



SMITH WILLIAMS CONSULTANTS, INC.

SCANNED

Appendix B.6

Interface Shear Strength Testing



SMITH WILLIAMS CONSULTANTS, INC.

Appendix B.6.1

Phase 5 Interface Shear Strength Testing

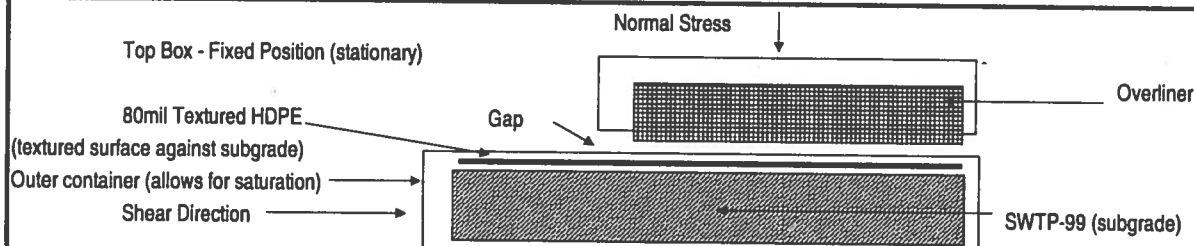
Soil / Geosynthetic Interface Test Report

Project	Valley Leach Facility - Cripple Creek & Victor			Project No.	DV108-130.7
Lab No.		Date Tested	7/24 - 7/27/07	Tested By	spb
Test Description	SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)			Checked By	spb
Sample I.D:					
Normal Stress Range, psf	7200	14400	21600	28800	Total No. of Points Requested
					4
Geomembrane Data	SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)				Test No. (file)
Manufacturer					27026A-D
Lot No.					
Roll No.		Textured?	Yes	Peak to Peak Thickness, mil	80
Specified Thickness, mil	80				
Test Target Parameters	Moisture Content, %	17.5	Dry Density, pcf	105.8	

Observations: The clay (subgrade) was compacted in the lower shear box half with dimensions of 10 in. x 12.0 in. x 2.5 inches deep.
The subgrade surface was sprayed with water prior to placing the geomembrane coupon on it. The coupon was left floating and not anchored to either the top or bottom box halves. The overliner was placed loosely and lightly tamped prior to saturating with tap water.
With the loading plate assembled and the normal force applied the sample was allowed to consolidate approximately 8 hours prior to initiating shear displacement. No punctures or tears were observed in the coupons upon completion of the test. The failure plane existed the interface between the smooth side and the overliner at the 50 psi stress and between the subgrade and the textured surface for all others.

Upper Box Half Description Overliner Poorly graded GRAVEL with silt and sand

Lower Box Half Description SWTP-99, compacted to approx. 95% MDD at OMC +2%



Default Test Descriptions (unless noted otherwise)

- 1 The test was performed in a Boart Longyear 300mm shear device, using an 8inch x 8 inch square insert.
- 2 The rate of displacement was 0.02 in./min. (0.50 mm/min.) for each stress.
- 3 The geomembrane coupon was not anchored. The coupon was sandwiched between the overliner and rested on the compacted subgrade.
- 4 Load increments were recorded in 10 lbf increments.
- 5 The Geosynthetic coupons are available for inspection at the lab.
- 6 The samples were allowed to consolidate for approximately 8 hours prior to initializing shear movement. The overliner was saturated with tap water and allow to fully drain prior to initializing shear displacement.
- 7 The geomembrane was tested in machine direction. No testing was performed in the cross-machine direction.

Geosynthetic Interface Test - ASTM D 5321, Method B
300mm Shear Device, 8.0 in. x 8.0 in. Insert
 Valley Leach Facility - Cripple Creek & Victor
 Smith Williams Consulting
 Project No. DV108-130.7

SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)

