MONTHLY STATUS REPORT
STEELCOTE FACILITY
ST. LOUIS, MISSOURI

February 14, 1995

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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
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41344

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February 15, 1995

Cynthia L. Hutchison
Environmental Engineer
RCRA Compliance Section
United States Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, KS 66101

RE: Steelcote Facility - St. Louis, Missouri
Docket No. VII-91-H-0025

Dear Ms. Hutchison:

Pursuant to paragraph 28 of the above-referenced Administrative Order on Consent, I am enclosing the status report for January, 1995. The status report includes analytical results from the second quarter of the second phase of groundwater monitoring and hydrological data from the wells installed for the second phase of groundwater monitoring.

Please let me know if you have any questions. Thank you.

Very truly yours,

Alphonse McMahon

Alphonse McMahon

AM/fmp
Enclosure

cc: Mr. Doug Niedt (w/o encl.)
Mr. Greg Niedt (w/ encl.)
Mr. Don McQueen (w/o encl.)

STL-48423.1

SHANNON & WILSON, INC.

STATUS REPORT
JANUARY 1995

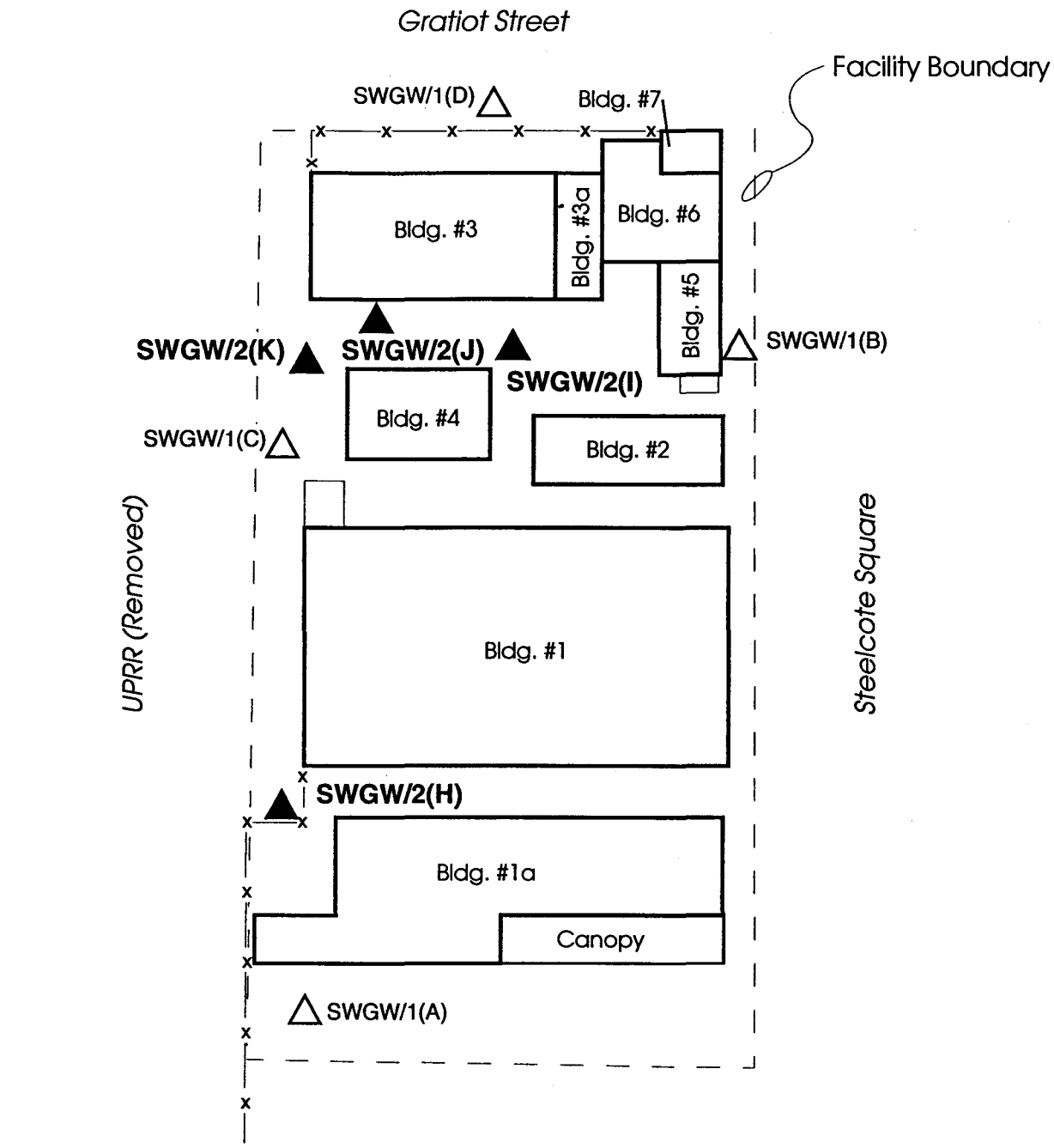
STEELCOTE FACILITY
ST. LOUIS, MISSOURI

PLANNED AND ACTUAL ACTIVITIES

Reduction of hydrologic data for the new wells and the quarterly sampling has been completed. Analytical results have been received and hydrological and analytical data are included with this status report.

