing stabilization time: _____ Minimum Starting Pressure: _____ Maximum Starting Pressure: _____ Test Duration: _____ Maximum Allowable Loss: _____

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Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS
Project: NORTH RANCH
Project: Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of
Date: 4/26/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S127	S128	0	EOS	Full	30	29	1636	1641	P		WS	XAES	N	
	S128	S18	0	EOS		30	30	1638	1643	P					
	S128	S129	0	EOS		30	30	1641	1646	P					
	S129	S132	0	EOS		30	30	1643	1648	P					
	S129	S132	0	EOS		30	30	1646	1651	P					
	S129	S133	0	EOS		30	30	1649	1654	P					
	S129	S133	0	EOS		30	30	1651	1656	P					
	S130	S131	0	EOS		30	30	1657	1658	P					
	S1	S136	0	EOS		30	30	1655	1700	P					
	S2	S136	0	EOS		30	30	1657	1702	P					
	S3	S136	0	EOS		30	30	1700	1705	P					
	S4	S136	0	EOS		30	30	1702	1707	P					
	S5	S136	0	EOS		30	30	1705	1710	P					
	S6	S136	0	EOS		30	30	1707	1712	P					
	S7	S137	0	EOS		30	30	1709	1714	P					
	S8	S137	0	EOS		30	30	1711	1716	P					
	S9	S139	0	EOS		30	30	1713	1718	P					
	S10	S137	0	EOS		30	30	1715	1720	P					
	S11	S139	0	EOS		30	30	1719	1724	P					
	S12	S139	0	EOS		30	30	1722	1727	P					
	S13	S135	0	EOS		30	30	1724	1729	P					
	S14	S139	0	EOS		30	30	1727	1732	P					
	S15	S139	0	EOS		30	30	1730	1735	P					
	S18	S132	0	EOS		30	30	1732	1737	P					

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project: Number: 22-SCS NRL-01

CQA SOLUTIONS

Sheet 3 of ____
Date: 9/30/22
Rev. Date: ____

NON-DESTRUCTIVE TEST LOG

Layer: Cell 1 Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S19	S132	0	EOS	Full	30	30	1735	1740	P	—	WS	XAS	N	
	S21	S133	0	EOS		30	30	1737	1742	P					
	S22	S130	0	EOS		30	30	1739	1744	P					
	S23	S130	0	EOS		30	30	1742	1747	P					
	S24	S130	0	EOS		30	30	1745	1750	P					
	S24	S131	0	EOS		30	30	1747	1752	P					
	S25	S131	0	EOS		30	30	1750	1755	P					
	S35	S131	0	EOS		30	24	1752	1757	P					
	S35	S130	0	EOS		30	30	1754	1759	P					
	S34	S130	0	EOS		30	30	1756	1801	P					
	S34	S129	0	EOS		30	30	1759	1804	P					
	S33	S129	0	EOS		30	28	1801	1806	P					
	S30	S128	0	EOS		30	30	1803	1808	P					
	S31	S127	0	EOS		30	30	1805	1810	P					
	S32	S126	0	EOS		30	30	1808	1813	P					
	S33	S125	0	EOS		30	30	1810	1815	P					
	S34	S124	0	EOS		30	30	1813	1818	P					

Specs: Pre-testing stabilization time: ____ Maximum Starting Pressure: ____ Maximum Allowable Loss: ____
Minimum Starting Pressure: ____ Test Duration: ____

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Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of
Date: various
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Various

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
ESDS1	54/55	52'	3/24	3/24	CK	W82	3/23	P	P	
ESDS2	57/58	56'	3/24	3/24	SL	W2	3/23	P	P	
WSDS1	52/53	55'	3/24	3/24	SL	W2	3/24	P	P	
WSDS2	51/52	26'	3/24	3/24	CK	W82	3/24	P	P	
CSDS1	55/56	106'	4/19	4/19	SL	W2	4/18	P	P	
CSDS2	511/512	32'	4/19	4/19	SL	W2	4/18	P	P	
CSDS3	54/55	41'	4/19	4/19	CK	W82	4/18	P	P	
CSDS4	510/511	74'	4/19	4/19	CK	W82	4/18	P	P	
CSDS5	514/515	120'	4/20	4/20	SL	W2	4/19	P	P	
CSDS6	516/520	12'	4/20	4/20	CK	W82	4/19	P	P	
CSDS7	522/523	128'	4/20	4/20	SL	W2	4/19	P	P	
CSDS8	523/524	89'	4/20	4/20	CK	W82	4/19	P	P	
CSDS9	528/529	81'	4/20	4/20	SL	W2	4/19	P	P	
CSDS10	529/530	63'	4/20	4/20	CK	W82	4/19	P	P	
CSDS11	536/535	98'	4/21	4/21	SL	W2	4/20	P	P	
CSDS12	534/538	56'	4/21	4/21	SL	W2	4/20	P	P	
CSDS13	545/548	18'	4/21	4/21	SL	W2	4/20	P	P	
CSDS14	530/549	3'	4/21	4/21	SL	W2	4/20	P	P	
CSDS15	553/554	120'	4/22	4/22	CK	W82	4/21	P	P	
CSDS16	554/555	103'	4/22	4/22	SL	W2	4/21	P	P	
CSDS17	559/560	63'	4/22	4/22	CK	W82	4/21	P	P	
CSDS18	560/561	36'	4/22	4/22	SL	W2	4/21	P	P	
CSDS19	566/567	19'	4/22	4/22	CK	W82	4/21	P	P	
CSDS20	566/565	44'	4/22	4/22	SL	W2	4/21	P	P	
CSDS21	570/568	30'	4/22	4/22	CK	W82	4/21	P	P	
CSDS22	575/576	28'	4/25	4/25	CK	W82	4/23	P	P	

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Pg (1) of (3)

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Bunch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 1 of
Date: various
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Cell 1 Secondary

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
CSDS23	S76/S77	55'	4/25	4/25	SL	W2	4/23	P	P	
CSDS24	S80/S81	8'	4/25	4/25	SL	W2	4/23	P	P	
CSDS25	S81/S82	170'	4/25	4/25	CK	W	4/23	P	P	
CSDS26	S90/S91	19	4/26	4/26	SL	W2	4/25	P	P	
CSDS27	S87/S88	68'	4/26	4/26	SL	W2	4/25	P	P	
CSDS28	S96/S97	83'	4/26	4/26	CK	W2	4/25	P	P	
CSDS29	S89/S90	8'	4/26	4/26	SL	W2	4/25	P	F	
CSDS30	S104/S105	54'	4/27	4/27	CK	W2	4/26	P	P	
CSDS31	S106/S106	82'	4/27	4/27	SL	W2	4/26	P	P	
CSDS32	S107/S109	61'	4/27	4/27	SL	W2	4/26	P	P	
CSDS33	S109/S111	111'	4/27	4/27	CK	W2	4/26	P	P	
CSDS34	S111/S112	164'	4/27	4/27	SL	W2	4/26	P	P	
CSDS35	S112/S114	37'	4/27	4/27	CK	W2	4/26	P	P	
CSDS36	S114/S115	70'	4/27	4/27	SL	W2	4/26	P	P	
CSDS37	S115/S117	266'	4/28	4/28	CK	W2	4/27	P	P	
CSDS38	S117/S118	280'	4/28	4/28	SL	W2	4/27	P	P	
CSDS39	S118/S119	212'	4/28	4/28	CK	W2	4/27	P	F	
CSDS39A	S118/S119	222'	4/30	4/30	CK	W2	4/27	P	P	
CSDS39B	S118/S119	202'	4/30	4/30	CK	W2	4/27	P	P	
CSDS24A	S79/S97	71'	4/29	4/29	SL	W2	4/29	P	P	
CSDS24B	S81/S95	3	4/29	4/29	SL	W2	4/25	P	P	
CSDS40	S119/S120	179'	4/28	4/28	SL	W2	4/27	P	P	
CSDS41	S120/S121	137'	4/28	4/28	CK	W2	4/27	P	P	
CSDS42	S121/S122	91'	4/28	4/28	SL	W2	4/27	P	P	
CSDS43	S122/S123	99'	4/28	4/28	CK	W2	4/27	P	P	
CSDS44	S121/S57	11	4/28	4/28	SL	W2	4/27	P	P	

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Pg (2) of (3)

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Client: _____
Project: _____
Project Number: _____

Sheet 3 of _____
Date: _____
Rev. Date: _____

DESTRUCTIVE SAMPLE LOG

Layer: Varies

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
CSDS45	S6/S16		4/29	4/29	CA	G744	4/22	P	P	
CSDS46	SR15/S53		4/29	4/29	MM	G44	4/22	P	P	
CSDS47	S123/S124	38'	4/29	4/29	CA	W82	4/28	P	P	
CSDS48	S124/S125	92'	4/29	4/29	CA	W82	4/28	P	P	
CSDS49	S129/S130	65'	4/29	4/29	SL	W2	4/28	P	P	
CSDS50	S134/S135	41'	4/29	4/29	SL	W2	4/28	P	P	
CSDS51	S38/S138	27'	4/29	4/29	CA	W82	4/28	P	P	
CSDS52	S137/S140	11'	4/29	4/29	SL	W2	4/28	P	P	
CSDS53	SR11/S36		4/30	4/30	MM	G44	4/22	P	P	
CSDS54	SR143/S132		4/30	4/30	MM	G44	4/29	P	P	

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PG (3) OF (3)

Released to Imaging: 8/24/2022 3:35:23 PM

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of
Date: various
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Various

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
ESDS1	54/55	52'	3/24	3/24	CK	W82	3/23	P	P	
ESDS2	57/58	56'	3/24	3/24	SL	W2	3/23	P	P	
WSDS1	52/53	55'	3/24	3/24	SL	W2	3/24	P	P	
WSDS2	51/52	26'	3/24	3/24	CK	W82	3/24	P	P	
CSDS1	55/56	106'	4/19	4/19	SL	W2	4/18	P	P	
CSDS2	511/512	32'	4/19	4/19	SL	W2	4/18	P	P	
CSDS3	54/55	41'	4/19	4/19	CK	W82	4/18	P	P	
CSDS4	510/511	74'	4/19	4/19	CK	W82	4/18	P	P	
CSDS5	514/515	120'	4/20	4/20	SL	W2	4/19	P	P	
CSDS6	516/520	12'	4/20	4/20	CK	W82	4/19	P	P	
CSDS7	522/523	128'	4/20	4/20	SL	W2	4/19	P	P	
CSDS8	523/524	89'	4/20	4/20	CK	W82	4/19	P	P	
CSDS9	528/529	81'	4/20	4/20	SL	W2	4/19	P	P	
CSDS10	529/530	63'	4/20	4/20	CK	W82	4/19	P	P	
CSDS11	536/535	98'	4/21	4/21	SL	W2	4/20	P	P	
CSDS12	534/538	56'	4/21	4/21	SL	W2	4/20	P	P	
CSDS13	545/548	18'	4/21	4/21	SL	W2	4/20	P	P	
CSDS14	530/549	3'	4/21	4/21	SL	W2	4/20	P	P	
CSDS15	553/554	120'	4/22	4/22	CK	W82	4/21	P	P	
CSDS16	554/555	103'	4/22	4/22	SL	W2	4/21	P	P	
CSDS17	559/560	63'	4/22	4/22	CK	W82	4/21	P	P	
CSDS18	560/561	36'	4/22	4/22	SL	W2	4/21	P	P	
CSDS19	566/567	19'	4/22	4/22	CK	W82	4/21	P	P	
CSDS20	566/565	44'	4/22	4/22	SL	W2	4/21	P	P	
CSDS21	570/568	30'	4/22	4/22	CK	W82	4/21	P	P	
CSDS22	575/576	28'	4/25	4/25	CK	W82	4/23	P	P	

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Client: SCS Engineers
Project: North Bunch Landfill
Project Number: 22-SCS-NRL-01

Sheet 1 of
Date: various
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Cell 1 Secondary

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
CSDS23	S76/S77	55'	4/25	4/25	SL	W2	4/23	P	P	
CSDS24	S80/S81	8'	4/25	4/25	SL	W2	4/23	P	P	
CSDS25	S81/S82	170'	4/25	4/25	CK	W	4/23	P	P	
CSDS26	S90/S91	19	4/26	4/26	SL	W2	4/25	P	P	
CSDS27	S87/S88	68'	4/26	4/26	SL	W2	4/25	P	P	
CSDS28	S96/S97	83'	4/26	4/26	CK	W2	4/25	P	P	
CSDS29	S89/S90	8'	4/26	4/26	SL	W2	4/25	P	F	
CSDS30	S104/S105	54'	4/27	4/27	CK	W2	4/26	P	P	
CSDS31	S106/S106	82'	4/27	4/27	SL	W2	4/26	P	P	
CSDS32	S107/S109	61'	4/27	4/27	SL	W2	4/26	P	P	
CSDS33	S109/S111	111'	4/27	4/27	CK	W2	4/26	P	P	
CSDS34	S111/S112	164'	4/27	4/27	SL	W2	4/26	P	P	
CSDS35	S112/S114	37'	4/27	4/27	CK	W2	4/26	P	P	
CSDS36	S114/S115	70'	4/27	4/27	SL	W2	4/26	P	P	
CSDS37	S115/S117	266'	4/28	4/28	CK	W2	4/27	P	P	
CSDS38	S117/S118	280'	4/28	4/28	SL	W2	4/27	P	P	
CSDS39	S118/S119	212'	4/28	4/28	CK	W2	4/27	P	F	
CSDS39A	S118/S119	222'	4/30	4/30	CK	W2	4/27	P	P	
CSDS39B	S118/S119	202'	4/30	4/30	CK	W2	4/27	P	P	
CSDS24A	S79/S97	71'	4/29	4/29	SL	W2	4/29	P	P	
CSDS24B	S81/S95	3	4/29	4/29	SL	W2	4/25	P	P	
CSDS40	S119/S120	179'	4/28	4/28	SL	W2	4/27	P	P	
CSDS41	S120/S121	137'	4/28	4/28	CK	W2	4/27	P	P	
CSDS42	S121/S122	91'	4/28	4/28	SL	W2	4/27	P	P	
CSDS43	S122/S123	99'	4/28	4/28	CK	W2	4/27	P	P	
CSDS44	S121/S57	11	4/28	4/28	SL	W2	4/27	P	P	

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Pg (2) of (3)

Released to Imaging: 8/24/2022 3:35:23 PM

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Client: _____
Project: _____
Project Number: _____

Sheet 3 of _____
Date: _____
Rev. Date: _____

DESTRUCTIVE SAMPLE LOG

Layer: Varies

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
CSDS45	S6/S16		4/29	4/29	CA	G744	4/22	P	P	
CSDS46	SR15/S53		4/29	4/29	MM	G44	4/22	P	P	
CSDS47	S123/S124	38'	4/29	4/29	CA	W82	4/28	P	P	
CSDS48	S124/S125	92'	4/29	4/29	CA	W82	4/28	P	P	
CSDS49	S129/S130	65'	4/29	4/29	SL	W2	4/28	P	P	
CSDS50	S134/S135	41'	4/29	4/29	SL	W2	4/28	P	P	
CSDS51	S38/S138	27'	4/29	4/29	CA	W82	4/28	P	P	
CSDS52	S137/S140	11'	4/29	4/29	SL	W2	4/28	P	P	
CSDS53	SR11/S36		4/30	4/30	MM	G44	4/22	P	P	
CSDS54	SR143/S132		4/30	4/30	MM	G44	4/29	P	P	

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PG (3) OF (3)

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS
Project: NORTH RANCH
Project Number: 22SCS-NR-01

CQA SOLUTIONS

Sheet 1 of 11
Date various
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR1	S5	S6	–	–	–	CSDS1	106	–	P	2	5	14	4/22	0933	CK	G744	WS	4/22	P	XAIS
SR2	S11	S12	–	–	–	CSDS2	32	–	P	2	5	14	4/22	0912	CK	G744	WS	4/22	P	XAIS
SR3	S4	S5	–	–	–	CSDS3	41	–	P	2	5	14	4/22	0858	CK	G744	WS	4/22	P	XAIS
SR4	S10	S11	–	–	–	CSDS4	74	–	P	2	5	14	4/22	0944	CK	G744	WS	4/22	P	XAIS
SR5	S14	S15	–	–	–	CSDS5	120	–	P	2	5	14	4/22	0924	CK	G744	WS	4/22	P	XAIS
SR6	S16	S17	–	–	–	CSDS6	12	–	P	2	6	16	4/22	0938	CK	G744	WS	4/22	P	XAIS
SR7	S22	S23	–	–	–	CSDS7	128	–	P	2	5	14	4/22	1011	CK	G744	WS	4/22	P	XAIS
SR8	S23	S24	–	–	–	CSDS8	89	–	P	2	6	18	4/22	1020	CK	G744	WS	4/22	P	XAIS
SR9	S22	S29	–	–	–	CSDS9	81	–	P	2	5	14	4/22	1326	CK	G744	WS	4/22	P	XAIS
SR10	S29	S30	–	–	–	CSDS10	63	–	P	2	5	14	4/22	1330	CK	G744	WS	4/22	P	XAIS
SR11	S35	S36	–	–	–	CSDS11	38	–	P	2	5	14	4/22	1000	MM	G744	WS	4/22	P	XAIS
SR12	S38	S39	–	–	–	CSDS12	56	–	P	2	5	14	4/22	1010	MM	G744	WS	4/22	P	XAIS
SR13	S44	S45	–	–	–	CSDS13	18	–	P	2	5	14	4/22	1048	MM	G744	WS	4/22	P	XAIS
SR14	S49	S49	–	–	–	CSDS14	8	–	P	2	6	16	4/22	1138	CK	G744	WS	4/22	P	XAIS
SR15	S53	S54	–	–	–	CSDS15	120	–	P	2	6	16	4/22	0950	MM	G744	WS	4/22	P	XAIS
SR16	S54	S55	–	–	–	CSDS16	103	–	P	2	5	14	4/22	0935	MM	G744	WS	4/22	P	XAIS
SR17	S59	S60	–	–	–	CSDS17	63	–	P	2	5	14	4/22	0905	MM	G744	WS	4/22	P	XAIS
SR18	S60	S61	–	–	–	CSDS18	36	–	P	2	6	16	4/22	850	MM	G744	WS	4/22	P	XAIS
SR19	S66	S67	–	–	–	CSDS19	19	–	P	2	5	14	4/22	0830	MM	G744	WS	4/22	P	XAIS
SR20	S65	S66	–	–	–	CSDS20	44	–	P	2	6	16	4/22	0825	MM	G744	WS	4/22	P	XAIS
											Total (Page)	292								
											Total (Project)	292								

Notes: _____

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-WR2-01

CQA SOLUTIONS

Sheet 2 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR21	570	565	—	—	—	CSD521	30	—	P	2	5	14	4/22	0830	CK	G744	WS	4/22	P	XAIS
SR22	515	516	510	—	—	Int	—	—	P	2	3	10	4/22	0939	CK	G744	WS	4/22	P	XAIS
SR23	529	530	549	—	—	Int	—	—	P	3	3	12	4/22	1147	CK	G744	WS	4/22	P	XAIS
SR24	520	531	519	—	—	Int	—	—	P	2	2	8	4/22	1352	CK	G744	WS	4/22	P	XAIS
SR25	526	535	536	—	—	Int	—	—	P	2	2	8	4/19	*	MM	G44	WS	4/20	P	XAIS
SR26	516	—	—	—	—	Hole	150'	7'5	P	1	1	4	4/22	1023	CK	G744	WS	4/22	P	XAIS
SR27	526	527	536	—	—	Int	—	—	P	2	2	8	4/22	1025	CK	G744	WS	4/22	P	XAIS
SR28	527	536	537	—	—	Int	—	—	P	2	4	12	4/22	1045	CK	G744	WS	4/22	P	XAIS
SR29	527	528	537	—	—	Int	—	—	P	3	3	12	4/22	1050	CK	G744	WS	4/22	P	XAIS
SR30	528	537	538	—	—	Int	—	—	P	3	3	12	4/22	1100	CK	G744	WS	4/22	P	XAIS
SR31	528	529	538	—	—	Int	—	—	P	3	4	14	4/22	1110	CK	G744	WS	4/22	P	XAIS
SR32	529	538	539	—	—	Int	—	—	P	2	2	8	4/22	1120	CK	G744	WS	4/22	P	XAIS
SR33	529	549	539	—	—	Int	—	—	P	3	3	12	4/22	1132	CK	G744	WS	4/22	P	XAIS
SR34	549	539	540	—	—	Int	—	—	P	2	3	10	4/22	1338	CK	G744	WS	4/22	P	XAIS
SR35	549	531	541	540	—	Int	—	—	P	4	8	24	4/19	*	MM	G44	WS	4/22	P	XAIS
SR36	531	532	541	—	—	Int	—	—	P	2	3	10	4/22	1348	MM	G44	WS	4/22	P	XAIS
SR37	532	541	542	—	—	Int	—	—	P	2	2	8	4/22	1300	MM	G44	WS	4/22	P	XAIS
SR38	532	546	542	—	—	CAP	—	—	P	2	25	54	4/22	1330	MM	G44	WS	4/22	P	XAIS
SR39	546	542	543	—	—	Int	—	—	P	3	11	28	4/22	1340	MM	G44	WS	4/22	P	XAIS
SR40	546	547	543	—	—	Int	—	—	P	3	7	20	4/22	1112	MM	G44	WS	4/22	P	XAIS
											Total (Page)	288								
											Total (Project)	580								

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Client: SLS Engineers
Project: North Ranch Landf. II
Project Number: 22-SLS-NRL-01

CQA SOLUTIONS

Sheet 3 of 11
Date Varies
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR41	S17	S18	—	—	—	CAP	170'	—	P	2	3	10	4/22	955	CK	G744	WS	4/22	P	XAIS
SR42	S17	-	-	-	-	CAP	165	6'S	P	1	1	4	4/22	958	CK	G744	WS	4/22	P	XAIS
SR43	S65	S69	S76	—	—	Int	—	—	P	2	3	10	4/22	0805	SLMM	G-44	WS	4/22	P	XAIS
SR44	—	S65	S66	—	-	Int	10'	—	P	3	7	20	4/22	0842	SLMM	G-44	WS	4/22	P	XAIS
SR45	S60	S61	—	—	-	BO	128	—	P	3	6	18	4/22	0910	MM	G-44	WS	4/22	P	XAIS
SR46	S59	—	—	—	—	Hole	115	12'W	P	2	3	10	4/22	0913	MM	G44	WS	4/22	P	XAIS
SR47	S52	—	—	—	-	Hole	75	12' W	P	2	3	10	4/22	*	SL	G744	WS	4/22	P	XAIS
SR48	S44	S45	S47	S48	-	Int	—	—	P	3	5	16	4/22	1100	MM	G44	WS	4/22	P	XAIS
SR49	S76	S76	—	—	-	CSDS22	28	—	P	2	5	14	4/28	0836	SL	G744	WS	4/29	P	XAIS
SR50	S76	S77	—	—	-	CSDS23	55	—	P	2	5	14	4/29	0839	SL	G744	WS	4/29	P	XAIS
SR51	S8	S81	—	—	-	CSDS24	80	—	P	2	5	14	4/28	0855	SL	G744	WS	4/29	P	XAIS
SR52	S81	S82	—	—	-	CSDS25	130	—	P	2	5	14	4/28	0918	SL	G744	WS	4/29	P	XAIS
SR53	S90	S91	—	—	-	CSDS26	19	—	P	2	5	14	4/28	*	SL	G744	WS	4/29	P	XAIS
SR54	S87	S88	—	—	-	CSDS27	68	—	P	2	5	14	4/28	08	SL	G744	WS	4/29	P	XAIS
SR55	S96	S97	—	—	-	CSDS28	83	—	P	2	5	14	4/28	*	SL	G744	WS	4/29	P	XAIS
SR56	S80	S96	—	—	-	CSDS29	8	—	P	2	5	14	4/28	0935	SL	G744	WS	4/29	P	XAIS
SR57	S104	S105	—	—	-	CSDS30	54	—	P	2	6	16	4/28	1001	SL	G744	WS	4/29	P	XAIS
SR58	S105	S106	—	—	-	CSDS31	82	—	P	2	6	16	4/28	0952	SL	G744	WS	4/29	P	XAIS
SR59	S107	~~S108~~	S109	—	-	CSDS32	61	—	P	3	5	16	4/28	0815	SL	G744	WS	4/29	P	XAIS
SR60	S108	S111	—	—	-	CSDS33	111	—	P	2	6	16	4/29	1036	SL	G44	WS	4/29	P	XAIS

Total (Page)	274
Total (Project)	354

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-WRL-01

CQA SOLUTIONS

Sheet 4 of 11
Date VARIES
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR61	S111	S112	–	–	–	CSDS34	164	–	P	2	5	14	4/28	1030	SL	G744	WS	4/30	P	XAIS
SR62	S112	S114	–	–	–	CSDS35	37	–	P	2	5	14	4/28	1052	SL	G744	WS	4/30	P	XAIS
SR63	S114	S115	–	–	–	CSDS36	70	–	P	2	5	14	4/28	1100	SL	G744	WS	4/30	P	XAIS
SR64	S115	S117	–	–	–	CSDS37	1266	–	P	2	6	16	4/28	0948	CK	G744	WS	4/30	P	XAIS
SR65	S117	S118	–	–	–	CSDS38	780	–	P	2	5	14	4/29	0935	CK	G744	WS	4/30	P	XAIS
SR66	S118	S119	–	–	–	CSDS39	212	–	P	2	6	16	4/30	*	MM	G44	WS	4/30	P	XAIS
SR67	S119	S120	–	–	–	CSDS40	1789	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR68	S120	S121	–	–	–	CSDS41	137	–	P	2	6	16	4/29	847	CK	G744	S	4/30	P	XAIS
SR69	S121	S122	–	–	–	CSDS42	91	–	P	2	6	16	4/29	0850	CK	G744	WS	4/30	P	XAIS
SR70	S122	S123	–	–	–	CSDS43	39	–	P	2	6	16	4/29	0910	CK	G744	WS	4/30	P	XAIS
SR71	S121	S57	–	–	–	CSDS44	11	–	P	2	6	16	4/29	1000	MM	G44	WS	4/30	P	XAIS
XRT2	S74	S97	–	–	–	CSDS29A	7	–	P	2	5	14	4/29	1057	CK	G744	WS	4/30	P	XAIS
SR73	S81	S95	–	–	–	CSDS29B	3	–	P	2	5	14	4/29	1046	CK	G744	WS	4/30	P	XAIS
SR74	SR6	S1C	–	–	–	CSDS45	–	–	P	2	5	14	4/29	*	MM	G44	WS	4/30	P	XAIS
SR75	SR15	S53	–	–	–	CSDS46	–	–	P	2	5	14	4/30	0933	MM	G44	WS	4/30	P	XAIS
SR76	S123	S124	–	–	–	CSDS47	38	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR77	S124	S125	–	–	–	CSDS48	92	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR78	S126	S120	–	–	–	CSDS49	105	–	P	2	5	14	4/29	1532	MM	G44	WS	4/30	P	XAIS
SR79	S141	S135	–	–	–	CSDS50	41	–	P	2	5	14	4/29	1141	MM	G44	WS	4/30	P	XAIS
SR80	S138	S139	–	–	–	CSDS51	27	–	P	2	5	14	4/29	1050	MM	G44	WS	4/30	P	XAIS

Total (Page)	742
Total (Project)	1146

Notes: * NO TIME PROVIDED BY INSTALLER

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 5 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR81	S137	S10	—	—	-	CSDSSZ	11	—	P	2	5	14	4/29	0942	MM	G44	WS	4/28	P	XAIS
SR82	S119	S119	—	—	-	CSDS39A	222	—	P	2	12	28	4/30	*	MM	G44	WS	4/30	P	XAIS
SR83	S118	S119	—	—	-	CSDS39B	201	—	P	2	12	28	4/30	*	MM	G44	WS	4/30	P	XAIS
SR84	S88	S89	—	—	-	CAP	105	—	P	2	6	16	4/28	1054	SL	G744	WS	4/28	P	XAIS
SR85	S87	S88	—	—	-	CAP	135	—	P	2	2	8	4/28	1054	SL	G744	WS	4/28	P	XAIS
SR86	S87	—	—	—	-	CAP	130	5' F	P	2	2	8	4/28	1052	SL	G744	WS	4/28	P	XAIS
SR87	S77	S86	—	—	-	CAP	130	—	P	2	2	8	4/28	1030	SL	G744	WS	4/28	P	XAIS
SR88	S86	—	—	—	-	CAP	125	11' G	P	2	2	8	4/28	1028	SL	G744	WS	4/28	P	XAIS
SR89	S86	S85	—	—	-	CAP	71	—	P	2	5	14	4/28	1021	SL	G744	WS	4/28	P	XAIS
SR90	S85	S86	S92	—	-	Int	—	—	P	4	4	16	4/28	1016	SL	G744	WS	4/28	P	XAIS
SR91	S84	S85	S92	—	-	Int	—	—	P	2	2	8	4/28	1012	SL	G744	WS	4/28	P	XAIS
SR92	S83	S84	S92	—	-	Int	—	—	P	2	2	8	4/28	1008	SL	G744	WS	4/28	P	XAIS
SR93	S83	S84	S93	—	-	Int	—	—	P	2	2	8	4/28	1003	SL	G744	WS	4/28	P	XAIS
SR94	S83	S93	S94	—	-	Int	—	—	P	2	2	8	4/28	1000	SL	G744	WS	4/28	P	XAIS
SR95	S82	S83	S94	—	-	Int	—	—	P	2	2	8	4/28	0957	SL	G744	WS	4/28	P	XAIS
SR96	S82	S94	S95	—	-	Int	—	—	P	2	2	8	4/28	0943	SL	G744	WS	4/28	P	XAIS
SR97	S81	S82	S95	—	-	Int	—	—	P	2	2	8	4/28	0941	SL	G744	WS	4/29	P	XAIS
SR98	S81	S95	S96	—	-	Int	—	—	P	2	2	8	4/28	0938	SL	G744	WS	4/29	P	XAIS
SR99	S80	S81	S96	—	-	Int	—	—	P	2	2	8	4/28	0937	SL	G744	WS	4/29	P	XAIS
SR100	S79	S80	—	—	-	CAP	93	—	P	2	2	8	4/28	0931	SL	G744	WS	4/29	P	XAIS

Total (Page)	228
Total (Project)	1374

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Date VARIES
Rev. Date:

GEOMEMBRANE REPAIR LOG

Layer: Cell F1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR101	S74	S90	S96	S97	—	Int	—	—	P	3	7	20	4/28	0930	SL	G744	WS	4/29	P	XAIS
SR102	S77	S79	S97	S98	—	Int	—	—	P	2	2	8	4/28	0911	SL	G744	WS	4/29	P	XAIS
SR103	S96	S97	S99	—	—	Int	—	—	P	2	2	8	4/28	0917	SL	G744	WS	4/29	P	XAIS
SR104	S97	S98	S99	—	—	Int	—	—	P	2	2	8	4/28	0919	SL	G744	WS	4/29	P	XAIS
SR105	S77	S78	S98	S100	—	Int	—	—	P	2	4	12	4/28	0857	SL	G744	WS	4/29	P	XAIS
SR106	S76	S77	S100	—	—	Int	—	—	P	2	2	8	4/28	0854	SL	G744	WS	4/29	P	XAIS
SR107	S76	S100	S101	—	—	Int	—	—	P	2	2	8	4/28	0850	SL	G744	WS	4/29	P	XAIS
SR108	S100	S101	S102	—	—	Int	—	—	P	2	2	8	4/29	0936	SL	G744	WS	4/29	P	XAIS
SR109	S101	S102	S103	—	—	Int	—	—	P	2	2	8	4/28	0942	SL	G744	WS	4/29	P	XAIS
SR110	S101	S75	S76	—	—	Int	—	—	P	2	2	8	4/28	0847	SL	G744	WS	4/29	P	XAIS
SR111	S101	S103	S75	—	—	Int	—	—	P	2	3	10	4/28	0842	SL	G744	WS	4/29	P	XAIS
SR112	S103	S75	S74	—	—	Int	—	—	P	2	2	8	4/28	0840	SL	G744	WS	4/29	P	XAIS
SR113	S103	S104	S74	—	—	Int	—	—	P	2	2	8	4/28	0838	SL	G744	WS	4/29	P	XAIS
SR114	S104	S74	S73	—	—	Int	—	—	P	2	2	8	4/28	0836	SL	G744	WS	4/29	P	XAIS
SR115	S104	S105	S73	—	—	Int	—	—	P	2	3	10	4/28	0830	SL	G744	WS	4/29	P	XAIS
SR116	S105	S73	S72	—	—	Int	—	—	P	2	2	8	4/28	0825	SL	G744	WS	4/29	P	XAIS
SR117	S103	S104	—	—	—	CAP	185	—	P	3	3	12	4/28	0941	SL	G744	WS	4/29	P	XAIS
SR118	S105	S106	S72	S71	—	Int	—	—	P	3	8	22	4/28	0823	SL	G744	WS	4/29	P	XAIS
SR119	S106	S107	S71	S70	—	Int	—	—	P	3	4	14	4/28	0809	SL	G744	WS	4/29	P	XAIS
SR120	S107	S109	S110	—	—	Int	—	—	P	2	3	10	4/28	1104	SL	G744	WS	4/29	P	XAIS

Total (Page)	106
Total (Project)	1480

Notes:

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Client: SCS Engineers
Project: North Ranch Landf. 11
Project Number: 22-SCS-VA1-01

CQA SOLUTIONS

Sheet 7 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR121	S109	S110	S111	—	—	Int	—	—	P	2	3	10	4/28	1101	SL	G744	WS	4/29	P	XAIS
SR122	S105	S106	S108	—	—	Int	—	—	P	2	2	8	4/29	1025	CA	G744	WS	4/29	P	XAIS
SR123	S106	S107	S108	—	—	Int	—	—	P	2	2	8	4/29	1023	CA	G744	WS	4/29	P	XAIS
SR124	S110	S111	—	—	—	BC	51	—	P	3	4	14	4/29	1017	CA	G744	WS	4/29	P	XAIS
SR125	S111	S112	—	—	—	BC	297	—	P	2	4	12	4/29	1011	CA	G744	WS	4/29	P	XAIS
SR126	S112	S113	S114	—	—	Int	—	—	P	2	3	10	4/28	1043	SL	G744	WS	4/29	P	XAIS
SR127	S113	S114	S115	—	—	Int	—	—	P	2	3	10	4/28	1046	SL	G744	WS	4/29	P	XAIS
SR128	S68	S109	S107	—	—	Int	—	—	P	2	2	8	4/29	1100	CA	G744	WS	4/29	P	XAIS
SR129	S67	S68	S107	S109	—	Int	—	—	P	3	6	18	4/29	1106	CA	G744	WS	4/29	P	XAIS
SR130	S66	S67	S109	S111	—	Int	—	—	P	5	6	18	4/29	1116	CA	G744	WS	4/29	P	XAIS
SR131	S66	S65	S111	—	—	Int	—	—	P	2	2	8	4/29	1126	CA	G744	WS	4/29	P	XAIS
SR132	S65	S111	S112	—	—	Int	—	—	P	2	3	10	4/29	1127	CA	G744	WS	4/29	P	XAIS
SR133	S65	S112	—	—	—	CAP	9	—	P	2	2	8	4/29	1130	CA	G744	WS	4/29	P	XAIS
SR134	S112	—	—	—	—	CAP	3	16' E	P	2	3	10	4/29	1134	CA	G744	WS	4/29	P	XAIS
SR135	S64	S65	S112	—	—	Int	—	—	P	2	2	8	4/29	1138	CA	G744	WS	4/29	P	XAIS
SR136	S64	S112	S113	—	—	Int	—	—	P	2	2	8	4/29	1139	CA	G744	WS	4/29	P	XAIS
SR137	S63	S64	S113	—	—	Int	—	—	P	2	2	8	4/29	1143	CA	G744	WS	4/29	P	XAIS
SR138	S114	S115	S116	—	—	Int	—	—	P	2	2	8	4/29	0958	CA	G744	WS	4/29	P	XAIS
SR139	S115	S116	S117	—	—	Int	—	—	P	2	2	8	4/29	0956	CA	G744	WS	4/29	P	XAIS
SR140	S79	S80	S81	S82	S68	CAP	—	—	P	2	20	44	4/30	0905	MM	G744	WS	4/30	P	XAIS

Total (Page)	276
Total (Project)	1816

Notes: _____

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SLS Engineers
Project: North Ranch Landfill
Project Number: 72-SLS-NRL-01

CQA SOLUTIONS

Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR141	SR1	S36	-	-	-	CSDG3	-	-	P	2	6	18	4/30	*	MM	G44	WS	4/30	P	XAIS
SR142	R143	S37	-	-	-	CSDG4	-	-	P	3	5	18	4/30	*	MM	G44	WS	4/30	P	XAIS
SR143	S129	S132	S14	S21	-	Int	-	-	P	4	8	24	4/29	1415	MM	G44	WS	4/30	P	XAIS
SR144	S119	S115	S62	-	-	Int	-	-	P	2	2	8	4/29	1148	CA	G744	WS	4/30	P	XAIS
SR145	S115	S63	S62	-	-	Int	-	-	P	2	6	12	4/29	1150	CA	G744	WS	4/30	P	XAIS
SR146	S115	S117	S62	-	-	Int	-	-	P	3	3	12	4/29	1040	MM	G44	WS	4/30	P	XAIS
SR147	S117	S62	S61	-	-	Int	-	-	P	2	2	8	4/29	1036	MM	G44	WS	4/30	P	XAIS
SR148	S117	S118	S61	-	-	Int	-	-	P	2	2	8	4/29	1032	MM	G44	WS	4/30	P	XAIS
SR149	S118	S61	S60	-	-	Int	-	-	P	2	2	8	4/29	1027	MM	G44	WS	4/30	P	XAIS
SR150	S118	S119	S60	-	-	Int	-	-	P	2	2	8	4/29	1025	MM	G44	WS	4/30	P	XAIS
SR151	S119	S60	S59	-	-	Int	-	-	P	2	2	8	4/29	1023	MM	G44	WS	4/30	P	XAIS
SR152	S119	S120	S59	-	-	Int	-	-	P	2	2	8	4/29	1020	MM	G44	WS	4/30	P	XAIS
SR153	S12[illegible]	S59	S58	-	-	Int	-	-	P	2	2	8	4/29	1018	MM	G44	WS	4/30	P	XAIS
SR154	S12[illegible]	125	S58	-	-	Int	-	-	P	2	2	8	4/29	1015	MM	G44	WS	4/30	P	XAIS
SR155	S12[illegible]	S58	S57	-	-	Int	-	-	P	2	2	8	4/29	1013	MM	G44	WS	4/30	P	XAIS
SR156	S121	S122	S57	-	-	Int	-	-	P	2	4	8	4/29	0955	MM	G44	WS	4/30	P	XAIS
SR157	S122	S57	S56	-	-	Int	-	-	P	2	2	8	4/29	0950	MM	G44	WS	4/30	P	XAIS
SR158	S122	S123	S56	-	-	Int	-	-	P	3	4	14	4/29	0945	MM	G44	WS	4/30	P	XAIS
SR159	S123	S56	S55	-	-	Int	-	-	P	2	2	8	4/29	0940	MM	G44	WS	4/30	P	XAIS
SR160	S123	S124	S55	S54	-	Int	-	-	P	4	6	20	4/29	0807	MM	G44	WS	4/30	P	XAIS

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Total (Page)	214
Total (Project)	2030

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SLS Engineers
Project: North Ranch Landf. II
Project Number: 21-SLS-NRL-01

CQA SOLUTIONS

Sheet 9 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR161	S124	S125	S54	S53	—	Int	—	—	P	2	4	12	4/28	0755	MM	G44	WS	4/30	P	XAIS
SR162	S125	S126	S53	S52	—	Int	—	—	P	3	3	12	4/30	0750	MM	G44	WS	4/30	P	XAIS
SR163	S116	S117	S52	S51	—	Int	—	—	P	2	10	24	4/30	0743	MM	G44	WS	4/30	P	XAIS
SR164	S117	S128	S51	S50	—	Int	—	—	P	2	6	16	4/29	1635	MM	G44	WS	4/30	P	XAIS
SR165	S128	S129	S50	S49	—	Int	—	—	P	3	5	16	4/29	1630	MM	G44	WS	4/30	P	XAIS
SR166	S129	S33	S34	—	—	Int	—	—	P	2	2	8	4/29	1621	MM	G44	WS	4/30	P	XAIS
SR167	S129	S130	S34	—	—	Int	—	—	P	2	2	8	4/29	1616	MM	G44	WS	4/30	P	XAIS
SR168	S130	S31	S35	—	—	Int	—	—	P	2	2	8	4/29	1610	MM	G44	WS	4/30	P	XAIS
SR169	S130	S131	S35	—	—	Int	—	—	P	2	3	10	4/29	1608	MM	G44	WS	4/30	P	XAIS
SR170	S131	S35	S36	S46	—	Int	—	—	P	4	6	20	4/29	1603	MM	G44	WS	4/30	P	XAIS
SR171	S131	S36	S46	—	—	Int	—	—	P	2	2	8	4/29	1555	MM	G44	WS	4/30	P	XAIS
SR172	S131	S25	S24	—	—	Int	—	—	P	2	2	8	4/29	1541	MM	G44	WS	4/30	P	XAIS
SR173	S24	S131	S30	—	—	Int	—	—	P	3	3	12	4/29	1535	MM	G44	WS	4/30	P	XAIS
SR174	S130	S24	S23	—	—	Int	—	—	P	2	2	8	4/29	1520	MM	G44	WS	4/30	P	XAIS
SR175	S130	S23	S22	—	—	Int	—	—	P	2	2	8	4/29	1518	MM	G44	WS	4/30	P	XAIS
SR176	S130	S132	S22	S21	—	Int	—	—	P	3	5	16	4/29	1505	MM	G44	WS	4/30	P	XAIS
SR177	S132	S19	S18	—	—	Int	—	—	P	3	3	12	4/29	1425	MM	G44	WS	4/30	P	XAIS
SR178	S132	S118	S18	—	—	Int	—	—	P	3	3	12	4/29	1418	MM	G44	WS	4/30	P	XAIS
SR179	S129	S132	S128	—	—	Int	—	—	P	3	4	14	4/29	1415	MM	G44	WS	4/30	P	XAIS
SR180	S18	S118	S117	—	—	Int	—	—	P	3	5	16	4/29	1415	MM	G44	WS	4/30	P	XAIS

Total (Page)	248
Total (Project)	2278

Notes: _____

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 10 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 6 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR181	518	517	5146	5127	—	Int	—	—	P	3	10	26	4/29	1400	MM	G44	WS	4/30	P	XAIS
SR182	520	519	5139	—	—	Int	—	—	P	2	2	8	4/29	1500	MM	G44	WS	4/30	P	XAIS
SR183	5126	5125	5135	—	—	Int	—	—	P	2	2	8	4/29	*	MM	G44	WS	4/30	P	XAIS
SR184	5136	127	1135	1140	—	Int	—	—	P	2	10	24	4/29	*	MM	G44	WS	4/30	P	XAIS
SR185	5140	518	517	—	—	Int	—	—	P	2	4	12	4/29	1340	MM	G44	WS	4/30	P	XAIS
SR186	5140	510	5135	—	—	Int	—	—	P	2	3	10	4/29	1332	MM	G44	WS	4/30	P	XAIS
SR187	5135	5135	5131	—	—	Int	—	—	P	2	2	8	4/29	1328	MM	G44	WS	4/30	P	XAIS
SR188	5129	5134	5125	—	—	Int	—	—	P	2	5	14	4/29	1325	MM	G44	WS	4/30	P	XAIS
SR189	5135	516	510	—	—	Int	—	—	P	2	2	8	4/29	1315	MM	G44	WS	4/30	P	XAIS
SR190	5135	—	—	—	—	Hole	21'	5'W of SR	P	2	2	8	4/29	1135	MM	G44	WS	4/30	P	XAIS
SR191	5135	—	—	—	—	Hole	22'	5'W of SR	P	2	2	8	4/29	1132	MM	G44	WS	4/30	P	XAIS
SR192	5135	526	5136	—	—	Int	—	—	P	2	4	12	4/29	1127	MM	G44	WS	4/30	P	XAIS
SR193	5135	5124	5136	—	—	Int	—	—	P	2	4	12	4/29	1035	MM	G44	WS	4/30	P	XAIS
SR194	518	5136	5138	—	—	Int	—	—	P	2	3	10	4/29	1040	MM	G44	WS	4/30	P	XAIS
SR195	5138	520	515	—	—	Int	—	—	P	2	4	12	4/29	1118	MM	G44	WS	4/30	P	XAIS
SR196	5134	5138	515	—	—	Int	—	—	P	2	2	8	4/29	1119	MM	G44	WS	4/30	P	XAIS
SR197	5139	513	514	—	—	Int	—	—	P	3	8	22	4/29	1110	MM	G44	WS	4/30	P	XAIS
SR198	5135	514	513	—	—	Int	—	—	P	2	3	10	4/29	1100	MM	G44	WS	4/30	P	XAIS
SR199	5129	513	512	—	—	Int	—	—	P	2	3	10	4/29	1045	MM	G44	WS	4/30	P	XAIS
SR200	5139	512	511	—	—	Int	—	—	P	2	2	8	4/29	1027	MM	G44	WS	4/30	P	XAIS

Total (Page)	238
Total (Project)	2516

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Client: _____
Project: _____
Project Number: _____

CQA SOLUTIONS

Date _____
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR201	S139	S138	S11			Int			P	3	7	20	4/29	1025	MM	G44	WS	4/30	P	XAIS
SR202	S138	S136				CAP	20		P	2	2	8	4/29	1030	MM	G44	WS	4/30	P	XAIS
SR203	S138	S137	S11	S10		Int			P	2	6	16	4/29	1022	MM	G44	WS	4/30	P	XAIS
SR204	S138	S137	S136			Int			P	2	3	10	4/29	1015	MM	G44	WS	4/30	P	XAIS
SR205	S137	S10	S9			Int			P	2	3	10	4/29	0938	MM	G44	WS	4/30	P	XAIS
SR206	S137	S9	S8			CAP	12		P	2	2	8	4/29	0920	MM	G44	WS	4/30	P	XAIS
SR207	S9	S8	S7			Hole	160	11'W	P	1	1	4	4/29	0918	MM	G44	WS	4/30	P	XAIS
SR208	S137		S7	S8		Int			P	2	2	8	4/29	0852	MM	G44	WS	4/30	P	XAIS
SR209	S136	S137	S8	17	S6	Int			P	2	6	16	4/29	0845	MM	G44	WS	4/30	P	XAIS
SR210	~~S136~~	S137	S9	S8		Int			P	2	2	8	4/29	0842	MM	G44	WS	4/30	P	XAIS
SR211	S7					Hole			P	1	2	6	4/29	0907	MM	G44	WS	4/30	P	XAIS
SR212	S136	S6	S5			Int			P	2	3	10	4/29	0835	MM	G44	WS	4/30	P	XAIS
SR213	S136	S5	S4			Int			P	2	2	8	4/29	0826	MM	G44	WS	4/30	P	XAIS
SR214	S136	S4	S3			Int			P	2	2	8	4/29	0825	MM	G44	WS	4/30	P	XAIS
SR215	S136	S134	S3			Int			P	3	4	14	4/29	0815	MM	G44	WS	4/30	P	XAIS
SR216	S134	S3	S2			Int			P	2	2	8	4/29	0809	MM	G44	WS	4/30	P	XAIS
SR217	S141	S2	S1			Int			P	2	2	8	4/29	0800	MM	G44	WS	4/30	P	XAIS
SR218	S134	S141				Int			P	3	4	14	4/29	0755	MM	G44	WS	4/30	P	XAIS

Total (Page)	
Total (Project)	

Notes: _____

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Client: SCS
Project: North Ranch
Project Number: 22SCS-NR-01

CQA SOLUTIONS

Sheet 1 of 11
Date various
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR1	S5	S6	–	–	–	CSDS1	106	–	P	2	5	14	4/22	0933	CK	G744	WS	4/22	P	XAIS
SR2	S11	S12	–	–	–	CSDS2	32	–	P	2	5	14	4/22	0912	CK	G744	WS	4/22	P	XAIS
SR3	S4	S5	–	–	–	CSDS3	41	–	P	2	5	14	4/22	0858	CK	G744	WS	4/22	P	XAIS
SR4	S10	S11	–	–	–	CSDS4	74	–	P	2	5	14	4/22	0944	CK	G744	WS	4/22	P	XAIS
SR5	S14	S15	–	–	–	CSDS5	120	–	P	2	5	14	4/22	0924	CK	G744	WS	4/22	P	XAIS
SR6	S16	S17	–	–	–	CSDS6	12	–	P	2	6	16	4/22	0938	CK	G744	WS	4/22	P	XAIS
SR7	S22	S23	–	–	–	CSDS7	128	–	P	2	5	14	4/22	1011	CK	G744	WS	4/22	P	XAIS
SR8	S23	S24	–	–	–	CSDS8	89	–	P	2	6	18	4/22	1020	CK	G744	WS	4/22	P	XAIS
SR9	S22	S29	–	–	–	CSDS9	81	–	P	2	5	14	4/22	1326	CK	G744	WS	4/22	P	XAIS
SR10	S29	S30	–	–	–	CSDS10	63	–	P	2	5	14	4/22	1330	CK	G744	WS	4/22	P	XAIS
SR11	S35	S36	–	–	–	CSDS11	38	–	P	2	5	14	4/22	1000	MM	G744	WS	4/22	P	XAIS
SR12	S38	S39	–	–	–	CSDS12	56	–	P	2	5	14	4/22	1010	MM	G744	WS	4/22	P	XAIS
SR13	S44	S45	–	–	–	CSDS13	18	–	P	2	5	14	4/22	1048	MM	G744	WS	4/22	P	XAIS
SR14	S49	S49	–	–	–	CSDS14	8	–	P	2	6	16	4/22	1138	CK	G744	WS	4/22	P	XAIS
SR15	S53	S54	–	–	–	CSDS15	120	–	P	2	6	16	4/22	0950	MM	G744	WS	4/22	P	XAIS
SR16	S54	S55	–	–	–	CSDS16	103	–	P	2	5	14	4/22	0935	MM	G744	WS	4/22	P	XAIS
SR17	S59	S60	–	–	–	CSDS17	63	–	P	2	5	14	4/22	0905	MM	G744	WS	4/22	P	XAIS
SR18	S60	S61	–	–	–	CSDS18	36	–	P	2	6	16	4/22	850	MM	G744	WS	4/22	P	XAIS
SR19	S66	S67	–	–	–	CSDS19	19	–	P	2	5	14	4/22	0830	MM	G744	WS	4/22	P	XAIS
SR20	S65	S66	–	–	–	CSDS20	44	–	P	2	6	16	4/22	0825	MM	G744	WS	4/22	P	XAIS
											Total (Page)	292								
											Total (Project)	292								

Notes: _____

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-02-01

CQA SOLUTIONS

Sheet 2 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR21	576	565	—	—	—	CSD521	30	—	P	2	5	14	4/22	0830	CK	G-744	WS	4/22	P	XAIS
SR22	515	516	510	—	—	Int	—	—	P	2	3	10	4/22	0939	CK	G-744	WS	4/22	P	XAIS
SR23	529	530	549	—	—	Int	—	—	P	3	3	12	4/22	1147	CK	G-744	WS	4/22	P	XAIS
SR24	570	571	579	—	—	Int	—	—	P	2	2	8	4/22	1352	CK	G-744	WS	4/22	P	XAIS
SR25	526	535	536	—	—	Int	—	—	P	2	2	8	4/19	*	MM	G44	WS	4/20	P	XAIS
SR26	526	—	—	—	—	Hole	150'	7'5	P	1	1	4	4/22	1023	CK	G-744	WS	4/22	P	XAIS
SR27	526	527	536	—	—	Int	—	—	P	2	2	8	4/22	1025	CK	G-744	WS	4/22	P	XAIS
SR28	527	536	537	—	—	Int	—	—	P	2	4	12	4/22	1045	CK	G-744	WS	4/22	P	XAIS
SR29	527	528	537	—	—	Int	—	—	P	3	3	12	4/22	1050	CK	G-744	WS	4/22	P	XAIS
SR30	528	537	538	—	—	Int	—	—	P	3	3	12	4/22	1100	CK	G-744	WS	4/22	P	XAIS
SR31	528	529	538	—	—	Int	—	—	P	3	4	14	4/22	1110	CK	G-744	WS	4/22	P	XAIS
SR32	529	538	539	—	—	Int	—	—	P	2	2	8	4/22	1120	CK	G-744	WS	4/22	P	XAIS
SR33	529	549	539	—	—	Int	—	—	P	3	3	12	4/22	1132	CK	G-744	WS	4/22	P	XAIS
SR34	549	539	540	—	—	Int	—	—	P	2	3	10	4/22	1338	CK	G-744	WS	4/22	P	XAIS
SR35	549	531	541	540	—	Int	—	—	P	4	8	24	4/19	*	MM	G44	WS	4/22	P	XAIS
SR36	531	532	541	—	—	Int	—	—	P	2	3	10	4/22	1348	MM	G44	WS	4/22	P	XAIS
SR37	532	541	542	—	—	Int	—	—	P	2	2	8	4/22	1300	MM	G44	WS	4/22	P	XAIS
SR38	532	546	542	—	—	CAP	—	—	P	2	25	54	4/22	1330	MM	G44	WS	4/22	P	XAIS
SR39	546	542	543	—	—	Int	—	—	P	3	11	28	4/22	1340	MM	G44	WS	4/22	P	XAIS
SR40	546	547	543	—	—	Int	—	—	P	3	7	20	4/22	1112	MM	G44	WS	4/22	P	XAIS
											Total (Page)	288								
											Total (Project)	580								

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Client: SLS Engineers
Project: North Ranch Landf. II
Project Number: 22-SLS-NRL-01

CQA SOLUTIONS

Sheet 3 of 11
Date Varies
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR41	S17	S18	—	—	—	CAP	170'	—	P	2	3	10	4/22	955	CK	G744	WS	4/22	P	XAIS
SR42	S17	-	-	-	-	CAP	165	6'S	P	1	1	4	4/22	958	CK	G744	WS	4/22	P	XAIS
SR43	S65	S69	S76	—	—	Int	—	—	P	2	3	10	4/22	0805	SLMM	G-44	WS	4/22	P	XAIS
SR44	—	S65	S66	—	-	Int	10'	—	P	3	7	20	4/22	0842	SLMM	G-44	WS	4/22	P	XAIS
SR45	S60	S61	—	—	-	BO	128	—	P	3	6	18	4/22	0910	MM	G-44	WS	4/22	P	XAIS
SR46	S59	—	—	—	—	Hole	115	12'W	P	2	3	10	4/22	0913	MM	G44	WS	4/22	P	XAIS
SR47	S52	—	—	—	-	Hole	75	12'W	P	2	3	10	4/22	*	SL	G744	WS	4/22	P	XAIS
SR48	S44	S45	S47	S48	-	Int	—	—	P	3	5	16	4/22	1100	MM	G44	WS	4/22	P	XAIS
SR49	S76	S76	—	—	-	CSDS22	28	—	P	2	5	14	4/28	0836	SL	G744	WS	4/29	P	XAIS
SR50	S76	S77	—	—	-	CSDS23	55	—	P	2	5	14	4/29	0839	SL	G744	WS	4/29	P	XAIS
SR51	S8	S81	—	—	-	CSDS24	80	—	P	2	5	14	4/28	0855	SL	G744	WS	4/29	P	XAIS
SR52	S81	S82	—	—	-	CSDS25	130	—	P	2	5	14	4/28	0918	SL	G744	WS	4/29	P	XAIS
SR53	S90	S91	—	—	-	CSDS26	19	—	P	2	5	14	4/28	*	SL	G744	WS	4/29	P	XAIS
SR54	S87	S88	—	—	-	CSDS27	68	—	P	2	5	14	4/28	08	SL	G744	WS	4/29	P	XAIS
SR55	S96	S97	—	—	-	CSDS28	83	—	P	2	5	14	4/28	*	SL	G744	WS	4/29	P	XAIS
SR56	S80	S96	—	—	-	CSDS29	8	—	P	2	5	14	4/28	0935	SL	G744	WS	4/29	P	XAIS
SR57	S104	S105	—	—	-	CSDS30	54	—	P	2	6	16	4/28	1001	SL	G744	WS	4/29	P	XAIS
SR58	S105	S106	—	—	-	CSDS31	82	—	P	2	6	16	4/28	0952	SL	G744	WS	4/29	P	XAIS
SR59	S107	~~S108~~	S109	—	-	CSDS32	61	—	P	3	5	16	4/28	0815	SL	G744	WS	4/29	P	XAIS
SR60	S108	S111	—	—	-	CSDS33	111	—	P	2	6	16	4/29	1036	SL	G44	WS	4/29	P	XAIS