7200 psf Normal Stress				14400 psf Normal Stress				21600 psf Normal Stress				28800 psf Normal Stress			
Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf
0.039	0.991	10	0	0.031	0.787	20	0	-0.079	0.000	20	0	0.000	0.000	0	0
0.041	1.041	30	31	0.033	0.838	40	45	-0.080	-0.025	320	675	0.001	0.025	20	45
0.045	1.143	180	266	0.037	0.940	80	135	-0.078	0.025	550	1193	0.003	0.076	60	135
0.050	1.270	340	516	0.042	1.067	290	608	-0.075	0.102	780	1710	0.003	0.076	180	405
0.056	1.422	450	688	0.047	1.194	510	1103	-0.074	0.127	960	2115	0.005	0.127	310	698
0.062	1.575	560	859	0.052	1.321	700	1530	-0.069	0.254	1140	2520	0.008	0.203	450	1013
0.068	1.727	640	984	0.058	1.473	840	1845	-0.066	0.330	1290	2858	0.011	0.279	700	1575
0.074	1.880	700	1078	0.064	1.626	980	2160	-0.061	0.457	1430	3173	0.015	0.381	1010	2273
0.081	2.057	770	1188	0.070	1.778	1100	2430	-0.057	0.559	1560	3465	0.020	0.508	1320	2970
0.088	2.235	830	1281	0.077	1.956	1190	2633	-0.053	0.660	1670	3960	0.026	0.660	1590	3578
0.094	2.388	890	1375	0.084	2.134	1300	2880	-0.048	0.787	1780	4253	0.030	0.762	1800	4050
0.101	2.565	950	1469	0.090	2.286	1400	3105	-0.041	0.965	1910	4545	0.036	0.914	2010	4523
0.108	2.743	1000	1547	0.097	2.464	1500	3330	-0.038	1.041	2040	4770	0.041	1.041	2240	5040
0.115	2.921	1050	1625	0.103	2.616	1590	3533	-0.034	1.143	2140	5040	0.046	1.168	2470	5558
0.122	3.099	1100	1703	0.110	2.794	1680	3735	-0.028	1.295	2260	5265	0.052	1.321	2660	5985
0.127	3.226	1140	1766	0.116	2.946	1770	3938	-0.022	1.448	2360	5468	0.056	1.422	2840	6390
0.136	3.454	1180	1828	0.123	3.124	1850	4118	-0.018	1.549	2450	5670	0.062	1.575	2970	6683
0.144	3.658	1210	1875	0.129	3.277	1930	4298	-0.013	1.676	2540	5850	0.066	1.676	3120	7020
0.151	3.835	1250	1938	0.137	3.480	2020	4500	-0.008	1.803	2620	6030	0.073	1.854	3230	7268
0.157	3.988	1300	2016	0.143	3.632	2090	4658	-0.002	1.956	2700	6210	0.078	1.981	3350	7538
0.165	4.191	1320	2047	0.150	3.810	2150	4793	0.001	2.032	2780	6345	0.085	2.159	3470	7808
0.171	4.343	1360	2109	0.157	3.988	2210	4928	0.007	2.184	2840	6503	0.091	2.311	3590	8078
0.178	4.521	1380	2141	0.164	4.166	2260	5040	0.013	2.337	2910	6503	0.098	2.489	3700	8325
0.185	4.699	1420	2203	0.177	4.496	2330	5198	0.018	2.464	2980	6660	0.106	2.692	3810	8573
0.199	5.055	1430	2219	0.191	4.851	2380	5310	0.022	2.565	3040	6795	0.113	2.870	3920	8820
0.214	5.436	1470	2281	0.205	5.207	2470	5513	0.028	2.718	3160	7065	0.127	3.226	4020	9045
0.228	5.791	1510	2344	0.219	5.563	2550	5693	0.033	2.845	3280	7335	0.141	3.581	4100	9225
0.242	6.147	1530	2375	0.233	5.918	2630	5873	0.038	2.972	3390	7583	0.155	3.937	4240	9540
0.258	6.553	1540	2391	0.247	6.274	2700	6030	0.043	3.099	3490	7808	0.168	4.267	4370	9833
0.272	6.909	1550	2406	0.261	6.629	2760	6165	0.047	3.200	3580	8010	0.180	4.572	4490	10103
0.287	7.290	1560	2422	0.275	6.985	2810	6278	0.053	3.353	3680	8235	0.193	4.902	4570	10283
0.301	7.645	1560	2422	0.290	7.366	2860	6390	0.060	3.531	3770	8438	0.207	5.258	4660	10485
0.316	8.026	1560	2422	0.304	7.722	2900	6480	0.062	3.581	3850	8618	0.221	5.613	4750	10688