ANTICIPATED ACTIVITIES

Anticipated activities include the next quarterly sampling which is scheduled for March 5-8, 1995.



LEGEND

▲ **Approx. Location of Ground Water Monitoring Well**

△ **Approx. Location of Abandoned Ground Water Monitoring Well Location**

NORTH

0 20 40 80

Scale, in feet

WELL LOCATIONS
STEELCOTE FACILITY
ST. LOUIS, MISSOURI

Z-301-07

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

PLATE 1

Groundwater Monitoring Well Data
Steelcote Facility, St. Louis, MO.

	Survey Data					Hydraulic Data			
Well	Easting (ft)	Northing (ft)	Ground (elev)	TOC (elev)	Stickup (ft)	T (ft^2/min)	S	b (ft)	K (ft/s)
SWGW/2(H)	-8.35	-115.74	96.98	96.87	-0.12	4.22E-03	3.54E-04	1.2	5.86E-05
SWGW/2(I)	33.90	-11.21	96.52	96.35	-0.17	5.83E-03	1.48E-05	3.1	3.13E-05
SWGW/2(J)	19.50	-4.39	96.94	96.95	0.00	5.96E-03	1.27E-04	1.1	9.03E-05
SWGW/2(K)	-4.58	-12.42	97.19	97.10	-0.09	2.41E-03	7.50E-06	1.5	2.68E-05

Elevation BM: Elevation 100, located on NW corner of western loading dock.

Coordinate BM: Northing and Easting coordinates based off SW corner of building #3.

T = Transmissivity of well
S = Storativity of well
b = Saturated thickness of aquifer
K = Hydraulic conductivity of aquifer

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A Q T E S O L V   R E S U L T S
Version 1.10

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TEST DESCRIPTION

Data set........... swgwh-2.dat
Data set title..... SWGW/H

Knowns and Constants:
No. of data points.................. 136
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.1667

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ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

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RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

Estimate	Std.	Error	
T	=	4.2221E-003 +/-	1.3639E-004
S	=	3.5381E-004 +/-	5.3173E-005

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 136
Number of estimated parameters.... 2
Degrees of freedom................ 134
Residual mean..................... 0.001868
Residual standard deviation....... 0.01982
Residual variance................. 0.0003927

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0083	1.495	1.3403	0.15469	1
0.0166	1.286	1.3355	-0.049503	1
0.025	1.236	1.3315	-0.095471	1
0.0333	1.349	1.3279	0.02114	1
0.0416	1.406	1.3248	0.081226	1
0.05	1.331	1.3215	0.0094915	1
0.0583	1.267	1.3184	-0.0514	1
0.0666	1.312	1.316	-0.0039747	1
0.075	1.356	1.3132	0.04283	1
0.0833	1.324	1.3106	0.013397	1
0.0916	1.286	1.3081	-0.022102	1
0.1	1.299	1.3056	-0.00664	1
0.1083	1.324	1.3033	0.020733	1
0.1166	1.312	1.3009	0.011052	1