Total (Page)	274
Total (Project)	354

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(3) of (11)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-WRL-01

CQA SOLUTIONS

Sheet 4 of 11
Date VARIES
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SRC1	S111	S112	–	–	–	CSDS34	164	–	P	2	5	14	4/28	1030	SL	G744	WS	4/30	P	XAIS
SR62	S112	S114	–	–	–	CSDS35	37	–	P	2	5	14	4/28	1052	SL	G744	WS	4/30	P	XAIS
SR63	S114	S115	–	–	–	CSDS36	70	–	P	2	5	14	4/28	1100	SL	G744	WS	4/30	P	XAIS
SR64	S115	S117	–	–	–	CSDS37	1266	–	P	2	6	16	4/28	0948	CK	G744	WS	4/30	P	XAIS
SR65	S117	S118	–	–	–	CSDS38	280	–	P	2	5	14	4/29	0935	CK	G744	WS	4/30	P	XAIS
SR66	S118	S119	–	–	–	CSDS39	212	–	P	2	6	16	4/30	*	MM	G44	WS	4/30	P	XAIS
SR67	S119	S120	–	–	–	CSDS40	1789	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR68	S120	S121	–	–	–	CSDS41	137	–	P	2	6	16	4/29	847	CK	G744	S	4/30	P	XAIS
SR69	S121	S122	–	–	–	CSDS42	91	–	P	2	6	16	4/29	0850	CK	G744	WS	4/30	P	XAIS
SR70	S122	S123	–	–	–	CSDS43	39	–	P	2	6	16	4/29	0910	CK	G744	WS	4/30	P	XAIS
SR71	S121	S57	–	–	–	CSDS44	11	–	P	2	6	16	4/29	1000	MM	G44	WS	4/30	P	XAIS
SR72	S74	S97	–	–	–	CSDS29A	7	–	P	2	5	14	4/29	1057	CK	G744	WS	4/30	P	XAIS
SR73	S81	S95	–	–	–	CSDS29B	3	–	P	2	5	14	4/29	1046	CK	G744	WS	4/30	P	XAIS
SR74	SR6	S1C	–	–	–	CSDS45	–	–	P	2	5	14	4/29	*	MM	G44	WS	4/30	P	XAIS
SR75	SR15	S53	–	–	–	CSDS46	–	–	P	2	5	14	4/30	0933	MM	G44	WS	4/30	P	XAIS
SR76	S123	S124	–	–	–	CSDS47	38	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR77	S124	S125	–	–	–	CSDS48	92	–	P	2	5	14	4/30	*	MM	G44	WS	4/30	P	XAIS
SR78	S126	S120	–	–	–	CSDS49	105	–	P	2	5	14	4/29	1532	MM	G44	WS	4/30	P	XAIS
SR79	S141	S135	–	–	–	CSDS50	41	–	P	2	5	14	4/29	1141	MM	G44	WS	4/30	P	XAIS
SR80	S138	S139	–	–	–	CSDS51	27	–	P	2	5	14	4/29	1050	MM	G44	WS	4/30	P	XAIS

Total (Page)	242
Total (Project)	1146

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 5 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR81	537	510	—	—	-	CSD552	11	—	P	2	5	14	4/29	0942	MM	G44	WS	4/28	P	XAIS
SR82	518	519	—	—	-	CSD539A	222	—	P	2	12	28	4/30	*	MM	G44	WS	4/30	P	XAIS
SR83	518	519	—	—	-	CSD539B	201	—	P	2	12	28	4/30	*	MM	G44	WS	4/30	P	XAIS
SR84	528	529	—	—	-	CAP	105	—	P	2	6	16	4/28	1054	SL	G744	WS	4/28	P	XAIS
SR85	527	528	—	—	-	CAP	135	—	P	2	2	8	4/28	1054	SL	G744	WS	4/28	P	XAIS
SR86	587	—	—	—	-	CAP	130	5' E	P	2	2	8	4/28	1052	SL	G744	WS	4/28	P	XAIS
SR87	577	586	—	—	-	CAP	130	—	P	2	2	8	4/28	1030	SL	G744	WS	4/28	P	XAIS
SR88	586	—	—	—	-	CAP	125	11' E	P	2	2	8	4/28	1028	SL	G744	WS	4/28	P	XAIS
SR89	586	585	—	—	-	CAP	31	—	P	2	5	14	4/28	1021	SL	G744	WS	4/28	P	XAIS
SR90	585	586	592	—	-	Int	—	—	P	4	4	16	4/28	1016	SL	G744	WS	4/28	P	XAIS
SR91	584	585	592	—	-	Int	—	—	P	2	2	8	4/28	1012	SL	G744	WS	4/28	P	XAIS
SR92	583	584	592	—	-	Int	—	—	P	2	2	8	4/28	1008	SL	G744	WS	4/28	P	XAIS
SR93	583	584	593	—	-	Int	—	—	P	2	2	8	4/28	1003	SL	G744	WS	4/28	P	XAIS
SR94	583	593	594	—	-	Int	—	—	P	2	2	8	4/28	1000	SL	G744	WS	4/28	P	XAIS
SR95	582	583	594	—	-	Int	—	—	P	2	2	8	4/28	0957	SL	G744	WS	4/28	P	XAIS
SR96	582	594	595	—	-	Int	—	—	P	2	2	8	4/28	0943	SL	G744	WS	4/28	P	XAIS
SR97	581	582	595	—	-	Int	—	—	P	2	2	8	4/28	0941	SL	G744	WS	4/29	P	XAIS
SR98	581	595	596	—	-	Int	—	—	P	2	2	8	4/28	0938	SL	G744	WS	4/29	P	XAIS
SR99	580	581	596	—	-	Int	—	—	P	2	2	8	4/28	0937	SL	G744	WS	4/29	P	XAIS
SR100	574	580	—	—	-	CAP	93	—	P	2	2	8	4/28	0931	SL	G744	WS	4/29	P	XAIS

Total (Page)	228
Total (Project)	1374

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Date VARIES
Rev. Date:

GEOMEMBRANE REPAIR LOG

Layer: Cell F1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR101	S74	S90	S96	S97	—	Int	—	—	P	3	7	20	4/28	0930	SL	G744	WS	4/29	P	XAIS
SR102	S77	S79	S97	S98	—	Int	—	—	P	2	2	8	4/28	0911	SL	G744	WS	4/29	P	XAIS
SR103	S96	S97	S99	—	—	Int	—	—	P	2	2	8	4/28	0917	SL	G744	WS	4/29	P	XAIS
SR104	S97	S98	S99	—	—	Int	—	—	P	2	2	8	4/28	0919	SL	G744	WS	4/29	P	XAIS
SR105	S77	S78	S98	S100	—	Int	—	—	P	2	4	12	4/28	0857	SL	G744	WS	4/29	P	XAIS
SR106	S76	S77	S100	—	—	Int	—	—	P	2	2	8	4/28	0854	SL	G744	WS	4/29	P	XAIS
SR107	S76	S100	S101	—	—	Int	—	—	P	2	2	8	4/28	0850	SL	G744	WS	4/29	P	XAIS
SR108	S100	S101	S102	—	—	Int	—	—	P	2	2	8	4/29	0936	SL	G744	WS	4/29	P	XAIS
SR109	S101	S102	S103	—	—	Int	—	—	P	2	2	8	4/28	0942	SL	G744	WS	4/29	P	XAIS
SR110	S101	S75	S76	—	—	Int	—	—	P	2	2	8	4/28	0847	SL	G744	WS	4/29	P	XAIS
SR111	S101	S103	S75	—	—	Int	—	—	P	2	3	10	4/28	0842	SL	G744	WS	4/29	P	XAIS
SR112	S103	S75	S74	—	—	Int	—	—	P	2	2	8	4/28	0840	SL	G744	WS	4/29	P	XAIS
SR113	S103	S104	S74	—	—	Int	—	—	P	2	2	8	4/28	0838	SL	G744	WS	4/29	P	XAIS
SR114	S104	S74	S73	—	—	Int	—	—	P	2	2	8	4/28	0836	SL	G744	WS	4/29	P	XAIS
SR115	S104	S105	S73	—	—	Int	—	—	P	2	3	10	4/28	0830	SL	G744	WS	4/29	P	XAIS
SR116	S105	S73	S72	—	—	Int	—	—	P	2	2	8	4/28	0825	SL	G744	WS	4/29	P	XAIS
SR117	S103	S104	—	—	—	CAP	195	—	P	3	3	12	4/28	0941	SL	G744	WS	4/29	P	XAIS
SR118	S105	S106	S72	S71	—	Int	—	—	P	3	8	22	4/28	0823	SL	G744	WS	4/29	P	XAIS
SR119	S106	S107	S71	S70	—	Int	—	—	P	3	4	14	4/28	0809	SL	G744	WS	4/29	P	XAIS
SR120	S107	S109	S110	—	—	Int	—	—	P	2	3	10	4/28	1104	SL	G744	WS	4/29	P	XAIS

Total (Page)	106
Total (Project)	1480

Notes:

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Client: SCS Engineers
Project: North Ranch Landf. 11
Project Number: 22-SCS-VA1-01

CQA SOLUTIONS

Sheet 7 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR121	S109	S110	S111	—	—	Int	—	—	P	2	3	10	4/28	1101	SL	G744	WS	4/29	P	XAIS
SR122	S105	S106	S108	—	—	Int	—	—	P	2	2	8	4/29	1025	CA	G744	WS	4/29	P	XAIS
SR123	S106	S107	S108	—	—	Int	—	—	P	2	2	8	4/29	1023	CA	G744	WS	4/29	P	XAIS
SR124	S110	S111	—	—	—	BC	51	—	P	3	4	14	4/29	1017	CA	G744	WS	4/29	P	XAIS
SR125	S111	S112	—	—	—	BC	297	—	P	2	4	12	4/29	1011	CA	G744	WS	4/29	P	XAIS
SR126	S112	S113	S114	—	—	Int	—	—	P	2	3	10	4/28	1043	SL	G744	WS	4/29	P	XAIS
SR127	S113	S114	S115	—	—	Int	—	—	P	2	3	10	4/28	1046	SL	G744	WS	4/29	P	XAIS
SR128	S68	S109	S107	—	—	Int	—	—	P	2	2	8	4/29	1100	CA	G744	WS	4/29	P	XAIS
SR129	S67	S68	S107	S109	—	Int	—	—	P	3	6	18	4/29	1106	CA	G744	WS	4/29	P	XAIS
SR130	S66	S67	S109	S111	—	Int	—	—	P	5	6	18	4/29	1116	CA	G744	WS	4/29	P	XAIS
SR131	S66	S65	S111	—	—	Int	—	—	P	2	2	8	4/29	1126	CA	G744	WS	4/29	P	XAIS
SR132	S65	S111	S112	—	—	Int	—	—	P	2	3	10	4/29	1127	CA	G744	WS	4/29	P	XAIS
SR133	S65	S112	—	—	—	CAP	9	—	P	2	2	8	4/29	1130	CA	G744	WS	4/29	P	XAIS
SR134	S112	—	—	—	—	CAP	3	16' E	P	2	3	10	4/29	1134	CA	G744	WS	4/29	P	XAIS
SR135	S64	S65	S112	—	—	Int	—	—	P	2	2	8	4/29	1138	CA	G744	WS	4/29	P	XAIS
SR136	S64	S112	S113	—	—	Int	—	—	P	2	2	8	4/29	1139	CA	G744	WS	4/29	P	XAIS
SR137	S63	S64	S113	—	—	Int	—	—	P	2	2	8	4/29	1143	CA	G744	WS	4/29	P	XAIS
SR138	S114	S115	S116	—	—	Int	—	—	P	2	2	8	4/29	0958	CA	G744	WS	4/29	P	XAIS
SR139	S115	S116	S117	—	—	Int	—	—	P	2	2	8	4/29	0956	CA	G744	WS	4/29	P	XAIS
SR140	S79	S80	S81	S82	S83	CAP	—	—	P	2	20	44	4/30	0905	MM	G744	WS	4/30	P	XAIS

Total (Page)	276
Total (Project)	1816

Notes: _____

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Client: SCS Engineers
Project: Mesa Ranch Landfill
Project Number: 72-SCS-NRL-01

CQA SOLUTIONS

Sheet 8 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR141	SR1	S136	–	–	–	CSDG3	–	–	P	2	6	18	4/30	*	MM	G44	WS	4/30	P	XAIS
SR142	R143	S132	–	–	–	CSDG54	–	–	P	3	5	18	4/30	*	MM	G44	WS	4/30	P	XAIS
SR143	S129	S132	S14	S21	–	In1	–	–	P	4	8	24	4/29	1415	MM	G44	WS	4/30	P	XAIS
SR144	S119	S115	S62	–	–	In1	–	–	P	2	2	8	4/29	1148	CA	G744	WS	4/30	P	XAIS
SR145	S115	S63	S62	–	–	In1	–	–	P	2	11	12	4/29	1150	CA	G744	WS	4/30	P	XAIS
SR146	S115	S117	S62	–	–	In1	–	–	P	3	3	12	4/29	1040	MM	G44	WS	4/30	P	XAIS
SR147	S117	S62	S61	–	–	In1	–	–	P	2	2	8	4/29	1036	MM	G44	WS	4/30	P	XAIS
SR148	S117	S118	S61	–	–	In1	–	–	P	2	2	8	4/29	1032	MM	G44	WS	4/30	P	XAIS
SR149	S118	S61	S60	–	–	In1	–	–	P	2	2	8	4/29	1027	MM	G44	WS	4/30	P	XAIS
SR150	S118	S119	S60	–	–	In1	–	–	P	2	2	8	4/29	1025	MM	G44	WS	4/30	P	XAIS
SR151	S119	S60	S59	–	–	In1	–	–	P	2	2	8	4/29	1023	MM	G44	WS	4/30	P	XAIS
SR152	S119	S120	S59	–	–	In1	–	–	P	2	2	8	4/29	1020	MM	G44	WS	4/30	P	XAIS
SR153	S12[illegible]	S59	S58	–	–	In1	–	–	P	2	2	8	4/29	1018	MM	G44	WS	4/30	P	XAIS
SR154	S12[illegible]	125	S58	–	–	In1	–	–	P	2	2	8	4/29	1015	MM	G44	WS	4/30	P	XAIS
SR155	S12[illegible]	S58	S57	–	–	In1	–	–	P	2	2	8	4/29	1013	MM	G44	WS	4/30	P	XAIS
SR156	S121	S122	S57	–	–	In1	–	–	P	2	4	8	4/29	0955	MM	G44	WS	4/30	P	XAIS
SR157	S122	S57	S56	–	–	In1	–	–	P	2	2	8	4/29	0950	MM	G44	WS	4/30	P	XAIS
SR158	S122	S123	S56	–	–	In1	–	–	P	3	4	14	4/29	0945	MM	G44	WS	4/30	P	XAIS
SR159	S123	S56	S55	–	–	In1	–	–	P	2	2	8	4/29	0940	MM	G44	WS	4/30	P	XAIS
SR160	S123	S124	S55	S54	–	In1	–	–	P	4	6	20	4/29	0807	MM	G44	WS	4/30	P	XAIS

Total (Page)	214
Total (Project)	2030

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Client: SLS Engineers
Project: North Ranch Landf. 11
Project Number: 21-SLS-NRL-01

CQA SOLUTIONS

Sheet 9 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR161	S124	S125	S54	S53	—	Int	—	—	P	2	4	12	4/28	0755	MM	G44	WS	4/30	P	KAIS
SR162	S125	S126	S53	S52	—	Int	—	—	P	3	3	12	4/30	0750	MM	G44	WS	4/30	P	XAIS
SR163	S116	S117	S52	S51	—	Int	—	—	P	2	10	24	4/30	0743	MM	G44	WS	4/30	P	XAIS
SR164	S117	S128	S51	S50	—	Int	—	—	P	2	6	16	4/29	1635	MM	G44	WS	4/30	P	XAIS
SR165	S128	S129	S50	S53	—	Int	—	—	P	3	5	16	4/29	1630	MM	G44	WS	4/30	P	XAIS
SR166	S129	S33	S54	—	—	Int	—	—	P	2	2	8	4/29	1621	MM	G44	WS	4/30	P	XAIS
SR167	S129	S130	S34	—	—	Int	—	—	P	2	2	8	4/29	1616	MM	G44	WS	4/30	P	XAIS
SR168	S130	S31	S35	—	—	Int	—	—	P	2	2	8	4/29	1610	MM	G44	WS	4/30	P	XAIS
SR169	S130	S131	S35	—	—	Int	—	—	P	2	3	10	4/29	1608	MM	G44	WS	4/30	P	XAIS
SR170	S131	S35	S36	S46	—	Int	—	—	P	4	6	20	4/29	1603	MM	G44	WS	4/30	P	XAIS
SR171	S131	S35	S46	—	—	Int	—	—	P	2	2	8	4/29	1555	MM	G44	WS	4/30	P	XAIS
SR172	S131	S25	S24	—	—	Int	—	—	P	2	2	8	4/29	1541	MM	G44	WS	4/30	P	XAIS
SR173	S24	S131	S30	—	—	Int	—	—	P	3	3	12	4/29	1535	MM	G44	WS	4/30	D	XAIS
SR174	S130	S24	S23	—	—	Int	—	—	P	2	2	8	4/29	1520	MM	G44	WS	4/30	P	XAIS
SR175	S130	S23	S22	—	—	Int	—	—	P	2	2	8	4/29	1518	MM	G44	WS	4/30	P	XAIS
SR176	S130	S132	S22	S21	—	Int	—	—	P	3	5	16	4/29	1505	MM	G44	WS	4/30	P	XAIS
SR177	S132	S19	S18	—	—	Int	—	—	P	3	3	12	4/29	1425	MM	G44	WS	4/30	P	XAIS
SR178	S132	S118	S18	—	—	Int	—	—	P	3	3	12	4/29	1418	MM	G44	WS	4/30	P	XAIS
SR179	S129	S132	S128	—	—	Int	—	—	P	3	4	14	4/29	1415	MM	G44	WS	4/30	P	XAIS
SR180	S18	S118	S117	—	—	Int	—	—	P	3	5	16	4/29	1415	MM	G44	WS	4/30	P	XAIS

Total (Page)	248
Total (Project)	2278

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 10 of 11
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 6 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
SR181	S18	S17	S146	S127	—	Int	—	—	P	3	10	26	4/28	1400	MM	G44	WS	4/30	P	XAIS
SR182	S20	S19	S139	—	—	Int	—	—	P	2	2	8	4/29	1500	MM	G44	WS	4/30	P	XAIS
SR183	S126	S125	S135	—	—	Int	—	—	P	2	2	8	4/29	*	MM	G44	WS	4/30	P	XAIS
SR184	S126	127	135	140	—	Int	—	—	P	2	10	24	4/29	*	MM	G44	WS	4/30	P	XAIS
SR185	S140	S18	S17	—	—	Int	—	—	P	2	4	12	4/29	1340	MM	G44	WS	4/30	P	XAIS
SR186	S140	S 10	S135	—	—	Int	—	—	P	2	3	10	4/29	1332	MM	G44	WS	4/30	P	XAIS
SR187	S135	S135	S131	—	—	Int	—	—	P	2	2	8	4/29	1328	MM	G44	WS	4/30	P	XAIS
SR188	S129	S134	S125	—	—	Int	—	—	P	2	5	14	4/29	1325	MM	G44	WS	4/30	P	XAIS
SR189	S135	S6	S10	—	—	Int	—	—	P	2	2	8	4/29	1315	MM	G44	WS	4/30	P	XAIS
SR190	S135	—	—	—	—	Hole	21'	5'W of SR	P	2	2	8	4/29	1135	MM	G44	WS	4/30	P	XAIS
SR191	S135	—	—	—	—	Hole	22'	5'W of SR	P	2	2	8	4/29	1132	MM	G44	WS	4/30	P	XAIS
SR192	S135	S26	S136	—	—	Int	—	—	P	2	4	12	4/29	1127	MM	G44	WS	4/30	P	XAIS
SR193	S135	S124	S136	—	—	Int	—	—	P	2	4	12	4/29	1035	MM	G44	WS	4/30	P	XAIS
SR194	S18	S136	S18	—	—	Int	—	—	P	2	3	10	4/29	1040	MM	G44	WS	4/30	P	XAIS
SR195	S138	S20	S15	—	—	Int	—	—	P	2	4	12	4/29	1118	MM	G44	WS	4/30	P	XAIS
SR196	S134	S138	S15	—	—	Int	—	—	P	2	2	8	4/29	1113	MM	G44	WS	4/30	P	XAIS
SR197	S139	S15	S14	—	—	Int	—	—	P	3	8	22	4/29	1110	MM	G44	WS	4/30	P	XAIS
SR198	S135	S14	S13	—	—	Int	—	—	P	2	3	10	4/29	1100	MM	G44	WS	4/30	P	XAIS
SR199	S129	S 13	S12	—	—	Int	—	—	P	2	3	10	4/29	1045	MM	G44	WS	4/30	P	XAIS
SR200	S139	S12	S11	—	—	Int	—	—	P	2	2	8	4/29	1027	MM	G44	WS	4/30	P	XAIS

Total (Page)	238
Total (Project)	2516

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Client: _____
Project: _____
Project Number: _____

CQA SOLUTIONS

Date _____
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR201	S139	S138	S11			Int			P	3	7	20	4/29	1025	MM	G44	WS	4/30	P	XAIS
SR202	S138	S136				CAP	20		P	2	2	8	4/29	1030	MM	G44	WS	4/30	P	XAIS
SR203	S138	S137	S11	S10		Int			P	2	6	16	4/29	1022	MM	G44	WS	4/30	P	XAIS
SR204	S138	S137	S136			Int			P	2	3	10	4/29	1015	MM	G44	WS	4/30	P	XAIS
SR205	S137	S10	S9			Int			P	2	3	10	4/29	0938	MM	G44	WS	4/30	P	XAIS
SR206	S137	S9	S8			CAP	12		P	2	2	8	4/29	0920	MM	G44	WS	4/30	P	XAIS
SR207	S9	S8	S7			Hole	160	11'W	P	1	1	4	4/29	0918	MM	G44	WS	4/30	P	XAIS
SR208	S137		S7	S8		Int			P	2	2	8	4/29	0852	MM	G44	WS	4/30	P	XAIS
SR209	S136	S137	S8	17	S6	Int			P	2	6	16	4/29	0845	MM	G44	WS	4/30	P	XAIS
SR210	~~S136~~	S137	S9	S8		Int			P	2	2	8	4/29	0842	MM	G44	WS	4/30	P	XAIS
SR211	S7					Hole			P	1	2	6	4/29	0907	MM	G44	WS	4/30	P	XAIS
SR212	S136	S6	S5			Int			P	2	3	10	4/29	0835	MM	G44	WS	4/30	P	XAIS
SR213	S136	S5	S4			Int			P	2	2	8	4/29	0826	MM	G44	WS	4/30	P	XAIS
SR214	S136	S4	S3			Int			P	2	2	8	4/29	0825	MM	G44	WS	4/30	P	XAIS
SR215	S136	S134	S3			Int			P	3	4	14	4/29	0815	MM	G44	WS	4/30	P	XAIS
SR216	S134	S3	S2			Int			P	2	2	8	4/29	0809	MM	G44	WS	4/30	P	XAIS
SR217	S141	S2	S1			Int			P	2	2	8	4/29	0800	MM	G44	WS	4/30	P	XAIS
SR218	S134	S141				Int			P	3	4	14	4/29	0755	MM	G44	WS	4/30	P	XAIS

Total (Page)	
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Notes: _____

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-04-20

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71466**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71466

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	151	149	129	131	126	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	143	145	138	143	146	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	181	175	175	175	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	148	150	148	152	150	**150**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	144	153	136	144	142	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	171	176	181	178	174	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71466

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	148	132	152	139	136	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	143	153	147	147	154	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	181	177	176	174	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	140	147	137	138	139	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	151	146	152	152	**150**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	173	174	178	179	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-04-21

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71494**
Material(s) Tested:	(6) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71494

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-5 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	152	148	145	159	160	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	127	127	152	127	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	173	173	176	179	180	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-6 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	143	143	143	141	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	123	127	126	128	136	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	169	175	174	180	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71494

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	133	153	134	136	143	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	144	129	143	137	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	184	180	180	181	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-8 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	132	134	136	146	135	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	130	125	130	125	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	173	176	175	179	180	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71494

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-9 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	132	143	135	145	134	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	137	134	135	132	135	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	176	149	154	172	**165**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-10 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	137	139	140	143	142	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	128	131	130	134	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	178	176	178	178	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-04-22

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71526**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71526

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-11 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	141	139	145	143	135	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	129	128	130	133	128	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	169	173	178	172	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-12 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	141	135	134	132	136	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	133	133	135	130	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	168	181	181	175	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71526

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-13 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	164	147	140	145	136	**146**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	125	146	135	126	132	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	185	176	176	179	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-14 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	157	151	128	137	141	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	155	159	151	149	145	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	181	186	185	181	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

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Date: 2022-04-26

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71590**
Material(s) Tested:	(11) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-15 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	141	136	139	136	135	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	137	136	129	130	132	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	184	175	184	179	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-16 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	149	149	149	143	155	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	126	123	168	124	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	187	185	177	179	182	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-17 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	133	137	139	138	141	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	132	126	152	122	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	175	175	179	173	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-18 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	142	139	136	146	137	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	132	140	139	139	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	175	174	172	177	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-19 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	161	154	150	138	140	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	150	137	127	134	140	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	173	186	178	169	167	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-20 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	156	127	127	125	128	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	132	142	133	133	139	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	179	185	185	180	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-21 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	139	136	135	141	**139**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	151	147	155	153	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	181	183	182	185	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-22 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	131	136	137	144	137	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	123	125	127	162	126	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	180	152	169	183	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-23 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	153	140	139	144	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	138	156	140	140	136	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	184	171	182	178	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-24 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	144	142	155	155	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	135	134	128	132	134	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	189	175	181	184	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71590

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-25 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	139	125	133	147	121	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	123	126	131	146	125	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	178	170	187	177	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-04-28

Mail To:
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Center , TX , 75935

Bill To:

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Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71639**
Material(s) Tested:	(11) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-26 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	141	144	144	145	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	136	135	141	141	150	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	181	180	186	190	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-27 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	133	124	128	140	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	157	160	141	159	153	**154**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	188	186	178	181	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-28 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	131	130	127	131	126	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	132	140	138	133	127	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	187	180	180	181	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-29 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	150	161	143	151	**149**
Peel Incursion (%)	60	10	<5	<5	50	
Peel Locus Of Failure Code	AD-BRK	AD-BRK	SE	SE	AD-BRK	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	171	174	172	161	149	**165**
Peel Incursion (%)	<5	<5	<5	<5	10	
Peel Locus Of Failure Code	SE	SE	SE	SE	AD-BRK	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	191	180	178	185	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-30 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	136	136	127	141	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	123	127	132	128	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	188	187	180	181	183	**184**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-31 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	148	136	140	141	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	120	150	154	120	122	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	187	181	180	183	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-32 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	130	133	129	126	123	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	126	127	124	126	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	185	185	176	180	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-33 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	130	134	130	130	129	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	126	132	138	132	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	171	177	183	188	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-34 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	119	116	131	131	118	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	137	133	125	140	148	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	181	178	185	187	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-35 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	126	142	133	132	133	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	122	124	122	125	130	**125**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	182	180	186	189	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71639

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-36 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	119	118	121	119	119	**119**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	122	120	126	125	121	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	181	180	186	189	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-04-29

Mail To:
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Bill To:

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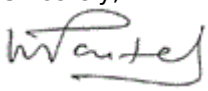
Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71684**
Material(s) Tested:	(8) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,



Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71684

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-37 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	128	126	134	128	132	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	121	126	142	123	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	180	175	177	182	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-38 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	150	146	150	153	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	122	126	121	125	125	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	182	184	177	176	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71684

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-39 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	137	56	134	131	104	**112**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	140	135	134	138	139	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	176	173	182	169	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-40 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	130	156	146	155	159	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	138	131	156	142	154	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	194	181	179	183	**184**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71684

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-41 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	140	132	134	138	135	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	138	133	144	147	150	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	185	177	180	180	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-42 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	159	143	144	133	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	123	118	124	123	137	**125**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	186	179	180	175	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71684

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-43 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	127	122	123	124	125	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	121	132	121	133	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	173	178	186	175	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-44 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	152	165	129	152	163	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	135	155	148	135	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	175	180	177	178	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-05-02

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71711**
Material(s) Tested:	(8) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71711

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-29A | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	154	148	144	155	147	**150**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	173	157	152	153	161	**159**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	174	173	178	174	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-29B | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	145	161	147	163	154	**154**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	136	159	155	138	**148**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	174	178	176	181	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71711

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-47 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	140	135	132	131	137	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	146	133	148	128	129	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	172	175	182	175	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-48 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	137	126	116	142	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	130	136	136	124	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	176	185	179	177	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71711

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-49 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	159	133	129	128	160	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	162	149	131	142	132	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	188	182	177	180	180	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-50 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	152	143	148	151	160	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	151	119	145	140	124	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	180	177	179	177	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71711

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-51 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	141	143	143	153	134	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	135	136	131	129	132	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	187	182	179	182	182	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-52 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	142	150	128	134	143	**139**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	157	146	163	156	164	**157**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	170	170	182	172	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71711

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-45 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	145	158	134	145	153	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	171	175	176	174	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-46 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	146	142	149	151	140	**146**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	178	181	173	175	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-05-05

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71804**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71804

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-39A | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	129	122	119	149	154	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	119	131	126	129	141	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	176	183	176	183	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-39B | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	131	133	134	142	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	122	123	122	131	**125**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	181	178	182	185	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71804

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-53 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	133	137	115	110	125	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	180	176	182	176	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-54 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	125	154	150	154	135	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	174	170	169	185	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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SCS ENGINEERS Environmental Consultants & Contractors

May 23, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction
Response to Construction Material Submittal #26 - Pond Subgrade Certification

Submitted Date: 5/18/22 & 5/20/22

Information Submitted:

Transglobal field survey of certification grid and CQA Solutions berm field density checking logs

SCS Response:

The leachate evaporation pond subgrade preparation has been completed. Client has provided Engineer with field survey checks of the subgrade certification as provided on Drawing 6-CT. In addition, CQA Solutions provided field quality control nuclear density gauge testing for the perimeter above grade structural containment berm. This data logs and density test location maps have been provided to Engineer.

Engineer has reviewed the pertinent subgrade construction information (attached). The field certification point elevations were compared to the design grade elevations on Drawing 6-CT and found that all certification point elevations are within allowable tolerances per RFI-11. Engineer has also reviewed the field density logs and maps and found the berm to have been constructed to a compacted density which satisfies the construction specifications.

Engineer approves the pond subgrade and releases the CQA Monitor to perform a final surface inspection for official subgrade acceptance. Once the CQA Monitor has accepted the subgrade surface the installer may begin deployment of geosynthetics.

NORTH RANCH CELL E-1 CONSTRUCTION

5/23/2022

LEACHATE POND CERTIFICATION POINTS TABLE VERIFICATION								
ID*	NORTHING	EASTING	SUBGRADE EL DESIGN	SUBGRADE EL AS BUILT 041422	Variance	VARIANCE < 0.2'	VARIANCE > 0.0'	Check (0.0'<Variance<+0.2')
700	418927.68	813198.64	3347.50	3347.54	0.036	OK	OK	TRUE
701	418894.44	813292.95	3347.50	3347.55	0.048	OK	OK	TRUE
702	418861.20	813387.27	3347.50	3347.60	0.101	OK	OK	TRUE
703	418856.34	813401.05	3347.50	3347.51	0.008	OK	OK	TRUE
704	418905.02	813209.49	3341.58	3341.72	0.147	OK	OK	TRUE
705	418877.68	813287.05	3341.58	3341.59	0.012	OK	OK	TRUE
706	418845.49	813378.38	3341.58	3341.71	0.137	OK	OK	TRUE
707	418882.35	813220.35	3335.65	3335.80	0.144	OK	OK	TRUE
708	418857.63	813279.98	3334.49	3334.56	0.064	OK	OK	TRUE
709	418834.64	813355.71	3335.65	3335.77	0.116	OK	OK	TRUE
710	418858.60	813277.23	3334.49	3334.55	0.062	OK	OK	TRUE
711	418851.87	813296.30	3334.49	3334.57	0.082	OK	OK	TRUE
712	418832.47	813289.46	3334.90	3334.92	0.021	OK	OK	TRUE
713	418839.12	813270.60	3334.90	3334.98	0.086	OK	OK	TRUE
714	418854.47	813279.07	3333.63	3333.74	0.102	OK	OK	TRUE
715	418849.77	813292.38	3333.58	3333.68	0.097	OK	OK	TRUE
716	418836.30	813285.86	3334.00	3334.17	0.165	OK	OK	TRUE
717	418840.95	813274.42	3333.84	3333.95	0.109	OK	OK	TRUE
718	418850.33	813280.91	3332.62	3332.78	0.159	OK	OK	TRUE
719	418847.67	813288.46	3332.50	3332.66	0.159	OK	OK	TRUE
720	418840.13	813285.80	3332.78	3332.94	0.160	OK	OK	TRUE
721	418842.79	813278.25	3332.78	3332.79	0.006	OK	OK	TRUE
722	418833.37	813165.40	3347.50	3347.59	0.093	OK	OK	TRUE
723	418828.29	813179.81	3342.40	3342.43	0.023	OK	OK	TRUE
724	418822.92	813195.04	3337.02	3337.11	0.089	OK	OK	TRUE
725	418800.13	813259.71	3335.65	3335.66	0.008	OK	OK	TRUE
726	418797.70	813266.60	3335.51	3335.59	0.081	OK	OK	TRUE
727	418772.48	813338.16	3337.02	3337.08	0.058	OK	OK	TRUE
728	418767.11	813353.39	3342.40	3342.52	0.111	OK	OK	TRUE
729	418762.03	813367.80	3347.50	3347.58	0.075	OK	OK	TRUE
730	418739.06	813132.15	3347.50	3347.56	0.058	OK	OK	TRUE
731	418734.98	813143.72	3343.41	3343.43	0.019	OK	OK	TRUE
732	418730.73	813155.78	3339.15	3339.24	0.087	OK	OK	TRUE
733	418705.82	813226.47	3337.65	3337.72	0.070	OK	OK	TRUE
734	418703.39	813233.36	3337.51	3337.57	0.063	OK	OK	TRUE
735	418676.04	813310.94	3339.15	3339.17	0.020	OK	OK	TRUE
736	418671.79	813322.99	3343.41	3343.51	0.097	OK	OK	TRUE
737	418667.72	813334.56	3347.50	3347.50	0.000	OK	OK	TRUE
738	418644.75	813098.91	3347.50	3347.53	0.029	OK	OK	TRUE
739	418641.67	813107.63	3344.42	3344.45	0.026	OK	OK	TRUE
740	418638.54	813116.51	3341.28	3341.38	0.104	OK	OK	TRUE
741	418611.50	813193.22	3339.65	3339.73	0.081	OK	OK	TRUE
742	418609.49	813198.95	3339.53	3339.59	0.057	OK	OK	TRUE
743	418579.61	813283.72	3341.28	3341.31	0.027	OK	OK	TRUE
744	418578.26	813287.54	3342.63	3342.66	0.026	OK	OK	TRUE
745	418576.47	813292.60	3344.42	3344.53	0.106	OK	OK	TRUE
746	418573.40	813301.32	3347.50	3347.57	0.070	OK	OK	TRUE
747	418550.43	813065.67	3347.50	3347.62	0.116	OK	OK	TRUE
748	418548.00	813071.39	3345.43	3345.48	0.048	OK	OK	TRUE
749	418546.40	813077.11	3343.46	3343.50	0.045	OK	OK	TRUE
750	418517.19	813159.98	3341.65	3341.72	0.064	OK	OK	TRUE
751	418514.76	813166.87	3341.51	3341.63	0.128	OK	OK	TRUE
752	418483.17	813256.49	3343.41	3343.49	0.085	OK	OK	TRUE
753	418481.16	813262.21	3345.43	3345.53	0.098	OK	OK	TRUE
754	418479.09	813268.07	3347.50	3347.57	0.068	OK	OK	TRUE
755	418508.53	813061.14	3344.28	3344.36	0.080	OK	OK	TRUE
756	418483.94	813148.26	3342.36	3342.43	0.070	OK	OK	TRUE
757	418481.95	813155.31	3342.20	3342.30	0.101	OK	OK	TRUE
758	418445.56	813240.76	3344.17	3344.32	0.142	OK	OK	TRUE
759	418443.61	813245.33	3344.28	3344.33	0.054	OK	OK	TRUE
760	418437.45	813248.28	3345.89	3346.01	0.121	OK	OK	TRUE
761	418440.70	813239.05	3345.89	3345.95	0.062	OK	OK	TRUE
762	418473.95	813144.74	3345.89	3345.95	0.056	OK	OK	TRUE
763	418505.58	813054.98	3345.89	3345.96	0.074	OK	OK	TRUE
764	418502.63	813048.82	3347.50	3347.58	0.084	OK	OK	TRUE
765	418469.39	813143.13	3347.50	3347.60	0.098	OK	OK	TRUE
766	418436.15	813237.45	3347.50	3347.58	0.078	OK	OK	TRUE
767	418431.29	813251.23	3347.50	3347.54	0.037	OK	OK	TRUE

NOTE:

* As-built certification points provided by Transglobal LLC on 5/11/22, 5/17/22 and 5/19/22

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 1

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from Modifed compaction spec	PASS / FAIL	Tech. Initials
LP-L1-01	N/A	1	1	4/23/2022	SF1-M	13.3	114.8	109.5	17.30	15.80	95.38	126.8	2.50	3.38	PASS	XAIS
LP-L1-02	N/A	1	1	4/23/2022	SF1-M	13.3	114.8	110.3	14.30	12.96	96.08	124.6	-0.34	4.08	PASS	XAIS
LP-L1-03	N/A	1	2	4/25/2022	SF1-M	13.3	114.8	110.1	13.90	12.62	95.91	124.0	-0.68	3.91	PASS	XAIS
LP-L1-04	N/A	1	2	4/25/2022	SF1-M	13.3	114.8	112.1	14.60	13.02	97.65	126.7	-0.28	5.65	PASS	XAIS
LP-L1-05	N/A	1	2	4/25/2022	SF1-M	13.3	114.8	109.8	15.20	13.84	95.64	125.0	0.54	3.64	PASS	XAIS
LP-L1-06	N/A	1	3	4/25/2022	SF1-M	13.3	114.8	107.9	17.50	16.22	93.99	125.4	2.92	1.99	PASS	XAIS
LP-L1-07	N/A	1	3	4/25/2022	SF1-M	13.3	114.8	113.1	12.50	11.05	98.52	125.6	-2.25	6.52	PASS	XAIS
LP-L1-08	N/A	1	3	4/25/2022	SF1-M	13.3	114.8	111.7	12.90	11.55	97.30	124.6	-1.75	5.30	PASS	XAIS
LP-L1-09	N/A	1	4	4/26/2022	SF1-M	13.3	114.8	108.7	17.70	16.28	94.69	126.4	2.98	2.69	PASS	XAIS
LP-L1-10	N/A	1	5	4/26/2022	SF1-M	13.3	114.8	109.1	16.40	15.03	95.03	125.5	1.73	3.03	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 2

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
LP-L2-01	N/A	2	1	4/27/2022	SF1-M	13.3	114.8	108.3	15.10	13.94	94.34	123.4	0.64	2.34	PASS	XAIS
LP-L2-02	N/A	2	1	4/27/2022	SF1-M	13.3	114.8	108.7	16.00	14.72	94.69	124.7	1.42	2.69	PASS	XAIS
LP-L2-03	N/A	2	2	4/28/2022	SF1-M	13.3	114.8	107.9	13.30	12.33	93.99	121.2	-0.97	1.99	PASS	XAIS
LP-L2-04	N/A	2	2	4/28/2022	SF1-M	13.3	114.8	109.9	16.80	15.29	95.73	126.7	1.99	3.73	PASS	XAIS
LP-L2-05	N/A	2	3	4/28/2022	SF1-M	13.3	114.8	110.5	15.50	14.03	96.25	126.0	0.73	4.25	PASS	XAIS
LP-L2-06	N/A	2	4	4/28/2022	SF1-M	13.3	114.8	112.0	15.70	14.02	97.56	127.7	0.72	5.56	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 3

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
LP-L3-01	N/A	2	1	4/29/2022	SF1-M	13.3	114.8	108.1	14.90	13.78	94.16	123.0	0.48	2.16	PASS	XAIS
LP-L3-02	N/A	2	1	4/29/2022	SF1-M	13.3	114.8	109.5	15.20	13.88	95.38	124.7	0.58	3.38	PASS	XAIS
LP-L3-03	N/A	2	2	4/29/2022	SF1-M	13.3	114.8	111.4	13.10	11.76	97.04	124.5	-1.54	5.04	PASS	XAIS
LP-L3-04	N/A	2	2	4/29/2022	SF1-M	13.3	114.8	110.4	16.20	14.67	96.17	126.6	1.37	4.17	PASS	XAIS
LP-L3-05	N/A	2	3	4/30/2022	SF1-M	13.3	114.8	109.0	17.10	15.69	94.95	126.1	2.39	2.95	PASS	XAIS
LP-L3-06	N/A	2	4	4/30/2022	SF1-M	13.3	114.8	113.0	14.90	13.19	98.43	127.9	-0.11	6.43	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 4

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
LP-L4-01	N/A	4	1	4/30/2022	SF1-M	13.3	114.8	113.5	15.60	13.74	98.87	129.1	0.44	6.87	PASS	XAIS
LP-L4-02	N/A	4	2	4/30/2022	SF1-M	13.3	114.8	111.8	16.10	14.40	97.39	127.9	1.10	5.39	PASS	XAIS
LP-L4-03	N/A	4	3	5/2/2022	SF1-M	13.3	114.8	110.1	17.20	15.62	95.91	127.3	2.32	3.91	PASS	XAIS
LP-L4-04	N/A	4	4	5/2/2022	SF1-M	13.3	114.8	112.0	15.90	14.20	97.56	127.9	0.90	5.56	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 5

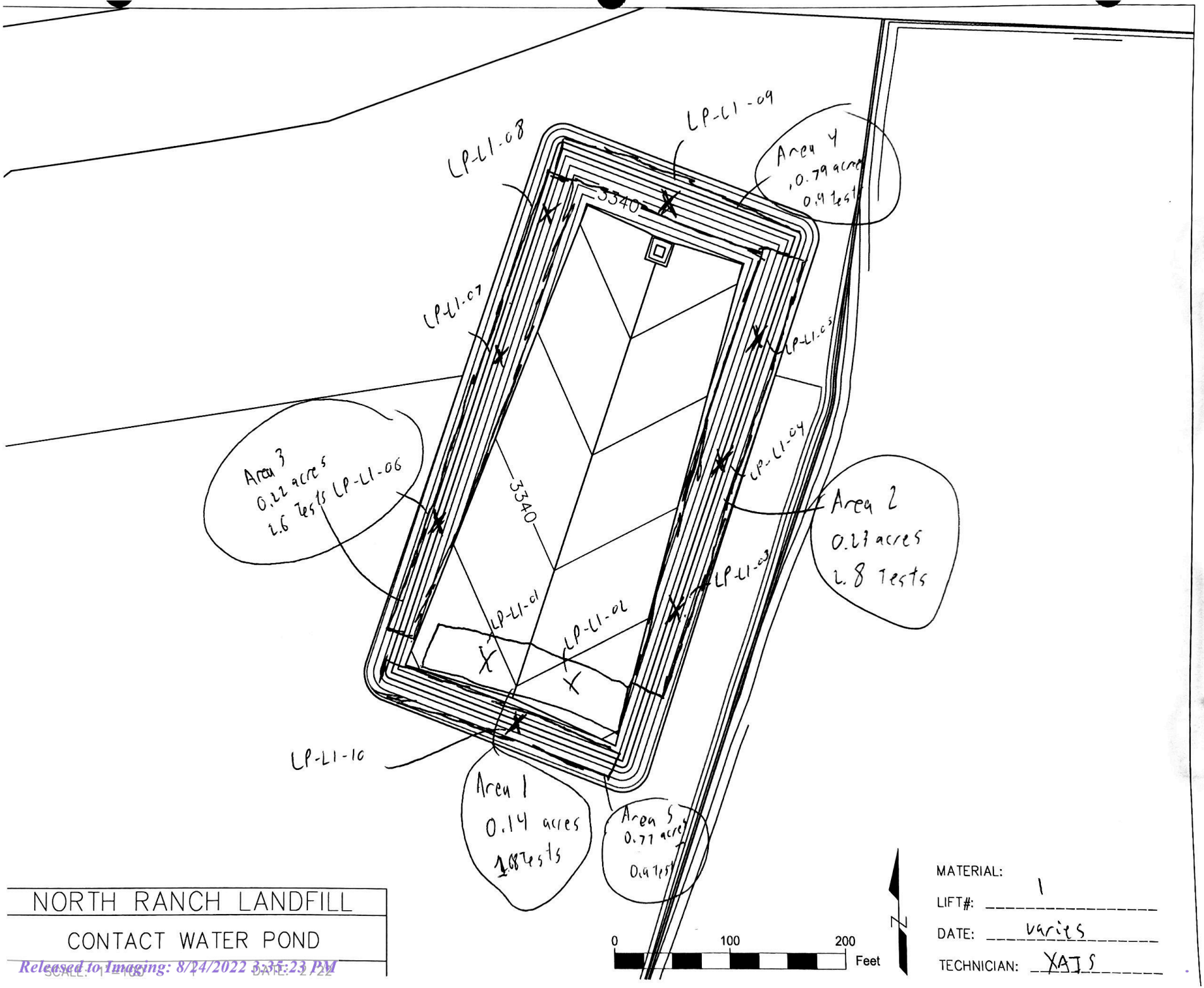
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LP-L5-01	N/A	5	1	5/2/2022	SF1-M	13.3	114.8	109.3	15.40	14.09	95.21	124.7	0.79	3.21	PASS	XAIS
LP-L5-02	N/A	5	2	5/3/2022	SF1-M	13.3	114.8	110.7	13.90	12.56	96.43	124.6	-0.74	4.43	PASS	XAIS
LP-L5-03	N/A	5	3	5/3/2022	SF1-M	13.3	114.8	107.5	13.60	12.65	93.64	121.1	-0.65	1.64	PASS	XAIS
LP-L5-04	N/A	5	4	5/17/2022	SF1-M	13.3	114.8	110.2	11.70	10.62	95.99	121.9	-2.68	3.99	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches

NORTH RANCH LANDFILL - CELL E-1 CONSTRUCTION PROJECT
FIELD DENSITY LOGS
LOCATION: LEACHATE POND, LIFT 6

Test #	Re-Test #	Lift #	Area	Date	Sample ID	OMC	MDD (PCF)	DD (PCF)	MC (PCF)	MC (%)	% Proctor	WD (PCF)	Deviation from OMC	Deviation from MODIFIED compaction spec	PASS / FAIL	Tech. Initials
LP-L6-01	N/A	9	1	5/3/2022	SF1-M	13.3	114.8	107.5	15.40	14.33	93.64	122.9	1.03	1.64	PASS	XAIS
LP-L6-02	N/A	9	2	5/3/2022	SF1-M	13.3	114.8	106.9	15.90	14.87	93.12	122.8	1.57	1.12	PASS	XAIS

Frequency:	12	tests/lift/acre
Compaction Spec:	92	% of Modified Proctor (Per CQA Plan)
Moisture Spec:		3% below OM to 3% above OM
Loose Lift Thickness:	8	inches



NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1" = 100' | DATE: 2/22

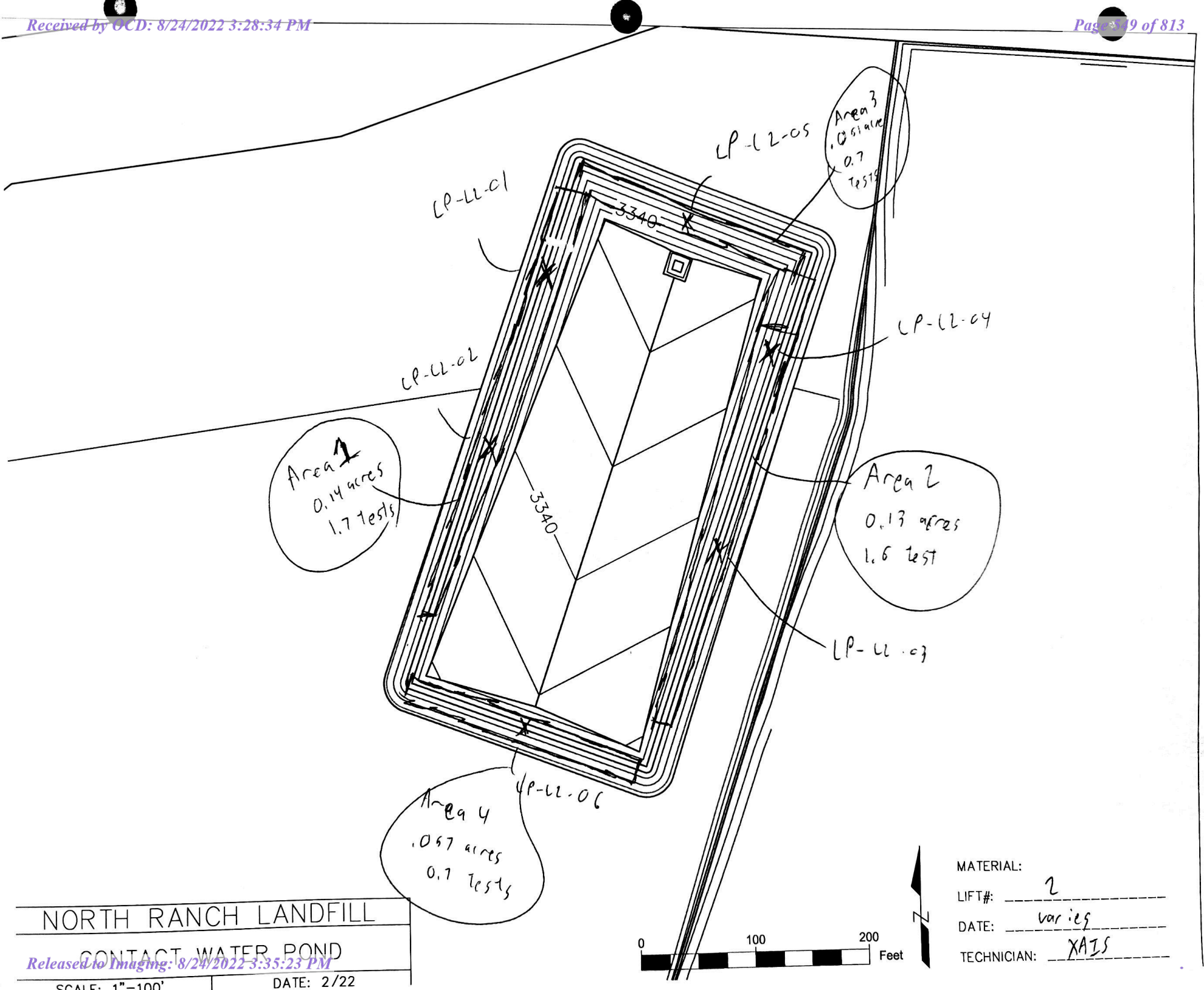
MATERIAL: 1

LIFT#: _____

DATE: varies

TECHNICIAN: XAJS

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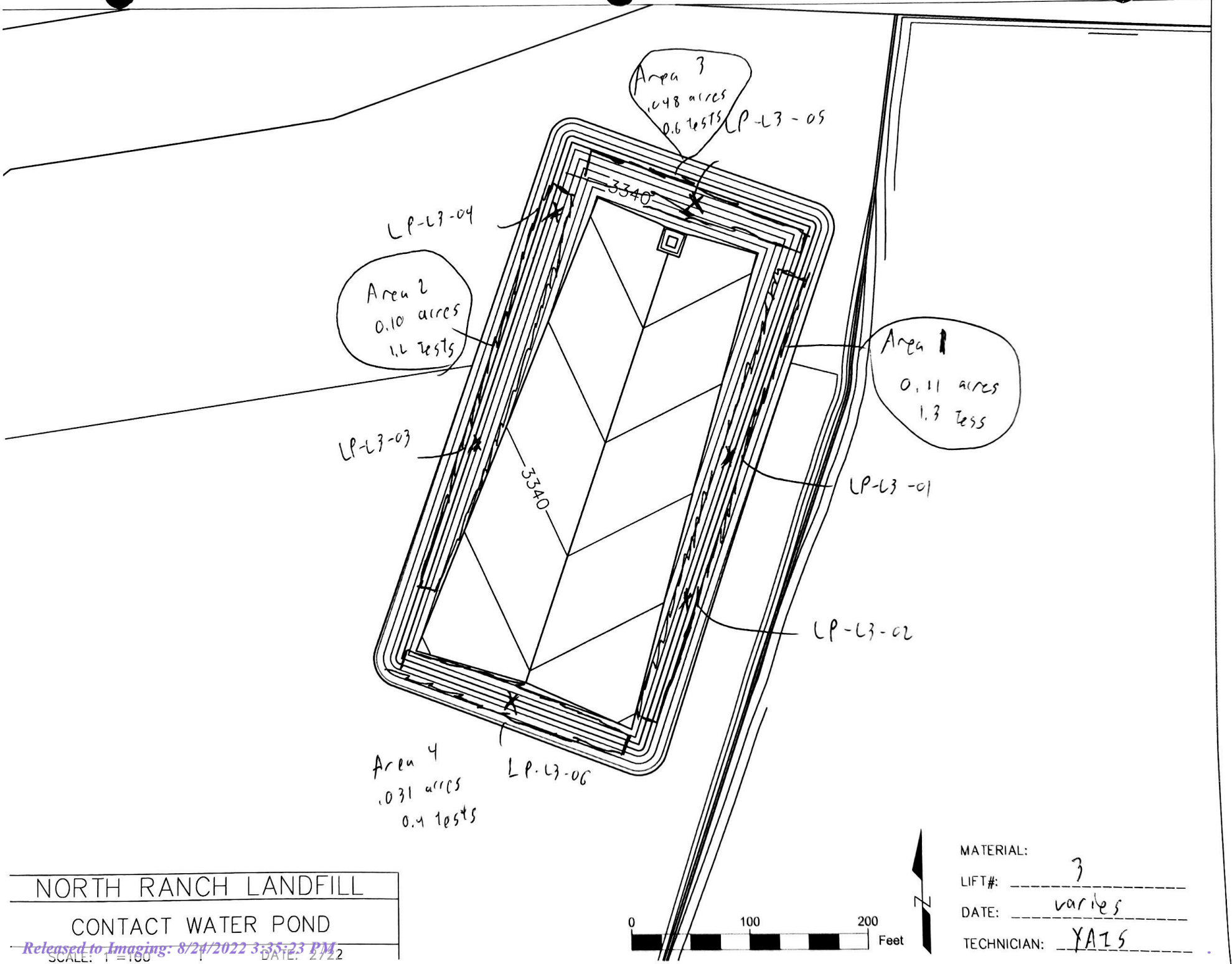


NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1"=100'

DATE: 2/22



NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1" = 100' DATE: 2/22

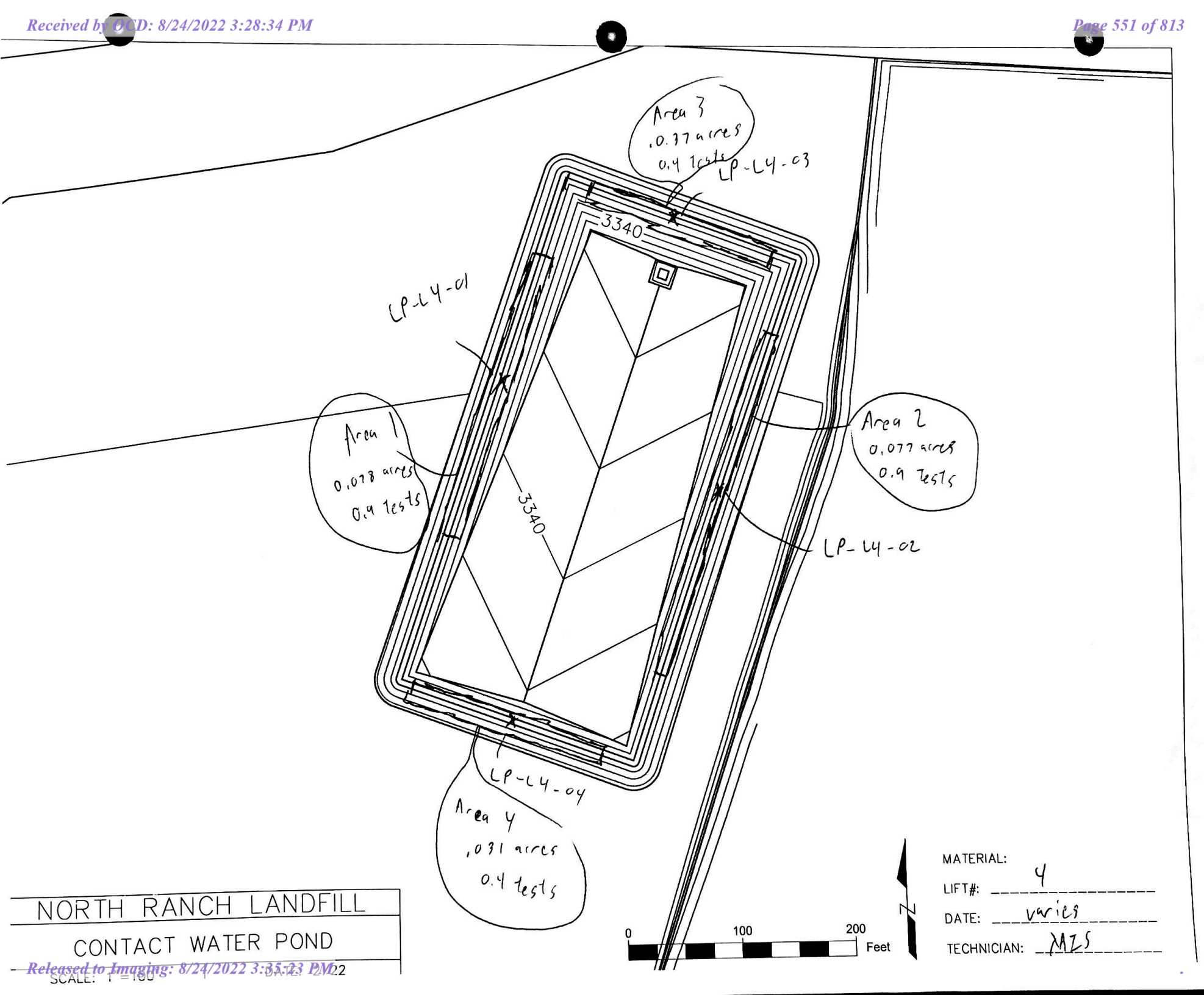
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LIFT#: 3

DATE: varies

TECHNICIAN: YAZS

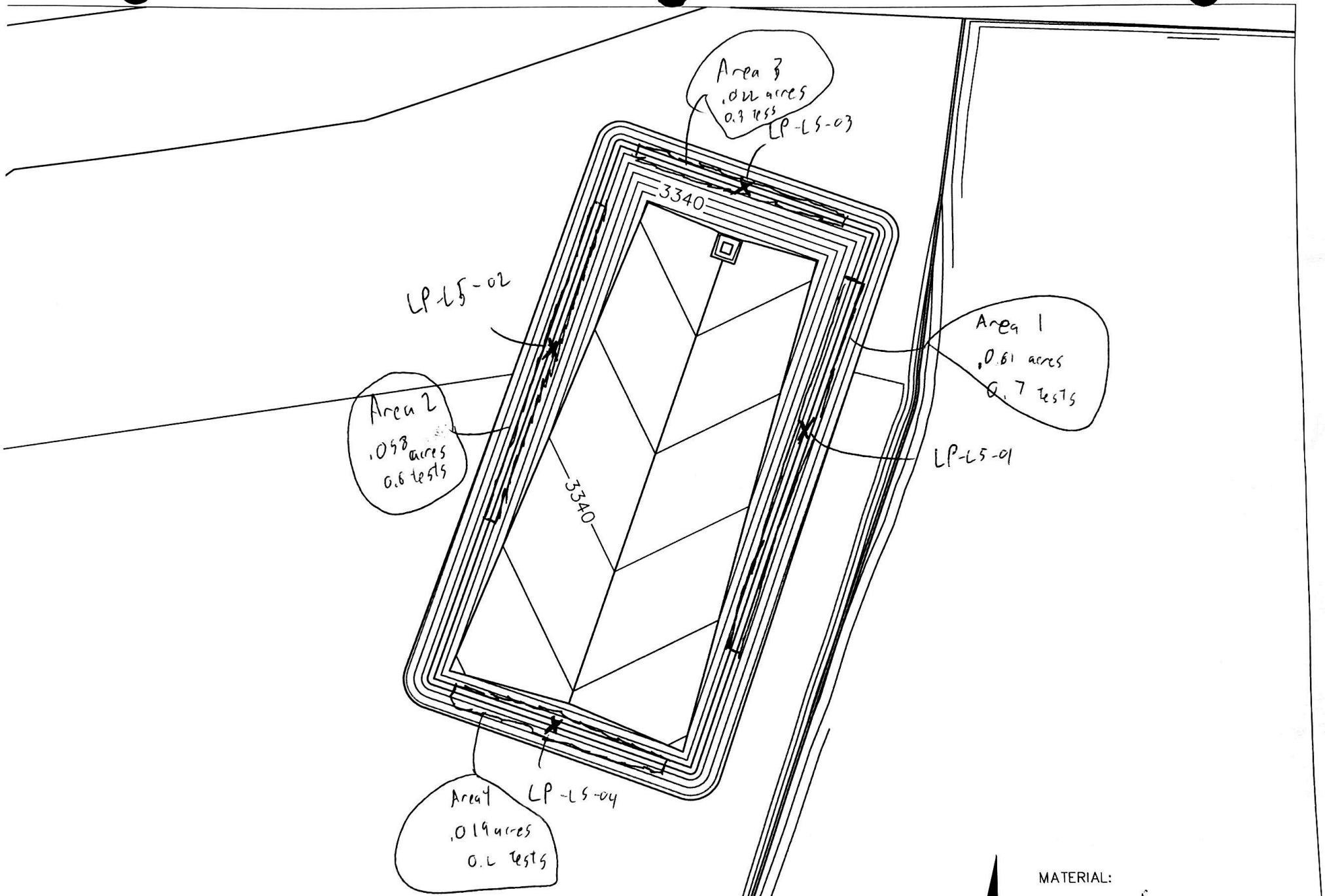
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NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1" = 100'



NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1" = 100'

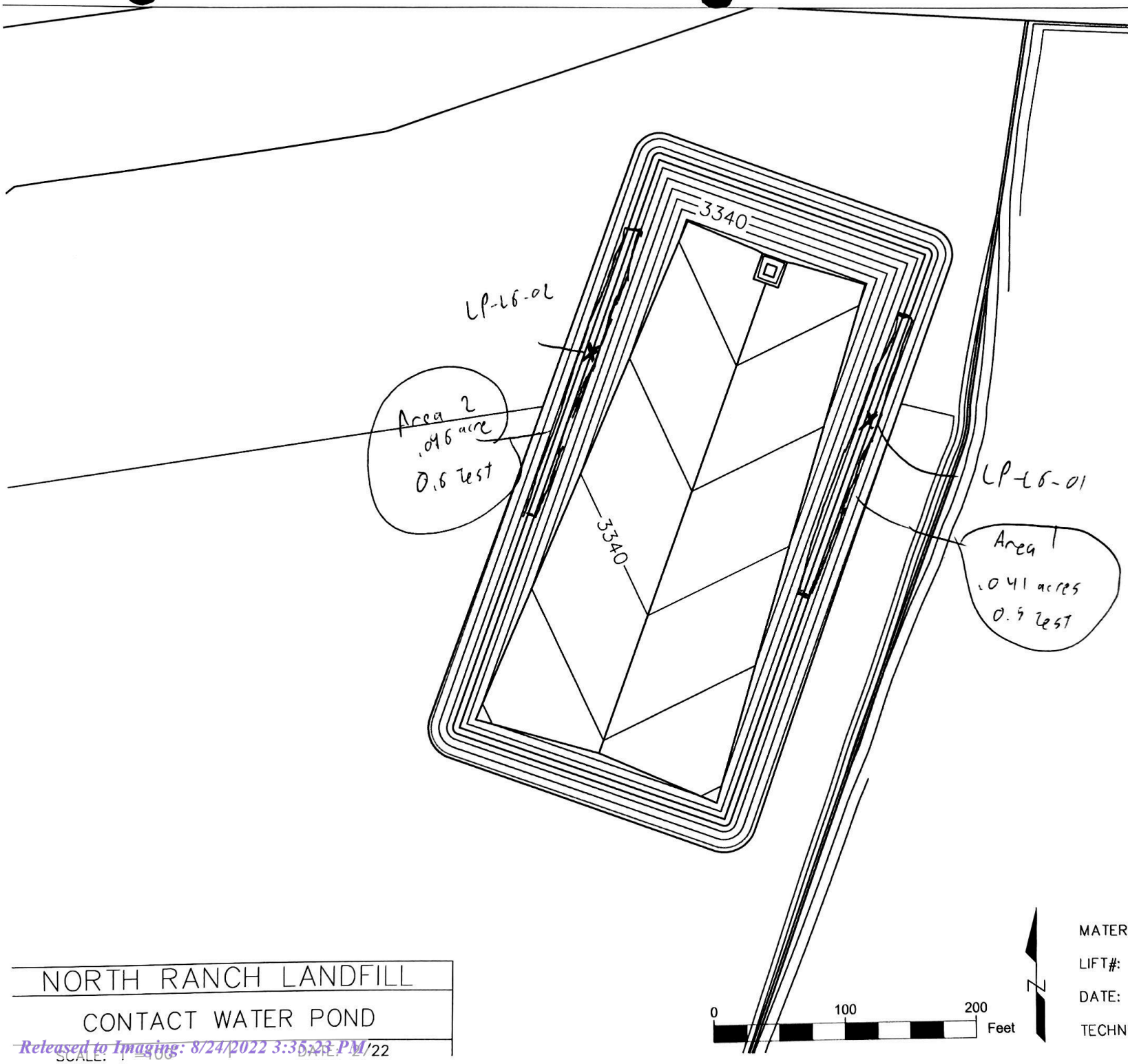
DATE: 5/23/22

MATERIAL:

LIFT#: 5

DATE: varies

TECHNICIAN: MAS



NORTH RANCH LANDFILL

CONTACT WATER POND

SCALE: 1" = 100' DATE: 5/3/22

MATERIAL:

LIFT#: 6

DATE: 5/3/22

TECHNICIAN: YAIS

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SCS ENGINEERS Environmental Consultants & Contractors

May 25, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #27 – Cell E-1 Primary 60-mil HDPE Installation

Requested Date: May 25, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for primary layer at Cell E-1

SCS Response:

Certifying Engineer has reviewed the pertinent data and observed the completed installation in person of the 60-mil HDPE primary geomembrane layer at Cell E-1. All but two destructive samples that were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. CPDS-45 failed initial testing and supplemental samples A-B were taken at each location. CPDS-45A and CPDS-45B also failed lab testing and further supplemental samples A1 and B1 were taken. Samples CPDS 45A1 and CPDS-45B1 both passed lab testing effectively ending tracking of the failed seam. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

Engineer notes minor edits need to be made to the field CQA Monitor's written logs, but none of the revisions preclude approval of the installation.

Engineer notes that the CQA Monitor was unable to determine the associated roll number with several panels installed as shown on Page 7 and Page 9 of the Panel Deployment log. CQA team will attempt to obtain this information from the installers QC team if possible, however, this issue does not preclude approval of the installation.

Therefore, the Certifying Engineer approves the installation of the primary 60-mil HDPE geomembrane layer for the Cell E-1. Subsequent overlying layers may be installed at this time.

Attached is all pertinent data.

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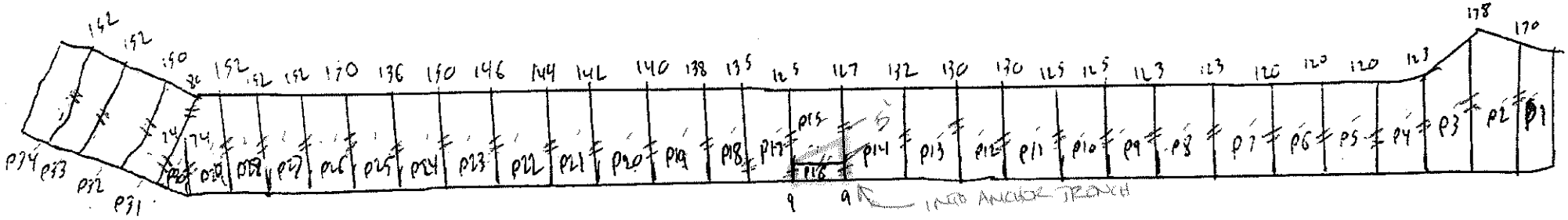
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Cell E1 Primary

22-SCS-NRL-01

5/4/22

NORTH BERM



(1) LEAVE P1O IN PLACE - DO NOT REMOVE

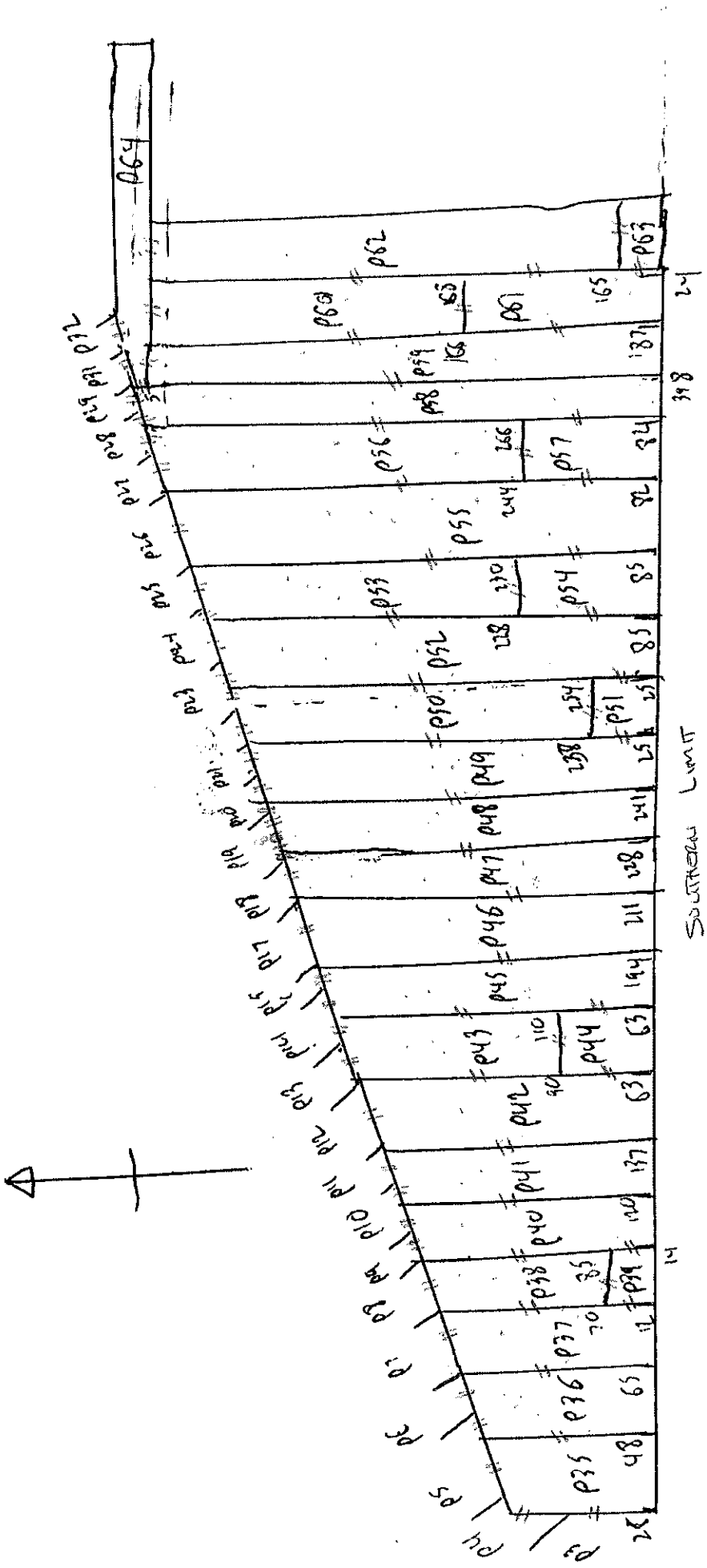
(2) PLACE PANEL ON TOP OF P1O (P1OR)

(3) COVER P1S/P1O KROSS SEAM

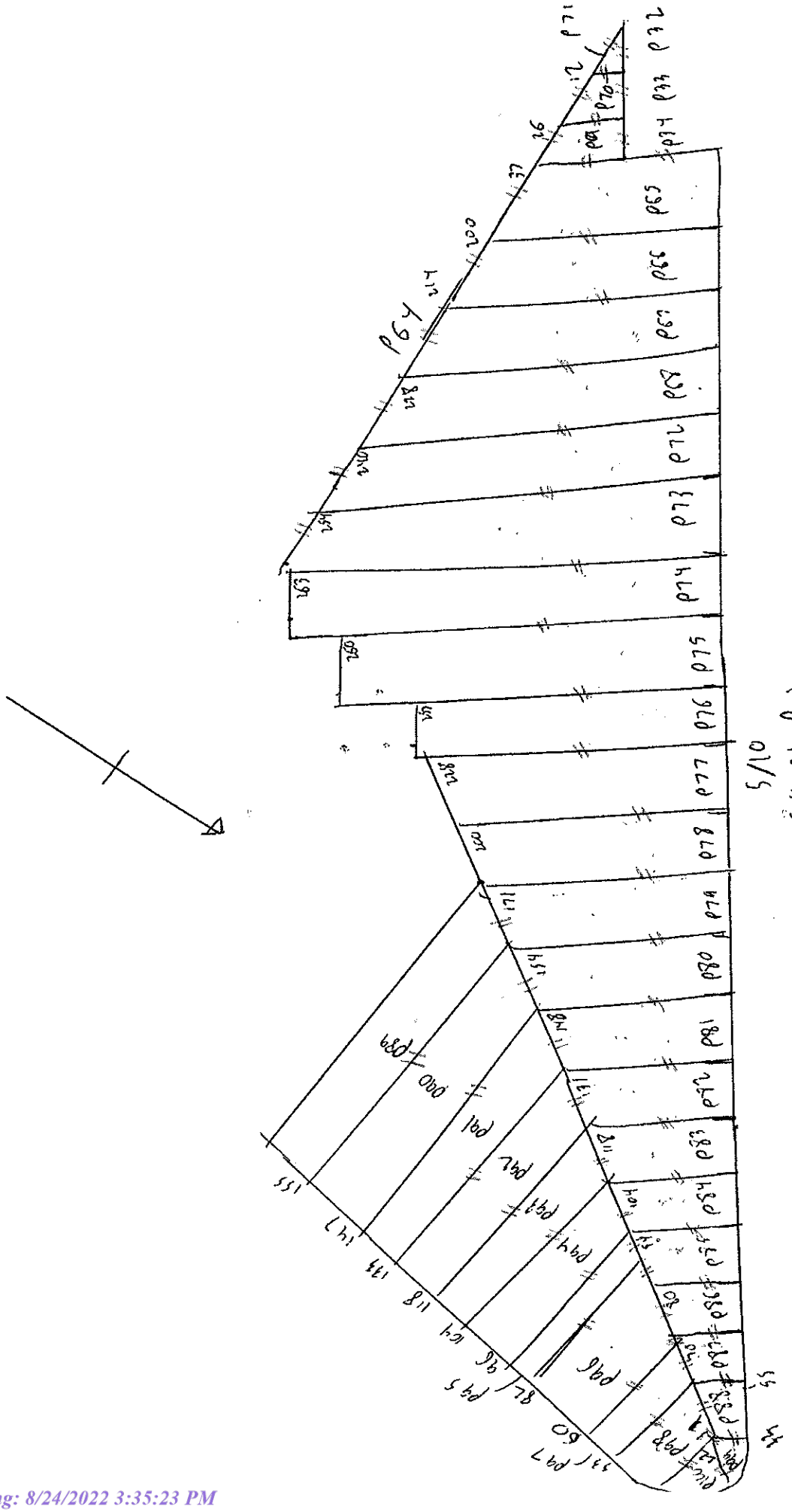
(4) ON ONE SIDE OF P1OR, ~~OR~~ MAKE APPROX 5 FEET PAST ORIGINAL CROSS-SEAM

PG (1) OF (5)

Page 555 of 813



Pg 2 of

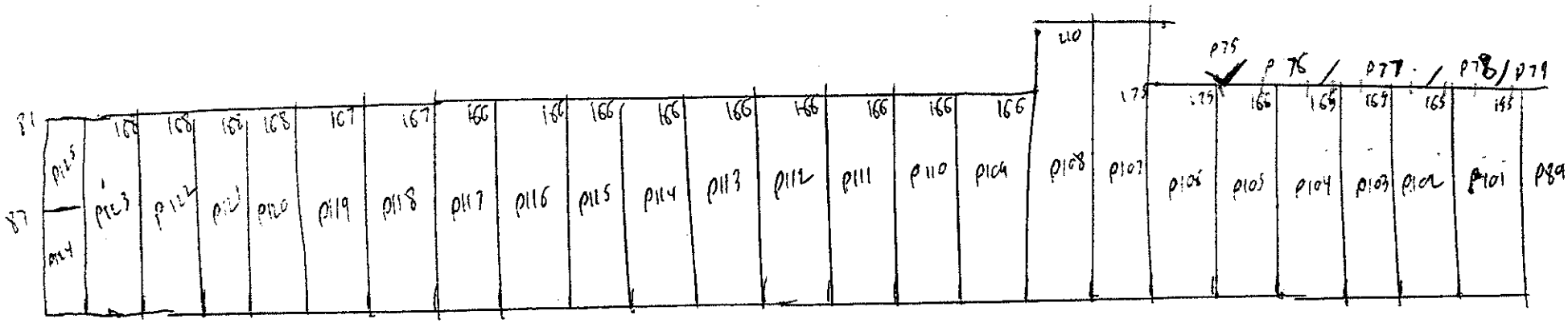

Cell E1 Primary
22-SCS-MRL-01
NM East / E Basin
NAD Compliant
5/10

(Pg 3 of 5)

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Received by OCD: 8/24/2022 3:28:34 PM

5/11/22
Cell 61 Primary
22-SCS-NRL-01

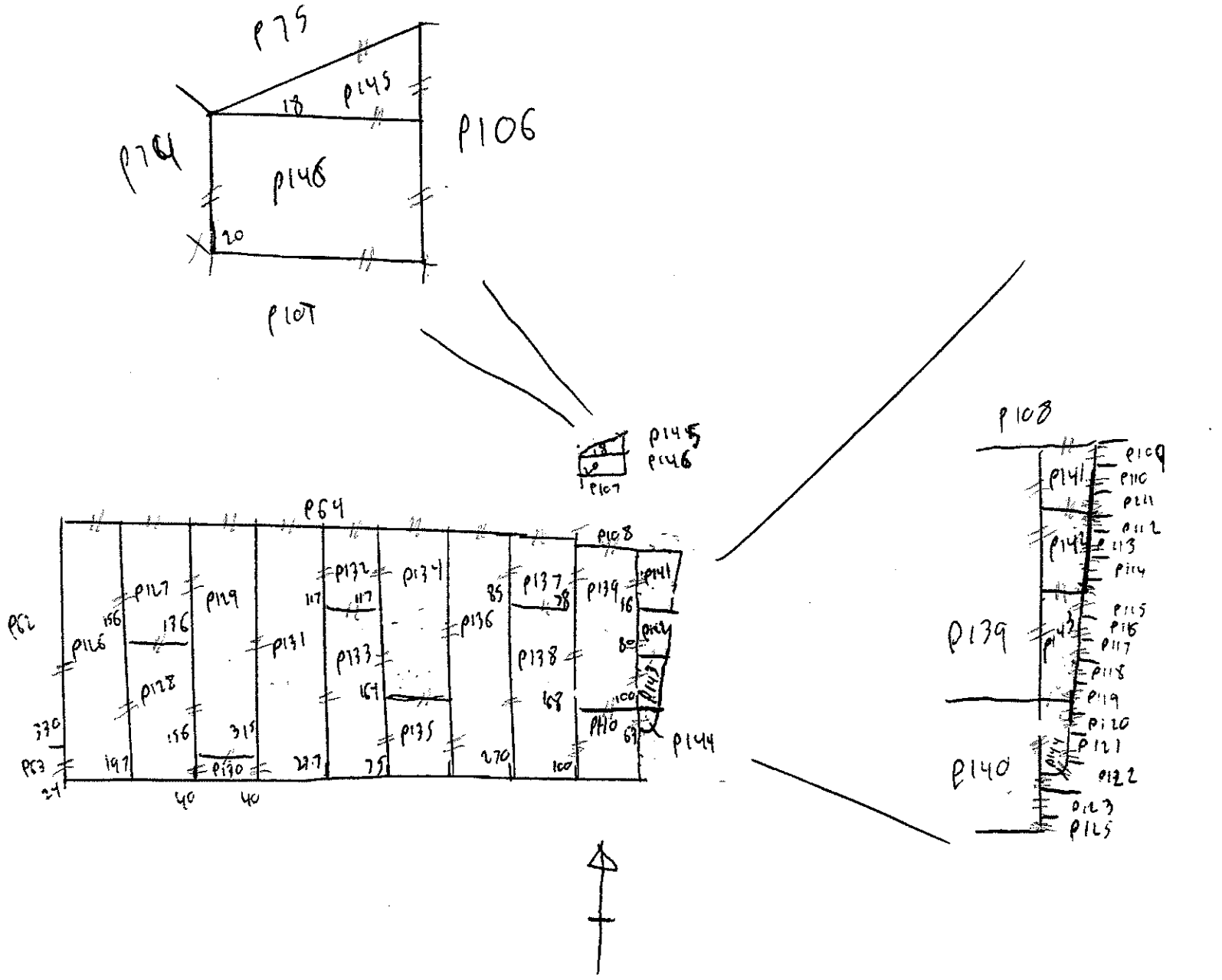


E. Berm

PG (4) OF (5)

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5/16/22
Cell 61 Primary
22-SCS-NRL-01

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: Nozzle Ranch
Project Number: 22SC5NZL01

CQA SOLUTIONS

Sheet 1 of 10
Date: 5/4/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P1	3938	800	170	23	3910	170	22.5	3,825	N. Berm	XAIS	
P2	3938	807	178	23	4094	174	22.5	3,915	N. Berm	XAIS	
P3	3938	809	178	23	4094	157	22.5	3,532.5	N. Berm	XAIS	
P4	3904	820	123	23	2829	122	22.5	2745	N. Berm	XAIS	
P5	3904	825	120	23	2760	120	22.5	2700	N. Berm	XAIS	
P6	3904	830	120	23	2760	120	22.5	2700	N. Berm	XAIS	
P7	3904	845	123	23	2829	122	22.5	2745	N. Berm	XAIS	
P8	3972	900	123	23	2829	123	22.5	2767.5	N. Berm	XAIS	
P9	3972	905	125	23	2875	124	22.5	2790	N. Berm	XAIS	
P10	3972	910	125	23	2875	125	22.5	2812.5	N. Berm	XAIS	
P11	3972	915	130	23	2990	127	22.5	2857.5	N. Berm	XAIS	
P12	3906	925	130	23	2990	130	22.5	2925	N. Berm	XAIS	
P13	3906	930	132	23	3036	131	22.5	2947.5	N. Berm	XAIS	
P14	3906	935	136	23	3128	134	22.5	3015	N. Berm	XAIS	
P15	3906	940	127	23	2921	126	22.5	2835	N. Berm	XAIS	
P16	3938	950	9	23	207	9	22.5	202.5	N. Berm	XAIS	
P17	3945	955	135	23	3105	135	22.5	3037.5	N. Berm	XAIS	
P18	3945	1000	136	23	3128	128	22.5	3060	N. Berm	XAIS	
P19	3945	1005	140	23	3220	138	22.5	3105	N. Berm	XAIS	
P20	3919	1030	142	23	3226	141	22.5	3172.5	N. Berm	XAIS	
P21	3919	1035	144	23	3312	143	22.5	3217.5	N. Berm	XAIS	
P22	3919	1040	142	23	3358	145	22.5	3262.5	N. Berm	XAIS	
P23	3989	1050	150	23	3450	147	22.5	3330	N. Berm	XAIS	
P24	3989	1055	150	23	3450	143	22.5	3217.5	N. Berm	XAIS	
			Total SF (Page)		73,376	Total SF (Page)		70717.5			
			Total SF (Project)		73,376	Total SF (Project)		70717.5			

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PG 1 of 10

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 2 of 10
Date: 5/4/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell G1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P25	3489	1100	150	23	3450	143	22.5	3217.5	N. Berm	XAIS	
P26	3489	1300	152	23	3496	151	22.5	3397.5	N. Berm	XAIS	
P27	3421	1305	152	23	3496	152	22.5	3420	N. Berm	XAIS	
P28	3421	1310	152	23	3496	152	22.5	3420	N. Berm	XAIS	
P29	3485	1315	154	23	3542	153	22.5	3442.5	N. Berm	XAIS	
P30	3485	1320	74	10	370	74	10	370	N. Berm	XAIS	Triangle
P31	3485	1330	154	23	3542	152	22.5	3420	N. Berm	XAIS	
P32	3485	1335	152	23	3496	151	22.5	3397.5	N. Berm	XAIS	
P33	3416	1350	152	23	3496	152	22.5	3420	N. Berm	XAIS	
P34	3416	1355	152	23	3496	152	22.5	3420	N. Berm	XAIS	

	Gross		Installed
Total SF (Page)	31,886	Total SF (Page)	30,825
Total SF (Project)	105,256	Total SF (Project)	101,542.5

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PG 2 of 10

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 42-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 10
Date: 5/9/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 9 Primary Material Type: HDPE Thickness: 60mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P35	3954	0800	48	23	1104	38	22.5	855	Floor	XAIS	
P36	3954	0805	65	23	1495	57	22.5	1282.5	Floor	XAIS	
P37	4010	0815	82	23	1886	73	22.5	1642.5	Floor	XAIS	
P38	4010	0820	85	23	1955	77	22.5	1732.5	Floor	XAIS	
P39	3988	0830	14	23	322	13	22.5	292.5	Floor	XAIS	
P40	3897	0835	120	23	2760	110	22.5	2475	Floor	XAIS	
P41	3897	0840	137	23	3151	128	22.5	2880	Floor	XAIS	
P42	3897	0845	154	23	3542	145	22.5	3262.5	Floor	XAIS	
P43	3897	0850	110	23	2530	100	22.5	2250	Floor	XAIS	
P44	3941	0900	63	23	1449	63	22.5	1417.5	Floor	XAIS	
P45	3941	0905	194	23	4462	184	22.5	4140	Floor	XAIS	
P46	3941	0910	211	23	4853	202	22.5	4545	Floor	XAIS	
P47	3975	0920	228	23	5244	219	22.5	4927.5	Floor	XAIS	
P48	3975	0925	241	23	5543	236	22.5	5310	Floor	XAIS	
P49	3940	0935	263	23	6049	252	22.5	5670	Floor	XAIS	
P50	3940	0940	254	23	5842	246	22.5	5535	Floor	XAIS	
P51	3988	1000	25	23	575	25	22.5	562.5	Floor	XAIS	
P52	3933	1010	300	23	6900	290	22.5	6525	Floor	XAIS	
P53	3933	1015	230	23	5290	229	22.5	5107.5	Floor	XAIS	
P54	3900	1025	85	23	1955	85	22.5	1912.5	Floor	XAIS	
P55	3906	1300	321	23	7521	321	22.5	7222.5	Floor	XAIS	
P56	3905	1310	266	23	6118	255	22.5	5737.5	Floor	XAIS	
P57	3898	1315	82	23	1886	82	22.5	1845	Floor	XAIS	
P58	3898	1320	398	23	9154	353	22.5	7942.5	Floor	XAIS	
			Total SF (Page)		91626	Total SF (Page)		85072.5			
			Total SF (Project)		165,002	Total SF (Project)		155,790			

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PG (3) of (10)

Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 4 of 10
Date: 3/5/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Primary Material Type: HDPE Thickness: 60mil Manufacturer: Solamax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
P59	3922	1330	358	23	8234	355	22.5	7987.5	Floor	XAIS	
P60	3922	1335	168	23	3864	167	22.5	3757.5	Floor	XAIS	
P61	3925	1340	189	23	4347	188	22.5	4230	Floor	XAIS	
P62	3925	1355	330	23	7590	330	22.5	7425	Floor	XAIS	
P63	3977	1410	24	23	552	24	22.5	540	Floor.	XAIS	
P64	3905	1420	250	23	5750	250	22.5	5625	Floor	XAIS	
				Total SF (Page)	30364		Total SF (Page)	26867			
				Total SF (Project)	193366		Total SF (Project)	182657			

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-09

CQA

Date: 6/10

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P65	3912	0755	200	23	4600	195	22.5	4387.5	N Berm	XAIS	
P66	3912	0800	214	23	4922	207	22.5	4657.5	N Berm	XAIS	
P67	3902	0810	228	23	5244	221	22.5	4972.5	N Berm	XAIS	
P68	3902	0815	240	23	5520	234	22.5	5265	N Berm	XAIS	
P69	3902	0820	37	23	851	32	22.5	720	Floor	XAIS	
P70	3985	0830	26	23	598	19	22.5	427.5	Floor	XAIS	
P71	3902	0837	12	10	60	12	10	60	Floor	XAIS	Triangle
P72	3907	0850	254	23	5842	247	22.5	5557.5	N Berm	XAIS	
P73	3907	0855	263	23	6049	258	22.5	5805	N. Berm	XAIS	
P74	3908	0905	263	23	6049	262	22.5	5895	N Berm	XAIS	
P75	3908	0910	260	23	5980	259	22.5	5827.5	N Berm	XAIS	
P76	4001	0920	257	23	5911	242	22.5	5445	N Berm	XAIS	
P77	4001	0925	228	23	5244	214	22.5	4815	N Berm	XAIS	
P78	3914	0935	200	23	4600	186	22.5	4185	N Berm	XAIS	
P79	3914	0940	171	23	3933	163	22.5	3667.5	N Berm	XAIS	
P80	3914	0945	154	23	3542	151	22.5	3397.5	N Berm	XAIS	
P81	3986	1300	148	23	3404	140	22.5	3150	N Berm	XAIS	
P82	3986	1305	131	23	3013	125	22.5	2812.5	N Berm	XAIS	
P83	3986	1310	118	23	2714	111	22.5	2497.5	N Berm	XAIS	
P84	3986	1315	104	23	2392	99	22.5	2227.5	N Berm	XAIS	
P85	3916	1325	94	23	2162	87	22.5	1957.5	N Berm	XAIS	
P86	3916	1330	80	23	1840	75	22.5	1687.5	N Berm	XAIS	
P87	3912	1340	70	23	1610	63	22.5	1417.5	N Berm	XAIS	
P88	3938	1350	55	23	1265	44	22.5	990	N Berm	XAIS	
			Total SF (Page)		87345	Total SF (Page)		81825			
			Total SF (Project)		282,711	Total SF (Project)		264,482			

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 6 of 10
Date: 5/10

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Width	Gross Area (SF)	Installed Measurements Length	Installed Width	Installed Area (SF)	Location	Observer	Comments
P89	4004	1400	155	23	3565	155	22.5	3487.5	E Berm	XATS	
P90	4004	1405	155	23	3565	151	22.5	3397.5	E Berm	XATS	
P91	4004	1410	147	23	3381	140	22.5	3150	E Berm	XATS	
P92	3996	1420	133	23	3059	126	22.5	2835	E Berm	XATS	
P93	3996	1425	118	23	2714	111	22.5	2497.5	E Berm	XATS	
P94	3996	1430	104	23	2392	100	22.5	2250	E Berm	XATS	
P95	3996	1435	96	23	2208	89	22.5	2002.5	E Berm	XATS	
P96	3996	1440	82	23	1886	70	22.5	1575	E Berm	XATS	
P97	3981	1450	60	23	1380	57	22.5	1282.5	E Berm	XATS	
P98	4004	1500	53	23	1219	42	22.5	945	E Berm	XATS	
P99	3919	1510	33	10	165	33	10	165	NE Corner	XATS	Triangle
P100	3919	1515	31	10	155	31	10	155	NE Corner	XATS	Triangle
				Total SF (Page)	25689		Total SF (Page)	23742.5			
				Total SF (Project)	308400		Total SF (Project)	288224.5			

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PG 6 of 10

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: TCS Engineers
Project: North Ranch Landfill
Project Number: 22-TCS-NRL-01

Sheet 7 of 10
Date: 1/11/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 6 Primary Material Type: HDPE Thickness: 60mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P101		0750	165	23	3795	160	22.5	3600	E. Berm	XAIS	
P102		0754	165	23	3795	164	22.5	3690	E. Berm	XAIS	
P103		0800	165	23	3795	164	22.5	3690	E. Berm	XAIS	
P104		0810	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P105		0815	175	23	4025	170	22.5	3825	E. Berm	XAIS	
P106		0820	175	23	4025	175	22.5	3937.5	E. Berm	XAIS	
P107	3457	0830	210	23	4830	210	22.5	4725	E. Berm	XAIS	
P108	3457	0835	210	23	4830	210	22.5	4725	E. Berm	XAIS	
P109	3975	0745	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P110	3975	0850	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P111	3975	0855	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P112	3978	0910	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P113	3978	0915	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P114	3478	0920	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P115	3924	0930	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P116	3924	0940	166	23	3818	166	22.5	3735	E. Berm	XAIS	
P117	3924	0950	167	23	3841	167	22.5	3757.5	E. Berm	XAIS	
P118	3930	1300	167	23	3841	167	22.5	3757.5	E. Berm	XAIS	
P119	3930	1305	168	23	3864	168	22.5	3780	E. Berm	XAIS	
P120	3930	1310	168	23	3864	168	22.5	3780	E. Berm	XAIS	
P121	3987	1320	168	23	3864	168	22.5	3780	E. Berm	XAIS	
P122	3987	1325	168	23	3864	168	22.5	3780	E. Berm	XAIS	
P123	3987	1330	169	23	3887	169	22.5	3802.5	E. Berm	XAIS	
P124	3911	1340	87	10	870	87	10	870	E. Berm	XAIS	
			Total SF (Page)		91351	Total SF (Page)		89115			
			Total SF (Project)		399752	Total SF (Project)		377359.5			

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Pg 7 of 10

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 8 of 10
Date: 5/11

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P125	3 911	1350	82	10	820	82	10	820	E Berm	XATS	
				Total SF (Page)	820		Total SF (Page)	820			
				Total SF (Project)	400572		Total SF (Project)	378179.5			

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PG 8 of 10

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 9 of 10
Date: 5/16/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell 1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P126	3963	0800	354	23	8142	354	22.5	7965	Floor	XAIS	
P127		0810	156	23	3588	156	22.5	3510	Floor	XAIS	
P128	3953	0820	197	23	4531	197	22.5	4432.5	Floor	XAIS	
P129	3953	0821	315	23	7245	314	22.5	7065	Floor	XAIS	
P130	4005	0835	40	23	920	40	22.5	900	Floor	XAIS	
P131	4009	0840	355	23	8165	355	22.5	7987.5	Floor	XAIS	
P132		0850	117	23	2691	117	22.5	2632.5	Floor	XAIS	
P133	3969	0900	239	23	5497	238	22.5	5355	Floor	XAIS	
P134		0908	117	23	2691	117	22.5	2632.5	Floor	XAIS	
P135		0920	75	23	1725	75	22.5	1687.5	Floor	XAIS	
P136		1000	356	23	8188	356	22.5	8010	Floor	XAIS	
P137	3970	1015	85	23	1955	82	22.5	1845	Floor	XAIS	
P138		1020	270	23	6210	269	22.5	6052.5	Floor	XAIS	
P139		1025	236	23	5428	236	22.5	5310	Floor	XAIS	
P140		1035	100	23	2300	100	22.5	2250	Floor	XAIS	
P141		1300	60	12	720	58	12	696	Floor	XAIS	
P142		1315	56	12	672	56	12	672	Floor	XAIS	
P143		1320	100	12	1200	100	12	1200	Floor	XAIS	
P144		1330	63	10	630	63	10	630	Floor	XAIS	
P145	5917	1340	18	10	180	18	10	180	Floor	XAIS	Triangle
P146	5917	1350	10	10	100	19	10	95	Floor	XAIS	
			Total SF (Page)		71778	Total SF (Page)		71108			
			Total SF (Project)		473350	Total SF (Project)		444257.5			

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Pg (9) of (10)

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Client: SLS Engineers
Project: North Ranch Landfill
Project Number: 2L-SLS-NRL-01

CQA SOLUTIONS

Sheet 10 of 10
Date: 5/17

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Cell E1 Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P16R1		1000	16	23	368	13	22.5	292.5	N Berm	MJS	
P124R1		1300	92	12	1104	92	12	1104	E Berm	XAJS	

Total SF (Page)	1472	Total SF (Page)	1396.5
Total SF (Project)	474822	Total SF (Project)	450.684

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PG 10 of 10

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: AL-SCS-NRL-01

CQA

Sheet 1 of ____
Date: 5/4
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong %	Pass/Fail	Observer	Comments
	WL	SL	0730	F	S	S	850	5			109	-	112	-	131	-	P	XAIS	
											116	-	110	-	130	-			
											98	-	102	-	128	-			
											117	-	109	-	140	-			
											105	-	109	-	130	-			
	WSL	CH	0740	F	S	S	850	6			114	-	107	-	134	-	P	XAIS	
											98	-	110	-	144	-			
											124	-	99	-	138	-			
											114	-	110	-	135	-			
											107	-	118	-	139	-			
	WL	SL	1710	F	S	S	850	5			105	-	123	-	132	-	P	XAIS	
											117	-	125	-	137	-			
											104	-	102	-	127	-			
											108	-	114	-	135	-			
											102	-	108	-	129	-			
	WSL	CH	1712	F	S	S	850	6			102	-	114	-	131	-	P	XAIS	
											108	-	113	-	135	-			
											97	-	109	-	143	-			
											108	-	114	-	143	-			
											113	-	110	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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PG (1) OF (18)

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 2 of ____
Date: 5/4
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Machine	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	42	5L	1715	F	S	T	850	5			108	-	106	-	144	-	P	TAS	
											107	-	120	-	140	-			
											116	-	108	-	139	-			
											99	-	117	-	146	-			
											120	-	102	-	142	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Pg (2) of (18)

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SLS - Engineering
Project: North Ranch Landfill
Project Number: 22-SLS-NRL-01

Sheet 3 of ____
Date: 5/5/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
	WL	SL	0742	F	S	S	850	5			102	-	112	-	139	-	P	XATS	
											98	-	107	-	130	-			
											103	-	102	-	138	-			
											104	-	123	-	142	-			
											110	-	114	-	140	-			
	WL	SL	0745	F	T	T	850	5			99	-	112	-	131	-	P	XATS	
											117	-	103	-	147	-			
											112	-	98	-	138	-			
											106	-	102	-	145	-			
											105	-	107	-	133	-			
	WBL	CH	0750	F	S	S	850	6			105	-	119	-	137	-	P	XATS	
											109	-	106	-	130	-			
											117	-	119	-	139	-			
											112	-	108	-	145	-			
											105	-	102	-	140	-			
	WL	SL	0748	F	S	T	850	5			108	-	107	-	141	-	P	XATS	
											107	-	110	-	131	-			
											113	-	119	-	145	-			
											114	-	118	-	136	-			
											109	-	102	-	139	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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PG (3) OF (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 12-SCS-NRL-01

CQA SOLUTIONS

Sheet 4 of ____
Date: 5/5
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	WL	SL	1313	F	S	S	850	5			97	–	107	–	133	–	P	XAIS	
											115	–	126	–	130	–			
											112	–	109	–	142	–			
											114	–	124	–	128	–			
											125	–	118	–	137	–			
	WBL	CH	1315	F	S	S	850	6			107	–	121	–	140	–	P	XAIS	
											108	–	106	–	145	–			
											112	–	102	–	138	–			
											110	–	125	–	142	–			
											123	–	98	–	147	–			
	WL	SL	1315	F	T	T	850	5			106	–	114	–	139	–	P	XAIS	
											105	–	104	–	124	–			
											102	–	110	–	128	–			
											108	–	123	–	138	–			
											115	–	113	–	142	–			
	WBL	CH	1316	F	S	T	850	5			96	–	117	–	137	–	P	XAIS	
											102	–	101	–	130	–			
											101	–	108	–	145	–			
											122	–	121	–	146	–			
											119	–	115	–	132	–			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 6 of ____
Date: 5/9/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon inside PPI	Peel: Coupon inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
	G744	SL	0740	E	T	T			550	550	101	~	[illegible]		131	~	P	XAIS	
											98	~	[illegible]		135	~			
											115	~	[illegible]		128	~			
											101	~	[illegible]		140	~			
											115	~	[illegible]		142	~			
	G44	MM	0748	E	T	T			550	550	116	~	[illegible]		141	~	P	XAIS	
											105	~	[illegible]		135	~			
											104	~	[illegible]		131	~			
											109	~	[illegible]		140	~			
											110	~	[illegible]		133	~			
	G44	MM	1302	E	T	T			550	550	92	~	[illegible]		130	~	P	XAIS	
											99	~	[illegible]		128	~			
											110	~	[illegible]		143	~			
											117	~	[illegible]		140	~			
											113	~	[illegible]		131	~			
	G744	SL	1308	E	T	T			550	550	107	~			145	~	P	XAIS	
											111	~			138	~			
											116	~			139	~			
											107	~			135	~			
											101	~			140	~			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-516-NRL.01

CQA GEOSYNTHETICS

Sheet 10 of ____
Date: 5/10/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
	W82	CH	0729	F	S	S	850	6			108	-	119	-	134	-	P	YAIS	
											102	-	105	-	144	-			
											122	-	123	-	136	-			
											113	-	107	-	148	-			
											118	-	109	-	129	-			
	W2	SL	0716	F	S	S	850	5			112	-	109	-	145	-	P	YAIS	
											109	-	110	-	130	-			
											105	-	113	-	137	-			
											119	-	119	-	127	-			
											123	-	120	-	142	-			
	W82	CH	1305	F	S	S	850	6			101	-	108	-	137	-	P	YAIS	
											111	-	110	-	130	-			
											116	-	126	-	143	-			
											120	-	118	-	139	-			
											98	-	105	-	141	-			
	W82	CH	1306	F	S	T	850	5			98	-	105	-	132	-	P	YAIS	
											102	-	116	-	138	-			
											99	-	109	-	130	-			
											107	-	112	-	141	-			
											110	-	114	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NR-01

CQA SOLUTIONS

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Date: 5/10/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
	WL	SL	1307	F	S	S	850	5			110	-	102	-	131	-	P	XAIS	
											115	-	108	-	141	-			
											109	-	117	-	137	-			
											99	-	112	-	130	-			
											98	-	105	-	134	-			
	WL	SL	1308	F	T	T	850	5			105	-	109	-	154	-	P	XAIS	
											101	-	99	-	134	-			
											104	-	111	-	130	-			
											121	-	118	-	141	-			
											117	-	123	-	136	-			
	WBL	CH	1310	F	T	T	850	5			109	-	101	-	151	-	P	XAIS	
											105	-	106	-	138	-			
											111	-	120	-	142	-			
											121	-	118	-	139	-			
											114	-	103	-	145	-			
	WBL	CH		F	S	T	850	5			102	-	111	-	141	-	P	XAIS	
											109	-	113	-	138	-			
											105	-	102	-	130	-			
											117	-	124	-	146	-			
											108	-	117	-	133	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

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Date: 5/11/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	W2	SL	0743	F	S	S	850	5			108	-	112	-	134	-	P	YAIS	
											119	-	109	-	143	-			
											103	-	101	-	139	-			
											106	-	102	-	131	-			
											107	-	117	-	137	-			
	W82	CM	0740	F	S	S	850	6			112	-	111	-	134	-	P	XAIS	
											105	-	110	-	143	-			
											109	-	121	-	141	-			
											120	-	108	-	140	-			
											106	-	97	-	132	-			
	W82	CM	1309	F	S	S	850	6			101	-	108	-	136	-	P	XAIS	
											105	-	117	-	134	-			
											117	-	109	-	131	-			
											102	-	120	-	136	-			
											121	-	116	-	142	-			
	W2	SL	1702	F	S	S	850	5			105	-	106	-	137	-	P	XAIS	
											109	-	105	-	140	-			
											119	-	104	-	143	-			
											114	-	121	-	132	-			
											117	-	115	-	131	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: M-SCS-NRL-01

CQA SOLUTIONS

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Date: 5/11/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	W2	SC	1305	F	T	T	890	5			109	-	102	-	131	-	P	XAJS	
											115	-	103	-	136	-			
											109	-	117	-	141	-			
											108	-	124	-	132	-			
											113	-	105	-	136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL.01

CQA SOLUTIONS

Sheet 10 of ___
Date: 5/12/22
Rev. Date: ___

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
	G744	SL	0713	E	T	T			550	550	101	-			138	-	P	XAVIS	
											98	-			138	-			
											97	-			132	-			
											106	-			127	-			
											109	-			141	-			
	G44	MM	1314	G	T	T			550	550	112	-			148	-	P	XAVIS	
											106	-			138	-			
											113	-			136	-			
											123	-			128	-			
											120	-			137	-			
	G744	SL	1312	E	T	T			550	550	98	-			137	-	P	XAVIS	
											101	-			134	-			
											105	-			141	-			
											116	-			141	-			
											107	-			151	-			
	G44	MM	1309	G	T	T			550	550	116	-			141	-	P	XAVIS	
											106	-			140	-			
											105	-			136	-			
											117	-			137	-			
											124	-			127	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 02-SCS-NRL-01

CQA SOLUTIONS

Sheet 11 of ____
Date: 5/14/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	647	MM	0715	G	T	T			550	550	118	-			156	-	P	YES	
											107	-			135	-			
											99	-			138	-			
											104	-			147	-			
											122	-			132	-			

Specs: Fusion Peel: ____ Peel Incursion: ____ % Extrusion Peel: ____ Peel Incursion: ____ %
Fusion Shear: ____ Elongation: ____ % Extrusion Shear: ____ Elongation: ____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 11-515-021.01

CQA SOLUTIONS

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Date: 5/16/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	W2	SL	0745	F	S	S	850	5			111	-	109	-	131	-	P	XATS	
											109	-	117	-	178	-			
											115	-	116	-	142	-			
											117	-	100	-	133	-			
											102	-	109	-	130	-			
	W2	SL	0748	F	T	T	850	5			120	-	115	-	151	-	P	XATS	
											118	-	110	-	142	-			
											109	-	107	-	144	-			
											111	-	113	-	140	-			
											109	-	116	-	135	-			
	W2	CH	0750	F	S	S	850	6			110	-	103	-	131	-	P	XATS	
											104	-	106	-	139	-			
											101	-	118	-	143	-			
											107	-	110	-	138	-			
											109	-	98	-	133	-			
	W2	CH	0752	F	S	T	850	5			105	-	107	-	138	-	P	XATS	
											98	-	102	-	130	-			
											109	-	100	-	134	-			
											118	-	105	-	144	-			
											107	-	114	-	140	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12A155-NRL-01

CQA SOLUTIONS

Sheet 13 of ____
Date: 5/10/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
	WBL	CA	0753	F	T	T	850	5			103	-	105	-	128	-	P	XAES	
											110	-	110	-	149	-			
											117	-	116	-	137	-			
											116	-	118	-	141	-			
											111	-	109	-	135	-			
	WL	SL	1302	F	S	S	850	5			113	-	107	-	128	-	P	XAES	
											117	-	115	-	130	-			
											101	-	119	-	137	-			
											107	-	108	-	141	-			
											105	-	110	-	139	-			
	WBL	CA	1304	F	S	S	850	6			110	-	103	-	129	-	P	XAES	
											101	-	98	-	131	-			
											110	-	107	-	138	-			
											118	-	103	-	142	-			
											120	-	117	-	149	-			
	WL	SL	1305	F	T	T	850	5			121	-	113	-	143	-	P	XAES	
											119	-	118	-	137	-			
											103	-	112	-	139	-			
											108	-	101	-	131	-			
											110	-	113	-	134	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 14 of
Date: 5/16/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
	G44	MM	0710	F	T	T			550	550	112	-			141	-	P	XAIS	
											119	-			136	-			
											101	-			130	-			
											108	-			133	-			
											111	-			132	-			
	G44	MM	0705	F	T	T			550	550	102	-			136	-	P	XAIS	
											107	-			141	-			
											99	-			131	-			
											118	-			138	-			
											112	-			127	-			
	G744	SL	1304	F	T	T			550	550	101	-			140	-	P	XAIS	
											107	-			141	-			
											105	-			130	-			
											119	-			137	-			
											120	-			138	-			
	G744	SL	0709	F	T	T			550	550	102	-			143	-	P	XAIS	
											119	-			141	-			
											121	-			130	-			
											102	-			132	-			
											107	-			137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 14 of 15

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 15 of _____
Date: 5/17
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
	644	MM	1302	E	T	T			550	550	112	-			140	-	P	XAIS	
											113	-			146	-			
											101	-			140	-			
											103	-			146	-			
											117	-			142	-			
	662	CA	1306	F	S	T	850	5			102	-	109	-	130	-	P	XAIS	
											107	-	111	-	136	-			
											108	-	119	-	148	-			
											106	-	102	-	129	-			
											117	-	110	-	127	-			
	V82	CA	1308	F	T	T	850	5			121	-	119	-	138	-	P	XAIS	
											117	-	109	-	132	-			
											118	-	117	-	140	-			
											107	-	110	-	135	-			
											110	-	111	-	128	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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PG (15) OF (18)

Page 584 of 813

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCCT-NRL-01

Sheet 16 of ____
Date: 5/19/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
90	640	MM	1300	6	T	T			550	550	115	-			141	-	P	MTS	
											110	-			135	-			
											119	-			130	-			
											115	-			138	-			
											112	-			143	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 16 of 18