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7200 psf Normal Stress				14400 psf Normal Stress				21600 psf Normal Stress				28800 psf Normal Stress			
Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf
0.330	8.382	1570	2438	0.317	8.052	2950	6593	0.069	3.759	3940	8820	0.235	5.969	4830	10868
0.345	8.763	1570	2438	0.331	8.407	2980	6660	0.074	3.886	4010	8978	0.250	6.350	4890	11003
0.360	9.144	1560	2422	0.346	8.788	3010	6728	0.080	4.039	4080	9135	0.264	6.706	4950	11138
0.375	9.525	1560	2422	0.359	9.119	3040	6795	0.085	4.166	4150	9293	0.279	7.087	5010	11273
0.389	9.881	1540	2391	0.375	9.525	3060	6840	0.090	4.293	4220	9450	0.291	7.391	5070	11408
0.405	10.287	1540	2391	0.389	9.881	3090	6908	0.096	4.445	4290	9608	0.306	7.772	5130	11543
0.420	10.668	1530	2375	0.404	10.262	3110	6953	0.101	4.572	4350	9743	0.318	8.077	5190	11678
0.434	11.024	1530	2375	0.418	10.617	3120	6975	0.106	4.699	4400	9855	0.332	8.433	5240	11790
0.449	11.405	1520	2359	0.432	10.973	3140	7020	0.111	4.826	4450	9968	0.348	8.839	5300	11925
0.463	11.760	1520	2359	0.446	11.328	3160	7065	0.117	4.978	4510	10103	0.362	9.195	5350	12038
0.478	12.141	1520	2359	0.460	11.684	3170	7088	0.121	5.080	4550	10193	0.378	9.601	5410	12173
0.492	12.497	1510	2344	0.475	12.065	3180	7110	0.126	5.207	4600	10305	0.391	9.931	5450	12263
0.508	12.903	1510	2344	0.489	12.421	3190	7133	0.133	5.385	4650	10418	0.407	10.338	5490	12353
0.522	13.259	1510	2344	0.503	12.776	3200	7155	0.137	5.486	4690	10508	0.421	10.693	5540	12465
0.538	13.665	1510	2344	0.519	13.183	3200	7155	0.144	5.664	4740	10620	0.434	11.024	5580	12555
0.552	14.021	1500	2328	0.532	13.513	3210	7178	0.149	5.791	4780	10710	0.448	11.379	5620	12645
0.567	14.402	1500	2328	0.548	13.919	3220	7200	0.154	5.918	4810	10778	0.462	11.735	5660	12735
0.581	14.757	1500	2328	0.562	14.275	3220	7200	0.166	6.223	4840	10845	0.477	12.116	5700	12825
0.596	15.138	1490	2313	0.576	14.630	3220	7200	0.177	6.502	4880	10935	0.492	12.497	5720	12870
0.610	15.494	1490	2313	0.592	15.037	3230	7223	0.188	6.782	4910	11003	0.506	12.852	5750	12938
0.626	15.900	1490	2313	0.606	15.392	3240	7245	0.197	7.010	4950	11093	0.524	13.310	5760	12960
0.640	16.256	1490	2313	0.622	15.799	3240	7245	0.209	7.315	4990	11183	0.537	13.640	5780	13005
0.655	16.637	1480	2297	0.636	16.154	3240	7245	0.219	7.569	5020	11250	0.552	14.021	5790	13028
0.670	17.018	1480	2297	0.650	16.510	3240	7245	0.231	7.874	5060	11340	0.565	14.351	5800	13050
0.685	17.399	1490	2313	0.666	16.916	3250	7268	0.242	8.153	5090	11408	0.579	14.707	5800	13050
0.699	17.755	1480	2297	0.682	17.323	3250	7268	0.254	8.458	5110	11453	0.595	15.113	5810	13073
0.714	18.136	1480	2297	0.695	17.653	3250	7268	0.263	8.687	5130	11498	0.610	15.494	5820	13095
0.728	18.491	1480	2297	0.710	18.034	3250	7268	0.274	8.966	5160	11565	0.626	15.900	5820	13095
0.743	18.872	1470	2281	0.724	18.390	3250	7268	0.285	9.246	5190	11633	0.641	16.281	5820	13095
0.757	19.228	1470	2281	0.740	18.796	3240	7245	0.297	9.550	5200	11655	0.656	16.662	5820	13095
0.773	19.634	1480	2297	0.763	19.380	3240	7245	0.306	9.779	5220	11700	0.671	17.043	5810	13073
0.795	20.193	1470	2281	0.785	19.939	3240	7245	0.318	10.084	5240	11745	0.686	17.424	5800	13050
0.817	20.752	1470	2281	0.808	20.523	3240	7245	0.328	10.338	5280	11835	0.706	17.932	5810	13073

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SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)