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-REL.01

CQA SOLUTIONS

Sheet ____ of ____
Date: 5/10/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
71	6741	SL	0700	F	T	T			550	550	107	-			131	-	P	XAIS	
											110	-			135	-			
											109	-			129	-			
											108	-			140	-			
											117	-			136	-			
95	V82	CH	1000	F	S	S	850	6			102	-	115	-	141	-	P	XAIS	
											113	-	104	-	140	-			
											112	-	113	-	148	-			
											109	-	120	-	135	-			
											118	-	119	-	139	-			
95	W2	SL	1102	F	T	T	950	5			110	-	103	-	132	-	P	XAIS	
											117	-	121	-	137	-			
											115	-	110	-	129	-			
											116	-	103	-	133	-			
											102	-	111	-	136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Unit 11
Project Number: 02-SLC-00121.01

Sheet ____ of ____
Date: 4/21/22
Rev. Date: ____

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
75	GH4	MM	0705	6	T	T			550	550	103	-			135	-	P	XAES	
											109	-			137	-			
											105	-			141	-			
											115	-			144	-			
											110	-			132	-			
75	GH4	SL	0707	6	T	T			550	550	115	-			129	-	P	XAES	
											113	-			134	-			
											109	-			133	-			
											116	-			138	-			
											102	-			141	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 8
Date 9/4/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 EL P1

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
P1	P2	CK	W82	815	828	0	170	170	170		XAIS	
P3	P4	CK	W82	0830	0842	0	123	123	293		YAIS	
P5	P6	CK	W82	0848	0859	0	120	120	413	CPDS1	XAIS	
P7	P8	CK	W82	0903	0917	0	123	123	536		XAIS	
P9	P10	CK	W82	0920	0931	0	125	125	661		XAIS	
P11	P12	CK	W82	0935	0944	0	130	130	791	CPDS3	XAIS	
P13	P14	CK	W82	0948	0958	0	132	132	923		XAIS	
P15	P17	CK	W82	1018	1031	0	125	125	1048		XAIS	
P18	P19	CK	W82	1035	1047	0	138	138	1185	CPDS5	XAIS	
P20	P21	CK	W82	1052	1108	0	142	142	1328		XAIS	
P22	P23	CK	W82	1117	1130	0	146	146	1474		XAIS	
P24	P25	CK	W82	1136	1149	0	136	136	1610	CPDS7	XAIS	
P26	P27	CK	W82	1322	1340	0	152	152	1762		XAIS	
P28	P28	CK	W82	1345	1402	0	152	152	1914		XAIS	
P31	P29	CK	W82	1409	1431	30	0	30	1994		XAIS	

Total LF (Page)	1994	Total DS (Page)	4	Total DS Needed (Page)	4	Over/Under (Page)	0
Total LF (Project)	1994	Total DS (Project)	4	Total DS Needed (Project)	4	Over/Under (Project)	0

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 1 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

Sheet 2 of 8
Date 5/6/22
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Primary

Welder Initials: CK
Welder Number:

Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P37	P38	CK	W82	0825	0830	0	70	70	70	—	XAIS	
P38	P40	CK	W82	0838	0844	0	85	85	155	—	XAIS	
P37	P39	CK	W82	0832	0833	0	12	12	167	—	XAIS	
P39	P40	CK	W82	0836	0848	0	14	14	181	—	XAIS	
P42	P43	CK	W82	0911	0917	0	91	91	272	—	XAIS	
P42	P44	CK	W82	0914	0928	0	63	63	335	—	XAIS	
P45	P46	CK	W82	0940	0957	0	194	194	529	—	XAIS	
P47	P48	CK	W82	1005	1031	0	228	228	757	CPOS13	XAIS	
P49	P50	CK	W82	1033	1048	0	238	238	995	—	XAIS	
P49	P51	CK	W82	1050	1052	0	25	25	1020	—	XAIS	
P52	P53	CK	W82	1100	1122	0	215	215	1235	CPOS16	XAIS	
P52	P54	CK	W82	1115	1133	0	85	85	1320	—	XAIS	
P54	P55	CK	W82	1138	1151	0	85	85	1405	—	XAIS	
P56	P58	CK	W82	1407	1432	0	266	266	1671	CPOS19	XAIS	
P59	P60	CK	W82	1446	1454	0	168	168	1839	—	XAIS	
P59	P61	CK	W82	1456	1520	0	187	187	2026	CPOS21	XAIS	
P61	P62	CK	W82	1528	1540	0	165	165	2191	CPOS22	XAIS	
P60	P62	CK	W82	1544	1546	0	24	24	2215	—	XAIS	
P32	P64	CK	W82	1600	1601	0	5	5	2220	—	XAIS	
P31	P64	CK	W82	1601	1603	0	24	24	2244	—	XAIS	
P38	P64	CK	W82	1604	1605	0	5	5	2249	—	XAIS	
P59	P64	CK	W82	1605	1607	0	22	22	2271	—	XAIS	
P60	P64	CK	W82	1607	1609	0	22	22	2293	—	XAIS	
P62	P64	CK	W82	1609	1611	0	22	22	2315	—	XAIS	

Total LF (Page)	2315	Total DS (Page)	5	Total DS Needed (Page)	4.6	Over/Under (Page)	10.4
Total LF (Project)	4309	Total DS (Project)	9	Total DS Needed (Project)	8.6	Over/Under (Project)	10.4

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PG (2) OF (8)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: JCS Engineers
Project: North Ranch Landfill
Project Number: 22-555-NRL-01

Sheet 3 of 8
Date 5/16
Rev. Date:

SEAMING RECORD

Layer: Cell C1 Primary

Welder Initials: CK
Welder Number:
Machine ID: W8L

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
P65	P64	CK	W8L	0800	0817	152	0	152	152	—	YAIS	
P67	P66	CK	W8L	0820	0840	214	0	214	366	CPDS23	YAIS	
P65	P69	CK	W8L	0844	0846	37	0	37	403	—	YAIS	
P69	P70	CK	W8L	0848	0850	26	0	26	429	—	YAIS	
P70	P71	CK	W8L	0853	0854	12	0	12	441	—	YAIS	
P72	P68	CK	W8L	0855	0930	240	0	240	681	—	YAIS	
P74	P73	CK	W8L	0935	1001	263	0	263	944	CPDS25	YAIS	
P76	P75	CK	W8L	1013	1039	257	0	257	1201	—	YAIS	
P78	P77	CK	W8L	1037	1102	200	0	200	1401	CPDS27	YAIS	
P80	P79	CK	W8L	1108	1131	154	0	154	1555	—	YAIS	
P85	P82	CK	W8L	1315	1331	118	0	118	1673	—	YAIS	
P84	P83	CK	W8L	1348	1359	104	0	104	1777	—	YAIS	
P85	P84	CK	W8L	1408	1412	94	0	94	1871	CPDS31	YAIS	
P86	P85	CK	W8L	1415	1420	80	0	80	1951	CPDS32	YAIS	
P88	P87	CK	W8L	1426	1431	55	0	55	2006	—	YAIS	
P91	P90	CK	W8L	1500	1521	0	147	147	2153	—	YAIS	
P93	P92	CK	W8L	1525	1542	0	118	118	2271	—	YAIS	
P95	P94	CK	W8L	1546	1550	0	96	96	2367	CPDS29	YAIS	
P97	P96	CK	W8L	1617	1620	0	66	66	2433	—	YAIS	
P99	P88	CK	W8L	1633	1635	0	22	22	2455	—	YAIS	
P99	P100	CK	W8L	1650	1652	0	22	22	2477	—	YAIS	
P99	P98	CK	W8L	1652	1653	0	3	3	2480	—	YAIS	
P88	P98	CK	W8L	1655	1655	0	20	20	2500	—	YAIS	
P97	P87	CK	W8L	1656	1657	17	0	17	2517		YAIS	

Total LF (Page)	2517	Total DS (Page)	6	Total DS Needed (Page)	5	Over/Under (Page)	+1.0
Total LF (Project)	6826	Total DS (Project)	15	Total DS Needed (Project)	13.7	Over/Under (Project)	+1.3

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PG (3) of (8)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NR1 c1

CQA

Sheet 4 of 8
Date 5/10
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P87	P96	CK	W82	1643	1650	0	7	7	7	–	YAIS	
P86	P96	CK	W82	1650	1652	0	24	24	31	–	YAIS	
P85	P96	CK	W82	1652	1659	0	24	24	55	–	YAIS	
P84	P94	CK	W82	1707	1705	0	24	24	79	–	YAIS	
P83	P93	CK	W82	1705	1707	0	24	24	103	–	YAIS	
P82	P92	CK	W82	1707	1709	0	24	24	127	–	YAIS	
P81	P91	CK	W82	1709	1711	0	24	24	151	–	YAIS	
P80	P90	CK	W82	1711	1713	0	24	24	175	–	YAIS	
P79	P89	CK	W82	1713	1715	0	22	22	197	–	YAIS	
P73	P64	CK	W82	1140	1142	0	24	24	221	–	YAIS	
P72	P64	CK	W82	1142	1144	0	24	24	245	–	YAIS	
P69	P64	CK	W82	1144	1146	0	24	24	269	–	YAIS	
P67	P64	CK	W82	1146	1148	0	24	24	293	–	YAIS	
P66	P64	CK	W82	1148	1150	0	24	24	317	–	YAIS	
P65	P64	CK	W82	1150	1152	0	24	24	341	–	YAIS	
P69	P64	CK	W82	1152	1154	0	24	24	365	–	YAIS	
P70	P64	CK	W82	1154	1156	0	24	24	389	–	YAIS	
P71	P64	CK	W82	1156	1157	0	12	12	401	–	YAIS	
P85	P95	CK	W82	1659	1703	0	24	24	425	–	YAIS	
P91	P93	CK	W82	1540	1543	0	24	24	449	–	YAIS	
515 P87	P88	CK	W82	1432	1440	0	24	24	585	–	YAIS	

Total LF (Page)	401	Total DS (Page)	0	Total DS Needed (Page)	0.8	Over/Under (Page)	-0.8
Total LF (Project)	7227	Total DS (Project)	15	Total DS Needed (Project)	14.5	Over/Under (Project)	+0.5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 4 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: XTO Energy, NMS
Project: North Eunice Landfills
Project Number: 22-515-NRL-01

CQA

Sheet 5 of 8
Date 5/11
Rev. Date:

SEAMING RECORD

Layer: Cell #1 Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P89	P101	CK	W82	0745	0803	0	155	155	155	CPD536	XAIS	
P102	P103	CK	W82	0810	0829	0	163	163	318	–	XAIS	
P104	P105	CK	W82	0834	0855	0	166	166	484	–	XAIS	
P106	P107	CK	W82	0859	0934	0	175	175	659	CPD538	XAIS	
P109	P108	CK	W82	0939	0957	166	0	166	825	–	XAIS	
P111	P110	CK	W82	1001	1028	166	0	166	991	–	XAIS	
P113	P112	CK	W82	1035	1057	166	0	166	1157	CPD540	XAIS	
P115	P114	CK	W82	1104	1120	166	0	166	1323	–	XAIS	
P117	P116	CK	W82	1125	1143	167	0	167	1490	–	XAIS	
P118	P117	CK	W82	1214	1237	167	0	167	1657	CPD542	XAIS	
P120	P119	CK	W82	1339	1355	168	0	168	1825	–	XAIS	
P122	P121	CK	W82	1412	1437	168	0	168	1993	–	XAIS	
P124	P125	CK	W82	1440	1442	22	0	22	2015	–	XAIS	
P124	P123	CK	W82	1445	1457	87	0	87	2102	CPD544	XAIS	
P125	P123	CK	W82	1457	1509	81	0	81	2183	–	XAIS	

Total LF (Page)	2183	Total DS (Page)	5	Total DS Needed (Page)	4.4	Over/Under (Page)	+0.6
Total LF (Project)	9410	Total DS (Project)	20	Total DS Needed (Project)	18.8	Over/Under (Project)	+1.2

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 5 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-MRL-01

CQA SOLUTIONS

Sheet 6 of 8
Date 5/16/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 Primary

Welder Initials: CH
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P62	P126	CH	W82	0815	0857	0	330	330	330	CPDS47	YAIS	
P63	P126	CH	W82	0902	0904	0	24	24	354		XAIS	
P127	P129	CH	W82	0906	0925	0	156	136	490		XAIS	
P128	P129	CH	W82	0928	0941	0	156	156	646	CPDS49	XAIS	
P128	P130	CH	W82	0947	0958	0	40	40	686		XAIS	
P132	P134	CH	W82	1000	1010	0	117	117	803	CPDS52	XAIS	
P133	P134	CH	W82	1013	1028	0	164	164	967		XAIS	
P133	P135	CH	W82	1030	1040	0	75	75	1044		XAIS	
P135	P134	CH	W82	1113	1115	0	22	22	1066		XAIS	
P134	P136	CH	W82	1041	10	0	281	281	1347	CPDS53	XAIS	
P135	P136	CH	W82	1108	1120	0	75	75	1422		XAIS	
P137	P139	CH	W82	1126	1131	0	78	78	1500		XAIS	
P138	P139	CH	W82	1133	1145	0	168	168	1668		XAIS	
P138	P140	CH	W82	1148	1158	0	100	100	1768	CPDS55	XAIS	
P64	P108	CH	W82	1159	130	0	17	17	1785		XAIS	
P139	P141	CH	W82	1332	1336	0	56	56	1841		XAIS	
P139	P142	CH	W82	1338	1344	0	80	80	1921	CPDS56	XAIS	
P139	P143	CH	W82	1346	1352	0	100	100	2021		XAIS	
P140	P144	CH	W82	1354	1400	0	63	63	2084		XAIS	
P140	P122	CH	W82	1406	1407	0	5	5	2089		XAIS	
P140	P123	CH	W82	1407	1409	0	22	22	2111		XAIS	
P140	P125	CH	W82	1409	1411	0	12	12	2123		XAIS	
P74	P107	CH	W82	1256	1258	0	8	8	2131		XAIS	
P64	P107	CH	W82	1258	1259	0	5	5	2136		YAIS	

Total LF (Page)	2136	Total DS (Page)	6	Total DS Needed (Page)	4.3	Over/Under (Page)	+1.7
Total LF (Project)	11546	Total DS (Project)	26	Total DS Needed (Project)	23.1	Over/Under (Project)	+2.9

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PG 6 OF 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 2 of 8
Date 5/16/22
Rev. Date:

SEAMING RECORD

Layer: Cell 1 Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct		
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number	Observer	Notes
P126	P64	CK	W82	1430	1432	0	22	22	22		XAIS	
P127	P64	CK	W82	1432	1434	0	22	22	44		XAIS	
P129	P64	CK	W82	1434	1437	0	22	22	66		XAIS	
P131	P64	CK	W82	1437	1439	0	22	22	88		XAIS	
P132	P64	CK	W82	1439	1441	0	22	22	110		XAIS	
P134	P64	CK	W82	1441	1443	0	22	22	132		XAIS	
P136	P64	CK	W82	1443	1446	0	22	22	154		XAIS	
P137	P64	CK	W82	1446	1448	0	22	22	176		XAIS	

Total LF (Page)	176	Total DS (Page)	0	Total DS Needed (Page)	0.4	Over/Under (Page)	-0.4
Total LF (Project)	11722	Total DS (Project)	26	Total DS Needed (Project)	21.4	Over/Under (Project)	+2.6

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 7 OF 8

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-915-NRL-01

CQA

Sheet 8 of 8
Date 5/17/22
Rev. Date:

SEAMING RECORD

Layer: Cell 4 Primary

Welder Initials: CK
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P124R1	P123	CK	W82	1300	1308	0	92	92	92		XAIS	
P124L1	P125	CK	W82	1310	1313	0	17	17	109		XAIS	

Total LF (Page)	109	Total DS (Page)	0	Total DS Needed (Page)	0.2	Over/Under (Page)	-0.2
Total LF (Project)	11831	Total DS (Project)	26	Total DS Needed (Project)	13.6	Over/Under (Project)	12.4

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 8 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Lanch II
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 8
Date 9/4/22
Rev. Date:

SEAMING RECORD

Layer: Cell C-1 Primary

Welder Initials: SL
Welder Number:
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
P2	P3	SL	WZ	0810	0826	0	178	178	178		XAIS	
P4	P5	SL	WZ	0835	0847	0	120	120	298		XAIS	
P6	P7	SL	WZ	0850	0902	0	120	120	418	CP052	XAIS	
P8	P9	SL	WZ	0907	0920	0	123	123	541		XAIS	
P10	P11	SL	WZ	0923	0935	0	125	125	666		XAIS	
P12	P13	SL	WZ	0939	0948	0	130	130	796	CP054	XAIS	
P14	P15	SL	WZ	0954	1004	0	127	127	923		XAIS	
P15	P16	SL	WZ	1008	1010	0	22	22	945		XAIS	
S14	S16	SL	WZ	1004	1006	0	9	9	954		XAIS	
S17	S16	SL	WZ	1000	1002	0	9	9	963		XAIS	
S17	S18	SL	WZ	1029	1048	0	135	135	1098		XAIS	
S19	S20	SL	WZ	1050	1100	0	140	140	1238	CP056	XAIS	
S21	S22	SL	WZ	1104	1117	0	144	144	1382		XAIS	
S23	S24	SL	WZ	1120	1135	0	150	150	1532		XAIS	
S25	S26	SL	WZ	1319	1335	0	150	150	1682	CP058	XAIS	
S29	S28	SL	WZ	1342	1354	152	0	152	1834		XAIS	
S30	S29	SL	WZ	1357	1402	74	0	74	1908		XAIS	
S31	S30	SL	WZ	1407	1413	74	0	74	1982		XAIS	
S32	S31	SL	WZ	1440	1452	150	0	150	2132	CP059	XAIS	
S33	S32	SL	WZ	1456	1507	152	0	152	2284	CP060	XAIS	
S34	S33	SL	WZ	1526	1543	152	0	152	2436		XAIS	

Total LF (Page)	2436	Total DS (Page)	6	Total DS Needed (Page)	4.9	Over/Under (Page)	+1.1
Total LF (Project)	2436	Total DS (Project)	6	Total DS Needed (Project)	4.9	Over/Under (Project)	+1.1

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Pg (1) of (8)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 22SCS-NRL-01

CQA

Sheet 2 of 6
Date 5/5
Rev. Date:

SEAMING RECORD

Layer: Cell C1 Primary

Welder Initials: SL
Welder Number:
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P35	P3	SL	WZ	0808	0810	0	18	18	18	—	XAIS	
P35	P36	SL	WZ	0820	0824	0	48	48	76	—	XAIS	
P36	P37	SL	WZ	0826	0830	0	65	65	141	—	XAIS	
P37	P39	SL	WZ	0834	0836	0	22	22	163	—	XAIS	
P40	P41	SL	WZ	0842	0854	0	120	120	283	—	XAIS	
P41	P42	SL	WZ	0900	0915	0	137	137	420	CPDS11	XAIS	
P44	P43	SL	WZ	0920	0922	0	22	22	442	—	XAIS	
P47	P45	SL	WZ	0928	0938	0	110	110	552	CPDS12	XAIS	
P44	P46	SL	WZ	0938	0942	0	63	63	615	—	XAIS	
P46	P47	SL	WZ	0948	1005	0	211	211	826	—	XAIS	
P48	P49	SL	WZ	1012	1039	0	241	241	1067	CPDS14	XAIS	
P50	P51	SL	WZ	1041	1042	0	22	22	1089	—	XAIS	
P50	P52	SL	WZ	1050	1112	0	254	254	1343	—	XAIS	
P51	P52	SL	WZ	1125	1127	0	25	25	1368	—	XAIS	
P53	P55	SL	WZ	1130	1152	0	230	230	1598	CPDS17	XAIS	
P53	P54	SL	WZ	1119	1121	0	22	22	1620	—	XAIS	
—	—	—	—	—	—	—	—	—	—	—	—	
P55	P56	SL	WZ	1350	1448	0	245	245	1950	—	XAIS	
P58	P59	SL	WZ	1426	1457	0	358	758	2708	CPDS20	XAIS	
P55	P57	SL	WZ	1410	1425	0	82	82	—	—	XAIS	
P61	P60	SL	WZ	1503	1505	0	22	22	2495	—	XAIS	
P61	P63	SL	WZ	1541	1543	0	22	22	2517	—	XAIS	
P57	P56	SL	WZ	1422	1422	0	22	22	2539	—	XAIS	
P35	P4	SL	WZ	1600	1602	0	23	23	2562	—		
Total LF (Page)		2562		Total DS (Page)		5	Total DS Needed (Page)		5.1	Over/Under (Page)		-0.1
Total LF (Project)		4998		Total DS (Project)		11	Total DS Needed (Project)		10	Over/Under (Project)		+1

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PG (2) OF (6)

Page 597 of 813

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 3 of 8
Date 5/4
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Primary

Welder Initials: SL
Welder Number: —
Machine ID: WZ

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P35	P6	SL	WZ	1602	1603	0	8	8	8		YAIS	
P36	P5	SL	WZ	1603	1605	0	14	14	22		YAIS	
P36	P6	SL	WZ	1605	1607	0	15	15	37		YAIS	
P37	P7	SL	WZ	1607	1609	0	23	23	60		YAIS	
P38	P8	SL	WZ	1609	1611	0	22	22	82		YAIS	
P40	P9	SL	WZ	1611	1612	0	9	9	91		YAIS	
P40	P10	SL	WZ	1612	1614	0	12	12	103		YAIS	
P41	P10	SL	WZ	1614	1616	0	8	8	111		YAIS	
P41	P11	SL	WZ	1616	1618	0	13	13	124		YAIS	
P42	P12	SL	WZ	1618	1620	0	20	20	144		YAIS	
P43	P13	SL	WZ	1620	1622	0	18	18	162		YAIS	
P43	P14	SL	WZ	1622	1623	0	8	8	170		YAIS	
P44	P14	SL	WZ	1623	1624	0	10	10	180		YAIS	
P45	P15	SL	WZ	1624	1625	0	10	10	190		YAIS	
P46	P17	SL	WZ	1625	1627	0	20	20	210		YAIS	
P47	P18	SL	WZ	1627	1628	0	10	10	220		YAIS	
P48	P19	SL	WZ	1628	1630	0	8	8	228		YAIS	
—	—	—	—	—	—	—	—	—	—		YAIS	
P48	P20	SL	WZ	1630	1631	0	11	11	244		YAIS	
P49	P20	SL	WZ	1631	1632	0	5	5	249		YAIS	
P49	P21	SL	WZ	1632	1634	0	12	12	261	CROSS	YAIS	
P50	P22	SL	WZ	1634	1636	0	18	18	279		YAIS	
P51	P23	SL	WZ	1636	1637	0	4	4	283		YAIS	
P51	P24	SL	WZ	1637	1639	0	14	14	297		YAIS	

Total LF (Page)	297	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	5295	Total DS (Project)	12	Total DS Needed (Project)	10.8	Over/Under (Project)	+1.4

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Pg (3) of (8)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS ENGINEERS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet 4 of 8
Date 5/5/22
Rev. Date:

SEAMING RECORD

Layer: Cell E1 Primary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P53	P24	SL	WL	1679	1646	0	3	3	3		XAIS	
P53	P25	SL	WL	1646	1641	0	12	12	20		XAIS	
P55	P26	SL	WL	1641	1643	0	23	23	43		XAIS	
P56	P27	SL	WL	1643	1645	0	20	20	63		XAIS	
P56	P28	SL	WL	1645	1646	0	5	5	68		XAIS	
P58	P28	SL	WL	1646	1647	0	10	10	78		XAIS	
P58	P29	SL	WL	1647	1648	0	6	6	84		XAIS	
P47	P19	SL	WL	1628	1626	0	2	2	86		XAIS	

Total LF (Page)	84	Total DS (Page)	6	Total DS Needed (Page)	0.2	Over/Under (Page)	-0.2
Total LF (Project)	5379	Total DS (Project)	12	Total DS Needed (Project)	10.8	Over/Under (Project)	+1.2

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 4 OF 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: Vaca Ranch Landfill
Project Number: 22-SCS-VRL-01

CQA

Sheet 5 of 8
Date 5/16
Rev. Date: —

SEAMING RECORD

Layer: Cell 6 Primary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P65	P66	SL	WL	0808	0826	200	0	200	200	—	XAIS	
P67	P68	SL	WL	0830	0907	228	0	228	428	CPDS24	XAIS	
P73	P72	SL	WL	0916	0938	254	0	254	682	—	XAIS	
P75	P74	SL	WL	0943	1022	260	0	260	942	CPDS26	XAIS	
P77	P76	SL	WL	1027	1055	228	0	228	1170	—	XAIS	
P79	P78	SL	WL	1057	1121	171	0	171	1341	CPDS28	XAIS	
P81	P80	SL	WL	1312	1328	148	0	148	1489	—	XAIS	
P82	P81	SL	WL	1331	1347	131	0	131	1620	—	XAIS	
P87	P86	SL	WL	1418	1432	76	0	76	1696	—	XAIS	
P90	P89	SL	WL	1445	1512	0	155	155	1845	—	XAIS	
P92	P91	SL	WL	1518	1531	0	133	133	1980	—	XAIS	
P94	P93	SL	WL	1540	1559	0	104	104	2084	CPDS30	XAIS	
P96	P95	SL	WL	1608	1620	0	82	82	2166	—	XAIS	
P98	P97	SL	WL	1624	1630	0	53	53	2219	—	XAIS	
P100	P98	SL	WL	1631	1635	0	31	31	2250	—	XAIS	
P34	P101	SL	WL	1703	1705	0	22	22	2272	—	XAIS	
P34	P70	SL	WL	1705	1707	0	22	22	2294	—	XAIS	
P33	P21	SL	WL	1707	1708	0	10	10	2304	—	XAIS	

Total LF (Page)	2304	Total DS (Page)	4	Total DS Needed (Page)	4.6	Over/Under (Page)	-0.6
Total LF (Project)	7683	Total DS (Project)	16	Total DS Needed (Project)	15.4	Over/Under (Project)	+0.6

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 5 OF 8

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 6 of 8
Date 5/11/22
Rev. Date:

SEAMING RECORD

Layer: 4 - Cell 01 Primary

Welder Initials: SL
Welder Number:
Machine ID: w2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P101	P102	SL	w2	0758	0813	0	165	165	165	CPD537	XAIS	
P103	P104	SL	w2	0818	0839	0	165	165	330		XAIS	
P105	P106	SL	w2	0844	0911	0	175	175	505		XAIS	
P108	P107	SL	w2	0916	0944	210	0	210	715		XAIS	
P110	P109	SL	w2	0950	1009	166	0	166	881	CPD539	XAIS	
P112	P111	SL	w2	1015	1041	166	0	166	1047		XAIS	
P114	P113	SL	w2	1046	1107	166	0	166	1213		XAIS	
P116	P115	SL	w2	1111	1138	166	0	166	1379	CPD541	XAIS	
P119	P118	SL	w2	1324	1350	167	0	167	1546		XAIS	
P121	P120	SL	w2	1355	1418	168	0	168	1714	CPD543	XAIS	
P123	P122	SL	w2	1425	1442	168	0	168	1882		XAIS	
P.105	P75	SL	w2	1507	1508	0	3	3	1885		XAIS	
P105	P76	SL	w2	1508	1510	0	20	20	1905		XAIS	
P104	P76	SL	w2	1510	1511	10	10	10	1915		XAIS	
P104	P77	SL	w2	1511	1512	0	6	6	1921		XAIS	
P103	P77	SL	w2	1512	1514	10	18	18	1939	CPD545	XAIS	
P102	P77	SL	w2	1514	1515	0	3	3	1942		XAIS	
P102	P78	SL	w2	1514	1516	0	10	10	1952		XAIS	
P101	P78	SL	w2	1516	1517	0	10	10	1962		XAIS	
P101	P79	SL	w2	1517	1518	0	5	5	1967		XAIS	

Total LF (Page)	1967	Total DS (Page)	5	Total DS Needed (Page)	3.9	Over/Under (Page)	+1.1
Total LF (Project)	9650	Total DS (Project)	21	Total DS Needed (Project)	19.3	Over/Under (Project)	+1.7

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Pg 6 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Branch Landfill
Project Number: 02SCS-NRL-01

CQA SOLUTIONS

Sheet 7 of 8
Date 5/11
Rev. Date:

SEAMING RECORD

Layer: Cell 01 Primary

Welder Initials: SL
Welder Number:
Machine ID: WA

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P126	P127	SL	WA	0815	0834	0	156	156	156		XAIS	
P127	P128	SL	WA	0838	0840	0	22	22	178		XAIS	
P126	P128	SL	WA	0842	0903	0	197	197	375	CP0548	XAIS	
P129	P131	SL	WA	0912	0948	0	315	315	690		XAIS	
P130	P129	SL	WA	0904	0906	0	22	22	712	CP0550	XAIS	
P130	P131	SL	WA	0930	0936	0	40	40	752		XAIS	
P131	P132	SL	WA	1005	1021	0	111	111	863	CP0551	XAIS	
P133	P132	SL	WA	0958	1000	0	22	22	885		XAIS	
P131	P133	SL	WA	1030	1047	0	237	237	1122		XAIS	
P136	P137	SL	WA	1059	1105	0	85	85	1207		XAIS	
P138	P137	SL	WA	1050	1052	0	22	22	1229		XAIS	
P136	P138	SL	WA	1109	1137	0	270	270	1499	CP0554	XAIS	
P142	P141	SL	WA	1300	1301	0	12	12	1511		XAIS	
P143	P142	SL	WA	1321	1323	0	17	17	1528		XAIS	
P 140	P139	SL	WA	1139	1142	0	22	22	1550		XAIS	
P144	P128	SL	WA	1418	1420	0	118	18	1568		XAIS	
P 121	P144	SL	WA	1420	1422	0	22	22	1590		XAIS	
P120	P141	SL	WA	1422	1424	0	22	22	1612		XAIS	
P119	P144	SL	WA	1424	1425	0	8	8	1620		XAIS	
P119	P143	SL	WA	1425	1427	0	20	20	1640		XAIS	
P118	P143	SL	WA	1427	1429	0	22	22	1662		XAIS	
P117	P143	SL	WA	1429	1431	0	22	22	1684	CP0558	XAIS	
P116	P143	SL	WA	1431	1433	0	22	22	1706		XAIS	
P115	P143	SL	WA	1433	1435	0	20	20	1726		XAIS	

Total LF (Page)	1726	Total DS (Page)	5	Total DS Needed (Page)	3.5	Over/Under (Page)	+1.5
Total LF (Project)	11376	Total DS (Project)	26	Total DS Needed (Project)	22.8	Over/Under (Project)	+3.2

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Pg (7) of (8)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SLS Engineers
Project: North Ranch Landf. II
Project Number: 22-SLS-NRL-01

CQA SOLUTIONS

Sheet 8 of 8
Date 5/16/22
Rev. Date:

SEAMING RECORD

Layer: Cell 61 Primary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P115	P142	SL	WL	1435	1436	0	5	5	5		XAIS	
P114	P142	SL	WL	1436	1438	0	22	22	27		XAIS	
P113	P142	SL	WL	1438	1440	0	22	22	49		XAIS	
P112	P142	SL	WL	1440	1442	0	22	22	71		XAIS	
P111	P142	SL	WL	1442	1443	0	8	8	79		XAIS	
P111	P141	SL	WL	1443	1444	0	14	14	93		XAIS	
P110	P141	SL	WL	1444	1446	0	22	22	115		XAIS	
P109	P141	SL	WL	1446	1448	0	22	22	137		XAIS	
P139	P108	SL	WL	1450	1452	0	22	22	159		XAIS	
P141	P138	SL	WL	1452	1454	0	22	22	181		XAIS	
P145	P146	SL	WL	1340	1344	0	18	18	199		XAIS	
P146	P107	SL	WL	1337	1339	0	20	20	219		XAIS	
P106	P146	SL	WL	1349	1350	0	10	10	229		XAIS	
P105	P145	SL	WL	1350	1351	0	8	8	237		XAIS	
P75	P145	SL	WL	1353	1354	0	7	7	244		XAIS	
P74	P146	SL	WL	1356	1357	0	5	5	249		XAIS	

Total LF (Page)	249	Total DS (Page)	0	Total DS Needed (Page)	0.5	Over/Under (Page)	−0.5
Total LF (Project)	11625	Total DS (Project)	26	Total DS Needed (Project)	23.3	Over/Under (Project)	+2.7

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 8 of 8

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SES Engineers
Project: North Ranch Landfill
Project Number: 22-SES-NRL-01

CQA

Sheet 1 of 1
Date 5/17/22
Rev. Date:

SEAMING RECORD

Layer: Cell Ed Primary

Welder Initials: MM
Welder Number:
Machine ID: G-44

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P1GR1	P15	MM	G-44	1300	1308	0	25	25	25		XAIS	
P1PR1	P17	MM	G-44	1310	1315	0	17	17	42		XAIS	
P1GR1	P14	MM	G-44	1317	1320	0	9	9	51		XAIS	
Total LF (Page)		51		Total DS (Page)		0		Total DS Needed (Page)	0.1	Over/Under (Page)		-0.1
Total LF (Project)		51		Total DS (Project)		0		Total DS Needed (Project)	0.1	Over/Under (Project)		-0.1

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Pg 1 of 1

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH (AMEN)
Project Number: 22SCS NM-01

CQA

Sheet 15
Date: 5/19/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell E | Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P1	P2	0	EOS	Full	30	30	1301	1306	P	–	WS	XAIS	N	
APT	P2	P3	0	EOS	Full	30	30	1303	1308	P	–	WS	XAIS	N	
APT	P3	P4	0	EOS	Full	30	30	1306	1311	P	–	WS	XAIS	N	
APT	P4	P5	0	EOS	Full	30	30	1308	1313	P	–	WS	XAIS	N	
APT	P5	P6	0	EOS	Full	30	30	1311	1316	P	–	WS	XAIS	N	
APT	P6	P7	0	EOS	Full	30	30	1314	1319	P	–	WS	XAIS	N	
APT	P7	P8	0	EOS	Full	30	30	1317	1322	P	–	WS	XAIS	N	
APT	P8	P9	0	EOS	Full	30	29	1320	1325	P	–	WS	XAIS	N	
APT	P9	P10	0	EOS	Full	30	30	1322	1327	P	–	WS	XAIS	N	
APT	P10	P11	0	EOS	Full	30	30	1325	1330	P	–	WS	XAIS	N	
APT	P11	P12	0	EOS	Full	30	30	1327	1332	P	–	WS	XAIS	N	
APT	P12	P13	0	EOS	Full	30	30	1330	1335	P	–	WS	XAIS	N	
APT	P13	P14	0	EOS	Full	30	30	1333	1338	P	–	WS	XAIS	N	
APT	P14	P15	0	EOS	Full	30	30	1335	1340	P	–	WS	XAIS	N	
APT	P14	P16	0	EOS	Full	30	30	1338	1343	P	–	WS	XAIS	N	
APT	P15	P16	0	EOS	Full	30	30	1341	1346	P	–	WS	XAIS	N	
APT	P16	P15	0	EOS	Full	30	30	1344	1349	P	–	WS	XAIS	N	
APT	P16	P17	0	EOS	Full	30	30	1346	1351	P	–	WS	XAIS	N	
APT	P17	P18	0	EOS	Full	30	30	1349	1354	P	–	WS	XAIS	N	
APT	P18	P19	0	EOS	Full	30	29	1351	1356	P	–	WS	XAIS	N	
APT	P19	P20	0	EOS	Full	30	30	1353	1358	P	–	WS	XAIS	N	
APT	P20	P21	0	EOS	Full	30	30	1356	1401	P	–	WS	XAIS	N	
APT	P21	P22	0	EOS	Full	30	30	1358	1403	P	–	WS	XAIS	N	
APT	P22	P23	0	EOS	Full	30	30	1401	1406	P	–	WS	XAIS	N	

Specs: Pre-testing stabilization time: –
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 5

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PG 1 OF 13

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: Navajo Refining
Project: Number: 22-SCS-NRC-01

CQA SOLUTIONS

Sheet 2 of 13
Date: 7/4/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P23	P24	0	EOS	Full	30	30	1403	1408	P	-	WS	XAIS	N	
APT	P24	P25	0	EOS	Full	30	30	1611	1616	P	-	WS	XAIS	N	
APT	P25	P26	0	EOS	Full	30	30	1613	1618	P	-	WS	XAIS	N	
APT	P26	P27	0	EOS	Full	30	30	1615	1620	P	-	WS	XAIS	N	
APT	P27	P28	0	EOS	Full	30	30	1618	1623	P	-	WS	XAIS	N	
APT	P29	P28	0	EOS	Full	30	30	1620	1625	P	-	WS	XAIS	N	
APT	P30	P29	0	EOS	Full	30	30	1622	1627	P	-	WS	XAIS	N	
APT	P31	P30	0	EOS	Full	30	30	1624	1629	P	-	WS	XAIS	N	
APT	P31	P29	0	EOS	Full	30	30	1627	1632	P	-	WS	XAIS	N	
APT	P32	P31	0	EOS	Full	30	30	1629	1634	P	-	WS	XAIS	N	
APT	P33	P32	0	EOS	Full	30	30	1631	1636	P	-	WS	XAIS	N	
APT	P34	P33	0	EOS	Full	30	29	1634	1639	P	-	WS	XAIS	N	

Specs: Pre-testing stabilization time: - Maximum Starting Pressure: 35 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

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Pg (2) of (13)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Pecos
Project: Number: 22-22-NRL-04

Sheet 3 of 5
Date: 5/9/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P3	P35	0	EOS	Full	30	29	1300	1305	P	—	WS	YAIS	N	
	P35	P36	0	EOS		30	30	1303	1308	P	—				
	P36	P37	0	EOS		30	30	1306	1311	P	—				
	P37	P38	0	EOS		30	30	1308	1313	P	—				
	P37	P39	0	EOS		29	30	1311	1316	P	—				
	P38	P39	0	EOS		30	30	1314	1319	P	—				
	P38	P40	0	EOS		30	30	1316	1321	P	—				
	P39	P40	0	EOS		30	30	1319	1324	P	—				
	P40	P41	0	EOS		30	30	1321	1326	P	—				
	P41	P42	0	EOS		30	30	1324	1329	P	—				
	P42	P43	0	EOS		30	30	1326	1331	P	—				
	P42	P44	0	EOS		30	30	1330	1335	P	—				
	P43	P44	0	EOS		30	28	1333	1338	P	—				
	P43	P45	0	EOS		30	30	1337	1342	P	—				
	P44	P45	0	EOS		30	30	1340	1345	P	—				
	P45	P46	0	EOS		30	30	1342	1347	P	—				
	P46	P47	0	EOS		30	30	1344	1349	P	—				
	P47	P48	0	EOS		30	29	1347	1352	P	—				
	P48	P49	0	EOS		30	29	1349	1354	P	—				
	P49	P50	0	EOS		30	30	1352	1357	P	—				
	P49	P51	0	EOS		30	30	1355	1400	P	—				
	P51	P50	0	EOS		30	30	1357	1402	P	—				
	P50	P52	0	EOS		30	30	1359	1404	P	—				
	P51	P52	0	EOS		30	30	1405	1410	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NAVAJO REFINERY
Project Number: 22-SCS-NRL-01

CQA

Sheet 4 of 13
Date: 5/6/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG
Layer: Cell 61 Primary

Test Type	Seams		Station		Tested Length	Pressure		Time		Pass/Fail		QC Tech	Observer	To be capped?	Notes
	Top	Bottom	Begin	End		Begin	End	Begin	End	APT	VT				
APT	P52	P53	0	EOS	Full	30	30	1407	1411	P	—	WS	MES	N	
	P52	P54	0	EOS		30	30	1410	1415	P	—				
	P53	P54	0	EOS		30	30	1411	1417	P	—				
	P53	P55	0	EOS		30	29	1414	1419	P	—				
	P54	P55	0	EOS		30	30	1417	1422	P	—				
	P55	P56	0	EOS		30	30	1604	1609	P	—				
	P56	P57	0	EOS		30	30	1607	1612	P	—				
	P56	P57	0	EOS		30	30	1610	1615	P	—				
	P56	P58	0	EOS		30	30	1613	1618	P	—				
	P57	P58	0	EOS		30	30	1616	1621	P	—				
	P58	P59	0	EOS		30	30	1619	1624	P	—				
	P59	P60	0	EOS		30	30	1621	1626	P	—				
	P59	P61	0	EOS		30	30	1623	1628	P	—				
	P60	P61	0	EOS		30	30	1625	1630	P	—				
	P60	P62	0	EOS		30	30	1628	1633	P	—				
	P61	P62	0	EOS		30	30	1630	1635	P	—				
	P61	P63	0	EOS		30	30	1633	1638	P	—				
	P63	P62	0	EOS		30	30	1635	1640	P	—				
	P4	P35	0	EOS		30	30	1637	1642	P	—				
	P5	P35	0	EOS		30	30	1639	1644	P	—				
	P5	P36	0	EOS		30	30	1641	1646	P	—				
	P6	P36	0	EOS		30	30	1643	1648	P	—				
	P37	P7	0	EOS		30	30	1646	1651	P	—				
	P38	P8	0	EOS		30	30	1648	1653	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: —

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client SCS
Project NORTH SEARCH
Project Number: 22-38 MRC-01

CQA

Sheet 5 of 15
Date: 3/5/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P40	P9	0	EOS	Full	30	30	1650	1655	P	—	WS	YAZS	N	
	P40	P10	0	EOS		30	30	1652	1657	P	—				
	P41	P10	0	EOS		30	30	1654	1659	P	—				
	P41	P11	0	EOS		30	30	1657	1702	P	—				
	P42	P12	0	EOS		30	30	1700	1705	P	—				
	P43	P13	0	EOS		30	30	1703	1708	P	—				
	P43	P14	0	EOS		30	30	1705	1710	P	—				
	P45	P14	0	EOS		30	30	1708	1713	P	—				
	P45	P15	0	EOS		30	30	1711	1716	P	—				
	P46	P17	0	EOS		30	30	1713	1718	P	—				
	P47	P18	0	EOS		30	30	1716	1721	P	—				
	P47	P19	0	EOS		30	30	1718	1723	P	—				
	P48	P19	0	EOS		30	30	1720	1725	P	—				
	P48	P20	0	EOS		30	30	1723	1728	P	—				
	P49	P20	0	EOS		30	30	1726	1731	P	—				
	P49	P21	0	EOS		30	30	1728	1733	P	—				
	P50	P22	0	EOS		30	30	1731	1736	P	—				
	P52	P23	0	EOS		30	30	1733	1738	P	—				
	P52	P24	0	EOS		30	30	1735	1740	P	—				
	P53	P24	0	EOS		30	30	1737	1742	P	—				
	P53	P25	0	EOS		30	30	1740	1745	P	—				
	P55	P26	0	EOS		30	30	1743	1748	P	—				
	P56	P27	0	EOS		30	30	1745	1750	P	—				
	P56	P28	0	EOS		30	30	1747	1752	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 32
Test Duration: 5
Maximum Allowable Loss: 3

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project: Number: 22-75 NRU-01

Sheet 10 of 15
Date: 5/5
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell G1 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P28	P28	0	EOS	Full	30	30	1749	1754	P	—	WS	YATS	N	
	P28	P29	0	EOS		30	30	1752	1757	P	—				
	P32	P64	0	EOS		30	30	1754	1759	P	—				
	P31	P64	0	EOS		30	30	1757	1802	P	—				
	P58	P64	0	EOS		30	29	1759	1804	P	—				
	P49	P64	0	EOS		30	30	1801	1806	P	—				
	P60	P64	0	EOS		30	30	1803	1808	P	—				
	P62	P64	0	EOS		30	30	1806	1811	P	—				
	P50	P23	0	EOS	1	30	30	1807	1812	P	—	1	1		

Specs: Pre-testing stabilization time: 30 Maximum Starting Pressure: 32 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: OXY
Project: LOCO HILLS RANCH
Project Number: 22-OXY-NRL-01

CQA

Sheet 7 of 15
Date: 5/10/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P34	P63	0	EOS	Full	30	30	1314	1319	P	—	WS	YAES	N	
	P34	P69	0	EOS		30	30	1805	1810	P	—				
	P33	P70	0	EOS		30	30	1808	1813	P	—				
	P32	P71	0	EOS		30	30	1810	1815	P	—				
	P71	P64	0	EOS		30	29	1316	1321	P	—				
	P70	P64	0	EOS		30	30	1319	1324	P	—				
	P69	P64	0	EOS		30	30	1321	1326	P	—				
	P68	P64	0	EOS		30	30	1324	1329	P	—				
	P66	P64	0	EOS		30	30	1326	1331	P	—				
	P67	P64	0	EOS		30	30	1328	1333	P	—				
	P58	P64	0	EOS		30	30	1330	1335	P	—				
	P72	P64	0	EOS		30	30	1332	1337	P	—				
	P73	P64	0	EOS		30	30	1335	1340	P	—				
	P71	P70	0	EOS		30	30	1337	1342	P	—				
	P70	P69	0	EOS		30	30	1339	1344	P	—				
	P69	P68	0	EOS		30	30	1341	1347	P	—				
	P68	P66	0	EOS		30	30	1344	1349	P	—				
	P66	P67	0	EOS		30	30	1347	1352	P	—				
	P67	P68	0	EOS		30	29	1350	1355	P	—				
	P68	P72	0	EOS		30	28	1352	1357	P	—				
	P72	P73	0	EOS		30	30	1354	1359	P	—				
	P73	P74	0	EOS		30	30	1356	1401	P	—				
	P74	P75	0	EOS		30	30	1359	1404	P	—				
	P75	P76	0	EOS		30	30	1402	1407	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22555

CQA

Sheet 8 of 15
Date: 7/6/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P76	P77	0	EOS	Full	30	28	1404	1409	P		WS	MAIS	N	
	P77	P78	0	EOS		30	30	1406	1411	P					
	P78	P79	0	EOS		30	30	1408	1413	P					
	P79	P80	0	EOS		30	30	1411	1416	P					
	P80	P81	0	EOS		30	30	1617	1622	P					
	P81	P82	0	EOS		30	30	1619	1624	P					
	P82	P83	0	EOS		30	30	1621	1626	P					
	P83	P84	0	EOS		30	30	1624	1629	P					
	P84	P85	0	EOS		30	30	1626	1631	P					
	P85	P86	0	EOS		30	30	1629	1634	P					
	P86	P87	0	EOS		30	30	1632	1637	P					
	P87	P88	0	EOS		30	30	1635	1640	P					
	P88	P99	0	EOS		30	30	1637	1642	P					
	P99	P100	0	EOS		30	30	1640	1645	P					
	P100	P98	0	EOS		30	30	1642	1647	P					
	P98	P97	0	EOS		30	29	1644	1649	P					
	P97	P96	0	EOS		30	30	1647	1652	P					
	P96	P95	0	EOS		30	30	1649	1654	P					
	P95	P94	0	EOS		30	30	1652	1657	P					
	P94	P93	0	EOS		30	30	1655	1700	P					
	P93	P92	0	EOS		30	30	1658	1703	P					
	P92	P91	0	EOS		30	30	1700	1705	P					
	P91	P90	0	EOS		30	30	1702	1707	P					
	P90	P89	0	EOS		30	30	1704	1709	P					

Specs: Pre-testing stabilization time: 5 Maximum Starting Pressure: 33 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 222C5-NRL-01

CQA

Sheet 9 of 15
Date: 5/10/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 6 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P99	P98	0	EOS	Full	30	30	1706	1711	P	–	WS	YATS	N	
	P88	P98	0	EOS		30	30	1708	1713	P	–				
	P97	P87	0	EOS		30	30	1710	1715	P	–				
	P87	P96	0	EOS		30	30	1713	1718	P	–				
	P86	P96	0	EOS		30	30	1715	1720	P	–				
	P95	P95	0	EOS		30	30	1717	1722	P	–				
	P84	P94	0	EOS		30	30	1719	1724	P	–				
	P93	P93	0	EOS		30	30	1722	1727	P	–				
	P82	P92	0	EOS		30	30	1724	1729	P	–				
	P81	P91	0	EOS		30	30	1726	1731	P	–				
	P80	P90	0	EOS		30	30	1728	1733	P	–				
	P79	P89	0	EOS		30	30	1731	1736	P	–				
	P85	P95	0	EOS		30	30	1715	1720	P	–				

Specs: Pre-testing stabilization time: 5
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg (9) of (15)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SG
Project: NOZTH RANCH
Project: Number 22-205 Rev 01

CQA

Sheet 10 of 15
Date: 5/17/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 1 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
AP7	P59	P101	0	605	Full	30	30	1518	1523	P	—	WS	MAES	N	
	P101	P102	0	605		30	30	1520	1525	P	—				
	P102	P103	0	605		30	30	1522	1527	P	—				
	P103	P104	0	605		30	30	1525	1530	P	—				
	P104	P105	0	605		30	30	1527	1532	P	—				
	P105	P106	0	605		30	30	1529	1534	P	—				
	P106	P107	0	605		30	30	1533	1538	P	—				
	P107	P108	0	605		30	30	1535	1540	P	—				
	P109	P108	0	605		30	30	1537	1542	P	—				
	P110	P109	0	605		30	30	1840	1545	P	—				
	P111	P110	0	605		30	30	1542	1547	P	—				
	P112	P111	0	605		30	30	1544	1549	P	—				
	P113	P112	0	605		30	30	1547	1552	P	—				
	P114	P113	0	605		30	30	1549	1554	P	—				
	P115	P114	0	605		30	30	1551	1556	P	—				
	P116	P115	0	605		30	30	1554	1559	P	—				
	P117	P116	0	605		30	30	1557	1602	P	—				
	P118	P117	0	605		30	30	1559	1604	P	—				
	P119	P118	0	605		30	30	1602	1607	P	—				
	P120	P119	0	605		30	30	1604	1609	P	—				
	P121	P120	0	605		30	30	1606	1611	P	—				
	P122	P121	0	605		30	30	1609	1614	P	—				
	P123	P122	0	605		30	30	1611	1616	P	—				
	P124	P123	0	605		30	30	1613	1618	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 5

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-325-LOG

CQA

Sheet 11 of 13
Date: 5/11/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 61 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P125	P123	0	EOS	Full	30	30	1615	1620	P	—	WS	MIS	N	
	P124	P125	0	EOS		30	30	1618	1623	P	—				
	P105	P75	0	EOS		30	30	1620	1625	P	—				
	P107	P76	0	EOS		30	30	1622	1627	P	—				
	P104	P76	0	EOS		30	30	1624	1629	P	—				
	P104	P77	0	EOS		30	30	1627	1632	P	—				
	P103	P77	0	EOS		30	30	1629	1634	P	—				
	P102	P77	0	EOS		30	30	1631	1636	P	—				
	P102	P78	0	EOS		30	30	1633	1638	P	—				
	P101	P78	0	EOS		30	30	1636	1641	P	—				
	P101	P79	0	EOS		30	30	1638	1643	P	—				

Specs: Pre-testing stabilization time: — Maximum Starting Pressure: 35 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

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Pg (11) of (13)

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client SCS
Project NORTH RANCH
Project Number: 22-SCSNRL-01

CQA

Sheet 12 of 15
Date: 5/17/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 41 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P62	P126	0	EOS	Full	30	30	0755	0800	P	—	WS	YATES	N	
	P63	P126	0	EOS		30	30	0757	0802	P	—				
	P126	P127	0	EOS		30	30	0759	0804	P	—				
	P126	P128	0	EOS		30	30	0802	0807	P	—				
	P127	P128	0	EOS		30	30	0804	0809	P	—				
	P127	P129	0	EOS		30	30	0806	0811	P	—				
	P128	P129	0	EOS		30	30	0808	0813	P	—				
	P128	P130	0	EOS		30	30	0811	0816	P	—				
	P129	P130	0	EOS		30	30	0813	0818	P	—				
	P129	P131	0	EOS		30	30	0815	0820	P	—				
	P130	P131	0	EOS		30	30	0817	0822	P	—				
	P131	P132	0	EOS		30	30	0820	0825	P	—				
	P131	P133	0	EOS		30	30	0822	0827	P	—				
	P132	P133	0	EOS		30	30	0824	0829	P	—				
	P132	P134	0	EOS		30	30	0826	0831	P	—				
	P133	P134	0	EOS		30	30	0828	0833	P	—				
	P133	P135	0	EOS		30	30	0831	0836	P	—				
	P134	P135	0	EOS		30	30	0833	0838	P	—				
	P134	P136	0	EOS		30	30	0835	0840	P	—				
	P135	P136	0	EOS		30	30	0837	0842	P	—				
	P136	P137	0	EOS		30	30	0839	0844	P	—				
	P136	P138	0	EOS		30	30	0842	0847	P	—				
	P137	P138	0	EOS		30	30	0844	0849	P	—				
	P137	P139	0	EOS		30	29	0846	0851	P	—			↓	

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet 13 of 15
Date: 3/11/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell 1 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P138	P139	0	EOS	Full	30 ✓	30 ✓	0848 ✓	0853 ✓	P	—	WS	YATES	N	
	P139	P140	0	EOS		30 ✓	29 ✓	0850 ✓	0855 ✓	P	—				
	P139	P140	0	EOS		30 ✓	30 ✓	0853 ✓	0858 ✓	P	—				
	P139	P141	0	EOS		30 ✓	30 ✓	0855 ✓	0900 ✓	P	—				
	P139	P141	0	EOS		30 ✓	30 ✓	0857 ✓	0902 ✓	P	—				
	P139	P143	0	EOS		30 ✓	30 ✓	0859 ✓	0904 ✓	P	—				
	P140	P144	0	EOS		30 ✓	30 ✓	0902 ✓	0907 ✓	P	—				
	P140	P145	0	EOS		30 ✓	30 ✓	0904 ✓	0909 ✓	P	—				
	P140	P143	0	EOS		30 ✓	30 ✓	0906 ✓	0911 ✓	P	—				
	P140	P142	0	EOS		30 ✓	30 ✓	0908 ✓	0913 ✓	P	—				
	P141	P142	0	EOS		30 ✓	30 ✓	0912 ✓	0917 ✓	P	—				
	P142	P143	0	EOS		30 ✓	29 ✓	0914 ✓	0919 ✓	P	—				
	P143	P144	0	EOS		30 ✓	30 ✓	0917 ✓	0922 ✓	P	—				
	P144	P122	0	EOS		30 ✓	30 ✓	0919 ✓	0924 ✓	P	—				
	P144	P121	0	EOS		30 ✓	30 ✓	0921 ✓	0926 ✓	P	—				
	P144	P120	0	EOS		30 ✓	30 ✓	0923 ✓	0928 ✓	P	—				
	P119	P143	0	EOS		30 ✓	30 ✓	0926 ✓	0931 ✓	P	—				
	P118	P143	0	EOS		30 ✓	30 ✓	0928 ✓	0933 ✓	P	—				
	P117	P143	0	EOS		30 ✓	30 ✓	0930 ✓	0935 ✓	P	—				
	P116	P143	0	EOS		30 ✓	30 ✓	0932 ✓	0937 ✓	P	—				
	P115	P143	0	EOS		30 ✓	30 ✓	0934 ✓	0939 ✓	P	—				
	P115	P142	0	EOS		30 ✓	30 ✓	0936 ✓	0941 ✓	P	—				
	P114	P142	0	EOS		30 ✓	28 ✓	0939 ✓	0944 ✓	P	—				
	P113	P142	0	EOS		30 ✓	30 ✓	0941 ✓	0946 ✓	P	—			↓	

Specs: Pre-testing stabilization time: 1 min
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5 min
Maximum Allowable Loss: 3