7200 psf Normal Stress				14400 psf Normal Stress				21600 psf Normal Stress				28800 psf Normal Stress			
Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf	Horiz. Displ.	mm	Shear Force	psf
0.839	21.311	1450	2250	0.830	21.082	3240	7245	0.340	10.843	5290	11858	0.728	18.491	5810	13073
0.860	21.844	1460	2266	0.850	21.590	3250	7268	0.350	10.897	5310	11903	0.750	19.050	5830	13118
0.882	22.403	1460	2266	0.874	22.200	3240	7245	0.362	11.201	5320	11925	0.774	19.660	5830	13118
0.904	22.962	1440	2234	0.896	22.758	3240	7245	0.372	11.455	5340	11970	0.796	20.218	5820	13095
0.926	23.520	1440	2234	0.917	23.292	3230	7223	0.384	11.760	5350	11993	0.817	20.752	5800	13050
0.949	24.105	1440	2234	0.941	23.901	3220	7200	0.394	12.014	5370	12038	0.837	21.260	5800	13050
0.971	24.663	1440	2234	0.962	24.435	3220	7200	0.407	12.344	5380	12060	0.858	21.793	5800	13050
0.993	25.222	1430	2219	0.984	24.994	3230	7223	0.418	12.624	5410	12128	0.883	22.428	5810	13073
1.016	25.806	1440	2234	1.008	25.603	3220	7200	0.428	12.878	5400	12105	0.903	22.936	5800	13050
1.038	26.365	1430	2219	1.030	26.162	3200	7155	0.439	13.157	5420	12150	0.927	23.546	5790	13028
1.061	26.949	1430	2219	1.051	26.695	3190	7133	0.451	13.462	5440	12195	0.949	24.105	5790	13028
1.082	27.483	1430	2219	1.075	27.305	3180	7110	0.461	13.716	5450	12218	0.970	24.638	5770	12983
1.105	28.067	1430	2219	1.095	27.813	3180	7110	0.475	14.072	5460	12240	0.991	25.171	5750	12938
1.126	28.600	1430	2219	1.117	28.372	3190	7133	0.485	14.326	5470	12263	1.016	25.806	5750	12938
1.148	29.159	1420	2203	1.138	28.905	3180	7110	0.498	14.656	5480	12285	1.037	26.340	5750	12938
1.171	29.743	1420	2203	1.161	29.489	3170	7088	0.509	14.935	5480	12285	1.060	26.924	5730	12893
1.193	30.302	1420	2203	1.183	30.048	3160	7065	0.521	15.240	5490	12308	1.081	27.457	5700	12825
1.215	30.861	1410	2188	1.205	30.607	3150	7043	0.532	15.519	5490	12308	1.100	27.940	5700	12825
1.238	31.445	1400	2172	1.225	31.115	3140	7020	0.545	15.850	5480	12285	1.124	28.550	5700	12825
1.259	31.979	1400	2172	1.248	31.699	3130	6998	0.555	16.104	5490	12308	1.147	29.134	5710	12848
1.282	32.563	1400	2172	1.269	32.233	3110	6953	0.568	16.434	5480	12285	1.171	29.743	5700	12825
1.303	33.096	1400	2172	1.292	32.817	3100	6930	0.580	16.739	5480	12285	1.191	30.251	5670	12758
1.326	33.680	1390	2156	1.314	33.376	3080	6885	0.593	17.089	5480	12285	1.214	30.836	5660	12735
1.349	34.265	1390	2156	1.336	33.934	3060	6840	0.605	17.374	5470	12263	1.233	31.318	5650	12713
1.370	34.798	1390	2156	1.357	34.468	3050	6818	0.629	17.983	5450	12218	1.256	31.902	5640	12690
1.392	35.357	1400	2172	1.379	35.027	3060	6840	0.654	18.618	5430	12173	1.279	32.487	5650	12713
1.414	35.916	1380	2141	1.403	35.636	3040	6795	0.679	19.253	5410	12128	1.302	33.071	5650	12713
1.437	36.500	1380	2141	1.426	36.220	3040	6795	0.702	19.837	5400	12105	1.323	33.604	5630	12668
1.460	37.084	1390	2156	1.448	36.779	3030	6773	0.726	20.447	5380	12060	1.347	34.214	5610	12623
1.482	37.643	1380	2141	1.470	37.338	3020	6750	0.749	21.031	5360	12015	1.367	34.722	5600	12600
1.503	38.176	1380	2141	1.492	37.897	3010	6728	0.774	21.666	5320	11925	1.389	35.281	5590	12578
1.524	38.710	1380	2141	1.513	38.430	3010	6728	0.798	22.276	5310	11903	1.413	35.890	5580	12555
1.547	39.294	1380	2141	1.536	39.014	2980	6660	0.823	22.911	5300	11880	1.436	36.474	5560	12510