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-MRE-001

CQA

Sheet 14 of 15
Date: 8/17/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell E1 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P112	P143	0	EOS	Full	30	30	0943	0948	P	—	WS	XAVIS	N	
	P111	P142	0	EOS		30	30	0945	0950	P	—				
	P111	P141	0	EOS		30	30	0948	0953	P	—				
	P111	P141	0	EOS		30	30	0950	0955	P	—				
	P110	P141	0	EOS		30	30	0952	0957	P	—				
	P109	P141	0	EOS		30	30	0954	0959	P	—				
	P139	P108	0	EOS		30	30	0957	1002	P	—				
	P141	P108	0	EOS		30	30	0959	1004	P	—				
	P145	P146	0	EOS		30	30	1001	1006	P	—				
	P146	P107	0	EOS		30	29	1004	1009	P	—				
	P106	P146	0	EOS		30	30	1006	1011	P	—				
	P106	P145	0	EOS		30	30	1008	1013	P	—				
	P75	P145	0	EOS		30	30	1011	1016	P	—				
	P74	P146	0	EOS		30	30	1013	1018	P	—				
	P64	P126	0	EOS		30	30	1015	1020	P	—				
	P64	P127	0	EOS		30	30	1017	1022	P	—				
	P64	P129	0	EOS		30	30	1020	1025	P	—				
	P64	P131	0	EOS		30	30	1022	1027	P	—				
	P64	P132	0	EOS		30	30	1024	1029	P	—				
	P64	P134	0	EOS		30	30	1026	1031	P	—				
	P64	P136	0	EOS		30	30	1029	1034	P	—				
	P64	P137	0	EOS		30	30	1031	1036	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PAGE 14 OF 15

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: [illegible]
Project Number: [illegible]

CQA

Sheet 15 of 15
Date: 6/17/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Cell C-1 Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
VT	P1SR1	P14	0	EOS	Full						P	VS	MES		
VT	P1SR1	P15	0	EOS	"						P	"	"		
VT	P1SR1	P17	0	EOS	"						P	"	"		
APT	P124R1	P123	0	EOS	"	30	30	1330	1335	P		"	"		
APT	P124R1	P125	0	EOS	"	30	30	1332	1337	P		"	"		

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCG Engineers
Project: North Ranch Landfill
Project Number: 22-SCG-NRL-01

CQA

Sheet 1 of 2
Date: 06/21/22
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Cell 61 Primary

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
CPDS1	P5/P6	26	5/5	5/5	CK	W82	5/4	P	P	
CPDS2	P6/P7	49	5/5	5/5	SL	W2	5/4	P	P	
CPDS3	P11/P12	13	5/5	5/5	CK	W82	5/4	P	P	
CPDS4	P12/P13	52	5/5	5/5	SL	W2	5/4	P	P	
CPDS5	P18/P19	57	5/5	5/5	CK	W82	5/4	P	P	
CPDS6	P19/P20	81	5/5	5/5	SL	W2	5/4	P	P	
CPDS7	P24/P25	18	5/5	5/5	CK	W82	5/4	P	P	
CPDS8	P25/P26	29	5/5	5/5	SL	W2	5/4	P	P	
CPDS9	P31/P32	~40	5/5	5/5	SL	W2	5/4	P	P	
CPDS10	P32/P33	69	5/5	5/5	SL	W2	5/4	P	P	
CPDS11	P41/P42	27	5/6	5/6	SL	W2	5/5	P	P	
CPDS12	P43/P44	36	5/6	5/6	SL	W2	5/5	P	P	
CPDS13	P47/P48	112	5/6	5/6	CK	W82	5/5	P	P	
CPDS14	P48/P49	179	5/6	5/6	SL	W2	5/5	P	P	
CPDS15	P41/P49	11	5/6	5/6	CK	W82	5/5	P	P	
CPDS16	P52/P53	107	5/6	5/6	CK	W82	5/5	P	P	
CPDS17	P53/P55	156	5/6	5/6	SL	W2	5/5	P	P	
CPDS18	P55/P56	19	5/6	5/6	SL	W2	5/5	P	P	
CPDS19	P56/P58	76	5/6	5/6	CK	W82	5/5	P	P	
CPDS20	P58/P59	147	5/6	5/6	SL	W2	5/5	P	P	
CPDS21	P59/P61	44	5/6	5/6	CK	W82	5/5	P	P	
CPDS22	P61/P62	116	5/6	5/6	CK	W82	5/5	P	P	
CPDS23	P66/P67	172	5/11	5/11	CK	W82	5/10	P	P	
CPDS24	P67/P68	131	5/11	5/11	SL	W2	5/10	P	P	
CPDS25	P73/P74	157	5/11	5/11	CK	W82	5/10	P	P	
CPDS26	P74/P75	114	5/11	5/11	SL	W2	5/10	P	P	

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Pg (1) of (3)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 32-SCS-NRL-01

Sheet 2 of 3
Date: VARIES
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Cell 61 Primary

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
CPDS27	P77/P78	117	5/11	5/11	CA	W82	5/10	P	P	
CPDS28	P78/P79	91	5/11	5/11	SL	W2	5/10	P	P	
CPDS29	P94/P95	26	5/11	5/11	CA	W82	5/10	P	P	
CPDS30	P93/P94	49	5/11	5/11	SL	W2	5/10	P	P	
CPDS31	P84/P85	70	5/11	5/11	CA	W82	5/10	P	P	
CPDS32	P85/P86	42	5/11	5/11	CA	W82	5/10	P	P	
CPDS33	PR8/P26	—	5/11	5/11	SL	G744	5/9	P	P	
CPDS34	PR16/P53	—	5/11	5/11	MM	G44	5/9	P	P	
CPDS35	PR12/P52	—	5/11	5/11	MM	G44	5/9	P	P	
CPDS36	P89/P101	37	5/12	5/12	CA	W82	5/11	P	P	
CPDS37	P101/P102	51	5/12	5/12	SL	W2	5/11	P	P	
CPDS38	P106/P107	76	5/12	5/12	CA	W82	5/11	P	P	
CPDS39	P109/P110	129	5/12	5/12	SL	W2	5/11	P	P	
CPDS40	P112/P113	160	5/12	5/12	CA	W82	5/11	P	P	
CPDS41	P115/P116	81	5/12	5/12	SL	W2	5/11	P	P	
CPDS42	P117/P118	127	5/12	5/12	CA	W82	5/11	P	P	
CPDS43	P120/P121	114	5/12	5/12	SL	W2	5/11	P	P	
CPDS44	P123/P124	30	5/12	5/12	CA	W82	5/11	P	P	
CPDS45	C77/P103	10	5/12	5/12	SL	W2	5/11	P	F	
CPDS45A	P78/P102	3	5/13	5/13	SL	W2	5/11	P	F	
CPDS45B	P77/P101/P103		5/13	5/13	SL	W2	5/11	P	F	
CPDS46	P124/P101	—	5/13	5/13	MM	G414	5/12	P	P	
CPDS47	PC2/PR6	27	5/17	5/17	CA	W82	5/16	P	P	
CPDS48	P116/P122	91	5/17	5/17	SL	W2	5/16	P	P	
CPDS49	P128/P129	42	5/17	5/17	CA	W82	5/16	P	P	
CPDS50	P129/P131	57	5/17	5/17	SL	W2	5/16	P	P	

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Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRLC1

Sheet 3 of 3
Date: VARIES
Rev. Date: ____

DESTRUCTIVE SAMPLE LOG

Layer: Cell 61 Primary

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
CPDSS1	P131/P132	33	5/17	5/17	SL	W2	5/16	P	P	
CPDSS2	P132/P134	97	5/17	5/17	CH	W82	5/16	P	P	
CPDSS3	P134/P136	153	5/17	5/17	CH	W82	5/16	P	P	
CPDSS4	P136/P138	118	5/17	5/17	SL	W2	5/16	P	P	
CPDSS5	P138/P140	17	5/17	5/17	CH	W82	5/16	P	P	
CPDSS6	P139/P142	27	5/17	5/17	CH	W82	5/16	P	P	
CPDSS7	PR174/P112		5/17	5/18	SL	G744	5/16	P	P	
CPDSS8	P143/P117	11	5/17	5/17	SL	W2	5/16	P	P	
CPDSS9	PR241/P24	9	5/20	5/20	G44	MM	5/19	P	P	
CPDS45A1	P1241/P76	N EOS	5/21	5/21	SL	W2	5/11	P	P	
CPDS45B1	P101/P77	S EOS	5/21	5/21	SL	W2	5/11	P	P	

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 13
Date VARIES
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR1	P5	P6	—	—	—	CPDS1	26	—	P	2	5	14	5/9	0742	MM	G44	WS	5/9	P	XAIS
PR2	P6	P7	—	—	—	CPDS2	49	—	P	2	5	14	5/9	0750	MM	G44	WS	5/9	P	XAIS
PR3	P11	P12	—	—	—	CPDS3	13	—	P	2	5	14	5/9	0804	MM	G44	WS	5/9	P	XAIS
PR4	P12	P13	—	—	—	CPDS4	42	—	P	2	5	14	5/9	0807	MM	G44	WS	5/9	P	XAIS
PR5	P18	P19	—	—	—	CPDS5	57	—	P	2	5	14	5/9	1437	SL	G744	WS	5/9	P	XAIS
PR6	P19	P20	—	—	—	CPDS6	81	—	P	2	5	14	5/9	1501	SL	G744	WS	5/9	P	XAIS
PR7	P24	P25	—	—	—	CPDS7	18	—	P	2	6	16	5/9	1418	SL	G744	WS	5/9	P	XAIS
PR8	P25	P26	—	—	—	CPDS8	29	—	P	2	5	14	5/9	1413	SL	G744	WS	5/9	P	XAIS
PR9	P31	P32	—	—	—	CPDS9	40	—	P	2	5	14	5/9	1342	SL	G744	WS	5/9	P	XAIS
PR10	P32	P33	—	—	—	CPDS10	69	—	P	2	5	14	5/9	1345	SL	G744	WS	5/9	P	XAIS
PR11	P41	P42	—	—	—	CPDS11	27	—	P	2	6	16	5/9	0840	MM	G44	WS	5/9	P	XAIS
PR12	P43	P45	—	—	—	CPDS12	36	—	P	2	5	14	5/9	1005	MM	G44	WS	5/9	P	XAIS
PR13	P47	P48	—	—	—	CPDS13	112	—	P	2	5	14	5/9	1016	MM	G44	WS	5/9	P	XAIS
PR14	P48	P49	—	—	—	CPDS14	179	—	P	2	5	14	5/9	1015	MM	G44	WS	5/9	P	XAIS
PR15	P51	P49	—	—	—	CPDS15	11	—	P	2	5	14	5/9	1005	SL	G744	WS	5/9	P	XAIS
PR16	P52	P53	—	—	—	CPDS16	107	—	P	2	5	14	5/9	1118	MM	G44	WS	5/9	P	XAIS
PR17	P54	P55	—	—	—	CPDS17	156	—	P	2	5	1	5/9	1109	MM	G44	WS	5/9	P	XAIS
PR18	P55	P56	—	—	—	CPDS18	19	—	P	3	5	14	5/9	0858	SL	G744	WS	5/9	P	XAIS
PR19	P56	P58	—	—	—	CPDS19	76	—	P	3	5	16	5/9	0908	SL	G744	WS	5/9	P	XAIS
PR20	P58	P59	—	—	—	CPDS20	147	—	P	2	5	14	5/9	1128	MM	G44	WS	5/9	P	XAIS

Total (Page)	288
Total (Project)	288

Notes: _____

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Pg 1 of 13

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 6 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR1	P1	P61	—	—	—	CPOS21	44	—	P	2	5	14	5/9	1320	MM	G44	WS	5/9	P	YAIS
PR2	P61	P62	—	—	—	CPOS22	116	—	P	2	5	14	5/9	1330	MM	G44	WS	5/9	P	YAIS
PR3	P62	P63	—	—	—	CPOS23	172	—	P	2	5	14	5/9	*	MM	G44	WS	5/9	P	YAIS
PR4	P63	P68	—	—	—	CPOS24	171	—	P	2	6	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR5	P73	P74	—	—	—	CPOS25	157	—	P	2	6	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR6	P74	P75	—	—	—	CPOS26	119	—	P	2	5	14	5/9	*	MM	G44	WS	5/9	P	YAIS
PR7	P77	P78	—	—	—	CPOS27	117	—	P	3	5	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR8	P78	P79	—	—	—	CPOS28	91	—	P	2	5	14	5/9	*	MM	G44	WS	5/9	P	YAIS
PR9	P94	P95	—	—	—	CPOS29	26	—	P	2	6	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR30	P93	P94	—	—	—	CPOS30	49	—	P	3	5	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR31	P84	P85	—	—	—	CPOS31	70	—	P	2	6	16	5/9	*	MM	G44	WS	5/9	P	YAIS
PR32	P85	P86	—	—	—	CPOS32	42	—	P	2	5	14	5/9	*	MM	G44	WS	5/9	P	YAIS
PR33	PR8	P26	—	—	—	CPOS33	—	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	YAIS
PR34	PR6	P53	—	—	—	CPOS34	—	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	YAIS
PR35	PR2	PC2	—	—	—	CPOS35	—	—	P	2	6	16	5/12	*	MM	G44	WS	5/12	P	YAIS
PR36	P3	P4	P31	—	—	In-1	—	—	P	2	2	8	5/9	0926	MM	G44	WS	5/9	P	YAIS
PR37	P4	P5	P35	—	—	In-1	—	—	P	2	3	10	5/9	0932	MM	G44	WS	5/9	P	YAIS
PR38	P5	P35	P36	—	—	In-1	—	—	P	2	2	8	5/9	0927	MM	G44	WS	5/9	P	YAIS
PR39	P36	P5	C6	—	—	In-1	—	—	P	2	2	8	5/9	0924	MM	G44	WS	5/9	P	YAIS
PR40	P36	P37	P6	P7	—	In-1	—	—	P	2	9	22	5/9	0926	MM	G44	WS	5/9	P	YAIS

Total (Page)	280
Total (Project)	568

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PG (2) OF (13)

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Client: SCS Engineers
Project: North Ranch Landfills
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR1	P37	P38	P7	P8	—	Int	—	—	P	2	7	18	5/9	0911	MM	G44	WS	5/9	P	XAIS
PR2	P38	P8	—	—	—	WS	11	—	P	2	2	8	5/9	0905	MM	G44	WS	5/9	P	XAIS
PR3	P38	P40	P8	P9	—	Int	—	—	P	2	6	16	5/9	0901	MM	G44	WS	5/9	P	XAIS
PR4	P37	P38	P39	—	—	Int	—	—	P	2	2	8	5/9	0946	MM	G44	WS	5/9	P	XAIS
PR45	P37	P39	P39	—	—	CAP	11	—	P	3	4	14	5/9	0948	MM	G44	WS	5/9	P	XAIS
PR46	P39	—	—	—	—	Hole	11'	2' 5	P	1	1	4	5/9	0948	MM	G44	WS	5/9	P	XAIS
PR47	P37	—	—	—	—	Hole	12'	5' 5	P	1	1	4	5/9	0950	MM	G44	WS	5/9	P	XAIS
PR48	P38	P39	P40	—	—	Int	—	—	P	2	4	8	5/9	0952	MM	G44	WS	5/9	P	XAIS
PR49	P40	P9	—	—	—	CAP	—	—	P	2	5	14	5/9	0954	MM	G44	WS	5/9	P	XAIS
DR50	P40	P9	P10	—	—	Int	—	—	P	2	2	8	5/9	0850	MM	G44	WS	5/9	P	XAIS
PR51	P40	P41	P10	—	—	Int	—	—	P	2	2	8	5/9	0847	MM	G44	WS	5/9	P	XAIS
PR52	P41	P10	P11	—	—	Int	—	—	P	2	4	8	5/9	0845	MM	G44	WS	5/9	P	XAIS
PR53	P41	P43	P11	P12	—	Int	—	—	P	2	4	12	5/9	0837	MM	G44	WS	5/9	P	XAIS
PR54	P42	P43	P12	P13	—	Int	—	—	P	2	6	16	5/9	0835	MM	G44	WS	5/9	P	XAIS
PR55	P42	P43	P44	—	—	Int	—	—	P	2	2	8	5/9	0955	MM	G44	WS	5/9	P	XAIS
PR56	P43	P44	P45	—	—	Int	—	—	P	2	2	8	5/9	1000	MM	G44	WS	5/9	P	XAIS
PR57	P43	P13	P14	—	—	Int	—	—	P	2	2	8	5/9	1116	SL	G744	WS	5/9	P	XAIS
PR58	P43	P45	P14	—	—	Int	—	—	P	2	2	8	5/9	1113	SL	G744	WS	5/9	P	XAIS
PR59	P45	P14	P15	—	—	Int	—	—	P	2	2	8	5/9	1106	SL	G744	WS	5/9	P	XAIS
PR60	P45	P46	P15	P17	—	Int	—	—	P	2	6	16	5/9	1103	SL	G744	WS	5/9	P	XAIS

Total (Page)	202
Total (Project)	770

Notes: _____

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PG (3) of (13)

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Client: SCS
Project: NORTH RANCH
Project Number: 22-SCSNR-01

CQA SOLUTIONS

Sheet 4 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Primary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
PR61	P17	P46	—	—	—	CAP	7	—	P	2	3	10	5/9	1100	SL	G744	WS	5/12	P	XAIS
PR62	P14	P15	P16	—	—	Int	—	—	P	2	3	10	5/9	1449	SL	G744	WS	5/12	P	XAIS
PR63	P15	P16	P17	—	—	Int	—	—	P	2	2	8	5/9	1443	SL	G744	WS	5/12	P	XAIS
PR64	P46	P47	P17	P18	—	Int	—	—	P	2	5	14	5/9	1051	SL	G744	WS	5/12	P	XAIS
PR65	P47	—	—	—	—	Hole	31	11' W	P	1	1	4	5/9	1046	SL	G744	WS	5/12	P	XAIS
PR66	P47	—	—	—	—	Hole	5'	11' W	P	1	1	4	5/9	1042	SL	G744	WS	5/12	P	XAIS
PR67	P47	P18	P19	—	—	Int	—	—	P	2	2	8	5/9	1038	SL	G744	WS	5/12	P	XAIS
PR68	P47	P48	P19	—	—	Int	—	—	P	2	2	8	5/9	1036	SL	G744	WS	5/12	P	XAIS
PR69	P48	P19	P20	—	—	Int	—	—	P	2	2	8	5/9	1012	SL	G744	WS	5/12	P	XAIS
PR70	P48	P49	P20	—	—	Int	—	—	P	3	3	12	5/9	1010	SL	G744	WS	5/12	P	XAIS
PR71	P89	P101	—	—	—	CP0536	37	—	P	2	5	18	5/12	*	MM	G44	WS	5/12	P	XAIS
PR72	P101	P102	—	—	—	CP0537	51	—	P	2	6	14	5/12	*	MM	G44	WS	5/12	P	XAIS
PR73	P102	P103	—	—	—	CP0538	76	—	P	2	6	16	5/12	*	MM	G44	WS	5/12	P	XAIS
PR74	P104	P105	—	—	—	CP0539	129	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	XAIS
PR75	P112	P113	—	—	—	CP0540	166	—	P	3	5	16	5/12	*	MM	G44	WS	5/12	P	XAIS
PR76	P115	P116	—	—	—	CP0541	81	—	P	2	6	16	5/12	*	MM	G44	WS	5/12	P	XAIS
PR77	P117	P118	—	—	—	CP0542	127	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	XAIS
PR78	P118	P121	—	—	—	CP0543	114	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	XAIS
PR79	P113	P124	—	—	—	CP0544	80	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	XAIS
PR80	P97	P103	—	—	—	CP0545	10	—	P	2	5	14	5/12	*	MM	G44	WS	5/12	P	XAIS
											Total (Page)	236								
											Total (Project)	1006								

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PG 4 OF 13

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 5 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR81	P44	P40	P21	—	—	Int	—	—	P	2	2	8	5/9	1007	SL	G744	WS	5/9	P	XAIS
PR82	P49	P50	P21	P22	—	Int	—	—	P	2	3	10	5/9	0950	SL	G744	WS	5/9	P	XAIS
PR83	P50	P12	—	—	—	CAP	10	—	P	2	2	8	5/9	0945	SL	G744	WS	5/9	P	XAIS
PR84	P50	P12	P23	—	—	Int	—	—	P	2	2	8	5/9	0943	SL	G744	WS	5/9	P	XAIS
PR85	P36	P52	P23	—	—	Int	—	—	P	2	2	8	5/9	0940	SL	G744	WS	5/9	P	XAIS
PR86	P23	—	—	—	—	Hole	149	11' E	P	1	1	4	5/9	0939	SL	G744	WS	5/9	P	XAIS
PR87	P23	—	—	—	—	Hole	149	13' E	P	1	1	4	5/9	0937	SL	G744	WS	5/9	P	XAIS
PR88	P23	—	—	—	—	Hole	146	13' E	P	1	1	4	5/9	0935	SL	G744	WS	5/9	P	XAIS
PR89	P23	—	—	—	—	Hole	126	13' E	P	1	1	4	5/9	0934	SL	G744	WS	5/9	P	XAIS
PR90	P23	—	—	—	—	Hole	120	13' E	P	1	1	4	5/9	0933	SL	G744	WS	5/9	P	XAIS
PR91	P49	P50	P51	—	—	Int	—	—	P	2	2	8	5/9	1012	MM	G44	WS	5/9	P	XAIS
PR92	P50	P51	P52	—	—	Int	—	—	P	2	2	8	5/9	1027	MM	G44	WS	5/9	P	XAIS
PR93	P52	P53	P54	—	—	Int	—	—	P	2	2	8	5/9	1036	MM	G44	WS	5/9	P	XAIS
PR94	P53	P54	P55	—	—	Int	—	—	P	2	3	10	5/9	1037	MM	G44	WS	5/9	P	XAIS
PR95	P53	P55	—	—	—	CAP	167	—	P	2	2	8	5/9	1103	MM	G44	WS	5/9	P	XAIS
PR96	P53	P55	—	—	—	Int	145	—	P	2	3	10	5/9	1114	MM	G44	WS	5/9	P	XAIS
PR97	P52	P23	P24	—	—	Int	—	—	P	2	2	8	5/9	0924	SL	G44	WS	5/9	P	XAIS
PR98	P52	P53	P24	—	—	Int	—	—	P	2	2	8	5/9	0921	SL	G44	WS	5/9	P	XAIS
PR99	P53	P24	P25	—	—	Int	—	—	P	2	2	8	5/9	0918	SL	G44	WS	5/9	P	XAIS
PR100	P53	P54	P25	P26	—	Int	—	—	P	2	6	16	5/9	0902	SL	G44	WS	5/9	P	XAIS
											Total (Page)	154								
											Total (Project)	1160								

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Pg 5 of 13

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NR-01

Sheet 6 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 6 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR101	P55	P56	P26	P27	—	Int	—	—	P	2	7	18	5/9	0845	SL	G-744	WS	5/9	P	XAIS
PR102	P56	P27	P28	—	—	Int	—	—	P	2	2	8	5/9	0847	SL	G-744	WS	5/9	P	XAIS
PR103	P56	P58	P28	—	—	Int	—	—	P	2	3	10	5/9	0839	SL	G-744	WS	5/9	P	XAIS
PR104	P58	P28	P29	—	—	Int	—	—	P	2	2	8	5/9	0833	SL	G-744	WS	5/9	P	XAIS
PR105	P58	P64	P69	P71	—	Int	—	—	P	3	4	14	5/9	1317	SL	G-744	WS	5/9	P	XAIS
PR106	P69	P70	P71	—	—	Int	—	—	P	2	4	12	5/9	1355	SL	G-744	WS	5/9	P	XAIS
PR107	P71	P72	—	—	—	CAP	81	—	P	3	2	10	5/9	1348	SL	G-744	WS	5/9	P	XAIS
PR108	P34	—	—	—	—	CAP	55	1'G	P	2	4	12	5/9	1377	SL	G-744	WS	5/9	P	XAIS
PR109	P34	—	—	—	—	Hole	99	1'F	P	1	2	6	5/9	1331	SL	G-744	WS	5/9	P	XAIS
PR110	P34	—	—	—	—	Hole	140	1'G	P	1	2	6	5/9	1319	SL	G-744	WS	5/9	P	XAIS
PR111	P34	P69	P65	—	—	Int	—	—	P	3	3	12	5/12	0823	MM	G-44	WS	5/12	P	XAIS
PR112	P39	P34	P69	P70	—	Int	—	—	P	2	2	8	5/12	0813	MM	G-44	WS	5/12	P	XAIS
PR113	P32	P33	P70	P71	—	Int	—	—	P	2	2	8	5/12	805	MM	G-44	WS	5/12	P	XAIS
PR114	P32	P71	P64	—	—	Int	—	—	P	2	3	10	5/12	0800	MM	G-44	WS	5/12	P	XAIS
PR115	P32	P71	P64	—	—	Int	—	—	P	1	2	6	5/9	1140	SL	G-744	WS	5/9	P	XAIS
PR116	P56	P59	P64	—	—	Int	—	—	P	3	3	12	5/9	0827	SL	G-744	WS	5/9	P	XAIS
PR117	P59	—	—	—	—	Hole	2	11'G	P	1	1	4	5/9	0820	SL	G-744	WS	5/9	P	XAIS
PR118	P59	—	—	—	—	Hole	5	11'E	P	1	1	4	5/9	0822	SL	G-744	WS	5/9	P	XAIS
PR119	P59	—	—	—	—	Hole	12	11'E	P	1	1	4	5/9	0824	SL	G-744	WS	5/9	P	XAIS
PR120	P59	P60	P64	—	—	Int	—	—	P	2	2	8	5/9	0807	SL	G-744	WS	5/9	P	XAIS

Total (Page)	180
Total (Project)	340

Notes: _____

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PG 6 OF 13

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Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 7 of 13
Date 8/4/22
Rev. Date: ____

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR121	P66	P6L	P64	—	—	Int	—	—	P	2	2	8	8/9	0805	SL	G-744	WS	8/9	P	XAIS
PR122	P55	P56	P57	—	—	Int	—	—	P	3	3	12	8/9	1045	MM	G-44	WS	8/9	P	XAIS
PR123	P5C	P57	P58	—	—	Int	—	—	P	2	2	8	8/9	1049	MM	G44	WS	8/9	P	XAIS
PR124	P5A	P6C	P61	—	—	Int	—	—	P	2	3	10	8/9	1135	MA	G-44	WS	8/9	P	XAIS
PR125	P60	P61	P62	—	—	Int	—	—	P	2	2	8	8/9		MM	G44	WS	8/9	P	XAIS
PR126	P6:	P6L	P63	—	—	Int	—	—	P	2	2	8	8/9		MM	G44	WS	8/9	P	XAIS
PR127	P67L	P101	—	—	—	CPD546	—	—	P	2	5	14	8/1		MM	G-44	WS	8/13	P	XAIS
PR128	P64	P70	P71	—	—	Int	—	—	P	2	3	10	8/12	0810	MM	G-44	WS	8/12	P	XAIS
PR129	P64	P69	P70	—	—	Int	—	—	P	2	2	8	8/12	0820	MM	G-44	WS	8/12	P	XAIS
PR130	P64	P63	P69	—	—	Int	—	—	P	2	2	8	8/12	0826	MM	G-44	WS	8/12	P	XAIS
RR131	P64	P65	P66	—	—	Int	—	—	P	2	2	8	8/12	0830	MM	G-44	WS	8/12	P	XAIS
PR132	P64	P6C	P67	—	—	Int	—	—	P	2	2	8	8/12	0840	MM	G-44	WS	8/12	P	XAIS
PR133	P64	P67	P68	—	—	Int	—	—	P	2	3	10	8/12	0845	MM	G-44	WS	8/12	P	XAIS
PR134	P64	P68	P72	—	—	Int	—	—	P	3	3	12	8/12	0850	MM	G44	WS	8/12	P	XAIS
PR135	P72	—	—	—	—	Hole	253	11' W	P	1	1	4	8/12	0854	MM	G-44	WS	8/12	P	XAIS
PR136	P64	P72	P73	—	—	Int	—	—	P	3	3	12	8/12	0857	MM	G-44	WS	8/12	P	XAIS
PR137	P98	P99	P100	—	—	Int	—	—	P	2	2	8	8/12	1102	MA	G-44	WS	8/12	P	XAIS
PR138	P88	P99	P98	—	—	Int	—	—	P	2	2	8	8/12	1125	MM	G-44	WS	8/12	P	XAIS
PR139	P87	P80	P97	P96	—	Int	—	—	P	2	5	14	8/12	1135	MM	G-44	WS	8/12	P	XAIS
PR140	P87	P97	—	—	—	CAP	—	—	P	1	2	6	8/12	1305	MM	G-44	WS	8/12	P	XAIS

Total (Page)	184
Total (Project)	1524

Notes: _____

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PG (7) of (13)

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-3C5-NRL-01

CQA

Sheet 8 of 13
Date 8/16/22
Rev. Date:

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
141	P87	P97	P96	—	—	Int	—	—	P	3	3	12	5/12	1315	MM	G-44	MS	5/12	P	XAIS
142	P87	P97	—	—	—	CAP	8	—	P	2	2	8	5/12	1317	MM	G-44	MS	5/12	P	XAIS
PR143	P87	P86	P96	—	—	Int	—	—	P	2	2	8	5/12	1320	MM	G-44	MS	5/12	P	XAIS
PR144	P86	P96	P85	P95	—	Int	—	—	P	2	4	12	5/12	1320	MM	G-44	MS	5/12	P	XAIS
PR145	P84	P85	P94	P95	—	Int	—	—	P	2	2	8	5/12	1350	MM	G-44	MS	5/12	P	XAIS
PR146	P83	P84	P93	P94	—	Int	—	—	P	3	4	14	5/12	1400	MM	G-44	MS	5/12	P	XAIS
PR147	P82	P83	P92	P93	—	Int	—	—	P	2	3	10	5/12	1414	MM	G-44	MS	5/12	P	XAIS
PR148	P82	P92	—	—	—	W.S	124	3'5	P	1	1	4	5/12	1415	MM	G-44	MS	5/12	P	XAIS
PR149	P82	P93	—	—	—	W.S	95	—	P	2	2	8	5/12	1407	MM	G-44	MS	5/12	P	XAIS
PR150	P82	—	—	—	—	Help	95	7'5	P	1	1	4	5/12	1415	MM	G-44	MS	5/12	P	XAIS
PR151	P81	P82	P91	P93	—	Int	—	—	P	2	2	8	5/12	1425	MM	G-44	MS	5/12	P	XAIS
PR152	P80	P81	P90	P91	—	Int	—	—	P	2	4	12	5/12	1430	MM	G-44	MS	5/12	P	XAIS
PR153	P79	P80	P89	P90	—	Int	—	—	P	2	2	8	5/12	0935	MM	G-44	MS	5/12	P	XAIS
PR154	P79	P89	P101	—	—	Int	—	—	P	2	2	8	5/12	0940	MM	G-44	MS	5/12	P	XAIS
PR155	P78	P102	—	—	—	CPD545A	3	—	P	3	12	30	5/13	X	MM	G-44	MS	5/13	P	XAIS
PR156	P77	P76	P104	—	—	CPD545B	—	—	P	3	14	34	5/13	X	MM	G-44	MS	5/13	P	XAIS
PR157	P76	P79	P103	—	—	Int	—	—	P	2	2	8	5/12	0945	MM	G-44	MS	5/12	P	XAIS
PR158	P78	P101	P102	—	—	Int	—	—	P	2	2	8	5/12	0950	MM	G-44	MS	5/12	P	XAIS
PR159	P105	P104	P76	—	—	Int	—	—	P	2	3	10	5/12	1015	MM	G-44	MS	5/12	P	XAIS
PR160	P103	P105	—	—	—	W.S	56		P	3	4	14	5/12	X	MM	G-44	MS	5/12	P	XAIS
									Total (Page)			228								
									Total (Project)			772								

Notes: X = TAPE NOT PROVIDED BY INSTALLER

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Pg 8 of 13

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL -01

Sheet 9 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell G1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR161	P133	P134	P135	—	—	Int	—	—	P	2	3	10	5/12	1630	MM	G44	WS	5/12	P	XAIS
PR162	P6	P136	—	—	—	CPOS47	27	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR163	P136	P137	—	—	—	CPOS48	91	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR164	P128	P129	—	—	—	CPOS49	41	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR165	P129	P131	—	—	—	CPOS50	—	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR166	P131	P132	—	—	—	CPOS51	33	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR167	P132	P134	—	—	—	CPOS52	97	—	P	2	6	16	5/17	*	SL	G744	WS	5/17	P	XAIS
PR168	P134	P136	—	—	—	CPOS53	153	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR169	P136	P138	—	—	—	CPOS54	118	—	P	2	6	16	5/17	*	SL	G744	WS	5/17	P	XAIS
PR170	P138	P140	—	—	—	CPOS55	17	—	P	3	5	16	5/17	*	SL	G744	WS	5/17	P	XAIS
PR171	P139	P142	P139	—	—	CPOS56	27	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR172	P142	P143	—	—	—	CAP	166	—	P	2	4	12	5/17	*	SL	G744	WS	5/17	P	XAIS
PR173	PR172	P142	—	—	—	CPOS57	—	—	P	2	5	14	5/17	*	SL	G744	WS	5/17	P	XAIS
PR174	P6	P126	P64	—	—	Int	—	—	P	3	5	16	5/17	0806	SL	G744	WS	5/17	P	XAIS
PR175	P64	P126	P127	—	—	Int	—	—	P	2	3	10	5/17	0812	SL	G744	WS	5/17	P	XAIS
PR176	P64	P126	P127	—	—	Int	—	—	P	2	3	10	5/17	0812	SL	G744	WS	5/17	P	XAIS
PR177	P126	P127	P128	—	—	Int	—	—	P	2	3	10	5/16	1428	MM	G44	WS	5/16	P	XAIS
PR178	P127	P128	P134	—	—	Int	—	—	P	2	2	8	5/16	1432	MM	G44	WS	5/16	P	XAIS
PR179	P6	P63	P126	—	—	Int	—	—	P	2	2	8	5/16	1445	MM	G44	WS	5/16	P	XAIS
PR180	P128	P129	P130	—	—	Int	—	—	P	2	2	8	5/16	1450	MM	G44	WS	5/16	P	XAIS

Total (Page)	252
Total (Project)	2004

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: M-SCS-MRL-01

Sheet 10 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 61 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR183	P129	P131	P130	—	—	Int	—	—	P	2	2	8	5/16	1500	MM	G44	WS	5/16	P	XAIS
PR182	P127	P129	P64	—	—	Int	—	—	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR187	P126	P131	P64	—	—	Int	—	—	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR184	P131	P132	P64	—	—	Int	—	—	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR185	P132	P134	P64	—	—	Int	—	—	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR186	P131	P132	P133	—	—	Int	—	—	P	2	2	8	5/17	0838	SL	G744	WS	5/17	P	XAIS
PR187	P132	P133	P119	—	—	Int	—	—	P	2	2	8	5/17	0841	SL	G744	WS	5/17	P	XAIS
PR188	P133	P134	P135	—	—	Int	—	—	P	2	2	8	5/16	1503	MM	G44	WS	5/16	P	XAIS
PR189	P134	P135	P136	—	—	Int	—	—	P	2	2	8	5/16	505	MM	G44	WS	5/16	P	XAIS
PR190	P64	P134	P136	—	—	Int	—	—	P	2	2	8	5/17	0930	SL	G744	WS	5/17	P	XAIS
PR191	P64	P136	P137	—	—	Int	—	—	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR192	P136	P137	P138	—	—	Int	—	—	P	2	2	8	5/17	0738	MM	G44	WS	5/17	P	XAIS
PR193	P137	P138	P139	—	—	Int	—	—	P	2	2	8	5/17	0841	MM	G44	WS	5/17	P	XAIS
PR194	P64	P108	P137	—	—	Int	—	—	P	2	5	14	5/17	0944	SL	G744	WS	5/17	P	XAIS
PR195	P64	P108	P107	—	—	Int	—	—	P	2	2	8	5/17	0948	SL	G744	WS	5/17	P	XAIS
PR196	P64	P107	P73	P74	—	Int	—	—	P	5	6	22	5/17	1006	SL	G744	WS	5/17	P	XAIS
PR197	P74	P107	P146	—	—	Int	—	—	P	3	3	12	5/17	1040	SL	G744	WS	5/17	P	XAIS
PR198	P107	—	—	—	—	Hole	185	7'5	P	2	2	8	5/17	*	SL	G744	WS	5/17	P	XAIS
PR199	P145	P146	P74	P75	—	Int	—	—	P	2	6	16	5/17	*	SL	G744	WS	5/17	P	XAIS
PR200	P145	P75	P106	—	—	Int	—	—	P	2	5	14	5/17	1101	SL	G744	WS	5/17	P	RAIS

Total (Page)	198
Total (Project)	1202

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PG 10 OF 13

Page 632 of 813

Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 11 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell 1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR201	P106	P105	P104	P76	—	Int	—	—	P	3	5	16	5/17	1113	SL	GT44	WS	5/17	P	XAIS
PR202	P145	P146	P106	—	—	Int	—	—	P	2	2	8	5/17	1123	SL	GT44	WS	5/17	P	XAIS
PR203	P146	P106	P107	—	—	Int	—	—	P	2	5	14	5/17	1056	SL	GT44	WS	5/17	P	XAIS
PR204	P139	P141	P108	—	—	Int	—	—	P	2	2	8	5/17	*	SL	GT44	WS	5/17	P	XAIS
PR205	P139	P141	P142	—	—	Int	—	—	P	2	2	8	5/17	0811	MM	GT44	WS	5/17	P	XAIS
PR206	P138	P139	P140	—	—	Int	—	—	P	2	2	8	5/16	1533	MM	GT44	WS	5/16	P	XAIS
PR207	P139	P140	P143	P144	—	Int	—	—	P	2	5	14	5/16	1547	MM	GT44	WS	5/16	P	XAIS
PR208	P125	P123	P140	—	—	Int	—	—	P	2	2	8	5/16	1513	MM	GT44	WS	5/16	P	XAIS
PR209	P140	P122	P123	—	—	Int	—	—	P	2	2	8	5/16	1517	MM	GT44	WS	5/16	P	XAIS
PR210	P140	P144	P122	—	—	Int	—	—	P	2	2	8	5/16	1521	MM	GT44	WS	5/16	P	XAIS
PR211	P140	P125	P143	—	—	Int	—	—	P	2	2	8	5/16	*	MM	GT44	WS	5/16	P	XAIS
PR212	P140	P144	P122	—	—	Int	—	—	P	2	2	8	5/16	1517	MM	GT44	WS	5/16	P	XAIS
PR213	P140	P125	P143	—	—	Int	—	—	P	2	2	8	5/17	*	MM	GT44	WS	5/17	P	XAIS
PR214	P125	P143	—	—	P114R1	Int	—	—	P	2	3	10	5/16	1521	MM	GT44	WS	5/16	P	XAIS
PR215	P140	P144	P122	—	—	Int	—	—	P	2	8	8	5/16	1525	MM	GT44	WS	5/16	P	XAIS
PR216	P144	P122	P121	—	—	Int	—	—	P	2	2	8	5/16	1532	MM	GT44	WS	5/16	P	XAIS
PR217	P144	P121	P110	—	—	Int	—	—	P	2	2	8	5/16	1557	MM	GT44	WS	5/16	P	XAIS
PR218	P144	P122	P119	—	—	Int	—	—	P	2	2	8	5/16	1600	MM	GT44	WS	5/16	P	YAIS
PR219	P144	P143	P119	—	—	Int	—	—	P	2	2	8	5/16	1603	MM	GT44	WS	5/16	P	YAIS
PR220	P143	P119	P118	—	—	Int	—	—	P	2	2	8	5/16	1603	MM	GT44	WS	5/16	P	YAIS
PR221	P118	—	—	—	—	Hole	160	S'N	P	1	1	4	5/16	*	MM	GT44	WS	5/16	P	XAIS

Total (Page)	118
Total (Project)	2380

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PG (11) OF (13)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 12 of 13
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell E1 Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR221	P118	—	—	—	—	Hole	159	10'S	P	3	2	10	5/16	*	MM	G44	WS	5/16	P	KAIS
PR222	P118	P117	P143	—	—	Int	—	—	P	2	2	8	5/16	1605	MM	G44	WS	5/16	P	KAIS
PR223	P117	P116	P143	—	—	Int	—	—	P	2	2	8	5/16	*	MM	G44	WS	5/16	P	KAIS
PR224	P116	P115	P143	—	—	Int	—	—	P	2	2	8	5/17	0737	MM	G44	WS	5/17	P	KAIS
PR225	P115	—	—	—	—	Hole	165	1' N	P	2	3	10	5/17	0740	MM	G44	WS	5/17	P	KAIS
PR226	P115	P143	P142	—	—	Int	—	—	P	2	2	8	5/17	0748	MM	G44	WS	5/17	P	KAIS
PR227	P115	P114	P142	—	—	Int	—	—	P	2	2	8	5/17	0752	MM	G44	WS	5/17	P	KAIS
PR228	P114	P113	P141	—	—	Int	—	—	P	2	2	8	5/17	0755	MM	G44	WS	5/17	P	KAIS
PR229	P113	P112	P141	—	—	Int	—	—	P	2	2	8	5/17	*	MM	G44	WS	5/17	P	KAIS
PR230	P111	P112	P142	—	—	Int	—	—	P	2	2	8	5/17	0803	MM	G44	WS	5/17	P	KAIS
PR231	P111	P142	P141	—	—	Int	—	—	P	2	2	8	5/17	0806	MM	G44	WS	5/17	P	KAIS
PR232	P111	P110	P141	—	—	Int	—	—	P	2	2	8	5/17	0815	MM	G44	WS	5/17	P	KAIS
PR233	P110	P109	P141	—	—	Int	—	—	P	2	2	8	5/17	0820	MM	G44	WS	5/17	P	KAIS
PR234	P141	—	—	—	—	Hole	6'	5' N	P	2	2	8	5/17	0823	MM	G44	WS	5/17	P	KAIS
PR235	P141	—	—	—	—	Hole	4	5' N	P	1	1	4	5/17	0825	MM	G44	WS	5/17	P	KAIS
PR236	P141	P109	P108	—	—	Int	—	—	P	2	2	8	5/17	0828	MM	G44	WS	5/17	P	KAIS
PR237	P107	P108	—	—	—	CAP	157	—	P	2	2	8	5/17	*	MM	G44	WS	5/17	P	KAIS
PR238	P107	P108	—	—	—	CAP	34'	—	P	2	6	16	5/1.	*	MM	G44	WS	5/17	P	KAIS
PR239	P107	P108	—	—	—	Bad	10	—	P	8	8	92	5/1.	*	MM	G44	WS	5/17	P	KAIS
PR240	P143	P117	—	—	—	CPOSS	11'	—	P	2	5	14	5/17	*	MM	G44	WS	5/17	P	KAIS
											Total (Page)	198								
											Total (Project)	2578								

Notes: * TIME NOT PROVIDED BY INSTALLER

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Pg 12 of 13

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 13 of 13
Date VARIOUS
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cell C1 Primary

Repair #	Damage: Seam Reference 1	Seam Reference 2	Seam Reference 3	Seam Reference 4	Panel ID	Defect Type	Location: Station	Location: Perpendicular	Repair: Repair Type	Repair Size: Width	Repair Size: Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR241	P102	P101	P74	P78	—	CAP	—	—	P	3	20	46	5/19	1307	MM	G44	WS	5/19	P	YAIS
PR242	P224	P79	—	—	—	CP0559	9	—	P	2	5	14	5/19	1315	MM	G44	WS	5/19	P	YAIS
PR243	P105	P104	P75	P76	—	CAP	—	—	P	3	18	42	5/19	1331	MM	G44	WS	5/19	P	YAIS
PR244	P107	P108	—	—	—	CAP	150	—	P	10	17	54	5/20	0855	SL	G44	WS	5/20	P	YAIS
PR245	P10A	P76	—	—	—	LP0545B1	—	—	P	4	8	24	5/21	0911	MM	G44	WS	5/21	P	YAIS
PR246	—	—	—	P101	P78	CP0545A1	—	—	P	5	10	30	5/21	0917	MM	G44	WS	5/21	P	YAIS

Total (Page)	210
Total (Project)	2798

Notes:

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PG 13 of 13

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Date: 2022-05-06

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71840**
Material(s) Tested:	(10) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71840

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	144	150	160	158	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	119	111	102	110	112	**111**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	177	183	179	179	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	136	150	144	143	137	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	147	159	146	127	154	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	157	166	169	178	**169**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71840

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	151	143	140	149	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	114	128	110	146	115	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	183	168	168	172	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	135	136	140	139	134	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	147	154	123	154	147	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	161	170	172	175	**172**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71840

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-5 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	136	139	133	142	152	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	115	108	109	111	118	**112**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	176	178	174	181	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-6 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	141	139	159	140	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	142	142	143	128	142	**139**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	176	173	173	178	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71840

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	122	120	123	123	122	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	109	113	110	116	113	**112**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	175	171	173	172	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-8 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	150	142	153	139	159	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	103	143	122	153	158	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	173	174	178	172	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71840

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-9 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	131	135	128	134	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	124	138	123	135	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	175	178	178	189	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-10 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	129	141	131	136	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	121	127	128	129	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	173	180	181	179	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-05-10

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71881**
Material(s) Tested:	(12) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-11 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	142	149	146	162	154	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	129	128	142	134	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	181	176	185	174	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-12 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	146	140	141	142	151	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	126	129	146	135	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	187	181	185	189	183	**185**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-13 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	149	142	144	140	148	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	150	127	135	127	131	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	185	180	180	185	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-14 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	148	137	145	146	149	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	113	119	123	117	123	**119**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	180	177	182	187	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-15 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	127	151	151	126	145	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	150	169	158	160	149	**157**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	167	176	170	168	173	**171**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-16 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	160	139	132	139	147	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	153	119	125	149	123	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	182	173	174	179	176	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-17 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	134	136	139	151	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	140	137	125	129	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	170	178	172	162	170	**170**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-18 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	140	141	138	145	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	140	145	142	139	140	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	171	177	172	182	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-19 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	130	137	139	142	135	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	122	121	115	124	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	185	176	177	182	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-20 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	150	137	143	151	154	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	126	133	125	136	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	181	154	179	179	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71881

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-21 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	151	140	137	136	134	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	126	120	126	127	**125**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	179	175	185	173	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-22 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	155	142	137	138	156	**146**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	138	129	126	141	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	171	172	172	180	177	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-05-13

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

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22-SCS-NRL-01

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Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**71989**
Material(s) Tested:	(20) Heat Fusion Weld Seam(s) (3) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-23 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	133	143	136	149	156	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	132	151	136	164	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	178	187	181	187	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-24 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	147	144	143	141	138	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	160	153	146	148	155	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	177	178	184	180	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-25 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	161	144	159	156	133	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	129	128	133	132	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	180	179	180	179	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-26 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	145	151	139	143	145	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	131	131	129	125	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	183	184	181	181	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-27 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	146	144	140	146	142	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	133	127	135	160	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	183	182	180	184	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-28 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	146	150	145	147	145	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	133	120	134	125	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	181	180	185	186	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-29 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	152	150	141	155	166	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	156	164	149	155	139	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	182	187	187	184	183	**185**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-30 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	176	167	176	124	130	**155**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	153	144	151	145	151	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	184	189	192	188	**188**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-31 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	155	161	148	147	156	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	159	154	149	133	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	188	193	187	184	184	**187**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-32 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	140	149	140	135	138	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	145	128	134	149	135	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	183	186	178	181	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-36 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	140	162	134	151	141	**146**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	124	135	128	137	108	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	185	185	181	183	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-37 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	164	143	141	135	128	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	128	127	131	134	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	181	180	181	185	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-38 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	148	145	160	154	**150**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	131	129	130	132	134	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	182	186	182	184	**184**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-39 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	154	159	149	151	154	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	134	143	135	131	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	179	180	181	181	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-40 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	137	171	130	161	125	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	150	140	146	149	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	187	186	184	187	**186**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-41 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	146	145	144	143	142	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	141	138	135	149	148	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	179	180	179	181	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-42 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	158	164	146	142	155	**153**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	150	149	158	163	136	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	190	186	184	182	**185**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-43 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	139	134	158	150	140	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	146	145	162	160	156	**154**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	181	185	180	184	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-44 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	157	167	158	156	160	**160**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	130	129	128	122	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	184	182	179	181	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-45 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	139	154	130	139	150	**142**
Peel Incursion (%)	30	25	20	25	<5	
Peel Locus Of Failure Code	AD-BRK	AD-BRK	AD-BRK	AD-BRK	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	136	144	140	143	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	182	180	178	181	180	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 71989

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-33 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	134	132	123	115	141	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	187	184	184	183	190	**186**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-34 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	129	103	103	105	130	**114**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	184	178	180	178	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-35 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	132	122	124	107	123	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	190	183	186	184	195	**188**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-05-18

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

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Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**72084**
Material(s) Tested:	(13) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-45A | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	152	181	161	167	163	**165**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	149	150	154	144	154	**150**
Peel Incursion (%)	<5	<5	<5	20	<5	
Peel Locus Of Failure Code	SE	SE	SE	AD-BRK	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	177	173	181	176	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-45B | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	126	145	145	147	167	**146**
Peel Incursion (%)	20	<5	<5	<5	<5	
Peel Locus Of Failure Code	AD-BRK	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	174	167	160	160	168	**166**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	166	172	172	168	174	**170**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-47 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	155	161	173	156	**158**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	174	156	164	164	167	**165**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	190	180	183	179	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-48 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	135	138	128	136	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	130	134	130	133	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	188	186	166	183	183	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-49 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	137	130	139	135	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	153	155	139	131	129	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	184	176	179	183	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-50 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	141	144	133	137	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	144	145	151	144	150	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	180	175	181	176	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-51 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	157	144	134	150	134	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	135	138	132	131	131	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	183	176	179	188	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-52 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	129	156	158	138	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	129	125	126	136	130	**129**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	182	182	176	188	182	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-53 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	127	125	131	132	136	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	124	129	133	135	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	183	179	186	184	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-54 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	140	138	146	136	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	122	124	122	126	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	187	182	182	182	182	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-55 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	142	138	139	131	136	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	142	129	139	135	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	181	178	186	183	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-56 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	161	159	153	144	151	**154**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	127	122	125	135	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	185	184	187	192	**186**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-58 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	170	167	170	159	169	**167**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	152	150	164	144	151	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	194	186	186	199	**190**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72084

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-46 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	149	149	146	160	155	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	171	174	167	170	**172**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-57 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	94	119	105	129	139	**117**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	171	169	167	178	**173**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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Date: 2022-05-25

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**72263**
Material(s) Tested:	(2) Heat Fusion Weld Seam(s) (1) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72263

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-45A1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	158	161	154	144	143	**152**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	141	159	136	143	148	**145**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	173	172	172	176	182	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-45B1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	163	158	155	159	159	**159**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	153	151	140	143	156	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	169	164	159	161	166	**164**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72263

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-59 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	154	165	143	146	149	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	171	166	162	164	163	**165**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

SCS ENGINEERS Environmental Consultants & Contractors

May 26, 2022
File No. 01022034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #28 – Leachate Pond Secondary 60-mil HDPE Installation

Requested Date: May 25, 2022

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for secondary layer at the Leachate Pond

SCS Response:

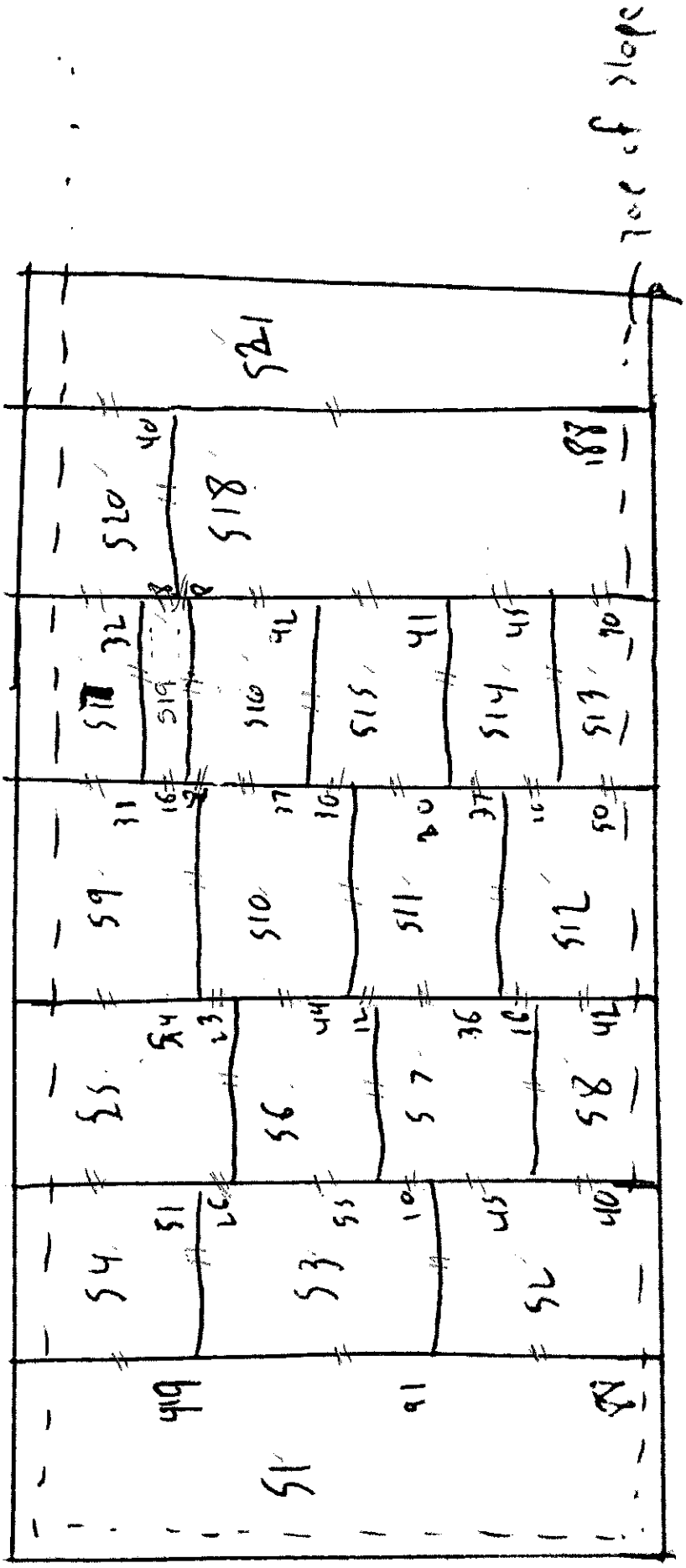
Certifying Engineer has reviewed the pertinent data and observed the completed installation in person of the 60-mil HDPE secondary geomembrane layer at the leachate evaporation pond. All destructive samples that were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

Engineer notes minor edits need to be made to the field CQA Monitor's written logs, but none of the revisions preclude approval of the installation.

Engineer notes that the CQA Monitor was unable to determine the associated roll number with several panels installed as shown on Page 1 of the Panel Deployment log. CQA team will attempt to obtain this information from the installer's QC team if possible, however, this issue does not preclude approval of the installation.