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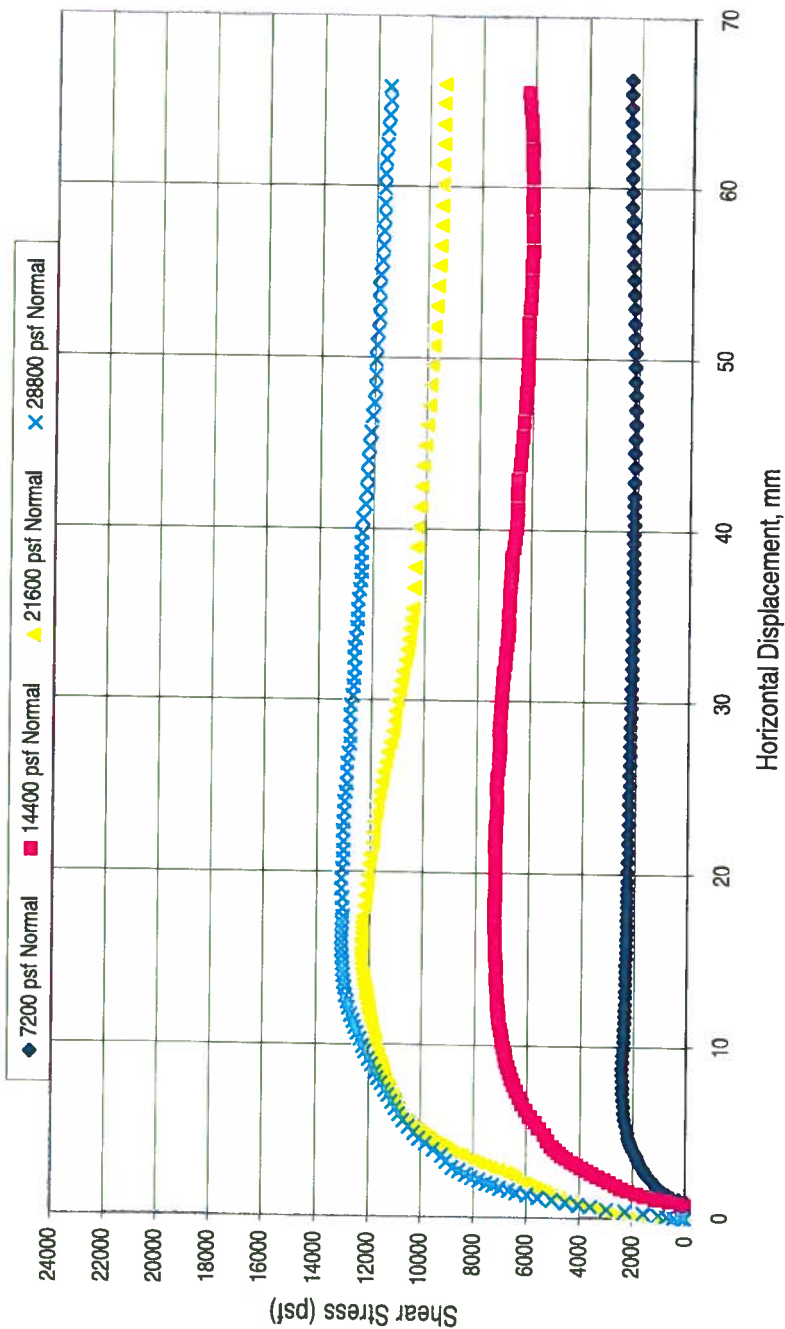
7200 psf Normal Stress				14400 psf Normal Stress				21600 psf Normal Stress				28800 psf Normal Stress			
Horiz. Displ.	mm	Shear Force lbs	Shear Stress psf	Horiz. Displ.	mm	Shear Force lbs	Shear Stress psf	Horiz. Displ.	mm	Shear Force lbs	Shear Stress psf	Horiz. Displ.	mm	Shear Force lbs	Shear Stress psf
1.568	39.827	1380	2141	1.558	39.573	2960	6615	0.846	23.495	5270	11813	1.456	36.982	5540	12465
1.590	40.386	1370	2125	1.581	40.157	2940	6570	0.870	24.105	5250	11768	1.476	37.490	5530	12443
1.611	40.919	1380	2141	1.604	40.742	2930	6548	0.892	24.663	5210	11678	1.497	38.024	5540	12465
1.634	41.504	1380	2141	1.625	41.275	2930	6548	0.916	25.273	5170	11588	1.519	38.583	5540	12465
1.654	42.012	1380	2141	1.659	42.139	2930	6548	0.939	25.857	5150	11543	1.543	39.192	5540	12465
1.687	42.850	1380	2141	1.692	42.977	2920	6525	0.960	26.391	5110	11453	1.565	39.751	5530	12443
1.721	43.713	1370	2125	1.726	43.840	2880	6435	0.984	27.000	5080	11385	1.598	40.589	5520	12420
1.756	44.602	1380	2141	1.759	44.679	2860	6390	1.007	27.584	5030	11273	1.631	41.427	5480	12330
1.787	45.390	1370	2125	1.791	45.491	2840	6345	1.030	28.169	4990	11183	1.663	42.240	5460	12285
1.821	46.253	1360	2109	1.825	46.355	2820	6300	1.054	28.778	4970	11138	1.697	43.104	5450	12263
1.853	47.066	1370	2125	1.859	47.219	2800	6255	1.077	29.362	4960	11115	1.731	43.967	5440	12240
1.887	47.930	1370	2125	1.891	48.031	2790	6233	1.101	29.972	4920	11025	1.764	44.806	5420	12195
1.918	48.717	1380	2141	1.923	48.844	2770	6188	1.124	30.556	4890	10958	1.797	45.644	5400	12150
1.952	49.581	1380	2141	1.955	49.657	2770	6188	1.146	31.115	4870	10913	1.834	46.584	5380	12105
1.985	50.419	1380	2141	1.988	50.495	2760	6165	1.170	31.725	4840	10845	1.865	47.371	5350	12038
2.019	51.283	1400	2172	2.019	51.283	2760	6165	1.193	32.309	4790	10733	1.897	48.184	5330	11993
2.052	52.121	1420	2203	2.052	52.121	2760	6165	1.218	32.944	4760	10665	1.929	48.997	5330	11993
2.086	52.984	1420	2203	2.085	52.959	2740	6120	1.241	33.528	4740	10620	1.964	49.886	5330	11993
2.119	53.823	1430	2219	2.117	53.772	2730	6098	1.265	34.138	4720	10575	1.997	50.724	5320	11970
2.153	54.686	1450	2250	2.149	54.585	2720	6075	1.289	34.747	4700	10530	2.028	51.511	5300	11925
2.185	55.499	1460	2266	2.183	55.448	2720	6075	1.312	35.331	4680	10485	2.060	52.324	5280	11880
2.221	56.413	1460	2266	2.216	56.286	2700	6030	1.360	36.551	4660	10440	2.093	53.162	5280	11880
2.253	57.226	1480	2297	2.252	57.201	2710	6053	1.406	37.719	4640	10395	2.125	53.975	5290	11903
2.288	58.115	1480	2297	2.284	58.014	2710	6053	1.454	38.938	4620	10350	2.158	54.813	5270	11858
2.320	58.928	1500	2328	2.318	58.877	2720	6075	1.500	40.107	4600	10305	2.191	55.651	5240	11790
2.354	59.792	1490	2313	2.351	59.715	2720	6075	1.546	41.275	4570	10238	2.226	56.540	5230	11768
2.386	60.604	1500	2328	2.387	60.630	2710	6053	1.593	42.469	4550	10193	2.259	57.379	5220	11745
2.420	61.468	1510	2344	2.418	61.417	2710	6075	1.641	43.688	4530	10148	2.291	58.191	5200	11700
2.450	62.230	1510	2344	2.451	62.255	2720	6075	1.688	44.882	4500	10080	2.323	59.004	5200	11700
2.484	63.094	1510	2344	2.485	63.119	2730	6098	1.735	46.076	4470	10013	2.358	59.893	5200	11700
2.515	63.881	1530	2375	2.518	63.957	2740	6120	1.780	47.219	4430	9923	2.391	60.731	5200	11700
2.548	64.719	1530	2375	2.549	64.745	2760	6165	1.827	48.412	4410	9878	2.424	61.570	5190	11678
2.579	65.507	1530	2375	2.582	65.583	2780	6210	1.873	49.581	4390	9833	2.458	62.433	5170	11633

Geosynthetic Interface Test - ASTM D 5321, Method B
300mm Shear Device, 8.0 in. x 8.0 in. Insert
 Valley Leach Facility - Cripple Creek & Victor
 Smith Williams Consulting
 Project No. DV108-130.7

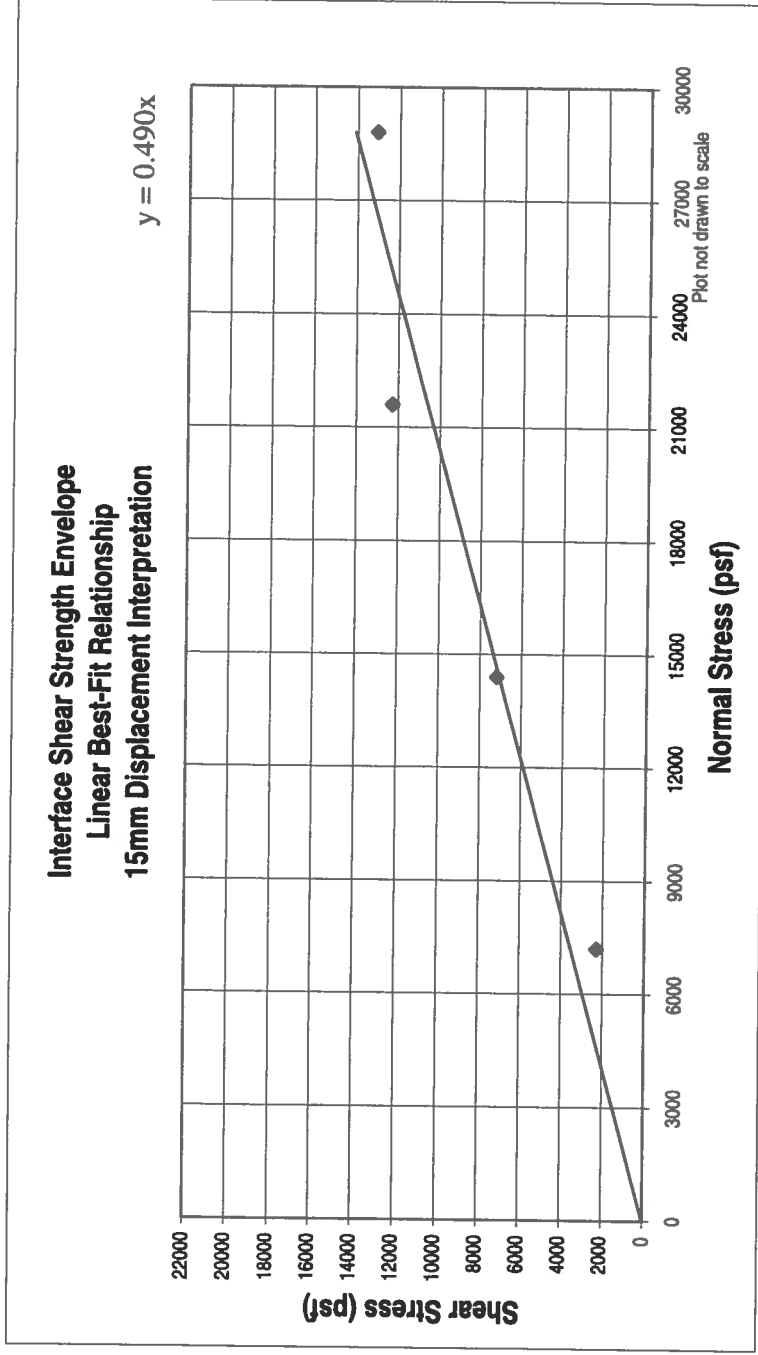
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)