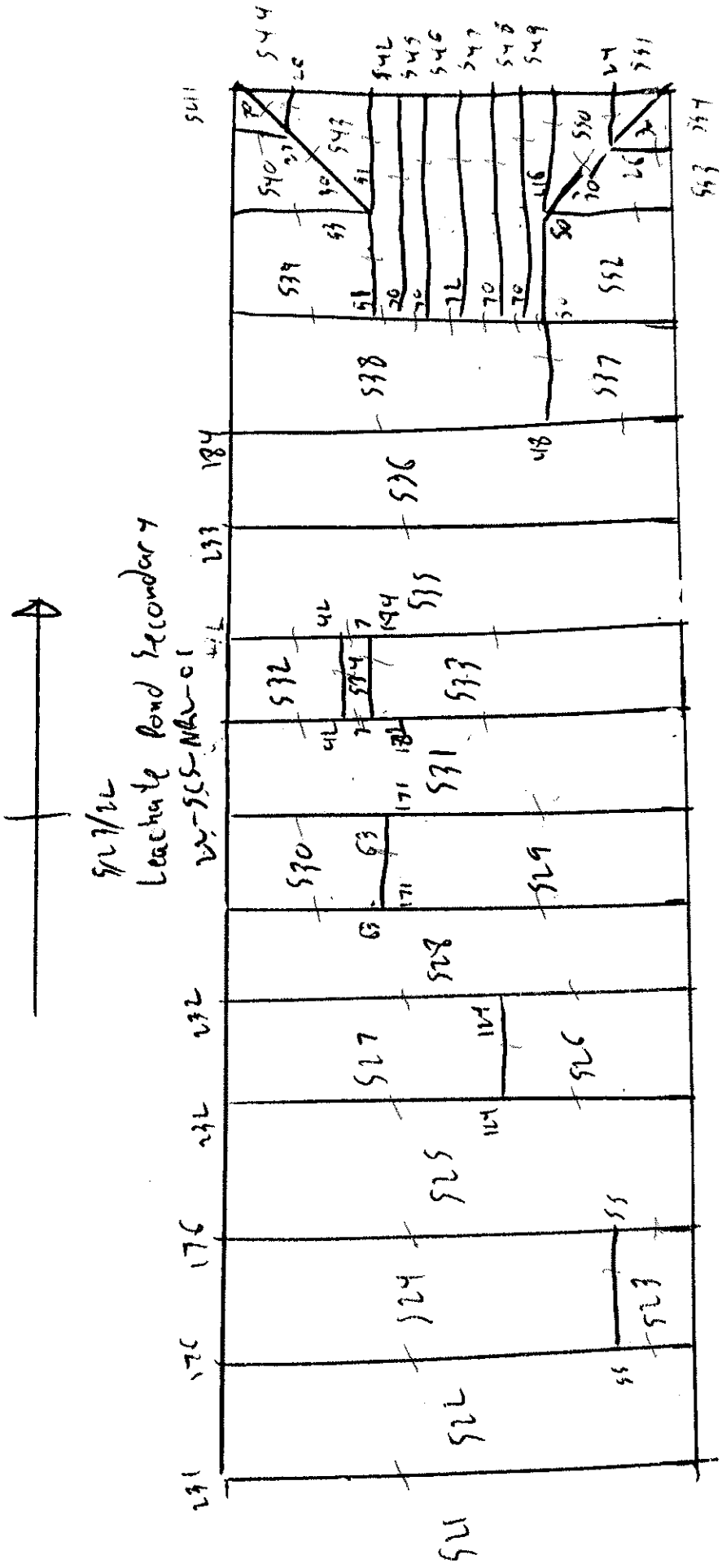
Therefore, the Certifying Engineer approves the installation of the secondary 60-mil HDPE geomembrane layer for the leachate evaporation pond. Subsequent overlying layers may be installed at this time.

Attached is all pertinent data.



Leachate Pond Secondary

Pg 1 of 2


5/17/22
Leachate Pond Secondary
Liner-SCS-MW-01

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 2
Date: 9/23/22
Rev. Date: _____

SUBGRADE ACCEPTANCE FORM

Layer: Leachate Pond Secondary

Liner Installer: Mustang

Subgrade covered by panels: 522 - 554

Approximate Area (SF): 73479.5 SF

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments: _____

Tim Smith 9/23/22
Liner Installer's Signature Date

Vincent Bright 9/25/22
Quality Technician's Signature Date

Sketch of Approved Area

See As Built Sketch

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 1 OF 2

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-SCS-NRL.01

CQA SOLUTIONS

Sheet 2 of 2
Date: 5/20/22
Rev. Date:

SUBGRADE ACCEPTANCE FORM

Layer: Leachate Pond Secondary

Liner Installer: Mustang

Subgrade covered by panels: 51-521

Approximate Area (SF): 38000

I hereby approve the condition of the subgrade for the area described above prior to the placement of the geomembrane liner. Condition refers to the surface of the subgrade and objects that may cause damage to the geomembrane liner and not the engineering soundness of the subgrade.

Comments:

Liner Installer's Signature — Date 5/20/22

Quality Technician's Signature — Date 5/23/22

Sketch of Approved Area

See As Built Sketch

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Client: SES Engineers
Project: North Ranch
Project Number: 22-525-NRL-01

Sheet 1 of 3
Date: 5/20/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
S1	4007	000	228	23	5244	228	22.5	5130	Floor	XAIS	
S2	3996	910	88	23	2024	88	22.5	1980	Floor	XAIS	
S3	3995	920	91	23	2093	91	22.5	2047.5	Floor	XAIS	
S4		930	51	23	1173	50	22.5	1125	Floor	XAIS	
S5	3996	940	77	23	1771	77	22.5	1732.5	Floor	XAIS	
S6	3992	1000	56	23	1288	56	22.5	1260	Floor	XAIS	
S7		1010	55	23	1265	54	22.5	1215	Floor	XAIS	
S8		1021	42	23	966	42	22.5	945	Floor	XAIS	
S9	3990	1030	55	23	1265	55	22.5	1237.5	Floor	XAIS	
S10	3989	1040	67	23	1541	65	22.5	1462.5	Floor	XAIS	
S11		1050	49	23	1127	49	22.5	1102.5	Floor	XAIS	
S12	3924	1100	60	23	1380	55	22.5	1237.5	Floor	XAIS	
S13	3995	1110	50	23	1150	50	22.5	1125	Floor	XAIS	
S14	3929	1120	47	23	1081	46	22.5	1035	Floor	XAIS	
S15	3976	1130	42	23	966	42	22.5	945	Floor	XAIS	
S16	3987	1140	45	23	1035	44	22.5	990	Floor	XAIS	
S17	3917	1150	32	23	736	32	22.5	720	Floor	XAIS	
S18		1200	188	23	4324	188	22.5	4230	Floor	XAIS	
S19	3918	1210	16	23	368	16	22.5	360	Floor	XAIS	
S20		1220	40	23	920	40	22.5	900	Floor	XAIS	
S21		1230	228	23	5244	228	22.5	5130	Floor	XAIS	
			Total SF (Page)		76961		Total SF (Page)		76000		
			Total SF (Project)		76961		Total SF (Project)		76000		

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Pg (1) of (3)

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Client: [illegible] Ingram, S
Project: North Ranch Landfill
Project Number: 22-555-NRC1

CQA SOLUTIONS

Sheet ___ of ___
Date: 5/12

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate Secondary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
522	3964	1250	231	23	5313	231	22.5	5197.5	Floor	XAIS	
523	3961	1255	55	23	1265	55	22.5	1237.5	Floor	XAIS	
524	3967	1302	176	23	4048	176	22.5	3960	Floor	XAIS	
525	3967	1310	231	23	5313	231	22.5	5197.5	Floor	XAIS	
526	3967	1315	108	23	2484	108	22.5	2430	Floor	XAIS	
527	3983	1325	124	23	2852	124	22.5	2790	Floor	XAIS	
528	3983	1330	232	23	5336	232	22.5	5220	Floor	XAIS	
529	3983	1335	171	23	3933	169	22.5	3802.5	Floor	XAIS	
530	3940	1945	63	23	1449	63	22.5	1417.5	Floor	XAIS	
531	3940	1350	233	23	5359	232	22.5	5220	Floor	XAIS	
532	3940	1355	42	23	966	42	22.5	945	Floor	XAIS	
533	3940	1400	184	23	4232	183	22.5	4117.5	Floor	XAIS	
534	3982	1410	7	23	161	7	22.5	157.5	Floor	XAIS	
535	3982	1415	233	23	5359	233	22.5	5242.5	Floor	XAIS	
536	3982	1420	232	23	5336	232	22.5	5220	Floor	XAIS	
537	3982	1430	48	23	1104	48	22.5	1080	Floor	XAIS	
538	3968	1435	184	23	4232	184	22.5	4140	Floor	XAIS	
539	3968	1445	53	23	1219	52	22.5	1170	W Berm	XAIS	
540	3968	1450	53	23	1219	40	22.5	900	W Berm	XAIS	
541	3968	1455	27	18	243	27	16	243	W Berm	XAIS	T
542	3968	1500	72	23	1656	71	22.5	1597.5	N Berm	XAIS	
543	3968	1505	51	23	1173	39	22.5	877.5	N Berm	XAIS	
544	3968	1510	26	18	234	26	18	234	N Berm	XAIS	T
545	3968	1515	70	23	1610	70	22.5	1575	N Berm	XAIS	
			Total SF (Page)		66096	Total SF (Page)		63967			
379			Total SF (Project)		109057	Total SF (Project)		194.67			

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PG (2) OF (3)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL.01

CQA SOLUTIONS

Sheet ___ of ___
Date: 5/7/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate S Material Type: HDPE Thickness: 60mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
546	3984	1525	72	23	1656	71	22.5	1597.5	N Berm	XAIS	
547	3984	1530	72	23	1656	71	22.5	1597.5	N Berm	XAIS	
548	3984	1535	70	23	1610	70	22.5	1575	N Berm	XAIS	
549	3984	1540	70	23	1610	70	22.5	1575	N Berm	XAIS	
550	3984	1545	46	23	1058	35	22.5	787.5	N Berm	XAIS	
551	3984	1550	24	18	192	24	18	192	N Berm	XAIS	T
552	3984	1555	50	23	1150	50	22.5	1125	E Berm	XAIS	
553	3984	1600	50	23	1150	38	22.5	855	E Berm	XAIS	
554	3984	1605	26	16	208	26	16	208	E Berm	XAIS	T
				Total SF (Page)	10290		Total SF (Page)	9516.5			
				Total SF (Project)	113747		Total SF (Project)	109479.5			

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PG 3 of 3

Client: SCS
Project: NORTH RANCH
Project Number: 22SCSNR-01

Sheet 1 of 5
Date: 4/20
Rev. Date: —

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
70	WZ	CK	955	F	S	S	350	6			111	-	113	-	131	-	P	MAS	
											107	-	113	-	144	-			
											109	-	111	-	140	-			
											115	-	114	-	137	-			
											114	-	115	-	132	-			
73	WZ	SL	1010	F	T	T	350	5			119	-	107	-	128	-	P	MAS	
											121	-	113	-	135	-			
											117	-	116	-	133	-			
											115	-	113	-	137	-			
											105	-	110	-	136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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Client: SCS Engineers
Project: North Ranch Land fill
Project Number: 22-SCS-REL.01

CQA SOLUTIONS

Sheet 2 of 5
Date: 5/26/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
77	6744	SL	0700	F	T	T			550	550	107	-			131	-	P	XAIS	
											110	-			135	-			
											109	-			129	-			
											108	-			140	-			
											117	-			136	-			
95	V82	CH	1300	F	S	S	850	6			102	-	115	-	141	-	P	XAIS	
											113	-	104	-	140	-			
											112	-	113	-	148	-			
											109	-	120	-	135	-			
											118	-	119	-	139	-			
95	W2	SL	1102	C	T	T	850	5			110	-	103	-	132	-	P	XAIS	
											117	-	121	-	137	-			
											115	-	110	-	129	-			
											116	-	103	-	133	-			
											102	-	111	-	136	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (2) OF (5)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 5
Date: 5/21/22
Rev. Date: —

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
68	G-744	SL	0700	E	T	T			550	550	101	~			131	~	P	XALS	
											105	~			125	~			
											104	~			142	~			
											111	~			140	~			
											109	~			137	~			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (3) OF (5)

Client: SESEngineers
Project: North Ranch Landfill
Project Number: 22-SES-NRL-01

CQA SOLUTIONS

Sheet 4 of 5
Date: 5/23/22
Rev. Date: —

TRIAL WELDS

Ambient Temp	Welder Information: Machine	Welder Information: Operator ID	Welder Information: Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
81	W2	CK	1640	F	S	S	850	C	C		97	-	107	-	137	-	P	YAIS	
											115	-	126	-	171	-			
											112	-	109	-	136	-			
											114	-	124	-	142	-			
											125	-	118	-	140	-			
81	W2	CK	1645	F	T	T	850	S			107	-	121	-	140	-	P	YAIS	
											108	-	106	-	145	-			
											112	-	102	-	138	-			
											110	-	125	-	142	-			
											123	-	98	-	147	-			
81	W2	SL	1641	F	S	S	850	S			106	-	114	-	139	-	P	YAIS	
											105	-	104	-	134	-			
											102	-	110	-	128	-			
											108	-	123	-	138	-			
											119	-	113	-	142	-			
81	W2	SL	1647	F	T	T	850	S			96	-	117	-	147	-	P	YAIS	
											102	-	101	-	130	-			
											101	-	108	-	145	-			
											122	-	121	-	146	-			
											119	-	115	-	132	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (4) OF (5)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NAL-01

CQA SOLUTIONS

Sheet 5 of 5
Date: 5/24/22
Rev. Date: _____

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Machine	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong. %			
73	G44	MM	0700	E	T	T			550	550	105	-			154	-	P	YAIS	
											101	-			174	-			
											104	-			130	-			
											121	-			141	-			
											117	-			136	-			
73	G744	SL	0707	E	T	T					109	-			174	-	P	YAIS	
											119	-			193	-			
											103	-			139	-			
											106	-			131	-			
											107	-			137	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (5) OF (5)

Client: SCS Engineers
Project: North Knish Liner
Project Number: 22-XS-0RL-01

CQA SOLUTIONS

Sheet 1 of 3
Date 5/20
Rev. Date:

SEAMING RECORD

Layer: Leachate Secondary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
S4	S3	SL	W2	1112	1114	0	22	22	22		XAIS	
S3	S2	SL	W2	1131	1133	0	22	22	44		XAIS	
S5	S6	SL	W2	1124	1127	0	22	22	66		XAIS	
S7	S6	SL	W2	1101	1103	0	22	22	88		XAIS	
S8	S7	SL	W2	1123	1125	0	22	22	110		XAIS	
S9	S10	SL	W2	1138	1140	0	22	22	132		XAIS	
S11	S10	SL	W2	1416	1418	0	22	22	154		XAIS	
S12	S11	SL	W2	1730	1732	0	22	22	176		XAIS	
S13	S14	SL	W2	1404	1406	0	22	22	198		XAIS	
S14	S16	SL	W2	1447	1449	0	22	22	220		XAIS	
S20	S18	SL	W2	1395	1397	0	22	22	242		XAIS	
S16	S15	SL	W2	1145	1147	0	22	22	264		MIS	
S14	S15	SL	W2	1150	1152	0	22	22	286	LSDS3	XAIS	
S13	S14	SL	W2	1335	1337	0	22	22	308		XAIS	

Total LF (Page)	308	Total DS (Page)	1	Total DS Needed (Page)	0.6	Over/Under (Page)	+0.4
Total LF (Project)	308	Total DS (Project)	1	Total DS Needed (Project)	0.6	Over/Under (Project)	+0.4

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 1 of 3

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 3
Date 5/23/22
Rev. Date:

SEAMING RECORD

Layer: leachate secondary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
SLL	SL4	SL	WL	1302	1318	176	0	176	176		XAIS	
SL3	SL4	SL	WL	1321	1323	0	22	22	198		XAIS	
SL2	SL3	SL	WL	1325	1330	55	0	55	253		XAIS	
SL5	SL7	SL	WL	1341	1354	124	0	124	377	LSDS5	XAIS	
SL5	SL6	SL	WL	1354	1408	108	0	108	485		XAIS	
SL6	SL7	SL	WL	1334	1336	0	22	22	507		XAIS	
S30	SL9	SL	WL	1412	1414	0	22	22	529		XAIS	
S30	S31	SL	WL	1416	1426	62	0	62	591	LSDS7	XAIS	
SL9	S31	SL	WL	1426	1448	171	0	171	762		XAIS	
S32	S34	SL	WL	1455	1457	0	22	22	784		XAIS	
S34	S33	SL	WL	1451	1453	0	22	22	806		XAIS	
S32	S35	SL	WL	1502	1504	42	0	42	848		XAIS	
S34	S35	SL	WL	1504	1505	7	0	7	855		XAIS	
S37	S35	SL	WL	1505	1516	184	0	184	1039		XAIS	
S37	S38	SL	WL	1529	1531	0	22	22	1061		XAIS	
S38	S39	SL	WL	1540	1548	51	0	51	1112		XAIS	
S39	S40	SL	WL	1549	1553	53	0	53	1165		XAIS	
S40	S41	SL	WL	1557	1559	0	27	27	1192		XAIS	
S43	S42	SL	WL	1606	1608	0	51	51	1243	LSDS12	XAIS	
S44	S43	SL	WL	1602	1604	0	26	26	1269		XAIS	
S41	S44	SL	WL	1623	1626	0	30	30	1299		XAIS	
S40	S43	SL	WL	1626	1629	0	30	30	1329		XAIS	
S39	S42	SL	WL	1628	1630	0	22	22	1351		XAIS	
S43	S42	SL	WL	1705	1707	0	50	50	1401		XAIS	

Total LF (Page)	1401	Total DS (Page)	3	Total DS Needed (Page)	2.9	Over/Under (Page)	+0.2
Total LF (Project)	1709	Total DS (Project)	4	Total DS Needed (Project)	3.4	Over/Under (Project)	+0.6

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (2) of (3)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 3
Date 9/13/22
Rev. Date: _____

SEAMING RECORD

Layer: Leachate Secondary

Welder Initials: SL
Welder Number: _____
Machine ID: WL

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
518	542	SL	WL	1626	1634	0	22	22	22	USDS9	YAZS	
518	545	SL	WL	1634	1636	0	22	22	44		YAZS	
518	546	SL	WL	1636	1638	0	22	22	66		YAZS	
538	547	SL	WL	1638	1640	0	22	22	88		YAZS	
538	548	SL	WL	1640	1642	0	22	22	110		YAZS	
538	549	SL	WL	1642	1644	0	22	22	132		YAZS	
537	551	SL	WL	1644	1650	0	50	50	182		YAZS	
551	549	SL	WL	1654	1656	0	22	22	204		YAZS	

Total LF (Page)	204	Total DS (Page)	1	Total DS Needed (Page)	0.4	Over/Under (Page)	+0.6
Total LF (Project)	1813	Total DS (Project)	5	Total DS Needed (Project)	3.8	Over/Under (Project)	+1.2

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (3) OF (5)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number:

CQA SOLUTIONS

Sheet 1 of 3
Date 5/10
Rev. Date:

SEAMING RECORD

Layer: Leachate Secondary

Welder Initials: CM
Welder Number:
Machine ID: W82

Seam Reference Top	Seam Reference Bottom	Welding Info Operator	Welding Info Machine	Weld Times Start	Weld Times End	Station Begin	Station End	Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
S1	S2	CM	W82	1016	1023	88	0	88	88		XAES	
S1	S3	CM	W82	1023	1041	91	0	91	179		XAES	
S1	S4	CM	W82	1000	1005	49	0	49	228		XAES	
S4	S5	CM	W82	1046	1049	51	0	51	279	USDS1	XAES	
S3	S5	CM	W82	1049	1056	26	0	26	305		XAES	
S3	S6	CM	W82	1056	1058	55	0	55	360		XAES	
S3	S7	CM	W82	1058	1059	10	0	10	370		XAES	
S2	S7	CM	W82	1059	1103	45	0	45	415		XAES	
S2	S8	CM	W82	1103	1106	44	0	44	459		XAES	
S4	S9	CM	W82	1110	1115	54	0	54	513		XAES	
S5	S10	CM	W82	1115	1118	23	0	23	536		XAES	
S6	S10	CM	W82	1118	1122	44	0	44	580		XAES	
S6	S11	CM	W82	1122	1125	12	0	12	592		XAES	
S7	S11	CM	W82	1125	1129	36	0	36	628		XAES	
S7	S12	CM	W82	1129	1134	42	0	42	670		XAES	
S8	S12	CM	W82	1134	1137	42	0	42	712		XAES	
S9	S13	CM	W82	1340	1342	31	0	31	743		XAES	
S9	S14	CM	W82	1342	1344	16	0	16	759		XAES	
S9	S16	CM	W82	1344	1346	8	0	8	767		XAES	
S10	S15	CM	W82	1346	1350	37	0	37	804	USDS2	XAES	
S10	S15	CM	W82	1134	1142	30	0	30	834		XAES	
S11	S15	CM	W82	1142	1144	60	0	60	894		XAES	
S11	S14	CM	W82	1144	1146	37	0	37	931		XAES	
S12	S14	CM	W82	1146	1148	10	0	10	931		XAES	

Total LF (Page)	931	Total DS (Page)	2	Total DS Needed (Page)	1.9	Over/Under (Page)	10.1		
Total LF (Project)	931	Total DS (Project)	2	Total DS Needed (Project)	1.9	Over/Under (Project)	10.1		

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (1) OF (3)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-25S-NRL-01

CQA SOLUTIONS

Sheet 2 of 3
Date 5/10/22
Rev. Date: _____

SEAMING RECORD

Layer: Leachate Secondary

Welder Initials: CA
Welder Number: _____
Machine ID: WGL

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct		
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number	Observer	Notes
S1L	S13	CA	WGL	1148	1151	50	0	50	50		XAIS	
S17	S20	CA	WGL	1353	1355	72	0	72	82		XAIS	
S19	S20	CA	WGL	1355	1356	8	0	8	90		XAIS	
S19	S18	CA	WGL	1400	1402	8	0	8	98		XAIS	
S16	S18	CA	WGL	1402	1405	42	0	42	140		XAIS	
S15	S18	CA	WGL	1345	1349	41	0	41	181		XAIS	
S14	S18	CA	WGL	1349	1373	45	0	45	226		XAIS	
S13	S18	CA	WGL	1373	1378	50	0	50	276		XAIS	
S20	S21	CA	WGL	1410	1416	40	0	40	316		XAIS	
S18	S21	CA	WGL	1416	1430	188	0	188	504	L5054	XAIS	

Total LF (Page)	504	Total DS (Page)	1	Total DS Needed (Page)	1	Over/Under (Page)	0
Total LF (Project)	1435	Total DS (Project)	3	Total DS Needed (Project)	2.9	Over/Under (Project)	+0.1

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg (2) of (3)

Client: JCS Engineers
Project: North Knoll Landfill
Project Number: 22-SCS-MRL.01

CQA SOLUTIONS

Sheet 3 of 3
Date 5/23/22
Rev. Date: _____

SEAMING RECORD

Layer: Leachate Secondary

Welder Initials: CH
Welder Number: _____
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed	Cumul.	Destruct	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End	Length	Lin. Ft	Number		
521	522	CH	W82	1253	1314	270	0	270	270		XAES	
524	525	CH	W82	1319	1338	176	0	176	406		XAES	
523	525	CH	W82	1636	1642	55	0	55	461		XAES	
527	528	CH	W82	1343	1354	121	0	121	582		XAES	
526	528	CH	W82	1354	1405	108	0	108	690	LSDS6	XAES	
529	530	CH	W82	1408	1416	63	0	63	753		XAES	
528	529	CH	W82	1416	1433	166	0	166	919	LSDS8	XAES	
531	532	CH	W82	1433	1444	42	0	42	961		XAES	
531	534	CH	W82	1444	1445	7	0	7	968		XAES	
531	533	CH	W82	1445	1501	182	0	182	1150		XAES	
535	536	CH	W82	1506	1529	232	0	232	1382		XAES	
536	538	CH	W82	1533	1551	184	0	184	1566	LSDS10	XAES	
536	537	CH	W82	1551	1556	48	0	48	1614		XAES	
542	545	CH	W82	1600	1603	0	70	70	1684		XAES	
545	546	CH	W82	1604	1611	0	70	70	1754		XAES	
546	547	CH	W82	1671	1634	0	72	72	1826		XAES	
548	547	CH	W82	1635	1638	70	0	70	1896		XAES	
549	548	CH	W82	1648	1651	70	0	70	1966	LSDS11	XAES	
550	549	CH	W82	1654	1657	46	0	46	2012		XAES	
551	550	CH	W82	1700	1702	24	0	24	2036		XAES	
554	553	CH	W82	1703	1707	0	26	26	2062		XAES	
553	550	CH	W82	1710	1713	0	70	70	2132		XAES	
554	551	CH	W82	1713	1716	0	70	70	2132		XAES	
Total LF (Page)		2132		Total DS (Page)		4	Total DS Needed (Page)		4.2	Over/Under (Page)		-0.2
Total LF (Project)		3357		Total DS (Project)		7	Total DS Needed (Project)		7.1	Over/Under (Project)		-0.1

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 3 of 3

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: XCS
Project: NORTH RANCH
Project Number: 22-XCS-NRL-01

CQA

Sheet 1 of 5
Date: 9/7/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Pond Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S1	S2	0	EOS	Full	30	30	0726	0735	P	–	RC	XALS	N	
	S1	S3	0	EOS		30	30	0732	0737	P	–				
	S1	S4	0	EOS		30	30	0734	0734	P	–				
	S4	S5	C	EOS		30	30	0737	0742	P	–				
	S3	S5	0	EOS		30	30	0739	0744	P	–				
	S3	S6	0	EOS		30	30	0741	0746	P	–				
	S3	S7	0	EOS		30	30	0743	0748	P	–				
	S2	S7	0	EOS		30	30	0745	0750	P	–				
	S2	S8	0	EOS		30	30	0748	0753	P	–				
	S5	S9	0	EOS		30	30	0751	0756	P	–				
	S5	S10	0	EOS		30	30	0753	0758	P	–				
	S6	S10	0	EOS		30	30	0756	0801	P	–				
	S6	S11	0	EOS		30	30	0758	0803	P	–				
	S7	S11	0	EOS		30	30	0800	0805	P	–				
	S7	S12	0	EOS		30	30	0803	0808	P	–				
	S8	S12	0	EOS		30	30	0806	0811	P	–				
	S2	S3	0	EOS		30	30	0808	0813	P	–				
	S3	S4	0	EOS		30	30	0810	0815	P	–				
	S5	S6	0	EOS		30	30	0813	0818	P	–				
	S6	S7	0	EOS		30	30	0815	0820	P	–				
	S7	S8	0	EOS		30	30	0817	0822	P	–				
	S9	S10	0	EOS		30	30	0819	0824	P	–				
	S10	S11	C	EOS		30	30	0821	0826	P	–				
	S11	S12	C	EOS		30	30	0824	0829	P	–				

Specs: Pre-testing stabilization time: – Maximum Starting Pressure: 33 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 1 of 5

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCSNRL-01

CQA

Date: 5/23/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate pond Secondary

Test Type	Seams Top	Seams Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	S9	S17	0	EOS	Full	30	30	0826	0831	P		RC	XAES		
	S9	S19	0	EOS		30	30	0828	0833	P					
	S9	S16	0	EOS		30	30	0831	0836	P					
	S10	S16	0	EOS		30	30	0833	0838	P					
	S10	S15	0	EOS		30	29	0835	0840	P					
	S11	S15	0	EOS		30	30	0837	0842	P					
	S11	S14	0	EOS		30	30	0840	0845	P					
	S12	S14	0	EOS		30	30	0842	0847	P					
	S12	S13	0	EOS		30	30	0844	0849	P					
	S17	S19	0	EOS		30	30	0847	0852	P					
	S19	S15	0	EOS		30	30	0849	0854	P					
	S16	S15	0	EOS		30	30	0851	0856	P					
	S15	S14	0	EOS		30	30	0854	0859	P					
	S14	S17	0	EOS		30	30	0856	0901	P					
	S17	S20	0	EOS		30	30	0858	0903	P					
	S19	S20	0	EOS		30	30	0901	0906	P					
	S19	S18	0	EOS		30	30	0903	0908	P					
	S16	S18	0	EOS		30	30	0905	0910	P					
	S16	S18	0	EOS		30	30	0908	0913	P					
	S14	S18	0	EOS		30	30	0910	0915	P					
	S17	S18	0	EOS		30	30	0912	0917	P					
	S20	S18	0	EOS		30	30	0914	0919	P					
	S20	S21	0	EOS		30	30	0917	0922	P					
	S18	S21	0	EOS		30	29	0919	0924	P					

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Page 693 of 813

Client: SCS
Project: NORTH RANCH
Project: Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 5
Date: 7/13/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG
Layer: Leachate Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	SL1	SL2	0	EOS	Full	30	30	1557	1602	P	–	VS	MES	N	
	SL2	SL3	0	EOS		30	30	1559	1604	P	–				
	SL2	SL4	0	EOS		30	30	1601	1606	P	–				
	SL3	SL4	0	EOS		30	30	1819	1820	P	–				
	SL3	SL5	0	EOS		30	30	1606	1611	P	–				
	SL4	SL5	0	EOS		30	30	1608	1613	P	–				
	SL5	SL6	0	EOS		30	30	1610	1615	P	–				
	SL5	SL7	0	EOS		30	30	1612	1617	P	–				
	SL6	SL7	0	EOS		30	30	1614	1619	P	–				
	SL6	SL8	0	EOS		30	30	1617	1622	P	–				
	SL7	SL8	0	EOS		30	30	1619	1624	P	–				
	SL8	SL9	0	EOS		30	30	1621	1626	P	–				
	SL8	SL10	0	EOS		30	30	1624	1629	P	–				
	SL9	SL10	0	EOS		30	30	1626	1631	P	–				
	SL9	SL11	0	EOS		30	30	1629	1634	P	–				
	SL10	SL11	0	EOS		30	30	1631	1636	P	–				
	SL11	SL12	0	EOS		30	30	1633	1638	P	–				
	SL11	SL14	0	EOS		30	30	1635	1640	P	–				
	SL11	SL13	0	EOS		30	30	1638	1643	P	–				
	SL14	SL12	0	EOS		30	30	1640	1645	P	–				
	SL14	SL13	0	EOS		30	30	1642	1647	P	–				
	SL13	SL15	0	EOS		30	30	1644	1649	P	–				
	SL14	SL15	0	EOS		30	30	1646	1651	P	–				
	SL12	SL15	0	EOS		30	30	1648	1654	P	–				

Specs: Pre-testing stabilization time: – Maximum Starting Pressure: 36 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG. 2 OF 5

Client: SCS
Project: NORTH RANCH
Project: Number: 22-SCS-NRL-01

CQA

Sheet 4 of 5
Date: 5/23/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	535	536	0	EOS	Full	30	30	1651	1657	P	–	WS	YAIS	N	
	536	537	0	EOS		30	29	1654	1659	P	–				
	536	538	0	EOS		30	30	1657	1702	P	–				
	537	538	0	EOS		30	30	1659	1704	P	–				
	538	539	0	EOS		30	30	1702	1707	P	–				
	538	542	0	EOS		30	30	1704	1709	P	–				
	538	545	0	EOS		30	30	1706	1711	P	–				
	538	546	0	EOS		30	30	1708	1713	P	–				
	538	547	0	EOS		30	30	1711	1716	P	–				
	538	548	0	EOS		30	30	1713	1718	P	–				
	538	549	0	EOS		30	29	1715	1720	P	–				
	537	552	0	EOS		30	29	1717	1722	P	–				
	539	540	0	EOS		30	30	1720	1725	P	–				
	540	541	0	EOS		30	30	1722	1727	P	–				
	541	544	0	EOS		30	30	1725	1730	P	–				
	540	543	0	EOS		30	30	1727	1732	P	–				
	544	543	0	EOS		30	30	1729	1734	P	–				
	543	542	0	EOS		30	30	1731	1736	P	–				
	539	542	0	EOS		30	30	1734	1739	P	–				
	542	545	0	EOS		30	30	1736	1741	P	–				
	545	546	0	EOS		30	30	1739	1744	P	–				
	546	547	0	EOS		30	30	1741	1746	P	–				
	547	548	0	EOS		30	30	1743	1748	P	–				
	548	549	0	EOS		30	30	1746	1751	P	–				

Specs: Pre-testing stabilization time: ____ Maximum Starting Pressure: 35 Maximum Allowable Loss: 3
Minimum Starting Pressure: 30 Test Duration: 5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRLC-01

CQA SOLUTIONS

Sheet 5 of 5
Date: 7/11/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Secondary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	549	550	0	EOS	full	30	30	1749	1754	P	–	WS	KAIS	N	
	549	552	0	EOS		30	30	1751	1756	P	–				
	550	551	0	EOS		30	30	1753	1758	P	–				
	550	553	0	EOS		30	30	1755	1800	P	–				
	551	554	0	EOS		30	30	1758	1803	P	–				
	552	553	0	EOS		30	30	1800	1805	P	–				
	553	554	0	EOS		30	30	1802	1807	P	–				

Specs: Pre-testing stabilization time: 10 Maximum Starting Pressure: 35 Maximum Allowable Loss: ≤ 3
Minimum Starting Pressure: 30 Test Duration: 5

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 5 of 5

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-SCS-MIL-01

Sheet 1 of 1
Date: 5/26/22
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Leachate Secondary

Sample Information					Welder Information			Testing Information		Comments, Tracking Notes, Etc.
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	
LSDS1	S4/S5	26	5/21	5/23	CK	W82	5/20	P	P	
LSDS2	S16/S16	17	5/21	5/23	CK	W82	5/20	P	P	
LSDS3	S4/S14	3	5/21	5/23	SL	W2	5/20	P	P	
LSDS4	S18/S21	25	5/21	5/23	CK	W82	5/20	P	P	
LSDS5	S25/S27	50	5/24	5/24	SL	W2	5/23	P		
LSDS6	S26/S28	81	5/24	5/24	CK	W82	5/23	P		
LSDS7	S30/S31	41	5/24	5/24	SL	W2	5/23	P		
LSDS8	S28/S29	21	5/24	5/24	CK	W82	5/23	P		
LSDS9	S38/S42	7	5/24	5/24	SL	W2	5/23	P		
LSDS10	S36/S38	34	5/24	5/24	CK	W82	5/23	P		
LSDS11	S48/S49	27	5/24	5/24	CK	W82	5/23	P		
LSDS12	S42/S43	20	5/24	5/24	SL	W2	5/23	P		
LSDS13	SR34/S49		5/24	5/24	MM	G44	5/24	P		
LSDS14	SR37/S39		5/24	5/24	SL	G744	5/24	P		

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PG 1 OF 1

Client: SCS Engineers
Project: Navajo Rapids Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 4
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Secondary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
SR1	S1	S3	S4	--	—	Int	—	—	P	3	3	12	5/21	928	SL	G-744	WS	5/21	P	XAIS
SR2	S1	S2	S3	—	—	Int	—	—	P	2	4	12	5/21	911	SL	G-744	WS	5/21	P	XAIS
SR3	S2	S8	S7	—	—	Int	—	—	P	2	2	8	5/21	921	SL	G-744	WS	5/21	P	XAIS
SR4	S2	S6	S7	—	—	Int	—	—	P	2	2	8	5/21	903	SL	G-744	WS	5/21	P	XAIS
SR5	S3	S7	S6	—	—	Int	—	—	P	2	2	8	5/21	900	SL	G-744	WS	5/21	P	XAIS
SR6	S3	S6	S5	—	—	Int	—	—	P	2	2	8	5/21	915	SL	G-744	WS	5/21	P	XAIS
SR7	S3	S4	S5	—	—	Int	—	—	P	2	2	8	5/21	923	SL	G-744	WS	5/21	P	XAIS
SR8	S5	S9	S10	—	—	Int	—	—	P	2	2	8	5/21	935	SL	G-744	WS	5/21	P	XAIS
SR9	S5	S6	S10	—	—	Int	—	—	P	2	2	8	5/21	930	SL	G-744	WS	5/21	P	XAIS
SR10	S6	S10	S11	—	—	Int	—	—	P	2	2	8	5/21	918	SL	G-744	WS	5/21	P	XAIS
SR11	S6	S7	S11	—	—	Int	—	—	P	2	2	8	5/21	913	SL	G-744	WS	5/21	P	XAIS
SR12	S7	S11	S12	—	—	Int	—	—	P	2	2	8	5/21	855	SL	G-744	WS	5/21	P	XAIS
SR13	S7	S8	S12	—	—	Int	—	—	P	2	2	8	5/21	858	SL	G-744	WS	5/21	P	XAIS
SR14	S12	S13	S14	—	—	Int	—	—	P	2	2	8	5/21	809	SL	G-744	WS	5/21	P	XAIS
SR15	S12	S11	S14	—	—	Int	—	—	P	2	4	12	5/21	912	SL	G-744	WS	5/21	P	XAIS
SR16	S11	S14	S15	—	—	Int	—	—	P	2	2	8	5/21	826	SL	G-744	WS	5/21	P	XAIS
SR17	S11	S10	S15	—	—	Int	—	—	P	2	2	8	5/21	829	SL	G-744	WS	5/21	P	XAIS
SR18	S10	S15	S16	—	—	Int	—	—	P	2	2	8	5/21	1004	SL	G-744	WS	5/21	P	XAIS
SR19	S10	S9	S16	—	—	Int	—	—	P	2	2	8	5/21	715	SL	G-744	WS	5/21	P	XAIS
SR20	S9	S16	S19	—	—	Int	—	—	P	2	3	10	5/21	741	SL	G-744	WS	5/21	P	XAIS
									Total (Page)			174								
									Total (Project)			174								

PG (1) of (4)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 4
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Secondary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
SR1	S9	S17	S14	—	—	Int	—	—	P	2	2	8	5/21		SL	GT44	WS	5/21	P	KAIS
SR2	S17	S19	S20	—	—	Int	—	—	P	2	2	8	5/21	950	SL	GT44	WS	5/21	P	YAIS
SR3	S19	S20	S18	—	—	Int	—	—	P	2	3	10	5/21	0757	SL	GT44	WS	5/21	P	XAIS
SR4	S16	S19	S20	—	—	Int	—	—	P	2	2	8	5/21	0755	SL	GT44	WS	5/21	P	XAIS
SR5	S16	S15	S19	—	—	Int	—	—	P	2	2	8	5/21	1009	SL	GT44	WS	5/21	P	XAIS
SR6	S14	S15	S18	—	—	Int	—	—	P	2	2	8	5/21	0824	SL	GT44	WS	5/21	P	XAIS
SR7	S13	S14	S18	—	—	Int	—	—	P	2	2	8	5/21	0806	SL	GT44	WS	5/21	P	XAIS
SR8	S18	S20	S21	—	—	Int	—	—	P	2	2	8	5/21	1001	SL	GT44	WS	5/21	P	XAIS
SR9	S4	S5	—	—	—	LSDS1	26	—	P	2	5	14	5/24	770	MM	G 44	WS	5/24	P	XAIS
SR10	S10	S16	—	—	—	LSDS2	17	—	P	2	5	14	5/24	746	MM	G 44	WS	5/24	P	XAIS
SR11	S14	S15	—	—	—	LSDS3	3	—	P	2	5	14	5/24	745	MM	G 44	WS	5/24	P	YAIS
SR12	S18	S21	—	—	—	LSDS4	25	—	P	2	6	16	5/24	850	MM	G 44	WS	5/24	P	XAIS
SR13	S25	S27	—	—	—	LSDS5	50	—	P	2	5	14	5/24	903	MM	G 44	WS	5/24	P	XAIS
SR14	S26	S28	—	—	—	LSDS6	81	—	P	3	6	18	5/24	916	MM	G 44	WS	5/24	P	XAIS
SR15	S30	S31	—	—	—	LSDS7	41	—	P	2	5	14	5/24	914	MM	G 44	WS	5/24	P	XAIS
SR16	S29	S29	—	—	—	LSDS8	21	—	P	2	5	14	5/24	925	MM	G 44	WS	5/24	P	XAIS
SR17	S38	S42	—	—	—	LSDS9	7	—	P	2	5	14	5/24	X	SL	G744	WS	5/24	P	XAIS
SR18	S36	S38	—	—	—	LSDS10	79	—	P	2	6	16	5/24	0935	MM	G 44	WS	5/24	P	XAIS
SR19	S48	S49	—	—	—	LSDS11	27	—	P	2	5	14	5/24	X	MM	G 44	WS	5/24	P	XAIS
SR20	S42	S47	—	—	—	LSDS12	70	—	P	2	5	14	5/24	0935	SL	G744	WS	5/24	P	XAIS
											Total (Page)	142								
											Total (Project)	416								

Notes: * TIME NOT PROVIDED BY INSTALLER

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PG (2) OF (4)

Client: SCS Engineers
Project: North Ranch Unit 11
Project Number: 22-SCS-NR-01

CQA SOLUTIONS

Sheet 3 of 4
Date VARIES
Rev. Date: NA

GEOMEMBRANE REPAIR LOG

Layer: Leachate Secondary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
SR41	549	548	—	—	—	LSDS13	—	—	P	2	7	18	5/24	*	MM	G44	WS	5/24	P	YAJS
SR42	537	538	—	—	—	LSDS4	—	—	P	2	7	18	5/24	*	MM	G44	WS	5/24	P	YAJS
SR43	522	523	524	—	—	Int	—	—	P	2	2	8	5/24	855	MM	G44	WS	5/24	P	YAJS
SR44	523	524	525	—	—	Int	—	—	P	2	2	8	5/24	853	MM	G44	WS	5/24	P	YAJS
SR45	525	526	527	—	—	Int	—	—	P	2	2	8	5/24	907	MM	G44	WS	5/24	P	YAJS
SR46	526	527	528	—	—	Int	—	—	P	2	2	8	5/24	910	MM	G44	WS	5/24	P	YAJS
SR47	528	529	530	—	—	Int	—	—	P	2	2	8	5/24	905	SL	G744	WS	5/24	P	YAJS
SR48	529	530	531	—	—	Int	—	—	P	2	2	8	5/24	902	SL	G744	WS	5/24	P	YAJS
SR49	531	532	534	—	—	Int	—	—	P	2	2	8	5/24	325	SL	G744	WS	5/24	P	YAJS
SR50	531	534	533	—	—	Int	—	—	P	2	4	12	5/24	830	SL	G744	WS	5/24	P	YAJS
SR51	532	534	535	—	—	Int	—	—	P	2	2	8	5/24	858	SL	G744	WS	5/24	P	YAJS
SR52	533	534	535	—	—	Int	—	—	P	2	2	8	5/24	851	SL	G744	WS	5/24	P	YAJS
SR53	536	537	538	—	—	Int	—	—	P	2	2	8	5/24	945	MM	G44	WS	5/24	P	YAJS
SR54	550	551	553	554	—	Int	—	—	P	3	4	14	5/24	1025	MM	G44	WS	5/24	P	YAJS
SR55	549	550	552	553	—	Int	—	—	P	4	6	20	5/24	957	MM	G44	WS	5/24	P	YAJS
SR56	537	537	542	544	—	Int	—	—	P	3	4	14	5/24	950	MM	G44	WS	5/24	P	YAJS
SR57	538	548	549	—	—	Int	—	—	P	2	2	8	5/24	940	MM	G44	WS	5/24	P	YAJS
SR58	536	547	548	—	—	Int	—	—	P	2	2	8	5/24	937	MM	G44	WS	5/24	P	YAJS
SR59	539	546	547	—	—	Int	—	—	P	2	2	8	5/24	1014	SL	G744	WS	5/24	P	YAJS
SR60	538	545	546	—	—	Int	—	—	P	2	2	8	5/24	1008	SL	G744	WS	5/24	P	YAJS

Total (Page)	208
Total (Project)	624

Notes: * = TIME NOT PROVIDED BY INSTALLER

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 4 of 4
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Secondary

Repair #	Damage								Repair									Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
SR61	538	542	545	—	—	Int	—	—	P	2	2	8	5/24	1002	SL	G744	WS	5/24	P	YAZS
SR62	539	540	542	543	—	Int	—	—	P	2	5	14	5/24	925	SL	G744	WS	5/24	P	YAZS
SR63	540	541	543	544	—	Int	—	—	P	2	3	10	5/24	945	SL	G744	WS	5/24	P	YAZS
SR64	541	543	—	—	—	CAP	15'	—	P	1	2	6	5/24	949	SL	G744	WS	5/24	P	YAZS
SR65	538	539	542	—	—	Int	—	—	P	2	3	10	5/24	920	SL	G744	WS	5/24	P	YAZS

Total (Page)	48
Total (Project)	672

Notes:

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 4 of 4

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-05-25

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**72262**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72262

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	131	134	155	143	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	146	148	149	142	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	182	177	176	176	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	152	144	152	145	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	145	156	132	145	142	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	181	182	182	186	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72262

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CSDS-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	161	164	165	166	172	**166**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	164	156	163	161	170	**163**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	186	180	177	182	179	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CSDS-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	136	140	126	136	138	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	113	150	114	116	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	181	188	182	181	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-05-26

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**72295**
Material(s) Tested:	(8) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72295

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: LSDS-5 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	139	146	146	136	149	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	125	127	122	127	128	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	179	177	177	182	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: LSDS-6 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	135	136	140	143	158	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	126	136	126	137	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	180	183	180	187	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72295

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: LSDS-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	146	144	140	148	157	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	126	127	129	126	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	181	180	176	179	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: LSDS-8 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	121	124	128	142	134	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	121	121	148	122	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	183	178	180	180	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72295

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: LSDS-9 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	136	141	130	129	142	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	129	148	154	133	144	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	184	182	177	182	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: LSDS-10 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	131	128	129	134	133	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	142	151	139	152	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	177	179	177	178	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72295

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: LSDS-11 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	151	142	163	153	147	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	162	128	143	138	134	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	183	188	181	180	183	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: LSDS-12 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	153	155	152	155	156	**154**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	129	129	135	136	132	**132**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	177	181	179	185	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72295

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: LSDS-13 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	145	141	139	151	131	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	181	176	175	187	176	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: LSDS-14 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	104	134	138	125	130	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	177	174	174	172	178	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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SCS ENGINEERS Environmental Consultants & Contractors

June 3, 2022
File No. 01222034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #29 – Leachate Pond Primary 60-mil HDPE Installation

Requested Date: 6/1/22

Information Requested:

Certification Engineer's approval of 60-mil HDPE geomembrane installation for primary layer at leachate evaporation pond

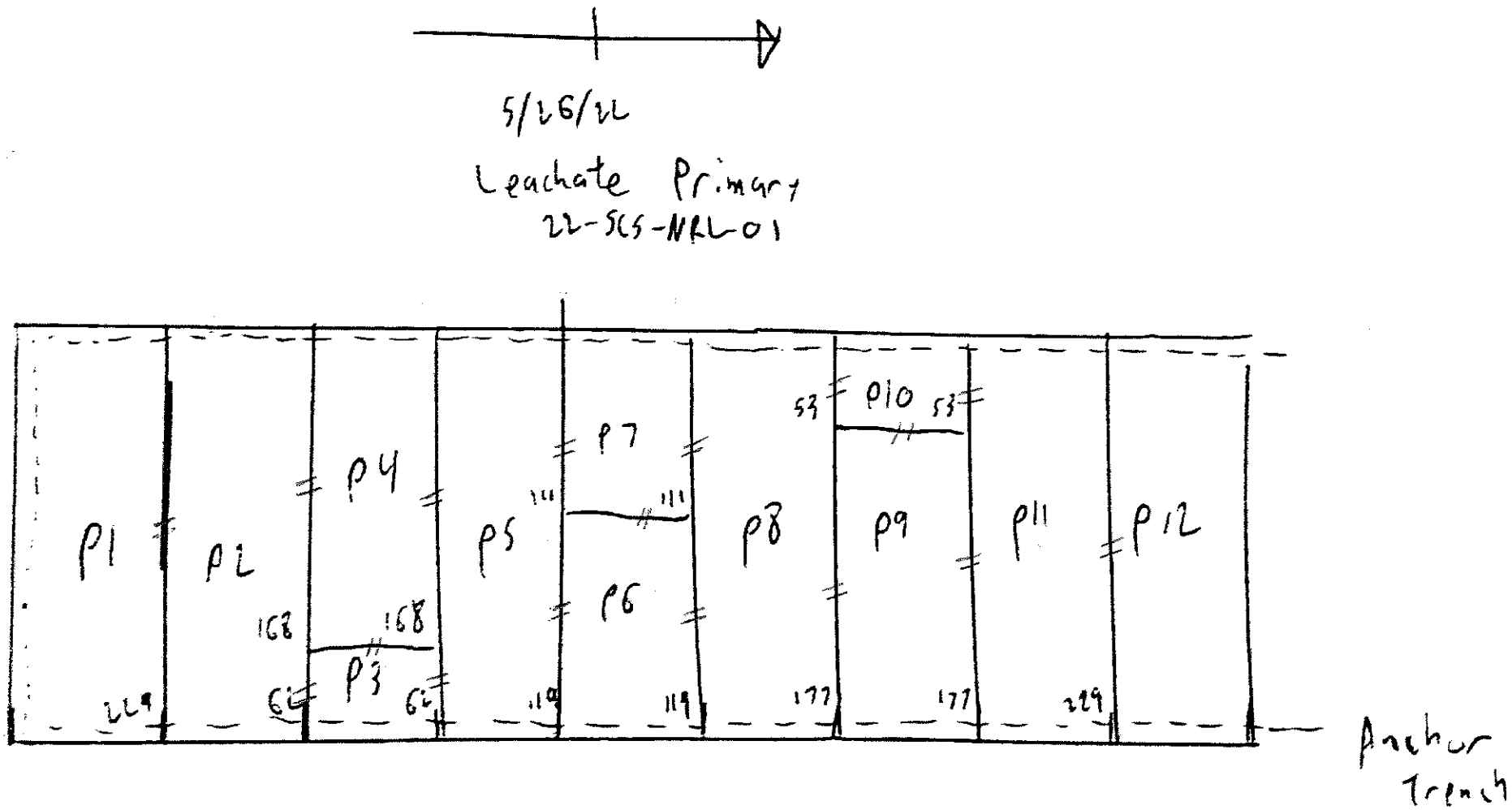
SCS Response:

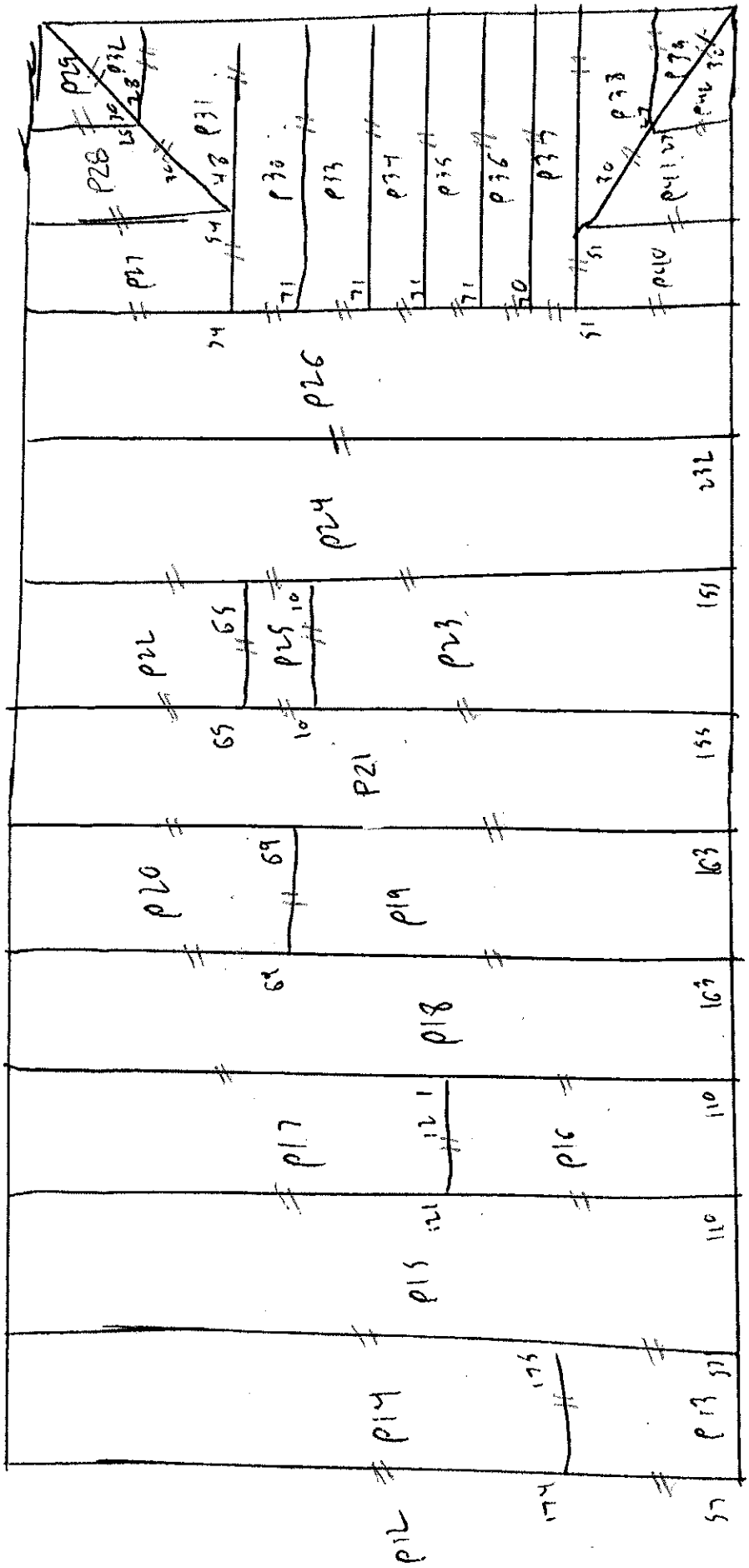
Certifying Engineer has reviewed the pertinent data for the 60-mil HDPE primary geomembrane layer at leachate evaporation pond. 15 destructive samples were field tested for peel and shear strength and exceeded specifications as well as laboratory tested for peel and shear strength and exceeded specification. Certifying Engineer has also received the panel deployment CQA logs including non-destructive air testing of fusion seams, and non-destructive vacuum box testing of extrusion welds. All seams and repairs have met minimum field testing requirements.

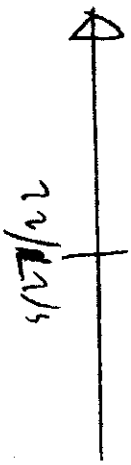
Therefore, the Certifying Engineer approves the installation of the secondary 60-mil HDPE geomembrane layer for the leachate evaporation pond. Subsequent overlying layers may be installed at this time.

Attached is all pertinent data.