7200 psf Normal Stress				14400 psf Normal Stress				21600 psf Normal Stress				28800 psf Normal Stress			
Horiz. Displ.	Horiz. Displ.	Shear Force	Shear Stress	Horiz. Displ.	Horiz. Displ.	Shear Force	Shear Stress	Horiz. Displ.	Horiz. Displ.	Shear Force	Shear Stress	Horiz. Displ.	Horiz. Displ.	Shear Force	Shear Stress
inches	mm	lbs	psf	inches	mm	lbs	psf	inches	mm	lbs	psf	inches	mm	lbs	psf
2.612	66.345	1530	2375					1.918	50.724	4370	9788	2.494	63.348	5160	11610
								1.963	51.867	4350	9743	2.527	64.186	5140	11565
								2.009	53.035	4320	9675	2.559	64.999	5120	11520
								2.056	54.229	4300	9630	2.592	65.837	5130	11543
								2.103	55.423	4280	9585				
								2.148	56.566	4270	9563				
								2.195	57.760	4250	9518				
								2.241	58.928	4250	9518				
								2.289	60.147	4240	9495				
								2.336	61.341	4240	9495				
								2.382	62.509	4230	9473				
								2.428	63.678	4230	9473				
								2.475	64.872	4230	9473				
								2.520	66.015	4220	9450				
Normal Stress, psf															
15mm shear stress		7,200	2313				14,400				21,600				28,800
							7223				12285				13073
30mm shear stress		2203					7065				11025				12758
45mm shear stress		2125					6390				10080				12195
60mm shear stress		2313					6075				9495				11700

SHEAR STRESS (psf) VS. HORIZONTAL DISPLACEMENT (mm)



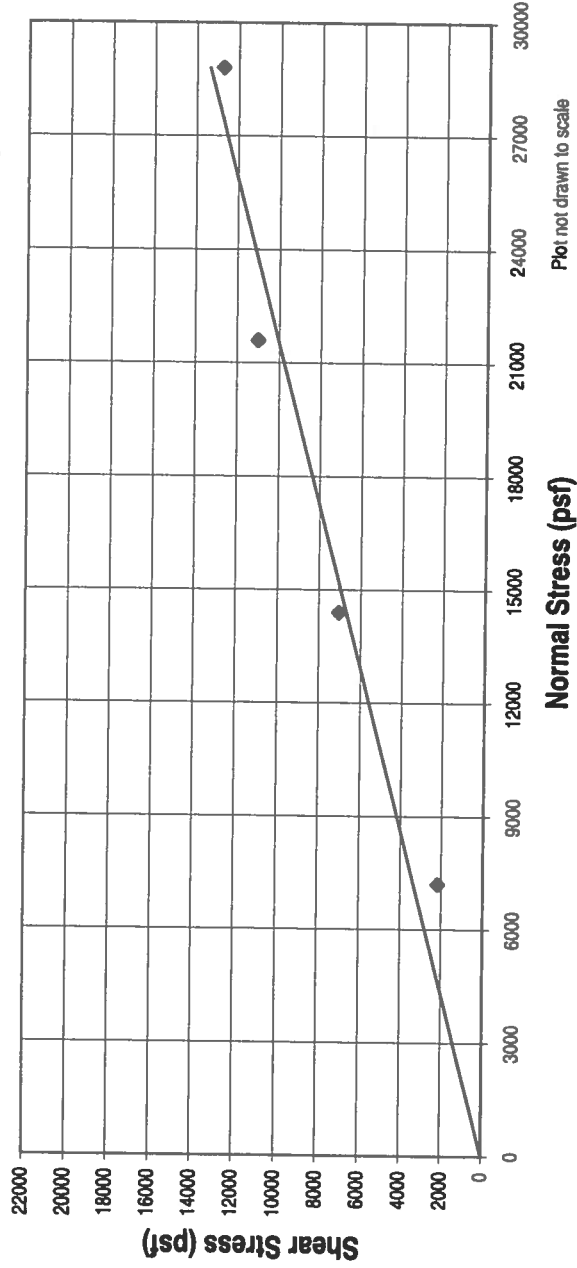
Valley Leach Facility - Cripple Creek & Victor
Project No. DV108-130.7
Geosynthetic Interface Test - ASTM D 5321, Method B
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)



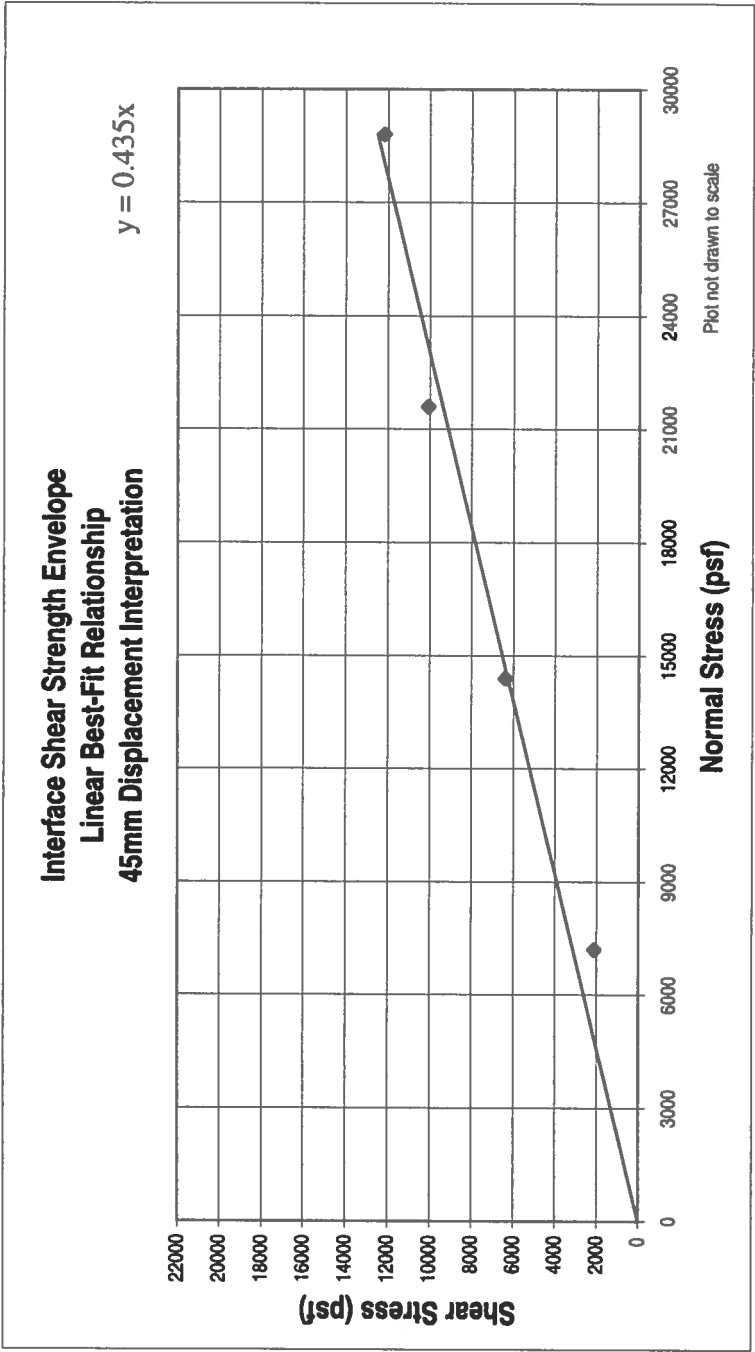
Valley Leach Facility - Cripple Creek & Victor
Project No. DV108-130.7
Geosynthetic Interface Test - ASTM D 5321, Method B
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)

**Interface Shear Strength Envelope
Linear Best-Fit Relationship
30mm Displacement Interpretation**

$$y = 0.465x$$



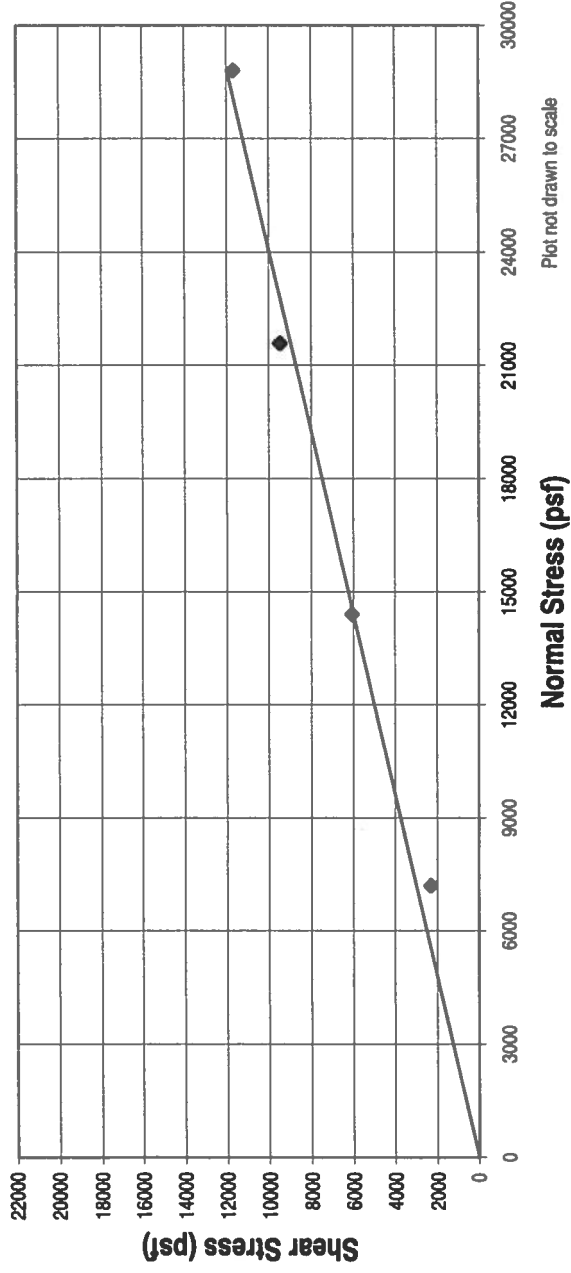
**Valley Leach Facility - Cripple Creek & Victor
Project No. DV108-130.7
Geosynthetic Interface Test - ASTM D 5321, Method B
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)**



Valley Leach Facility - Cripple Creek & Victor
Project No. DV108-130.7
Geosynthetic Interface Test - ASTM D 5321, Method B
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)

**Interface Shear Strength Envelope
Linear Best-Fit Relationship
60mm Displacement Interpretation**

$$y = 0.415x$$



**Valley Leach Facility - Cripple Creek & Victor
Project No. DV108-130.7
Geosynthetic Interface Test - ASTM D 5321, Method B
SWTP-99 vs 80 mil Text HDPE vs. Overliner (Composite)**