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Received by OCD: 8/24/2022 3:28:34 PM







Leachate Primary
22-515-MAL-01

PG (2) OF (2)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SES Engineers
Project: North Ranch Landfill
Project Number: 22-SES-NRL-01

CQA SOLUTIONS

Date: 8/2/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P1	3452	1300	229	23	5267	229	22.5	5152.5	Floor	XAIS	
P2	3452	1305	229	23	5267	229	22.5	5152.5	Floor	XAIS	
P3	3497	1315	62	23	1426	62	22.5	1395	Floor	XAIS	
P4	3466	1325	168	23	3864	168	22.5	3780	Floor	XAIS	
P5	3466	1330	230	23	5290	230	22.5	5175	Floor	XAIS	
P6	3486	1335	119	23	2737	119	22.5	2677.5	Floor	XAIS	
P7	3456	1345	111	23	2553	111	22.5	2497.5	Floor	XAIS	
P8	3450	1355	230	23	5290	230	22.5	5175	Floor	XAIS	
P9	3456	1400	177	23	4071	177	22.5	3982.5	Floor	XAIS	
P10	3484	1410	53	23	1219	53	22.5	1192.5	Floor	XAIS	
P11	3498	1415	230	23	5290	230	22.5	5175	Floor	XAIS	
P12	3498	1420	229	23	5267	229	22.5	5152.5	Floor	XAIS	
			Total SF (Page)		47541	Total SF (Page)		46507.5			
			Total SF (Project)		47541	Total SF (Project)		46507.5			

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (1) OF (3)

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: [illegible]
Project: North Ranch Unit 21H
Project Number: 21-515-NRU-01

CQA SOLUTIONS

Date: [illegible] 8/17/22

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate Pond Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements			Installed Measurements			Location	Observer	Comments
			Length	Width	Area (SF)	Length	Width	Area (SF)			
P13	3910	0750	57	23	1311	57	22.5	1282.5	Floor	XAES	
P14	*	0749	174	23	4002	174	22.5	3915	Floor	XAES	
P15	*	0800	231	23	5313	231	22.5	5197	Floor	XAES	
P16	*	0805	110	23	2530	110	22.5	2475	Floor	XAES	
P17	*	0815	121	23	2783	121	22.5	2722.5	Floor	XAES	
P18	*	0823	232	23	5336	232	22.5	5220	Floor	XAES	
P19	*	0830	163	23	3749	163	22.5	3667.5	Floor	XAES	
P20	*	0835	69	23	1587	69	22.5	1552.5	Floor	XAES	
P21	*	0843	232	23	5336	232	22.5	5220	Floor	XAES	
P22	*	0850	65	23	1495	65	22.5	1462.5	Floor	XAES	
P23	3910	0853	155	23	3565	155	22.5	3487.5	Floor	XAES	
P24	*	0903	232	23	5336	232	22.5	5197.5	Floor	XAES	
P25	*	0910	10	23	230	10	22.5	225	Floor	XAES	
P26	*	0920	232	23	5336	232	22.5	5220	Floor	XAES	
P27	*	0930	54	23	1242	54	22.5	1215	W Berm	XAES	
P28	*	0940	54	23	1242	40	22.5	ROC	W Berm	XAES	
P29	*	0945	25	17	212.5	25	17	212.5	W Berm	XAES	T
P30	*	0955	71	23	1633	69	22.5	1552.5	N Berm	XAES	
P31	*	1000	48	23	1104	38	22.5	855	N Berm	XAES	
P32	*	1005	22	18	252	28	18	252	N Berm	XAES	T
P33	*	1015	71	23	1633	71	22.5	1597.5	N Berm	XAES	
P34	*	1255	71	23	1633	71	22.5	1597.5	N Berm	XAES	
P35	*	1300	71	23	1633	71	22.5	1597.5	N Berm	XAES	
P36	*	1305	70	23	1610	70	22.5	1575	N Berm	XAES	
			Total SF (Page)		60109.5	Total SF (Page)		59289			
			Total SF (Project)		167644.5	Total SF (Project)		164716.5			

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* ROLL # NOT PROVIDED BY INSTALLER

PG (2) OF (3)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-956-NRL-C1

CQA SOLUTIONS

Sheet 3 of 3
Date: 5/27

GEOMEMBRANE DEPLOYMENT RECORD

Layer: Leachate Primary Material Type: HDPE Thickness: 60 mil Manufacturer: Solmax

Panel Number	Roll Number	Time	Gross Measurements Length	Gross Measurements Width	Gross Measurements Area (SF)	Installed Measurements Length	Installed Measurements Width	Installed Measurements Area (SF)	Location	Observer	Comments
P37	*	1310	70	23	1610	70	22.5	1575	N Berm	YATS	
P38	*	1320	48	23	1104	38	22.5	855	N Berm	YATS	
P39	*	1330	27	15	202.5	27	15	202.5	N Berm	YATS	T
P40	*	1335	51	23	1173	51	22.5	1147.5	E Berm	YATS	
P41	*	1349	51	23	1173	39	22.5	877.5	E Berm	YATS	
P42	*	1356	27	10	135	27	10	135	E Berm	YATS	T
				Total SF (Page)	5397.5		Total SF (Page)	4792.5			
				Total SF (Project)	113042		Total SF (Project)	109509			

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PG 3 of 3

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Lunch Landfill
Project Number: 22-SCS-NRL-01

Sheet 1 of 4
Date: 5/26/22
Rev. Date: —

TRIAL WELDS

Ambient Temp	Welder Information			Weld Type	Top Material	Bottom Material	Fusion		Extrusion		Peel				Shear		Pass/Fail	Observer	Comments
	Mach#	Operator ID	Time				Wedge Temp	Wedge Speed	Barrel Temp	Preheat	Coupon Inside		Coupon Outside		Coupon				
											PPI	%	PPI	%	PPI	Elong %			
87	WR	CK	1258	F	S	S	850	6			109	~	116	~	127	-	P	XAIS	
											112	~	110	-	134	~			
											113	-	118	-	145	~			
											119	-	114	-	134	~			
											122	~	120	~	140	~			
87	WR	CK	1300	F	T	T	850	5			119	~	121	~	134	-	P	XAIS	
											113	~	119	-	136	~			
											118	-	121	~	132	-			
											127	-	117	-	134	-			
											109	~	121	-	135	~			
87	WL	SL	1257	F	S	S	850	5			108	~	113	-	130	-	P	XAIS	
											118	-	105	-	138	~			
											121	~	115	-	142	-			
											115	~	110	-	132	~			
											122	~	115	~	129	-			
87	WL	SL	1259	F	T	T	850	5			107	-	116	~	132	-	P	XAIS	
											119	-	118	-	136	-			
											109	~	119	-	130	~			
											115	-	113	~	128	-			
											123	-	116	~	125	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 1 of 4

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-00201

Sheet 2 of 4
Date: 5/27/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
73	W902	CK	1800	F	SS	S	850	6			105	~	118	~	133	~	P	XAIS	
											108	~	122	~	132	~			
											124	~	108	~	142	~			
											121	~	114	~	138	~			
											112	~	105	~	140	~			
73	W902	CK	1802	F	T	T	850	5			102	~	112	~	132	~	P	XAIS	
											107	~	114	~	144	~			
											113	~	119	~	142	~			
											108	~	101	~	134	~			
											98	~	107	~	132	~			
73	WL	SL	0759	F	S	S	850	5			107	~	109	~	128	~	P	XAIS	
											114	~	117	~	131	~			
											119	~	108	~	140	~			
											113	~	112	~	139	~			
											102	~	106	~	137	~			
73	WL	SL	0801	F	T	T	850	5			98	~	105	~	138	~	P	XAIS	
											113	~	119	~	142	~			
											105	~	113	~	132	~			
											112	~	108	~	129	~			
											105	~	102	~	139	~			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (2) of (4)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Land fill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 4
Date: 5/27/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
97	W402	CA	1257	F	S	S	850	6			108	-	119	-	136	-	P	YAIS	
											107	-	107	-	130	-			
											116	-	106	-	128	-			
											114	-	123	-	125	-			
											115	-	118	-	138	-			
87	W402	CA	1259	F	T	T	850	5			99	-	101	-	129	-	P	YAIS	
											116	-	112	-	142	-			
											110	-	101	-	138	-			
											111	-	125	-	146	-			
											127	-	98	-	141	-			
87	W2	SL	1258	F	S	S	850	5			109	-	112	-	136	-	P	YAIS	
											121	-	112	-	136	-			
											119	-	104	-	130	-			
											108	-	123	-	128	-			
											105	-	113	-	135	-			
87	W2	SL	1900	F	T	T	850	5			118	-	104	-	134	-	P	YAIS	
											113	-	105	-	137	-			
											105	-	115	-	142	-			
											122	-	117	-	142	-			
											119	-	115	-	132	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

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PG (3) OF (4)

Page 719 of 813

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NRL-01

CQA SOLUTIONS

Sheet 4 of 4
Date: 8/23/22
Rev. Date:

TRIAL WELDS

Ambient Temp	Welder Information: Mach#	Operator ID	Time	Weld Type	Top Material	Bottom Material	Fusion: Wedge Temp	Fusion: Wedge Speed	Extrusion: Barrel Temp	Extrusion: Preheat	Peel: Coupon Inside PPI	Peel: Coupon Inside %	Peel: Coupon Outside PPI	Peel: Coupon Outside %	Shear: Coupon PPI	Shear: Coupon Elong. %	Pass/Fail	Observer	Comments
89	644	MM	0715	E	T	T			550	550	107	-			145	-	P	XAIS	
											116	-			134	-			
											118	-			142	-			
											121	-			172	-			
											117	-			138	-			
88	G744	SL	0720	E	T	T			550	550	105	-			132	-	P	XAIS	
											118	-			134	-			
											122	-			130	-			
											106	-			128	-			
											107	-			138	-			
105	644	MM	1702	E	T	T			550	550	117	-			134	-	P	XAIS	
											103	-			130	-			
											109	-			145	-			
											99	-			127	-			
											113	-			132	-			

Specs: Fusion Peel: _____ Peel Incursion: _____ % Extrusion Peel: _____ Peel Incursion: _____ %
Fusion Shear: _____ Elongation: _____ % Extrusion Shear: _____ Elongation: _____ %

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg 4 of 4

Client: SCS Engineers
Project: North Ranch Expansion IV
Project Number: 22-SCS-MRL-01

CQA SOLUTIONS

Sheet 1 of 2
Date 5/26/22
Rev. Date: —

SEAMING RECORD

Layer: Leachate Primary

Welder Initials: CH
Welder Number:
Machine ID: W82

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P1	P2	CH	W82	1335	1402	0	229	229	229	LPOS1	XAIS	
P4	P5	CH	W82	1406	1421	0	168	168	397		XAIS	
P3	P5	CH	W82	1421	1427	0	62	62	459		XAIS	
P5	P7	CH	W82	1433	1443	0	111	111	570	LPOS2	XAIS	
P6	P8	CH	W82	1443	1507	0	119	119	689		XAIS	
P10	P11	CH	W82	1532	1537	0	53	53	742	LPOS4	XAIS	
P9	P11	CH	W82	1537	1602	0	177	177	919		XAIS	

Total LF (Page)	919	Total DS (Page)	3	Total DS Needed (Page)	1.8	Over/Under (Page)	+1.2
Total LF (Project)	919	Total DS (Project)	3	Total DS Needed (Project)	1.8	Over/Under (Project)	+1.2

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (1) OF (2)

Client: SLS Engineers
Project: North Ranch Landfill
Project Number: 21-SLS-NRL-01

CQA SOLUTIONS

Sheet 2 of 2
Date 5/27/22
Rev. Date: _____

SEAMING RECORD

Layer: Leachate Primary

Welder Initials: CK
Welder Number: _____
Machine ID: W902

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P1L	P14	CK	W902	0900	0820	0	174	174	174		XAIS	
P1L	P13	CK	W902	0750	0758	0	17	17	291		XAIS	
P15	P17	CK	W902	0844	0836	0	121	121	312		XAIS	
P15	P16	CK	W902	0836	0844	0	110	110	462	LP057	XAIS	
P17	P18	CK	W902	0848	0900	0	121	121	583		XAIS	
P16	P18	CK	W902	0900	0913	0	110	110	693		XAIS	
P20	P21	CK	W902	915	922	0	69	69	762	LP058	XAIS	
P19	P21	CK	W902	0922	0941	0	173	173	935		XAIS	
P22	P24	CK	W902	0946	0950	0	65	65	1000		XAIS	
P25	P24	CK	W902	0950	0954	0	10	10	1010		XAIS	
P23	P24	CK	W902	0954	1015	0	155	155	1165	LP059	XAIS	
P24	P26	CK	W902	1020	1054	0	232	232	1397		XAIS	
P30	P31	CK	W902	1058	1101	0	48	48	1445	LP059	XAIS	
P30	P27	CK	W902	1101	1103	0	22	22	1467		XAIS	
P30	P33	CK	W902	1113	1117	0	71	71	1538		XAIS	
P26	P30	CK	W902	1128	1130	0	22	22	1560		XAIS	
P26	P33	CK	W902	1132	1132	0	22	22	1582		XAIS	
P26	P34	CK	W902	1132	1134	0	22	22	1604		XAIS	
P26	P35	CK	W902	1134	1136	0	22	22	1626		XAIS	
P26	P36	CK	W902	1136	1138	0	22	22	1648		XAIS	
P26	P37	CK	W902	1142	1144	0	22	22	1670		XAIS	
P26	P40	CK	W902	1144	1148	51	0	51	1721		XAIS	
P41	P42	CK	W902	1552	1556	27	0	27	1748		XAIS	

Total LF (Page)	1721	Total DS (Page)	4	Total DS Needed (Page)	7.4	Over/Under (Page)	+0.6
Total LF (Project)	1721	Total DS (Project)	4	Total DS Needed (Project)	7.4	Over/Under (Project)	+0.6

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Pg (2) of (2)

Client: SCS Engineers
Project: North Basin Landfill
Project Number: 22-SCS-NRL-01

CQA

Sheet 1 of 3
Date 5/26/22
Rev. Date: _____

SEAMING RECORD

Layer: Leachate Primary

Welder Initials: SL
Welder Number: _____
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P2	P4	SL	W2	1356	1411	0	166	168	162		YAIS	
P3	P4	SL	W2	1417	1419	0	22	22	190		YAIS	
P2	P3	SL	W2	1421	1423	0	61	22	212		YAIS	
P7	P6	SL	W2	1435	1437	0	22	22	234		YAIS	
P7	P8	SL	W2	1443	1455	0	111	111	345		YAIS	
P6	P7	SL	W2	1445	1458	0	119	119	464	LPOSS	YAIS	
P8	P10	SL	W2	1521	1524	0	53	53	517		YAIS	
P10	P9	SL	W2	1525	1527	0	22	22	539		YAIS	
P9	P11	SL	W2	1528	1547	0	177	177	716		YAIS	
P11	P12	SL	W2	1552	1631	0	229	229	945	LPOSS	YAIS	

Total LF (Page)	945	Total DS (Page)	2	Total DS Needed (Page)	1.9	Over/Under (Page)	+0.1
Total LF (Project)	945	Total DS (Project)	2	Total DS Needed (Project)	1.9	Over/Under (Project)	+0.1

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Pg (1) of (3)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-NM-01

CQA SOLUTIONS

Sheet 2 of 3
Date 5/27/22
Rev. Date:

SEAMING RECORD

Layer: Leachate Primary

Welder Initials: SL
Welder Number:
Machine ID: WL

Seam Reference Top	Seam Reference Bottom	Welding Info Operator	Welding Info Machine	Weld Times Start	Weld Times End	Station Begin	Station End	Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
P14	P13	SL	WL	0818	0830	0	174	174	174	LPDSC	XAIS	
P13	P14	SL	WL	0832	0834	0	22	22	196		XAIS	
P13	P15	SL	WL	0835	0841	0	57	57	253		XAIS	
P16	P17	SL	WL	0847	0849	0	22	22	275		XAIS	
P18	P20	SL	WL	0905	0909	0	69	69	344		XAIS	
P18	P19	SL	WL	0909	0915	0	173	173	517		XAIS	
P20	P19	SL	WL	0857	0859	0	22	22	539		XAIS	
P22	P23	SL	WL	1020	1022	0	22	22	561		XAIS	
P25	P23	SL	WL	1005	1007	0	22	22	583		XAIS	
P21	P22	SL	WL	0932	0938	0	65	65	648		XAIS	
P21	P25	SL	WL	0938	0940	0	10	10	658		XAIS	
P21	P23	SL	WL	0940	1002	0	155	155	813	LPDSC	XAIS	
P26	P27	SL	WL	1012	1017	0	54	54	867		XAIS	
P27	P28	SL	WL	1039	1044	0	54	54	921		XAIS	
P28	P29	SL	WL	1048	1050	0	25	25	946		XAIS	
P32	P31	SL	WL	1104	1106	0	29	29	975		XAIS	
P33	P34	SL	WL	1122	1129	0	71	71	1046		XAIS	
P34	P35	SL	WL	1318	1315	0	71	71	1117		XAIS	
P36	P35	SL	WL	1328	1324	70	0	70	1187		XAIS	
P37	P36	SL	WL	1327	1329	70	0	70	1257		XAIS	
P40	P37	SL	WL	1607	1609	22	0	22	1279		XAIS	
P38	P37	SL	WL	1512	1543	48	0	48	1327		XAIS	
P39	P38	SL	WL	1558	1600	27	0	27	1354		XAIS	
P41	P38	SL	WL	1124	1129	30	0	30	1384		XAIS	

Total LF (Page)	1384	Total DS (Page)	1	Total DS Needed (Page)	2.8	Over/Under (Page)	-0.6
Total LF (Project)	2279	Total DS (Project)	4	Total DS Needed (Project)	4.7	Over/Under (Project)	-0.7

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PG (2) OF (3)

Released to Imaging: 8/24/2022 3:35:23 PM
Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-515-NRL-01

Sheet 3 of 3
Date 5/27/22
Rev. Date:

SEAMING RECORD

Layer: Leachate Primary

Welder Initials: SL
Welder Number:
Machine ID: W2

Seam Reference		Welding Info		Weld Times		Station		Seamed Length	Cumul. Lin. Ft	Destruct Number	Observer	Notes
Top	Bottom	Operator	Machine	Start	End	Begin	End					
P42	P39	SL	W2	1613	1617	70	0	30	30		XAIS	
P41	P38	SL	W2	1625	1629	30	0	30	60		XAIS	
P32	P29	SL	W2	1629	1633	30	0	30	90		XAIS	
P40	P41	SL	W2	1640	1644	0	51	51	141	POS13	XAIS	

Total LF (Page)	141	Total DS (Page)	1	Total DS Needed (Page)	0.3	Over/Under (Page)	10.7
Total LF (Project)	2470	Total DS (Project)	5	Total DS Needed (Project)	4.9	Over/Under (Project)	10.1

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (3) OF (3)

Client: SCS
Project: NORTH RANCH
Project Number: 22-SCS-NRL-01

CQA

Sheet 1 of 4
Date: 5/06/22
Rev. Date: —

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Primary

Test Type	Seam # Top	Seam # Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail API	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
AP 1	P1	P2	0	EOS	Full	30	30	1601	1606	P	—	WS	YMS	N	
	P2	P3	0	EOS		30	30	1603	1608	P	—				
	P2	P4	0	EOS		30	30	1605	1610	P	—				
	P3	P4	0	EOS		30	30	1608	1613	P	—				
	P3	P5	0	EOS		30	29	1610	1615	P	—				
	P4	P5	0	EOS		30	30	1612	1617	P	—				
	P5	P6	0	EOS		30	30	1614	1619	P	—				
	P5	P7	0	EOS		30	30	1617	1622	P	—				
	P6	P7	0	EOS		30	30	1619	1624	P	—				
	P6	P8	0	EOS		30	30	1621	1626	P	—				
	P7	P8	0	EOS		30	30	1623	1628	P	—				
	P9	P9	0	EOS		30	30	1626	1631	P	—				
	P8	P10	0	EOS		30	30	1628	1633	P	—				
	P10	P9	0	EOS		30	30	1630	1635	P	—				
	P9	P11	0	EOS		30	30	1632	1637	P	—				
	P10	P11	0	EOS		30	30	1635	1640	P	—				
	P11	P12	0	EOS		30	30	1637	1642	P	—	↓	↓	↓	

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

Client: SCS
Project: North Ranch
Project Number: 22-SCS-NRL-01

CQA

Sheet: 2 of 4
Date: 5/17/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Primary

Test Type	Seams Top	Seams Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VI	QC Tech	Observer	To be capped?	Notes
APT	P12	P13	0	EOS	Full	30	30	1545	1550	P	–	WS	YA IS	N	
	P12	P14	0	EOS		30	30	1547	1552	P	–				
	P13	P14	0	EOS		30	29	1549	1554	P	–				
	P13	P15	0	EOS		30	30	1552	1557	P	–				
	P14	P15	0	EOS		30	30	1554	1559	P	–				
	P15	P16	0	EOS		30	30	1556	1601	P	–				
	P15	P17	0	EOS		30	30	1558	1603	P	–				
	P16	P17	0	EOS		30	30	1601	1606	P	–				
	P16	P18	0	EOS		30	30	1603	1608	P	–				
	P17	P18	0	EOS		30	30	1605	1610	P	–				
	P18	P19	0	EOS		30	30	1608	1613	P	–				
	P18	P20	0	EOS		30	30	1610	1615	P	–				
	P19	P20	0	EOS		30	30	1612	1617	P	–				
	P19	P21	0	EOS		30	30	1614	1619	P	–				
	P20	P21	0	EOS		30	30	1617	1622	P	–				
	P21	P22	0	EOS		30	30	1619	1624	P	–				
	P21	P23	0	EOS		30	30	1621	1626	P	–				
	P21	P25	0	EOS		30	30	1624	1629	P	–				
	P22	P25	0	EOS		30	30	1626	1631	P	–				
	P25	P23	0	EOS		30	29	1628	1633	P	–				
	P22	P24	0	EOS		30	30	1630	1635	P	–				
	P23	P24	0	EOS		30	30	1633	1638	P	–				
	P25	P24	0	EOS		30	30	1635	1640	P	–				
	P24	P26	0	EOS		30	30	1637	1642	P	–	↓	↓	↓	

Specs: Pre-testing stabilization time: –
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (2) OF (4)

Released to Imaging: 8/24/2022 3:35:23 PM

Client: SCS
Project: NORTH RANCH
Project: Number: 22-SCS-NRL-01

CQA

Sheet 3 of 4
Date: 5/12/22
Rev. Date:

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P26	P27	0	EOS	Full	30	30	1640	1645	P	—	VS	XAES	N	
	P26	P30	0	EOS		30	30	1642	1647	P	—				
	P26	P33	0	EOS		30	30	1644	1649	P	—				
	P26	P34	0	EOS		30	30	1647	1652	P	—				
	P26	P35	0	EOS		30	30	1650	1655	P	—				
	P26	P36	0	EOS		30	30	1653	1658	P	—				
	P26	P37	0	EOS		30	30	1655	1700	P	—				
	P26	P40	0	EOS		30	30	1657	1702	P	—				
	P27	P28	0	EOS		30	30	1659	1704	P	—				
	P27	P30	0	EOS		30	30	1701	1706	P	—				
	P28	P29	0	EOS		30	30	1704	1709	P	—				
	P28	P31	0	EOS		30	30	1706	1711	P	—				
	P29	P32	0	EOS		30	30	1708	1713	P	—				
	P32	P31	0	EOS		30	30	1710	1715	P	—				
	P31	P30	0	EOS		30	30	1712	1717	P	—				
	P30	P33	0	EOS		30	30	1715	1720	P	—				
	P33	P34	0	EOS		30	30	1717	1722	P	—				
	P34	P35	0	EOS		30	30	1719	1724	P	—				
	P36	P35	0	EOS		30	30	1721	1726	P	—				
	P37	P36	0	EOS		30	30	1724	1729	P	—				
	P38	P37	0	EOS		30	30	1726	1731	P	—				
	P39	P38	0	EOS		30	30	1729	1734	P	—				
	P40	P37	0	EOS		30	30	1731	1736	P	—				
	P40	P41	0	EOS		30	30	1733	1738	P	—				

Specs: Pre-testing stabilization time: —
Minimum Starting Pressure: 30
Maximum Starting Pressure: 35
Test Duration: 5
Maximum Allowable Loss: 3

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG (3) OF (4)

Received by OCD: 8/24/2022 3:28:34 PM

Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS
Project: North Vaquero
Project Number: 22-SCS-RRL-01

CQA

Sheet 4 of 4
Date: 5/27/22
Rev. Date: —

NON-DESTRUCTIVE TEST LOG

Layer: Leachate Primary

Test Type	Seam# Top	Seam# Bottom	Station Begin	Station End	Tested Length	Pressure Begin	Pressure End	Time Begin	Time End	Pass/Fail APT	Pass/Fail VT	QC Tech	Observer	To be capped?	Notes
APT	P41	P42	0	EOS	Full	30	30	1736	1741	P	—	WS	KAES	N	
APT	P41	P38	0	EOS	Full	30	30	1738	1743	P	—	WS	KAES	↓	
APT	P42	P39	0	EOS	Full	30	29	1740	1745	P	—	WS	KAES	↓	

Specs: Pre-testing stabilization time: _____ Maximum Starting Pressure: _____ Maximum Allowable Loss: _____
Minimum Starting Pressure: _____ Test Duration: _____

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PG (4) OF (4)

Page 729 of 813

Client: SLS Engineers
Project: North Ranch Landfill
Project Number: 22-SLS-001-CL

CQA

Sheet 1 of 1
Date: 5/29/22
Rev. Date:

DESTRUCTIVE SAMPLE LOG

Layer: Leachate Primary

Sample Information					Welder Information			Testing Information		
ID	Seam ID	Location	Date Marked	Date Sampled	Operator	Machine ID	Date Welded	Field Pass/Fail	Lab Pass/Fail	Comments, Tracking Notes, Etc.
LPDS1	P1/P2	48	5/27	5/28	CH	W82	5/26	P		
LPDS2	P6/P7	75	5/28	5/28	CH	W82	5/26	P		
LPDS3	P10/P9	19	5/28	5/28	SL	W2	5/26	P		
LPDS4	P9/P11	50	5/27	5/28	CH	W82	5/26	P		
LPDS5	P11/P12	181	5/27	5/28	SL	W2	5/26	P		
LPDS6	P14/P15	67	5/28	5/28	SL	W2	5/27	P		
LPDS7	P15/P16	20	5/28	5/28	CH	W902	5/27	P		
LPDS8	P20/P21	20	5/28	5/28	CH	W902	5/27	P		
LPDS9	P21/P23	137	5/28	5/28	SL	W2	5/27	P		
LPDS10	P23/P24	03	5/28	5/28	CH	W902	5/27	P		
LPDS11	P31/P30	17	5/28	5/28	CH	W902	5/27	P		
LPDS12	P33/P34	22	5/28	5/28	SL	W2	5/27	P		
LPDS13	P40/41	25	5/28	5/28	SL	W2	5/27	P		
LPDS14	PRE/P35	—	5/28	5/28	SL	W744	5/28	P		
LPDS15	PR37/P38	—	5/28	5/28	MM	W44	5/28	P		

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PG 1 OF 1

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-SCS-NRL-01

CQA SOLUTIONS

Sheet 1 of 5
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Cachuta Primary

Repair #	Damage								Repair							Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
PR1	P1	P2	—	—	—	LPOS1	48	—	P	2	5	14	5/28	0730	SL	G-744	WS	5/28	P	XAIS
PR2	P5	P7	—	—	—	LPOS2	73	—	P	2	5	14	5/28	0737	SL	G-744	WS	5/28	P	XAIS
PR3	P6	P8	—	—	—	LPOS3	19	—	P	2	6	16	5/28	0742	SL	G-744	WS	5/28	P	XAIS
PR4	P9	P11	—	—	—	LPOS4	50	—	P	2	5	14	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR5	P11	P12	—	—	—	LPOS5	181	—	P	3	5	16	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR6	P2	P3	P4	—	—	Int	—	—	P	2	2	8	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR7	P3	P4	P5	—	—	Int	—	—	P	2	2	8	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR8	P5	P6	P7	—	—	Int	—	—	P	2	8	20	5/28	0813	SL	G-744	WS	5/28	P	XAIS
PR9	P6	P7	P8	—	—	Int	—	—	P	2	2	8	5/28	0810	SL	G-744	WS	5/28	P	XAIS
PR10	P8	P9	P10	—	—	Int	—	—	P	2	3	10	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR11	P9	P10	P11	—	—	Int	—	—	P	2	2	8	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR13	P14	P15	—	—	—	LPOS6	69	—	P	2	5	14	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR14	P15	P16	—	—	—	LPOS7	20	—	P	2	6	16	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR15	P20	P21	—	—	—	LPOS8	20	—	P	2	5	14	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR16	P11	P13	—	—	—	LPOS9	177	—	P	2	5	14	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR17	P17	P14	—	—	—	LPOS10	63	—	P	2	6	16	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR18	P31	P30	—	—	—	LPOS11	17	—	P	2	6	16	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR19	P33	P34	—	—	—	LPOS12	22	—	P	2	6	16	5/28	*	SL	G-744	WS	5/28	P	XAIS
PR20	P40	P41	—	—	—	LPOS13	25	—	P	3	6	18	5/28	*	SLH	G-44	WS	5/28	P	XAIS
PR12	P11	—	—	—	—	Weld	227	12' N	P	2	4	12	5/28	*	SLH	G-44	WS	5/28	P	XAIS
											Total (Page)	172								
											Total (Project)	172								

Notes: * TIME NOT PROVIDED BY INSTALLER

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PG (1) OF (5)

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: M-SCS-NRL-01

CQA SOLUTIONS

Sheet 2 of 5
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair: Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data: Tech	Date	P/F	Observer
PR21	P11	—	—	—	—	Hole	226	6'S	P	1	1	4	5/28	*	MM	G44	WS	5/28	P	YAIS
PR22	PR8	P5	—	—	—	LPDSIM	—	—	P	2	7	18	5/28	*	SL	G744	WS	5/28	P	YAIS
PR23	P11	—	—	—	—	Hole	220	6'S	P	1	1	4	5/28	*	SL	G744	WS	5/28	P	YAIS
PR24	P11	—	—	—	—	Hole	215	6'S	P	1	1	4	5/28	*	SL	G744	WS	5/28	P	YAIS
PR25	P12	P13	P14	—	—	Int	—	—	P	2	2	8	5/28	*	SL	G744	WS	5/28	P	YAIS
PR26	P12	P—	—	—	—	Hole	173	11'S	P	2	2	8	5/28	*	SL	G744	WS	5/28	P	YAIS
PR27	P13	P14	P15	—	—	Int	—	—	P	2	3	10	5/28	*	SL	G744	WS	5/28	P	YAIS
PR28	P15	P16	P17	—	—	Int	—	—	P	2	2	8	5/28	*	MM	G44	WS	5/28	P	YAIS
PR29	P17	—	—	—	—	Hole	119	11'S	P	1	1	4	5/28	844	MM	G44	WS	5/28	P	YAIS
PR30	P17	—	—	—	—	Hole	116	11'S	P	1	1	4	5/28	842	MM	G44	WS	5/28	P	YAIS
PR31	P16	P17	P18	—	—	Int	—	—	P	2	2	8	5/28	847	MM	G44	WS	5/28	P	YAIS
PR32	P18	P19	P20	—	—	Int	—	—	P	2	2	8	5/28	755	MM	G44	WS	5/28	P	YAIS
PR33	P20	—	—	—	—	Hole	61	8'N	P	1	1	4	5/28	757	MM	G44	WS	5/28	P	YAIS
PR34	P20	P19	P21	—	—	Int	—	—	P	2	2	8	5/28	802	MM	G44	WS	5/28	P	YAIS
PR35	P21	P22	P23	—	—	Int	—	—	P	2	2	8	5/28	808	MM	G44	WS	5/28	P	YAIS
PR36	P21	P23	P25	—	—	Int	—	—	P	2	2	8	5/28	806	MM	G44	WS	5/28	P	YAIS
PR37	P22	P25	P24	—	—	Int	—	—	P	2	3	10	5/28	812	MM	G44	WS	5/28	P	YAIS
PR38	P23	P24	P25	—	—	Int	—	—	P	2	3	10	5/28	816	MM	G44	WS	5/28	P	YAIS
PR39	P28	P29	P31	P32	—	Int	—	—	P	2	6	16	5/28	*	MM	G44	WS	5/28	P	YAIS
PR40	PR39	P28	—	—	—	LPDSIS	—	—	P	3	7	20	5/28	*	MM	G44	WS	5/28	P	YAIS

Total (Page)	176
Total (Project)	4114

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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 12-SCS-NRL-01

CQA SOLUTIONS

Sheet 3 of 5
Date VARIES
Rev. Date: _____

GEOMEMBRANE REPAIR LOG

Layer: Leachate Primary

Repair #	Damage: Seam Reference 1	2	3	4	Panel ID	Defect Type	Location: Station	Perpendicular	Repair Type	Repair Size: Width	Length	Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Testing: Vacuum Test Data Tech	Date	P/F	Observer
PR41	P26	P26	P26	–	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR42	P26	P26	P33	–	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR43	P26	P33	P14	–	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR44	P26	P34	P35	–	–	Int	–	–	P	3	4	14	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR45	P26	P35	P36	–	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR46	P26	P36	P37	–	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR47	P26	P37	P38	P46	–	Int	–	–	P	2	2	8	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR48	P27	P36	P41	P46	–	Int/CAP	–	–	P	2	9	22	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR49	P41	P42	P39	P39	–	Int	–	–	P	3	5	16	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR50	P27	P28	P30	P31	–	Int	–	–	P	5	6	22	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR51	P36	–	–	–	–	Vent	6	5' W	P	1	1*	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR52	P37	–	–	–	–	Vent	6	11' W	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR53	P36	–	–	–	–	Vent	6	12' W	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR54	P35	–	–	–	–	Vent	8	10' E	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR55	~~P44~~ P33	–	–	–	–	Vent	8	10' W	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR56	~~P42~~ P32	–	–	–	–	Vent	8	10' E	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR57	P31	–	–	–	–	Vent	8	8' E	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR58	P26	–	–	–	–	Vent	8	11' S	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR59	P27	–	–	–	–	Vent	8	10' N	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
PR60	P26	–	–	–	–	Vent	9	5' N	P	1	1	3	5/28	*	MM	GUN	WS	5/28	P	XAIS
											Total (Page)	142								
											Total (Project)	596								

Notes: ◊ Only 3 sides of the vents are welded
* TIME NOT PROVIDED BY THE INSTALLER

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Released to Imaging: 8/24/2022 3:35:23 PM

Received by OCD: 8/24/2022 3:28:34 PM

Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22E-SCS-NRL-01

CQA SOLUTIONS

Sheet 4 of 5
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Primary

Repair #	Damage								Repair								Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
PR61	P24	—	—	—	—	Vent	8	3' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR62	P23	—	—	—	—	Vent	8	2' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR63	P20	—	—	—	—	Vent	8	2' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR64	P18	—	—	—	—	Vent	8	3' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR65	P17	—	—	—	—	Vent	8	6' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR66	P15	—	—	—	—	Vent	8	10' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR67	P14	—	—	—	—	Vent	8	10' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR68	P12	—	—	—	—	Vent	8	6' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR69	P11	—	—	—	—	Vent	8	4' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR70	P10	—	—	—	—	Vent	8	2' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR71	P7	—	—	—	—	Vent	8	2' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR72	P5	—	—	—	—	Vent	8	4' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR73	P4	—	—	—	—	Vent	8	7' S	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR74	P2	—	—	—	—	Vent	8	10' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR75	P1	—	—	—	—	Vent	70	8' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR76	P1	—	—	—	—	Vent	55	8' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR77	P1	—	—	—	—	Vent	80	8' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR78	P1	—	—	—	—	Vent	105	8' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR79	P1	—	—	—	—	Vent	130	8' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS
PR80	P1	—	—	—	—	Vent	155	6' N	P	1	1	3	5/18	*	MM	G44	WS	5/18	P	XAIS

Total (Page)	60
Total (Project)	555

PG (4) OF (5)

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Released to Imaging: 8/24/2022 3:35:23 PM
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Client: SCS Engineers
Project: North Ranch Landfill
Project Number: 22-SCS-11RL-01

CQA SOLUTIONS

Sheet 5 of 5
Date VARIES
Rev. Date: —

GEOMEMBRANE REPAIR LOG

Layer: Leachate Primary

Repair #	Damage								Repair							Testing			
	Seam Reference				Panel ID	Defect Type	Location		Repair Type	Repair Size		Lineal Feet	Repair Date	Repair Time	Repair Tech	Machine	Vacuum Test Data			
	1	2	3	4			Station	Perpendicular		Width	Length						Tech	Date	P/F	Observer
RR1	P1	—	—	—	—	Vent	180	8' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR2	P1	—	—	—	—	Vent	205	8' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR3	P1	—	—	—	—	Vent	220	8' W S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR4	P2	—	—	—	—	Vent	57	4' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR5	P5	—	—	—	—	Vent	57	4' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR6	P6	—	—	—	—	Vent	112	4' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR7	P8	—	—	—	—	Vent	112	7' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR8	P9	—	—	—	—	Vent	170	10' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR8a	P11	—	—	—	—	Vent	170	7' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR10	P12	—	—	—	—	Vent	56	4' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR11	P13	—	—	—	—	Vent	56	2' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR12	P16	—	—	—	—	Vent	103	2' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR13	P18	—	—	—	—	Vent	103	7' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR14	P19	—	—	—	—	Vent	156	5' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR15	P21	—	—	—	—	Vent	156	10' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR16	P23	—	—	—	—	Vent	149	10' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR17	P24	—	—	—	—	Vent	226	7' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR18	P25	—	—	—	—	Vent	226	4' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR19	P40	—	—	—	—	Vent	6	2' S	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS
PR20	P42	—	—	—	—	Vent	6	2' N	P	1	1	3'	5/18	*	SL	G744	WS	5/18	P	XAIS

Total (Page)	60
Total (Project)	

Notes: * TIME NOT PROVIDED BY INSTALLER

Submit to CQAS Project Manager by 7AM EST following the date of any updated information

PG 5 OF 5

TESTING, RESEARCH, CONSULTING AND FIELD SERVICES
AUSTIN, TX - USA | ANAHEIM, CA - USA | ANDERSON, SC - USA | GOLD COAST - AUSTRALIA | SUZHOU - CHINA

Date: 2022-06-01

Mail To:
Ravi Vemulapalli
High Roller - EPC NuBlu Energy
1008 Southview Circle
Center , TX , 75935

Bill To:

High Roller - EPC NuBlu Energy
22-SCS-NRL-01

e-mail:
ravi@hr-epc.com travis@hr-epc.com mbradford@scsengineers.com xavier@cqasolutions.co brent@cqasolutions.co

Dear Mr. Vemulapalli,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**North Ranch Landfill**
TRI Job Reference Number:	**72409**
Material(s) Tested:	(13) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Jarrett A. Nelson

Jarret Nelson
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	143	131	130	136	137	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	145	152	119	137	133	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	186	185	182	188	186	**185**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	129	128	128	151	130	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	125	125	129	131	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	181	179	185	188	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	144	160	144	155	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	128	120	126	122	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	175	179	178	182	177	**178**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	142	146	137	138	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	140	134	145	115	142	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	157	179	178	180	181	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-5 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	154	139	136	145	132	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	121	119	128	126	123	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	161	168	173	183	186	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-6 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	131	149	115	134	143	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	138	156	137	119	134	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	180	171	176	173	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	134	135	131	137	140	**135**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	148	145	151	155	154	**151**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	180	179	184	182	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-8 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	158	139	125	153	132	**141**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	151	159	149	160	157	**155**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	185	179	187	183	**183**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-9 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	144	134	134	141	144	**139**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	150	149	127	121	121	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	180	176	178	179	181	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-10 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	142	139	133	131	133	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	127	136	134	131	161	**138**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	179	183	180	180	181	**181**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-11 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	131	133	130	137	137	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	142	145	154	154	138	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	186	185	183	184	**182**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-12 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	153	142	140	143	139	**143**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	133	150	125	125	124	**131**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	180	181	184	184	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-13 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	140	142	135	127	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	139	135	134	144	134	**137**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	184	182	176	177	177	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK
TRI Client: High Roller - EPC NuBlu Energy
Project: North Ranch Landfill

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 72409

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: CPDS-14 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	134	127	125	119	122	**125**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	176	173	174	176	**175**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: CPDS-15 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	137	125	140	136	141	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	163	163	164	164	**165**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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SCS ENGINEERS Environmental Consultants & Contractors

June 3, 2022
File No. 01222034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

Response to Construction Material Submittal #30 – Beyond Engineering and Testing Results for Concrete at East and West Drying Pads

Requested Date: June 2, 2022

Information Requested:

Review and Approval for Concrete Cylinder Testing Results from Beyond Engineering and Testing for East and West Drying Pads.

SCS Response:

Structural Engineer of Record has reviewed the attached concrete testing results and has made the following comments:

1. Samples associated with Reports #202047.0514.740 A-F, have met the specified strength requirements as of the break of the third cylinder sample. No further cylinder breaks are necessary

2. Samples associated with Reports #202047.0514.740 G-N, have not yet met the specified strength requirements as of the break of the third cylinder sample. Further cylinder breaks are required. Lab is to break 1 more cylinder from each sample set at 28-days and if necessary the final cylinder at 52 days.

3. Samples associated with Reports #202047.0514.723 A-J, and L -N, have met the specified strength requirements as of the break of the third cylinder sample. No further cylinder breaks are necessary

4. Samples associated with Report #202047.0514.723 K , has not yet met the specified strength requirements as of the break of the third cylinder sample. Further cylinder breaks are required. Lab is to break 1 more cylinder from each sample set at 28-days and if necessary the final cylinder at 52 days.

BEYOND Engineering & Testing

www.BeyondET.com
West Texas
3011-B South County Road 1260
Midland, Texas 79706
432.561.5780

TO: CQA Solutions
Attn: Brent Duganiero
723 Phillips Ave. Bld. A, Suite 201
Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0514.7040A
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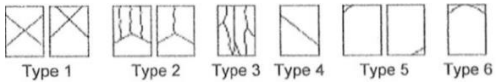
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 30' E and 10' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1125	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	43,870	3,490	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	47,890	3,810	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	52,190	4,150	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	2:58 AM	**ACCUMULATED YARDS:**	10.0	**AMBIENT TEMP:**	50 °F
SLUMP:	4.50"	**TRUCK NO.:**	34	**CONCRETE TEMP:**	52 °F
AIR CONTENT:	3.7%	**TICKET NO.:**	507652	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

DATE ISSUED: June 2, 2022
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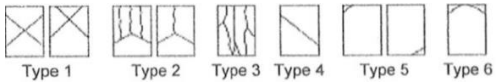
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 50' E and 5' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1126	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	41,080	3,270	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	45,390	3,610	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	51,990	4,140	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	3:20 AM	**ACCUMULATED YARDS:**	80.0	**AMBIENT TEMP:**	60 °F
SLUMP:	6.50"	**TRUCK NO.:**	35	**CONCRETE TEMP:**	52 °F
AIR CONTENT:	4.6%	**TICKET NO.:**	507659	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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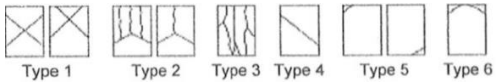
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 60' E and 20' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1127	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	45,070	3,590	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	47,880	3,810	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	53,650	4,270	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Clear
TIME OF FIELD TEST:	4:13 AM	**ACCUMULATED YARDS:**	150.0	**AMBIENT TEMP:**	47 °F
SLUMP:	5.50"	**TRUCK NO.:**	21	**CONCRETE TEMP:**	50 °F
AIR CONTENT:	4.2%	**TICKET NO.:**	507666	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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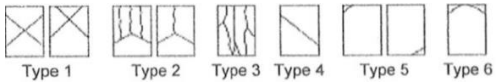
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 40' E and 35' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1128	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	43,860	3,490	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	45,530	3,620	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	56,240	4,480	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	5:20 AM	**ACCUMULATED YARDS:**	200.0	**AMBIENT TEMP:**	60 °F
SLUMP:	5.25"	**TRUCK NO.:**	36	**CONCRETE TEMP:**	59 °F
AIR CONTENT:	5.5%	**TICKET NO.:**	507671	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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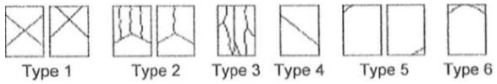
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 70' E and 35' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1129	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	47,650	3,790	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	52,320	4,160	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	56,750	4,520	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	6:00 AM	**ACCUMULATED YARDS:**	250.0	**AMBIENT TEMP:**	63 °F
SLUMP:	5.50"	**TRUCK NO.:**	21	**CONCRETE TEMP:**	59 °F
AIR CONTENT:	5.0%	**TICKET NO.:**	507675	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Quality Review

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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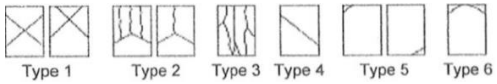
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 100' E and 35' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1130	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	40,360	3,210	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	42,920	3,420	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	49,710	3,960	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	7:00 AM	**ACCUMULATED YARDS:**	300.0	**AMBIENT TEMP:**	63 °F
SLUMP:	5.00"	**TRUCK NO.:**	31	**CONCRETE TEMP:**	59 °F
AIR CONTENT:	4.4%	**TICKET NO.:**	507678	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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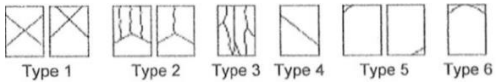
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 150' E and 20' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1131	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	38,120	3,030	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	42,760	3,400	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	49,430	3,930	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	7:49 AM	**ACCUMULATED YARDS:**	350.0	**AMBIENT TEMP:**	70 °F
SLUMP:	4.00"	**TRUCK NO.:**	32	**CONCRETE TEMP:**	69 °F
AIR CONTENT:	4.2%	**TICKET NO.:**	507683	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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TO: CQA Solutions
Attn: Brent Duganiero
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Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0514.7040H
PDF ID: 0514.7040H-CON

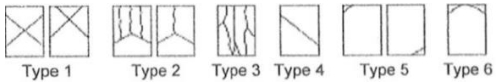
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Pad Slab, 40' E and 60' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1132	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	38,560	3,070	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	44,340	3,530	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	46,350	3,690	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	8:08 AM	**ACCUMULATED YARDS:**	400.0	**AMBIENT TEMP:**	69 °F
SLUMP:	5.75"	**TRUCK NO.:**	31	**CONCRETE TEMP:**	65 °F
AIR CONTENT:	4.0%	**TICKET NO.:**	507688	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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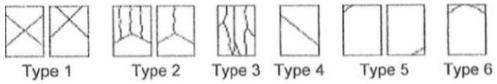
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 50' E and 50' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1133	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	39,430	3,140	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	42,850	3,410	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	44,460	3,540	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	8:48 AM	**ACCUMULATED YARDS:**	450.0	**AMBIENT TEMP:**	70 °F
SLUMP:	5.75"	**TRUCK NO.:**	32	**CONCRETE TEMP:**	65 °F
AIR CONTENT:	4.9%	**TICKET NO.:**	507693	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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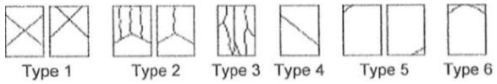
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 100' E and 60' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1134	**PRODUCER:**								
A	NM Ready Mix	2	3	5/17	4.00	12.57	38,580	3,070	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	47,020	3,740	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	47,340	3,770	DN
D	**ADMIXTURE:**		28	6/11					
E	4,000 PSI Mix w/Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	9:59 AM	**ACCUMULATED YARDS:**	500.0	**AMBIENT TEMP:**	72 °F
SLUMP:	4.75"	**TRUCK NO.:**	5	**CONCRETE TEMP:**	70 °F
AIR CONTENT:	3.8%	**TICKET NO.:**	507697	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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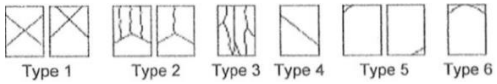
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 150' E and 70' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1135	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	38,120	3,030	SS
B	**MIX ID:**	2	7	5/21	4.00	12.57	40,570	3,230	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	46,060	3,670	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	11:41 AM	**ACCUMULATED YARDS:**	550.0	**AMBIENT TEMP:**	72 °F
SLUMP:	4.50"	**TRUCK NO.:**	13	**CONCRETE TEMP:**	80 °F
AIR CONTENT:	5.2%	**TICKET NO.:**	507702	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

DATE ISSUED: June 2, 2022
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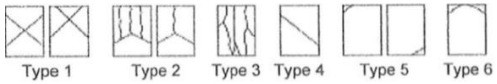
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 180' E and 50' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1136	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	36,790	2,930	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	41,080	3,270	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	45,590	3,630	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	12:50 PM	**ACCUMULATED YARDS:**	600.0	**AMBIENT TEMP:**	90 °F
SLUMP:	6.50"	**TRUCK NO.:**	5	**CONCRETE TEMP:**	88 °F
AIR CONTENT:	4.7%	**TICKET NO.:**	507707	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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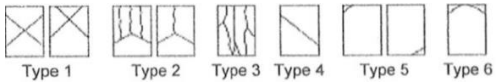
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 150' E and 60' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1137	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	38,110	3,030	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	39,990	3,180	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	46,400	3,690	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	2:10 PM	**ACCUMULATED YARDS:**	650.0	**AMBIENT TEMP:**	91 °F
SLUMP:	5.25"	**TRUCK NO.:**	5	**CONCRETE TEMP:**	89 °F
AIR CONTENT:	3.9%	**TICKET NO.:**	507713	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: J. Garcia/A. Curiel

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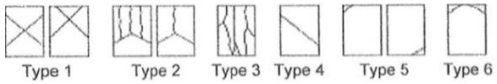
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: Concrete Foundation; Drying Pit Slab, 190' E and 70' N from SW Corner of Slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1138	**PRODUCER:**								
A	NM Ready Mix	3	3	5/17	4.00	12.57	36,930	2,940	SS
B	**MIX ID:**	3	7	5/21	4.00	12.57	44,200	3,520	SS
C	4,000 AEAC	3	17	5/31	4.00	12.57	47,010	3,740	DN
D	**ADMIXTURE:**		28	6/11					
E	Air		28	6/11					
	CYLINDER SIZE: 4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/14/2022	**WATER ADDED (gal):**	-	**WEATHER:**	Clear
TIME OF FIELD TEST:	2:47 PM	**ACCUMULATED YARDS:**	700.0	**AMBIENT TEMP:**	92 °F
SLUMP:	5.50"	**TRUCK NO.:**	43	**CONCRETE TEMP:**	84 °F
AIR CONTENT:	4.1%	**TICKET NO.:**	507719	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Attn: Brent Duganiero
723 Phillips Ave. Bld. A, Suite 201
Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0521.7232A
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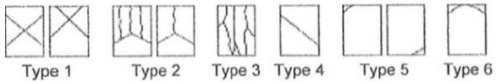
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1259	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	52,530	4,180	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	54,780	4,360	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	20	**WEATHER:**	Clear
TIME OF FIELD TEST:	2:30 AM	**ACCUMULATED YARDS:**	30.0	**AMBIENT TEMP:**	60 °F
SLUMP:	5.00"	**TRUCK NO.:**	33	**CONCRETE TEMP:**	86 °F
AIR CONTENT:	4.1%	**TICKET NO.:**	507799	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
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PDF ID: 0521.7232B-CON

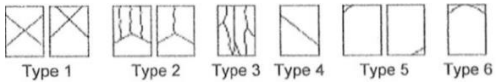
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 20' E from NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1260	**PRODUCER:**								
A	Lea County Ready Mix	2	3	5/24	4.00	12.57	56,460	4,490	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	59,970	4,770	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	30	**WEATHER:**	Clear
TIME OF FIELD TEST:	3:15 AM	**ACCUMULATED YARDS:**	60.0	**AMBIENT TEMP:**	60 °F
SLUMP:	2.00"	**TRUCK NO.:**	22	**CONCRETE TEMP:**	86 °F
AIR CONTENT:	3.5%	**TICKET NO.:**	507802	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
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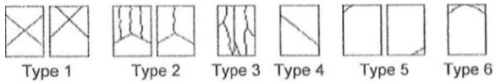
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 40' E from NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1261	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	54,830	4,360	SS
B	**MIX ID:**	2	10	5/31	4.00	12.57	62,530	4,980	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	20	**WEATHER:**	Clear
TIME OF FIELD TEST:	3:40 AM	**ACCUMULATED YARDS:**	110.0	**AMBIENT TEMP:**	62 °F
SLUMP:	5.00"	**TRUCK NO.:**	21	**CONCRETE TEMP:**	85 °F
AIR CONTENT:	4.5%	**TICKET NO.:**	507807	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0521.7232D
PDF ID: 0521.7232D-CON

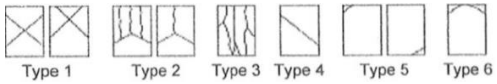
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 60' E from NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1262	**PRODUCER:**								
A	Lea County Ready Mix	2	3	5/24	4.00	12.57	56,100	4,460	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	69,520	5,530	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Clear
TIME OF FIELD TEST:	4:30 AM	**ACCUMULATED YARDS:**	170.0	**AMBIENT TEMP:**	65 °F
SLUMP:	3.75"	**TRUCK NO.:**	22	**CONCRETE TEMP:**	83 °F
AIR CONTENT:	3.2%	**TICKET NO.:**	507813	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
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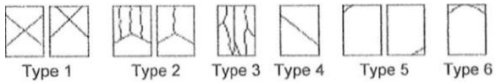
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 40' S from NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1263	**PRODUCER:**								
A	Lea County Ready Mix	2	3	5/24	4.00	12.57	57,730	4,590	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	65,600	5,220	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	5:00 AM	**ACCUMULATED YARDS:**	210.0	**AMBIENT TEMP:**	65 °F
SLUMP:	4.75"	**TRUCK NO.:**	34	**CONCRETE TEMP:**	87 °F
AIR CONTENT:	3.7%	**TICKET NO.:**	507817	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

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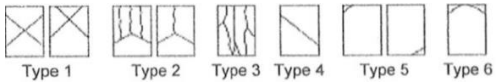
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 80' S from NW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1264	**PRODUCER:**								
A	Lea County Ready Mix	2	3	5/24	4.00	12.57	54,410	4,330	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	58,840	4,680	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	5:50 AM	**ACCUMULATED YARDS:**	250.0	**AMBIENT TEMP:**	66 °F
SLUMP:	6.50"	**TRUCK NO.:**	33	**CONCRETE TEMP:**	88 °F
AIR CONTENT:	3.5%	**TICKET NO.:**	507821	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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FIELD TECHNICIAN: R. Luna/E. Puentes

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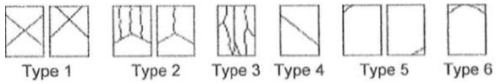
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East: Middle of slab

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1265	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	59,760	4,760	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	68,000	5,410	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	30	**WEATHER:**	Windy
TIME OF FIELD TEST:	6:40 AM	**ACCUMULATED YARDS:**	310.0	**AMBIENT TEMP:**	68 °F
SLUMP:	2.50"	**TRUCK NO.:**	12	**CONCRETE TEMP:**	90 °F
AIR CONTENT:	3.0%	**TICKET NO.:**	507827	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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BEYOND Engineering & Testing

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TO: CQA Solutions
Attn: Brent Duganiero
723 Phillips Ave. Bld. A, Suite 201
Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0521.7232H
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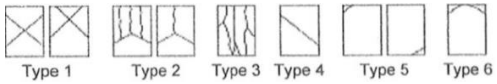
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 40' W from Center of Pad

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1266	**PRODUCER:**								
A	Lea County Ready Mix	2	3	5/24	4.00	12.57	57,670	4,590	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	66,880	5,320	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	20	**WEATHER:**	Windy
TIME OF FIELD TEST:	7:20 AM	**ACCUMULATED YARDS:**	360.0	**AMBIENT TEMP:**	68 °F
SLUMP:	3.00"	**TRUCK NO.:**	33	**CONCRETE TEMP:**	81 °F
AIR CONTENT:	3.2%	**TICKET NO.:**	507832	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0521.7232I
PDF ID: 0521.7232I-CON

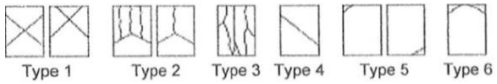
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 40' N and 40' E from SE Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1267	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	47,090	3,750	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	52,210	4,150	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	8:15 AM	**ACCUMULATED YARDS:**	420.0	**AMBIENT TEMP:**	68 °F
SLUMP:	5.00"	**TRUCK NO.:**	34	**CONCRETE TEMP:**	74 °F
AIR CONTENT:	3.4%	**TICKET NO.:**	507838	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

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32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
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PDF ID: 0521.7232J-CON

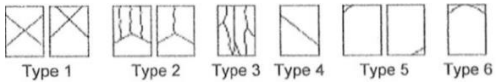
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 80' N and 40' E from SE Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1268	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	52,720	4,200	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	58,900	4,690	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	8:40 AM	**ACCUMULATED YARDS:**	470	**AMBIENT TEMP:**	70 °F
SLUMP:	4.00"	**TRUCK NO.:**	22	**CONCRETE TEMP:**	76 °F
AIR CONTENT:	3.0%	**TICKET NO.:**	507843	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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PROJECT: North Ranch
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Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
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PDF ID: 0521.7232K-CON

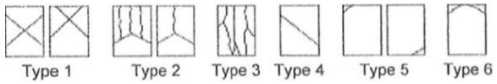
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 100' N and 80' E from SE Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1269	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	38,990	3,100	AD
B	**MIX ID:**	3	10	5/31	4.00	12.57	47,020	3,740	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	0	**WEATHER:**	Windy
TIME OF FIELD TEST:	9:15 AM	**ACCUMULATED YARDS:**	510	**AMBIENT TEMP:**	70 °F
SLUMP:	7.00"	**TRUCK NO.:**	32	**CONCRETE TEMP:**	80 °F
AIR CONTENT:	3.4%	**TICKET NO.:**	507847	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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Quality Review

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Toledo, OH 43612

PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

DATE ISSUED: June 2, 2022
REPORT NO.: 202047.0521.7232L
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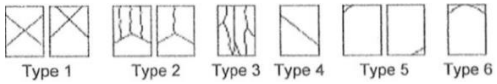
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 10' N and 10' W from SW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1270	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	43,780	3,480	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	51,620	4,110	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	10:30 AM	**ACCUMULATED YARDS:**	560	**AMBIENT TEMP:**	70 °F
SLUMP:	5.50"	**TRUCK NO.:**	11	**CONCRETE TEMP:**	80 °F
AIR CONTENT:	3.7%	**TICKET NO.:**	507852	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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PROJECT: North Ranch
32.14000, -103.46000
Jal , NM 88252

PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

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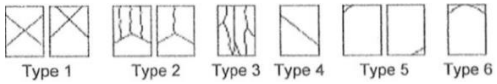
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East: 20' N and 45' W from SW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1271	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	44,300	3,530	AD
B	**MIX ID:**	3	10	5/31	4.00	12.57	53,290	4,240	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	11:15 AM	**ACCUMULATED YARDS:**	610	**AMBIENT TEMP:**	72 °F
SLUMP:	5.00"	**TRUCK NO.:**	32	**CONCRETE TEMP:**	80 °F
AIR CONTENT:	4.6%	**TICKET NO.:**	507857	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

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PROJECT NO.: WT2202047

PROJECT MANAGER: Johnny Franks
FIELD TECHNICIAN: R. Luna/E. Puentes

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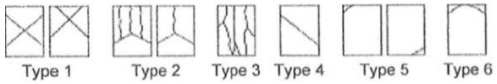
CONCRETE FIELD TESTING AND COMPRESSIVE STRENGTH

SAMPLE LOCATION: DP East; 25' N and 85' W from SW Corner

CYLINDER MARK	CONCRETE MIX INFORMATION	BREAK TYPE	AGE DAYS	DATE TESTED	DIA INCHES	AREA	TOTAL LOAD lbs.	COMPRESSIVE STRENGTH, psi	LAB TECH
C22-1272	**PRODUCER:**								
A	Lea County Ready Mix	3	3	5/24	4.00	12.57	39,520	3,140	SS
B	**MIX ID:**	3	10	5/31	4.00	12.57	50,770	4,040	DN
C	4,000 AEAC		14	6/4					
D	**ADMIXTURE:**		28	6/18					
	Air								
	CYLINDER SIZE:								
	4 **X** 8								

28 DAY COMPRESSIVE STRENGTH REQUIREMENT (psi): **4,000**

BREAK TYPES



FIELD TEST INFORMATION

DATE CASTED:	5/21/2022	**WATER ADDED (gal):**	10	**WEATHER:**	Windy
TIME OF FIELD TEST:	12:30 PM	**ACCUMULATED YARDS:**	660	**AMBIENT TEMP:**	75 °F
SLUMP:	5.00"	**TRUCK NO.:**	23	**CONCRETE TEMP:**	82 °F
AIR CONTENT:	4.2%	**TICKET NO.:**	507862	**CURING METHOD:**	Laboratory
UNIT WEIGHT:	---				

REMARKS:

NOTES: (1.) COMPRESSIVE STRENGTHS DETERMINED IN ACCORDANCE WITH ASTM C39 (2.) CROSS-SECTIONAL AREA & LENGTH ARE STANDARD UNLESS OTHERWISE NOTED (3.) MIX DESIGN AND MIXTURE INFORMATION PROVIDED BY OTHERS (4.) CYLINDERS CURED IN LABORATORY IN ACCORDANCE PER ASTM C31, UNLESS OTHERWISE NOTED (5.) UNBONDED CAPS UTILIZED IN ACCORDANCE WITH ASTM C1231, UNLESS OTHERWISE NOTED. BECAUSE OF THE VIOLENT RELEASE OF ENERGY STORED IN PADS, THE BROKEN CYLINDER RARELY EXHIBITS CONICAL FRACTURE TYPICAL OF CAPPED CYLINDERS, THUS THE SKETCHES OF TYPES OF FRACTURE IN TEST METHOD C39 ARE NOT DESCRIPTIVE (6.) SAMPLES TAKEN IN ACCORDANCE WITH ASTM C172, UNLESS OTHERWISE NOTED. (7.) WHEN APPLICABLE, THE FOLLOWING TEST PROCEDURES WERE USED: SLUMP-ASTM C143, UNIT WEIGHT-ASTM C138, AIR CONTENT- ASTM C231, TEMPERATURE- ASTM C1064.

Beyond Engineering and Testing, LLC

Quality Review

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APPENDIX F:
REQUEST FOR INFORMATION (RFI)

February 24, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #1 – Unsolicited Clarification from the Engineer of Record and CQA Team

Submitted Date: 2/11/22

Information Submitted:

None

SCS Response:

We have identified a few items in the CQA Plan that need to be addressed prior to liner install. Just wanted to get these clarified ahead of install, we can discuss further at the pre-installation meeting with the liner crew PM. Feel free to forward these on to your installer.

1. Extrusion welds will be vacuum box tested per ASTM 4437 as stated in Table 5B. However, since this CQA plan was written this ASTM standard has been updated. Section 2.3.8.1 Procedure Item #6 states that "a minimum vacuum of 4-8 psi" it to be registered on the gauge. However, ASTM 4437 has updated this to 1-4 PSI. Thus, the installer will be held to the latest ASTM version and CQA Team will only require 1-4 psi.
2. Section 2.3.8.2 States that air seam testing shall hold a pressure of 35 psi plus or minus 1% for 5min. This contradicts Table 5B which states 30 psi for 5-min allowing upto 4psi loss over that time, referencing GRI GM6. The current industry standard for air seam testing is to test per ASTM D5280 and ASTM D4437 which is to pressurize the seam channel to 30 psi min, wait 2-min and then record a 5-min period with upto 4-psi allowable loss. The latter current method will be observed on this project.
3. Section 2.3.9.2 in referring to destructive seam tests, states that a passing test shall meet the minimum required values in at least 4 out of 5 specimens. This is actually based off of an outdated document specification GRI-GM19. The current industry standard for this item is GRI-GM19A, which requires all 5 out of 5 samples to pass. The latter current method will be observed on this project.
4. Section 2.3.6 states: "If a trial seam sample fails a test conducted by the Geosynthetics Installer, then a destructive test seam sample shall be taken from each of the seams completed by the seamer during the shift related to the considered trial seam. These

samples shall be forwarded to the Geosynthetics Laboratory and, if they fail the tests, the procedure indicated in Section 2.3.9.5 shall apply." In general, the installer will not be held to this standard.

5. Sump testing: Section 2.7.3 states that the secondary and primary liners shall be tested by filling each with water and "making appropriate observations". I will clarify this requirement at a later time.
6. CQA Plan and specs conflict about anchor trench lifts for compaction. Anchor Trench compaction will be done in 6-inch lifts per the specs.

February 24, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #2 – Protective Soil Layer Installation Procedure

Submitted Date: 2/22/22

Information Submitted:

T5 and HREPC have submitted the following procedure for placement of PSL for approval:

1. We will start with a 3ft lift into the pit area. This will be built with a loader so that the dirt is dumped onto liner(may need to look at how we can use a dozer for this step).
2. After we have a road started into the pit area that is 3+ ft thick then we will run an LGP (Low Ground Pressure) dozer with GPS over surface to keep road 3 ft thick.
3. Once we have an area large enough, we will run tractors into the pit on the road we build (3ft thick).
4. Then we will come behind and cut the fill down to 2ft thick with the GPS LGP dozer.

The PSL/PC will be picked up by pans from stockpile, then ejected from the pans, then spread with a dozer. That means that the PSL/PC will be handled at a minimum of 3 times giving our operators and anyone on the ground opportunities to catch any large rocks that could be inadvertently put into the PSL/PC layer.

SCS Response:

Generally, the engineer does not suggest or approve means and methods for construction beyond what is defined specifically in the Specifications for the project. However, with regards to the proposed procedure I have no comment but do suggest the following additional measures to be taken to limit potential inadvertent damage to the liner during protective soil placement:

1. As specified the material placed shall be relatively free of large dense clauds, rocks, or sharp debris. Operators and the CQA monitor should be keeping an eye of the material being placed to make sure clauds are pulverized and large rocks and debris are removed prior to placement.
2. The LGP equipment operator should avoid as much as possible sharp turns or 0-point turning. These kinds of turns can cause rutting and stresses that can damage the underlying liner.

February 24, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #1 – Unsolicited Clarification from the Engineer of Record and CQA Team

Submitted Date: 2/11/22

Information Submitted:

None

SCS Response:

We have identified a few items in the CQA Plan that need to be addressed prior to liner install. Just wanted to get these clarified ahead of install, we can discuss further at the pre-installation meeting with the liner crew PM. Feel free to forward these on to your installer.

1. Extrusion welds will be vacuum box tested per ASTM 4437 as stated in Table 5B. However, since this CQA plan was written this ASTM standard has been updated. Section 2.3.8.1 Procedure Item #6 states that "a minimum vacuum of 4-8 psi" it to be registered on the gauge. However, ASTM 4437 has updated this to 1-4 PSI. Thus, the installer will be held to the latest ASTM version and CQA Team will only require 1-4 psi.
2. Section 2.3.8.2 States that air seam testing shall hold a pressure of 35 psi plus or minus 1% for 5min. This contradicts Table 5B which states 30 psi for 5-min allowing upto 4psi loss over that time, referencing GRI GM6. The current industry standard for air seam testing is to test per ASTM D5280 and ASTM D4437 which is to pressurize the seam channel to 30 psi min, wait 2-min and then record a 5-min period with upto 4-psi allowable loss. The latter current method will be observed on this project.
3. Section 2.3.9.2 in referring to destructive seam tests, states that a passing test shall meet the minimum required values in at least 4 out of 5 specimens. This is actually based off of an outdated document specification GRI-GM19. The current industry standard for this item is GRI-GM19A, which requires all 5 out of 5 samples to pass. The latter current method will be observed on this project.
4. Section 2.3.6 states: "If a trial seam sample fails a test conducted by the Geosynthetics Installer, then a destructive test seam sample shall be taken from each of the seams completed by the seamer during the shift related to the considered trial seam. These

samples shall be forwarded to the Geosynthetics Laboratory and, if they fail the tests, the procedure indicated in Section 2.3.9.5 shall apply." In general, the installer will not be held to this standard.

5. Sump testing: Section 2.7.3 states that the secondary and primary liners shall be tested by filling each with water and "making appropriate observations". I will clarify this requirement at a later time.
6. CQA Plan and specs conflict about anchor trench lifts for compaction. Anchor Trench compaction will be done in 6-inch lifts per the specs.

SCS ENGINEERS Environmental Consultants & Contractors

February 25, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #3 – Unsolicited Clarification from the Engineer of Record and CQA Team

Clarification to liner system at truck wash and drying pads (Drawing 9PL, Detail A)

Submitted Date: 2/25/22

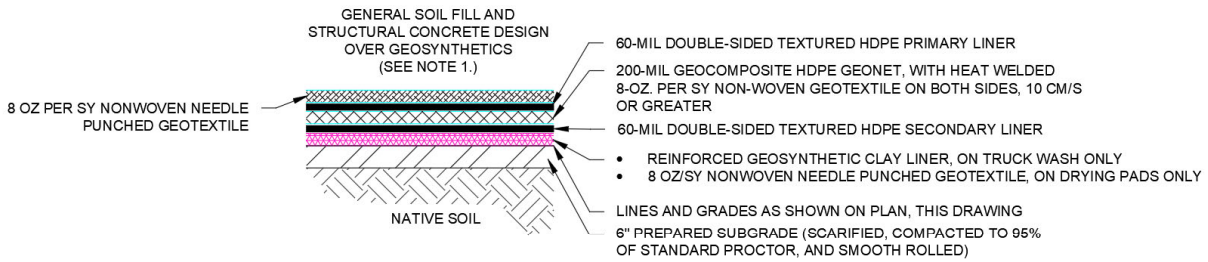
Information Submitted:

None

SCS Response:

Detail A of Drawing 9PL "Truck Wash and Drying Pad Liner Profile", shows a geosynthetic clay liner (GCL) layer below the secondary 60-mil HDPE layer in contact with the subgrade soil for all three concrete pads. However, the Facility's permit does not require a GCL layer to be installed below concrete drying pads. This layer is only required below the truck wash pad.

Therefore, this RFI #3 is to revise Detail A of Drawing 9PL to replace the GCL layer with an 8-oz Geotextile for the drying pads only. See revised detail below:



TRUCK WASH AND DRYING PAD LINER PROFILE (TYPICAL)

DETAIL A / 9PL
SCALE: NOT TO SCALE

SCS ENGINEERS Environmental Consultants & Contractors

February 28, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #4 – 8oz Geotextile conformance testing

Submitted Date: 2/28/22

Information Submitted:

Is conformance testing required on the 8-oz/sy nonwoven geotextile specified on this project.

SCS Response:

Upon review, Engineer notes that the geotextile application in this project is solely to provide a cushion layer for the geomembrane and is not a structural feature. Therefore, the Engineer waives the conformance testing requirements for the subject material in lieu of satisfactory manufacturer's quality control testing results.

SCS ENGINEERS Environmental Consultants & Contractors

March 7, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #5 – Anchor Trench Backfill and Compaction

Submitted Date: 3/7/22

Information Submitted:

T5 Construction calls into question Specification Section 02223 – Trenching, Backfilling and Compacting, Section 3.01. This section requires that anchor trenching be backfilled in 6-inch compacted lifts meeting 95% of Standard Proctor (SP), ± 2% optimum moisture content (OMC), with density testing on each lift every 100 feet of trench.

SCS Response:

Assessment:

- Engineer has reviewed the requirements of Specification Section 02223, section 3.01 and compared it to the requirements of the Permitted CQA Plan.
- CQA Plan Sections 2.1.2, only requires that the anchor trench be backfilled with 12-inch compacted lifts with testing frequency of 1-test per 100 feet of trench if testing is required. Thus, the lift thickness requirement of Section 02223, Section 3.01 exceeds the lift thickness requirement in the Permitted CQA Plan.
- Engineer has also compared the requirements of Specification Section 02223, Section 3.01 to other similar cell construction projects and have determined that requiring field density tests of each lift satisfying at a minimum 95% of SP with ± 2%OMC is unnecessarily onerous.

Engineer's Determination:

- Engineer will allow the following for placement, compaction, and testing of anchor trench fill:
  - Backfill lift thickness: 12-inch maximum
  - Backfill compaction: Each lift shall be compacted to 90% maximum dry density ±3% OMC.
  - Method of compaction: At contractor's discretion, taking care to not damage the liner during compaction. Any damage will be repaired at contractor's expense.
  - Field Testing: Nuclear Gauge testing is only required on the upper most lift at a frequency of 1-test per 100-feet of trench.

SCS ENGINEERS Environmental Consultants & Contractors

May 25, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #5a – Anchor Trench Backfill and Compaction – Moisture waiver

Submitted Date: 5/25/22

Information Submitted:

T5 Construction calls into question Specification Section 02223 – Trenching, Backfilling and Compacting, Section 3.01. This section requires that anchor trenching be backfilled in 6-inch compacted lifts meeting 95% of Standard Proctor (SP), ± 2% optimum moisture content (OMC), with density testing on each lift every 100 feet of trench.

RFI #5 reduced the compaction specification to:

- Backfill lift thickness: 12-inch maximum
- Backfill compaction: Each lift shall be compacted to 90% maximum dry density ±3% OMC.
- Method of compaction: At contractor's discretion, taking care to not damage the liner during compaction. Any damage will be repaired at contractor's expense.
- Field Testing: Nuclear Gauge testing is only required on the upper most lift at a frequency of 1-test per 100-feet of trench.

T5, under this request for information, has requested that the moisture requirement be waived.

SCS Response:

Engineer approves the requested waiver for moisture content in the anchor trench compaction.

SCS ENGINEERS Environmental Consultants & Contractors

March 7, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #6 – In Place Soil Density Testing

Submitted Date: 3/7/22

Information Submitted:

T5 is having issues with passing field soil density tests on structural fill and requests alternative allowable testing criteria.

SCS Response:

Assessment:

- Specification Section 02220 – Excavation and Backfilling, Table 02220-1 requires that all structural fill be placed in 8-inch lifts to 95% of Standard Proctor Maximum Dry Density per ASTM D-698 (SP), ± 1% optimum moisture content (OMC). However, per the geotechnical engineering report for the site from the facility permit, structural fill's OMC can range from ±2% OMC.
- Pre-construction soil laboratory results show the soils have been classified as SM and are visibly a gravely sand with some small percentage of silty fines. Soil was determined to be non-plastic by the Atterberg testing. Gradations is ~15% gravel, ~72% sands, ~13% fines.
- Site is in arid climate with soils having low moisture retention.

Engineer's Determination:

- For this soil and climate condition, an acceptable alternative to gauge calibration and field density testing using the results from the SP ASTM D698, the field density gauge may be calibrated and test in place soil density using the maximum dry density (MDD) as determined by the Modified Proctor (MP) per ASTM D1557.
- When MP MDD is used for calibration and testing, in place compacted soil density must by at least 92% of MP MDD ± 3% OMC.
- To be clear, field density testing using SP MDD remains acceptable.

SCS ENGINEERS Environmental Consultants & Contractors

March 7, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #7 – Geocomposite Seaming

Submitted Date: 3/7/22

Information Submitted:

Geosynthetics Installer, Mustang Extreme, requested clarification on the acceptable seeming procedure for the geocomposite layers of the various containment systems.

Engineer's Response:

The following method will replace the methods specified in Section 2.5.3 of the CQA Plan and Specification Section 02278, Section 3.05.B, D, & F

For all geocomposite installations, i.e. leak detection layers at the concrete pads, Cell E-1, and Contact Pond, and leachate collection layer at Cell E-1; the Engineer and CQA Team shall require that geocomposite panels be seamed in compliance with Geosynthetics Institutes Standard Guide GRI-GN2 and GRI-GC13, for "Joining and Attaching Geonets and Drainage Composites"(Standard Guide).

Specifically:

- End-to-end seams shall be overlapped 1.5-feet, with the upgradient panel lapped over the downgradient panel. The geonets shall be mechanically joined together using plastic electrical zip ties every 6-inches. The upper geotextiles shall be bonded together per Section 4.6 of the Standard Guide.
- Side-to-side seams shall be overlapped 6-inches minimum, panel overlap order does not matter. The geonets shall be mechanically joined together using electrical zip ties every 5-feet. The upper geotextiles shall be bonded together per Section 4.6 of the Standard Guide.

SCS ENGINEERS Environmental Consultants & Contractors

March 8, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #8 – Destructive Sample Testing and Reporting

Submitted Date: 3/8/22

Information Submitted:

Geosynthetics Installer, Mustang Extreme, requested clarification on the destructive sampling and testing procedures stated in Section 2.3.9.1 Thru 2.3.9.5.

Engineer's Response:

Section 2.3.9.1 – Location and Frequency, shall be adhered to verbatim.

Section 2.3.9.2 – Sampling Procedure, Revised as follows:

- Paragraph 3 of this Section, Bullet 1: a 12in x 12in sample of the overall destruct sample shall be given to the installer for archive storage. Laboratory testing by the installer is not required.
- Paragraph 3 of this Section, Bullet 2: a 12in x 18in sample of the overall destruct sample shall be given taken by the CQA Monitor for third party laboratory testing.

Section 2.3.9.3 – Field Testing, shall be adhered to verbatim.

Section 2.3.9.4 – Laboratory Testing, Revised as follows:

- Paragraph 2, final sentence: A passing test shall meet the minimum required values in 5 [not 4] out of 5 specimens.
- Paragraph 4: Delete entirely.

Section 2.3.9.5 – Procedure for Destructive Tet Failure, revised as follows:

- Paragraph 1, first sentence: delete “the Installer’s laboratory”. Again, installer is not responsible for laboratory testing.

Section 3.2 – Destructive Test Reports, revised as follows:

- Paragraph 1, Second sentence: delete “the Installer’s laboratory”. Again, installer is not responsible for laboratory testing.

SCS ENGINEERS Environmental Consultants & Contractors

March 8, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #9 – Sump Testing

Submitted Date: 3/8/22

Information Submitted:

Geosynthetics Installer, Mustang Extreme, requested clarification on the sump testing as defined in CQA Plan Section 2.7.3, Second Paragraph Bullet #4.

Engineer's Response:

Engineer is waiving the requirement of filling the sumps at Cell E-1, the Pond, the Drying Pads, and the Truck Wash with water for "appropriate observations". Unless notified by the Engineer otherwise in the future, sump integrity shall be verified using the nondestructive air-testing and vacuum box testing, and destructive sample tests proscribed by the CQA Plan. In addition, the CQA Monitor shall visually inspect each sump and provide approval prior to placing overlying materials.

SCS ENGINEERS Environmental Consultants & Contractors

March 15, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #10 – Unsolicited Engineer's Clarification – Cell E1 and Contact Pond Certification Points

Submitted Date: 3/15/22

Information Submitted:

N/A

Engineer's Response:

Engineer has revised the certification points for the Cell E-1 subgrade and Contact Water Pond to be in-line with the required frequency and spacing stated in Section 2.0, Subsection 4.0 of the CQA Plan. This section requires only a 100-ft grid spacing. The current drawings show a 50-ft grid spacing.

Attached to this RFI Response are revised Drawings 6CT, 7CT1 and 7CT2 showing the revised 100-ft certification grid and associated tables.

Also attached are CSV files for the Tables shown on 6CT and 7CT2.

SCS ENGINEERS Environmental Consultants & Contractors

April 5, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #11 – Subgrade grading tolerance

Submitted Date: 4/1/22

Information Submitted:

T5 Construction requests a variance of 0 to +.2 on the landfill grading. Via Email dated 4/1/22

Engineer's Response:

Engineer has reviewed the potential impacts to base grading drainage design of the cell as it relates to the minimum requirements of the permit and NMAC 19.15.36.14.C. The permit and NMAC 19.15.36.14.C require that the floor drainage and leachate piping maintain a minimum of 2% in the flow direction.

The floor sheet drainage as designed has a flow direction drainage slope of ~2.8% to allow for variations in grading without negatively exceeding the minimum allowable slope of 2%. Engineer estimates maximum deflection due to the proposed increased tolerance will decrease the floor's sheet flow slope to 2.6%, which is acceptable.

However, the main leachate pipe trench as is designed at the 2% minimum. Thus, increase deflections will cause an exceedance of the minimum allowable slope of 2%.

Therefore, Engineer permits a tolerance of 0.0 - +0.2-ft throughout the cell floor grading.

Tolerance in the trench may also be 0.0 - +0.2-ft, however, a variance from the design at one point must be matched at a minimum or greater up to 0.2ft up through the trench flow line such than the 2% minimum is not exceeded at any point along the pipe trench. E.G. Point 1273 is 0.1' higher than design, then points 1270, 1267, and 1204 must also be raised up by 0.1'-0.2' to insure the 2% pipe slope is maintained.

This directive applies to Cell E-1 and the Evaporation Pond grading.

SCS ENGINEERS Environmental Consultants & Contractors

April 12, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #12 – Cell E-1 Leachate and Leak Detection Riser Pipe Trench

Submitted Date: 4/12/22

Information Submitted:

T5 has requested 3-D CAD modeling and an alternative design to the pipe riser trench shown on Detail E on Drawing 7PR. The 4-ft maximum trench width is not obtainable with excavation equipment available on-site and the minimum bucket width is 5ft-2inches. T5 also requested that the trench walls be laid back at a 3:1 (H:V) vs the prescribed vertical wall due to concerns about the ability of the soil to maintain a vertical hold and for ease of liner installation through the trench. Lastly T5 requested a trench depth.

Engineer's Response:

Engineer has reviewed the request and approves the requested variance. Engineer will provide a 3-D grading model in order to provide control of excavating this trench up the side slope wall. The model will be provided via email in a separate correspondence. See attached revision to Drawing 7PR showing the revised typical trench detail. In general, the trench will have a minimum bottom width of 5-ft, 2-inches, a depth of 2-ft from subgrade, and 3:1 trench wall slopes.

SCS ENGINEERS Environmental Consultants & Contractors

April 12, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #13 – Pipe SDR Rating

Submitted Date: 4/12/22

Information Submitted:

Mustang Extreme requests a variance to install SDR-11 HDPE in lieu of the specified SDR-17 for the 18-inch pipe riser in Cell E-1. Via Email dated 4/12/22.

Engineer's Response:

In general, a lower SDR rating is acceptable as it increases the side wall thickness and overall pipe strength. However, please note that a lower SDR rating will also reduce the pipe's natural flexibility. So, lower SDR rated pipe may not be able to use natural pipe flexibility to make the necessary bends in the sump areas where a thinner walled pipe could have. In this case contractor may need to buy or fabricate bends as needed to achieve these bend angles in the sump area.

Engineer approved generally the use of lower SDR-rated pipe for any specified pipe on this project as needed, with the understanding that purchased or fabricate bends may be necessary in the sump areas.

Please note: Use of higher SDR-rated (thinner walled) piping than what is specified is not permitted, and must be reviewed by the engineer on a case by case basis.

SCS ENGINEERS Environmental Consultants & Contractors

April 13, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #14 – Minor subgrade wind erosion repairs

Submitted Date: 4/13/22

Information Submitted:

T5 requests clarification regarding placement of soil material to bring the subgrade surface back to design grade after sediment removal due to wind erosion. In the case of minor wind scouring of the surface (i.e.<4-inches), is it acceptable to place moisture conditioned protective cover material without testing the replaced material. The wind erosion has only occurred below grade against excavated insitu soil walls.

Engineer's Response:

References:

- Specification Section 02200 - Earthwork, Section 3.15 Protection
  - B. "Repair and re establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
    - 1. Scarify or remove and replace material to depth directed by the Engineer; reshape and recompact to optimum moisture content or the required density."

- Specification Section 02210 – Excavation and Backfill, Section 3.06.C
  - "In the event of damage to prior work or work completed as specified in this Section, the Contractor shall submit a repair plan to the Owner and CQA Consultant(s). The repair plan shall describe the areas requiring repair, and the Contractor shall make all repairs and replacements necessary to the approval of the Owner and CQA Consultant(s) and at no additional cost to the Owner."

- Specification Section 02228 - Subgrade, Section 3.05.B

- In the event of damage to prior work or work completed as specified in this section, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Owner and CQA Consultant and at no additional cost to the Owner.

- CQA Plan, Section 2.1,
  - "The subgrade will not require any subgrade compaction testing as the contractor shall excavate down to subgrade"
  - "The main requirement for the subgrade is it must have sufficient compaction and strength to enable the placement of liner. The subgrade also must be stable to prevent large differential settlements that would be conducive of damage of the liner system or the pooling of leachate.

  - Table 3, subnote 5: "No subgrade testing required unless material over-excavated.

- Plan Drawing 7PL Detail A: "6" prepared subgrade shall (scarified and recompacted to 90% of standard proctor and smooth drum rolled.)"

Based on the above references, and information provided by the contractor. The wind erosion has uniformly scoured the wall, as opposed to rain damage rills that rut and crack the surface. Thus the wind erosion has not compromised the structural integrity of the cell wall and removed material uniformly with a maximum thickness (4-inches) that is thinner than the required 6-inch subgrade layer. The excavated insitu subgrade compaction only requires a 90% compaction, which is essentially a loose cushion layer for soil placement. In addition, the CQA plan explicitly states that excavated subgrade surface do not require compaction testing.

Therefore, Engineer approves T5's proposed erosion repair plan of placing moisture conditioned protective cover soil material over the effected areas. Engineer further is not requiring post placement compaction testing on this repair soil material.

SCS ENGINEERS Environmental Consultants & Contractors

April 27, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #15 – Valve SDR Rating

Submitted Date: 4/27/22

Information Submitted:

See Attached Email

Engineer's Response:

Engineer approves use of SDR-11 Valves in lieu of SDR-13.5 Valves.

Bradford, Michael

From: Travis Clark <travis@hr-epc.com>
Sent: Wednesday, April 27, 2022 12:20 PM
To: Bradford, Michael
Subject: North Ranch Landfill

This email originated from outside of SCS Engineers. Do not click links or open attachments unless you recognize the sender and know the content is safe.

See note below on force main valves.

Sent from my iPhone

Begin forwarded message:

From: Schaun Gallagher <Schaun.Gallagher@isco-pipe.com>
Date: April 27, 2022 at 2:10:16 PM CDT
To: Travis Clark <travis@hr-epc.com>
Cc: Chris Rountree <Chris.Rountree@isco-pipe.com>, Rick Gentner <Rick.Gentner@isco-pipe.com>
Subject: DR11 Valves

Travis,
Just a quick note, we have 3" AVK valves in stock in DR11 (not DR13.5) we would like to substitute the heavier wall. The DR13.5 is out 8-10 weeks from AVK. It is common practice within the HDPE industry that you can fuse up or down one DR without issue.
Please advise if this is acceptable.

9 7 EA 59329999 3" DR 13.5 IPS PE AVK GATE VALVE 304 – Offering in DR11 out of stock.

Regards,
Schaun

Schaun Gallagher
EPC Sales Manager
ISCO Industries, Inc.
Phone: 281-381-1532
Email: schaun.gallagher@isco-pipe.com
www.isco-pipe.com
ISCO - Total Piping Solutions

SCS ENGINEERS Environmental Consultants & Contractors

May 5, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #16 – Concrete Quality Control Specifications

Submitted Date: 4/27/22

Information Submitted:

Contractor believes the Field Quality Control requirements for the cast in place concrete to be onerous for the type and application of the concrete pads. Contrator requests a review and clarification and possible revision to the Field Quality Control requirments as stated in the Cast in Place Concrete Specification, Specification 03310-Section 3.07 based on the known use.

Engineer's Response:

Structural Engineer of Record has reviewed the Cast in Place Concrete Specification, Spec 03310-Section 3.07, and agrees with the contractors assessment. The following Field Quality Control requirements will supersede those stated in Section 3.07 of Specification 03310.

See Next Page

3.07 Field Quality Control

1. *Samples for testing shall be obtained in accordance with ACI 301. The rate of sampling shall be per ACI 301 and the following:*
   a) *Obtain one sample per 50 cubic yards of concrete.*

2. *Take additional samples when observations on tests for slump, temperature, or air content indicate nonconformance with the specifications.*

3. *For each concrete sample taken, the following tests shall be conducted in accordance with ACI 301:*
   a) *Strength tests*
   b) *Slump*
   c) *Temperature*
   d) *Air content*

4. *Test cylinder sets shall be dated and numbered consecutively.*

5. *Concrete QA test reports shall be provided to the buyer on a weekly basis. Data to be included in the test report shall include, but not be limited to, the following:*
   a) *Location of concrete on the job and associated drawing numbers and structure/foundation identification*
   b) *Specified strength (f ☐c)*
   c) *Date poured*
   d) *Mix type*
   e) *7- and 28-day compressive strength*
   f) *Slump, air and concrete temperatures at time of pour, time of day concrete was batched, and time of day concrete was poured*
   g) *Air content*
   h) *Name of inspector making cylinders and cylinder number*

SCS ENGINEERS Environmental Consultants & Contractors

June 1, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #17 – Dimensions of Concrete Leachate Riser Headwall

Submitted Date: 5/26/22

Information Submitted:

Contractor requested clarification to concrete headwall for leachate riser pipes in Cell E-1. Request exact dimensions and pipe spacing details.

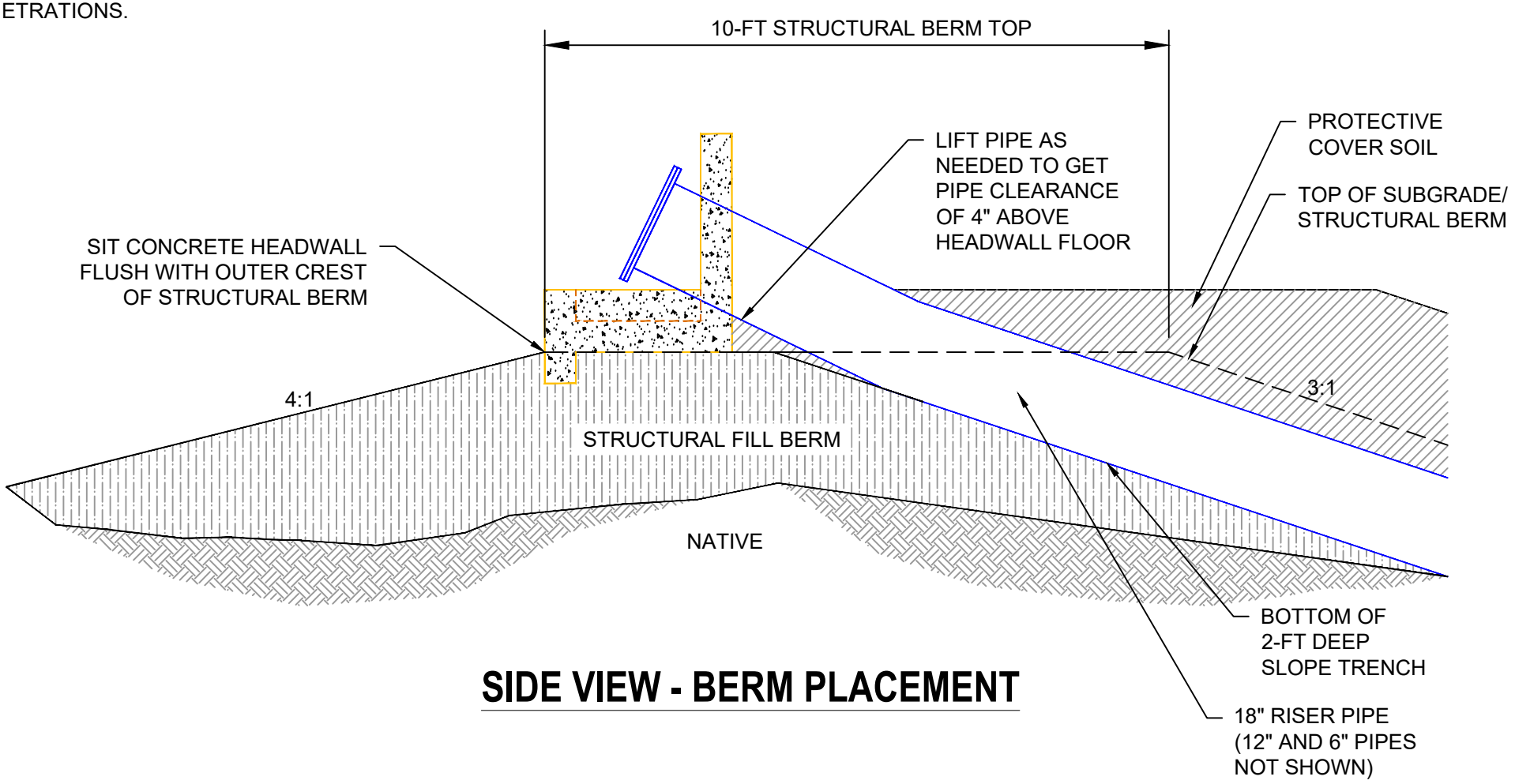
SCS Response:

Engineer has provided attached guidance for concrete headwall construction under as-built conditions.

Page 800 of 813

STEEL REINFORCEMENT
NOTE:

INSTALL#4 REINFORCED BARS @ 1'-0" O.C. BOTH DIRECTIONS. PLACE 4 ADDITIONAL DIAG. BARS AROUND PIPE PENETRATIONS.



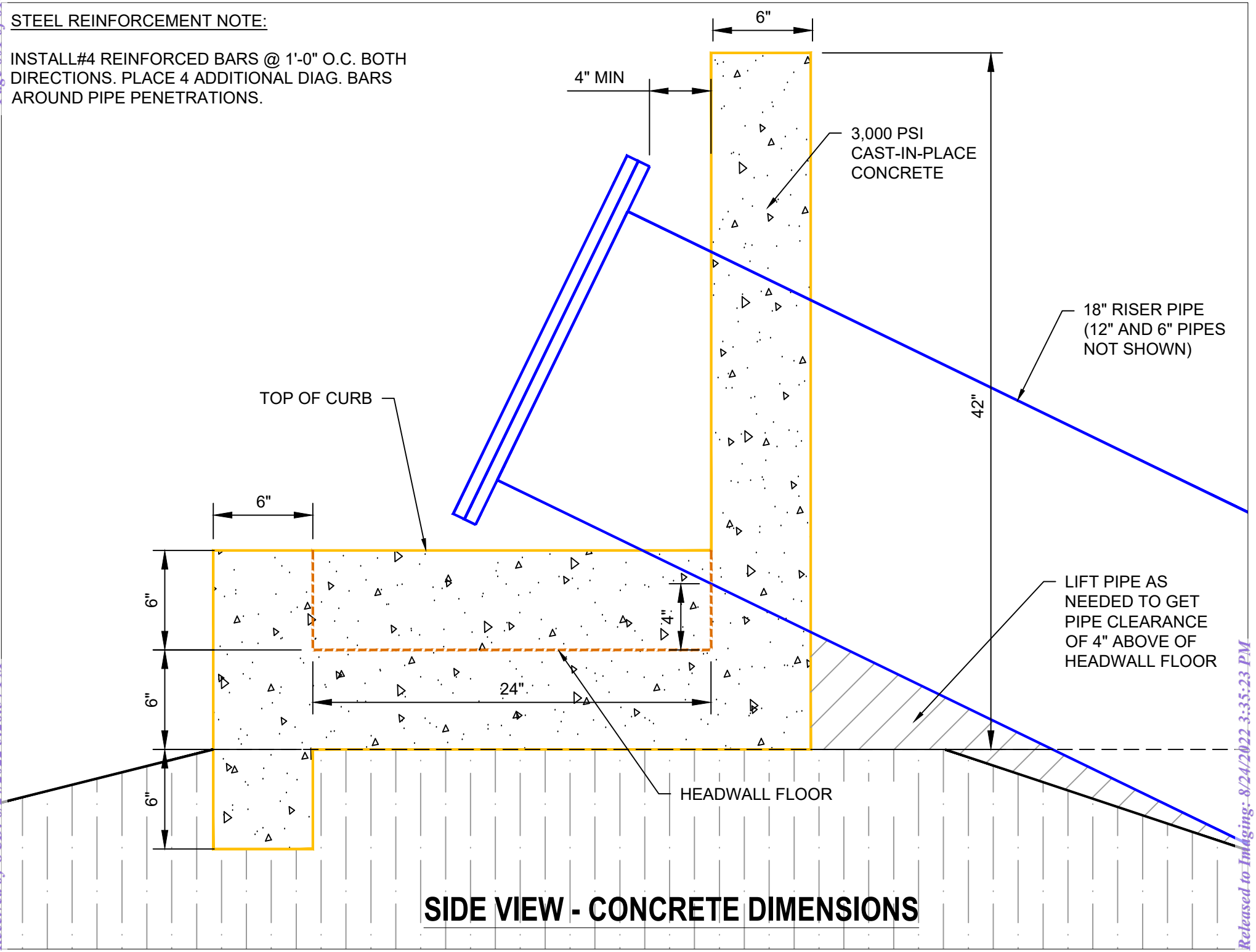
SIDE VIEW - BERM PLACEMENT

Received by OCD: 8/24/2022 3:28:34 PM
Released to Imaging: 8/24/2022 3:35:23 PM

Page 801 of 813

STEEL REINFORCEMENT NOTE:

INSTALL#4 REINFORCED BARS @ 1'-0" O.C. BOTH DIRECTIONS. PLACE 4 ADDITIONAL DIAG. BARS AROUND PIPE PENETRATIONS.



SIDE VIEW - CONCRETE DIMENSIONS

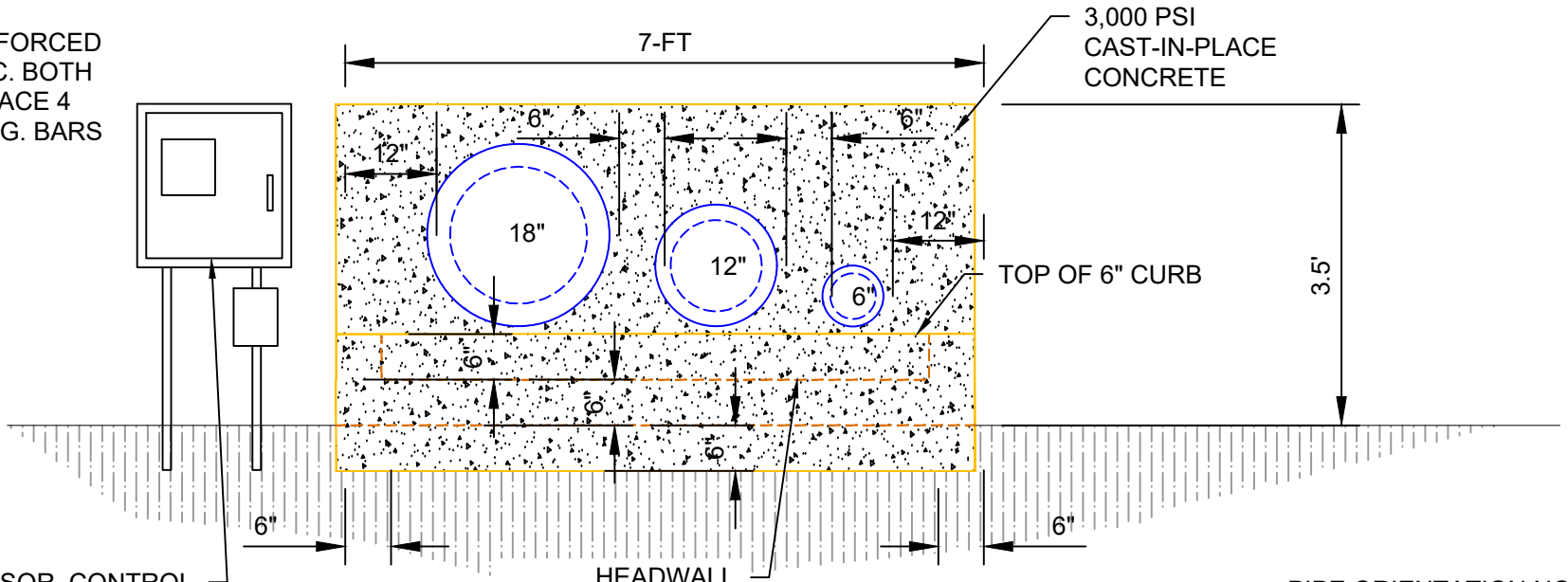
Received by OCD: 8/24/2022 3:28:34 PM

Released to Imaging: 8/24/2022 3:35:23 PM

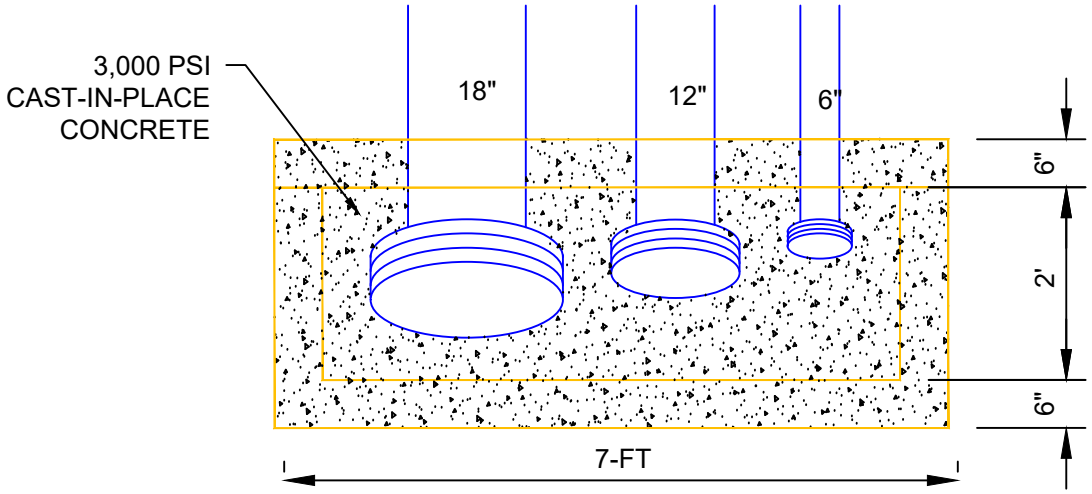
Page 802 of 813

STEEL REINFORCEMENT NOTE:

INSTALL#4 REINFORCED BARS @ 1'-0" O.C. BOTH DIRECTIONS. PLACE 4 ADDITIONAL DIAG. BARS AROUND PIPE PENETRATIONS.



FRONT VIEW - CONCRETE DIMENSIONS



TOP VIEW - CONCRETE DIMENSIONS

PIPE ORIENTATION NOTE:

ORDER OF 18-INCH, 12-INCH AND 6-INCH RISERS LEFT TO RIGHT SHOWN CAN BE CHANGED AS NEEDED IN FIELD. CONTRACTOR TO MAINTAIN FLANGE TO FLANGE SEPARATION DISTANCES SHOWN REGARDLESS OF ORDER.

Received by OCD: 8/24/2022 3:28:34 PM
Released to Imaging: 8/24/2022 3:35:23 PM

SCS ENGINEERS Environmental Consultants & Contractors

June 2, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #18 – Evaporation Pond Liner Ballast Tube – Alternative Request

Submitted Date: 5/27/22

Information Submitted:

Contactor has requested to install an alternate to the 8" 45-mil PP-R Sand Tube Ballasts for the Leachate Evaporation Pond per Detail C on Drawing 6PR.

Contractor would like to field fabricate the ballast tubes from left over 60-mil HDPE material and fill with onsite soil.

Engineer's Response:

This variance is acceptable, please proceed. CQA Monitor will observe the placement of the tubes and ensure any damage to the primary liner is properly repaired and documented.

SCS ENGINEERS Environmental Consultants & Contractors

June 2, 2022
File No. 0122034.00 / Task 2

MEMORANDUM

TO: High Roller EPC

FROM: Michael Bradford, P.E.

SUBJECT: North Ranch Landfill – Cell E-1 and Supporting Infrastructure Construction

RFI #19 – Cell E-1 Liner Anchor Trench protective cover berm - compaction

Submitted Date: 5/27/22

Information Submitted:

Detail C of Drawing 7PR calls for a 1-ft cover soil to be placed over the top of the structural containment berm. The detail calls for this 1-ft of fill to be compacted to 90% of Standard Proctor. Contractor calls into question the necessity and would requests a variance to this compaction requirement

Engineer's Response:

Upon review of the intent of this soil cover over the top of the structural containment berm, Engineer has determined that this soils is solely for the protection of the anchor trench and serves no structural purpose. In application it is simply an extension of the protective cover soil layer.

Therefore, Engineer waives the compaction requirement for this 1-ft of berm top cover soil.

APPENDIX G-1:
NUCLEAR GAUGE CALIBRATION

Print Date: 01/28/2022 Cert#: MI29187 Page 1/3

InstroTek, Inc.

Gauge Calibration Report

Gauge Model: MC1 DRP
Serial Number: 8825
Calib. Date: 01/28/2022 Expires: 01/28/2023

Density Std. Cnt: 34475
Moisture Std. Cnt: 8924
Bay Number: 6205

Block Type	Low	Med	High
Density	111	138.8	168.9
S/N	6001	6002	6003
Depth	Density Calibration Counts		
BS	21563	16582	12730
AC	40210	30308	22809
2	103247	77190	53139
4	93854	65709	42156
6	70211	45336	27348
8	46063	27269	15101
10	28151	15388	8422
12	16515	8924	5239

CQA Solutions

723 A Phillips Ave, Suite 201

Toledo, OH 43612

Gauge Constants:

Depth	A	B	C	@125 pcf Repeatability
BS	3.15616	51.53745	0.23942	0.72
AC	6.61755	49.57138	0.42184	0.49
2	11.44770	77.08466	0.18585	0.29
4	14.85405	60.49305	0.24310	0.25
6	18.76842	45.73803	0.27832	0.25
8	19.40923	38.57159	0.16501	0.26
10	22.47043	31.01562	0.13244	0.31
12	19.76074	27.31880	0.10397	0.40

Moisture Parameters:

Block Type	Low	High	A	B	@15 pcf Repeatability
Density	0	35.6			
S/N	6001	6006			
	Moisture Cal Counts		Gauge Constants		
	511	6044	57.4845	-3.2916	0.34

All measurements are in pcf unless otherwise stated

Service Center: InstroTek, Inc. 4495 44th St. Suite A 49512

Print Date: 01/28/2022 Cert#: MI29187 Page 2/3

InstroTek, Inc.

Uncertainty

Gauge Model: MC1 DRP
Serial Number: 8825
Calib. Date: 01/28/2022 Expires: 01/28/2023

Density Std. Cnt: 34475
Moisture Std. Cnt: 8924
Bay Number: 6205

Gauge Density Estimated Measurement Uncertainty:

Density Depth	Low 111	Med 138.8	High 168.9
BS	1.35	1.94	2.97
AC	1.04	1.47	2.20
2	0.85	1.05	1.28
4	0.80	1.01	1.27
6	0.78	1.02	1.36
8	0.79	1.06	1.49
10	0.81	1.17	1.93
12	0.88	1.41	2.92

Gauge Moisture Estimated Measurement Uncertainty: 0.82

Note: Expanded uncertainties calculated above are for coverage factor K=2, which defines a measurement confidence level of approximately 95%. These values meet the requirement of ASTM D7759 and D6938. The calculations of uncertainty are based on the calibration facility being compliant to ASTM D7013, with potential influences controlled, such as wall effect, background and operator experience.

Gauge moisture measurement uncertainty is calculated at moisture density value of 240 kg/m3 (15 lb/ft3)

Print Date: 01/28/2022 Cert#: MI29187 Page 3/3

InstroTek, Inc.

Expected Std. Count

Gauge Model: MC1 DRP
Serial Number: 8825
Calib. Date: 01/28/2022 Expires: 01/28/2023

Density Std. Cnt: 34475
Moisture Std. Cnt: 8924
Bay Number: 6205

Date	From	To
Jan 22	34130	34819
Feb 22	34064	34752
Mar 22	33999	34685
Apr 22	33933	34619
May 22	33868	34552
Jun 22	33803	34486
Jul 22	33738	34419
Aug 22	33673	34353
Sep 22	33608	34287
Oct 22	33544	34221
Nov 22	33479	34155
Dec 22	33415	34090
Jan 23	33350	34024
Feb 23	33286	33959
Mar 23	33222	33893
Apr 23	33158	33828
May 23	33095	33763
Jun 23	33031	33698
Jul 23	32967	33633
Aug 23	32904	33569

NOTE: The expected density standard counts are based on decay of the Cesium 137 source used for density measurements. The results listed on this calibration report relate only to the gauge listed on this report. This calibration is only intended to be used for construction materials density and moisture measurements for any use outside of this limitation consult the manufacturer.
The blocks used for the calibration of the gauge listed above have density values that are traceable to SI through NIST. These blocks were traced to SI through NIST by using certified by NIST load cell (Sentran ZB1-1K-000, SN 931050) and calipers (SPI 40" Calipers, SN 000184); with an uncertainty of 0.3% for density and 2.2% for moisture. Block types: 6001 & 7001-Magnesium; 6002 & 7002-Magnesium/Aluminum Laminate; 6003 & 7003-Aluminum; 6004-Limestone; 6005 & 7005-Granite; 6006-Magnesium/Polyethylene.
The calibration performed was according to the ASTM D7759, the manufacturer's recommended procedures, and InstroTek's ISO 17025 Quality System. Maximum uncertainty for the density of 104 pcf (2628.0 kg/m3) at Backscatter (BS) is +/- 0.5 pcf (8.0 kg/m3), depths 2-11 are +/- 0.25 pcf (4.0 kg/m3), and depth 12 is +/- 0.35 pcf (6 kg/m3). Maximum uncertainty for the moisture at 15 pcf (240.3 kg/m3) at Backscatter (BS) is +/- 0.33 pcf (5.3 kg/m3).
The metallic block density values stated on this calibration report are the true gravimetric densities. During the calculation of A, B, and C constants, the metal densities are normalized by correction factors to account for chemical composition effects.

InstroTek, Inc.

Calibration Technician

1-28-22
Date

Service Center: InstroTek, Inc. 4490 44th St. Suite A 49512

Print Date: 01/28/2022 Cert#: MI29187 Supplement

InstroTek, Inc.

As Found / As Left Report

Gauge Model: MC1 DRP
Serial Number: 8825
Calib. Date: 01/28/2022

Density Std. Cnt: 34475
Moisture Std. Cnt: 8924
Bay Number: 6205

As Found Condition:

Depth	Low	Error	Med	Error	High	Error
	108.3		132.5		164.5	
BS	107.4	0.9	132.9	0.4	163.9	0.5
AC	107.7	0.6	133.2	0.8	165.4	1.0
2	106.8	1.5	131.7	0.8	164.4	0.1
4	107.1	1.2	131.7	0.8	164.1	0.4
6	107.5	0.8	132.0	0.4	162.7	1.8
8	107.6	0.7	132.1	0.3	163.6	0.8
10	107.4	0.9	132.5	0.1	163.2	1.3
12	109.7	1.4	132.1	0.4	161.1	3.3

Actual Moisture Density: 35.6 Measured: 35.5 Error: 0.1

As Left Condition:

Depth	Low	Error	Med	Error	High	Error
	108.3		132.5		164.5	
BS	108.3	0.0	132.5	0.0	164.5	0.0
AC	108.3	0.0	132.5	0.0	164.5	0.0
2	108.3	0.0	132.5	0.0	164.5	0.0
4	108.3	0.0	132.5	0.0	164.5	0.0
6	108.3	0.0	132.5	0.0	164.5	0.0
8	108.3	0.0	132.5	0.0	164.5	0.0
10	108.3	0.0	132.5	0.0	164.5	0.0
12	108.3	0.0	132.5	0.0	164.5	0.0

Actual Moisture Density: 35.6 Measured: 35.6 Error: 0.0

Uncertainty of the Calibration blocks were measured at k=2. Actual block densities and repeatability of the measurements is on page 1 of the calibration report.

All measurements are in pcf unless otherwise stated
Service Center: InstroTek, Inc. 4495 44th St. Suite A 49512

APPENDIX G-2:
TENSIOMETER CALIBRATION

DEMTECH Services Inc.®

CALIBRATION CERTIFICATE

Tensiometer Model:	Pro-Tester [T-0100/A or T-0100SE/A]		
Device Calibrated:	S-Type load cell	Calibration Apparatus:	
Range:	0 - 750 lbs. Tension		
Model No:	M2405-750#	Pro-Cal unit, model TC-0100/A	
Serial No:	**666584**		
A/D Module Model No:	T-029		
A/D Module Serial No:	**2111666584**		
Channel No:	N/A		

Dead Weight:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	R3	302

Indicator reading with no load: 0

Offset: **3.554521** Scale: **3.203110**

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: MH Date: 04/23/21

Signature: _____

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 688141

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 3113688141
Channel No: N/A

Dead Weight:

W1	2
W2	152
W3	302

Reference Cell:

R1	2
R2	152
R3	302

Indicator reading with no load: 0

Offset: 1.500310 Scale: 3.206188

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

GH

Date: 01/28/22

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 137702

CONDITIONS

Operator:	OGRID:
NGL Waste Services, LLC 1008 Southview Circle Center, TX 75935	329268
	Action Number: 137702
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
bjones	None	8/24/2022