0.125	1.293	1.2987	-0.0056506	1
0.1333	1.293	1.2964	-0.0034248	1
0.1416	1.305	1.2942	0.01076	1
0.15	1.299	1.2921	0.0069341	1
0.1583	1.293	1.29	0.0030471	1
0.1666	1.293	1.2879	0.0051279	1
0.175	1.293	1.2858	0.0072031	1
0.1833	1.286	1.2838	0.0022253	1
0.1916	1.286	1.2818	0.004221	1
0.2	1.28	1.2798	0.0002152	1
0.2083	1.286	1.2778	0.0081619	1
0.2166	1.28	1.2759	0.0040861	1
0.225	1.28	1.274	0.0060119	1
0.2333	1.274	1.2721	0.0018942	1
0.2416	1.274	1.2702	0.0037572	1
0.25	1.274	1.2684	0.0056238	1
0.2583	1.267	1.2665	0.00045028	1
0.2666	1.267	1.2647	0.0022598	1
0.275	1.267	1.2629	0.0040744	1
0.2833	1.267	1.2611	0.0058517	1
0.2916	1.261	1.2594	0.0016138	1
0.3	1.261	1.2576	0.0033822	1
0.3083	1.261	1.2559	0.0051155	1
0.3166	1.261	1.2542	0.0068352	1
0.325	1.255	1.2524	0.0025621	1
0.3333	1.255	1.2507	0.0042557	1
0.35	1.249	1.2474	0.0016263	1
0.3666	1.249	1.2441	0.00493	1
0.3833	1.249	1.2408	0.0082093	1
0.4	1.242	1.2376	0.0044466	1
0.4166	1.236	1.2344	0.0016248	1
0.4333	1.236	1.2312	0.0047843	1
0.45	1.23	1.2281	0.0019074	1
0.4666	1.223	1.225	-0.0020224	1
0.4833	1.223	1.222	0.0010331	1
0.5	1.223	1.2189	0.0040569	1
0.5166	1.217	1.216	0.0010322	1
0.5333	1.217	1.213	0.0039962	1
0.55	1.217	1.2101	0.0069318	1
0.5666	1.211	1.2072	0.0038227	1
0.5833	1.204	1.2043	-0.00029518	1
0.6	1.204	1.2014	0.0025614	1
0.6166	1.198	1.1986	-0.0006236	1
0.6333	1.198	1.1958	0.0021845	1
0.65	1.198	1.193	0.0049694	1
0.6666	1.192	1.1903	0.0017154	1
0.6833	1.192	1.1875	0.0044561	1
0.7	1.185	1.1848	0.00017549	1
0.7166	1.185	1.1821	0.0028581	1
0.7333	1.185	1.1795	0.0055369	1
0.75	1.179	1.1768	0.002196	1
0.7666	1.179	1.1742	0.0048202	1
0.7833	1.179	1.1716	0.0074416	1
0.8	1.173	1.169	0.0040448	1
0.8166	1.167	1.1664	0.00061476	1
0.8333	1.167	1.1638	0.0031829	1
0.85	1.16	1.1613	-0.001266	1
0.8666	1.16	1.1587	0.0012533	1
0.8833	1.154	1.1562	-0.0022284	1
0.9	1.154	1.1537	0.00027399	1
0.9166	1.154	1.1513	0.0027459	1
0.9333	1.148	1.1488	-0.00078258	1
0.95	1.148	1.1463	0.0016739	1
0.9666	1.141	1.1439	-0.0028988	1
0.9833	1.141	1.1415	-0.00047138	1
1	1.141	1.1391	0.0019419	1
1.2	1.11	1.1112	-0.001173	1
1.4	1.078	1.0849	-0.0069372	1
1.6	1.059	1.0601	-0.0011004	1

1.8	1.034	1.0365	-0.0024797	1
2	1.009	1.0139	-0.0049346	1
2.2	0.996	0.99235	0.0036456	1
2.4	0.965	0.97165	-0.0066489	1
2.6	0.946	0.95174	-0.0057432	1
2.8	0.927	0.93257	-0.0055742	1
3	0.908	0.91409	-0.0060877	1
3.2	0.889	0.89624	-0.0072367	1
3.4	0.87	0.87898	-0.0089799	1
3.6	0.857	0.86228	-0.0052809	1
3.8	0.839	0.84611	-0.0071071	1
4	0.826	0.83043	-0.0044293	1
4.2	0.801	0.81522	-0.014221	1
4.4	0.794	0.80046	-0.0064584	1
4.6	0.782	0.78612	-0.0041193	1
4.8	0.763	0.77218	-0.0091837	1
5	0.75	0.75863	-0.0086331	1
5.2	0.738	0.74545	-0.0074503	1
5.4	0.725	0.73262	-0.0076195	1
5.6	0.712	0.72013	-0.0081258	1
5.8	0.7	0.70796	-0.0079555	1
6	0.693	0.6961	-0.0030957	1
6.2	0.681	0.68453	-0.0035343	1
6.4	0.668	0.67326	-0.00526	1
6.6	0.656	0.66226	-0.0062622	1
6.8	0.643	0.65153	-0.0085306	1
7	0.63	0.64106	-0.011056	1
7.2	0.63	0.63083	-0.00082902	1
7.4	0.618	0.62084	-0.0028415	1
7.6	0.611	0.61109	-8.5183E-005	1
7.8	0.599	0.60155	-0.0025525	1
8	0.592	0.59224	-0.00023599	1
8.2	0.586	0.58313	0.0028712	1
8.4	0.574	0.57422	-0.00022438	1
8.6	0.561	0.56552	-0.0045163	1
8.8	0.561	0.557	0.0040015	1
9	0.555	0.54867	0.0063347	1
9.2	0.536	0.54051	-0.004511	1
9.4	0.536	0.53253	0.0034694	1
9.6	0.523	0.52472	-0.0017187	1
9.8	0.517	0.51707	-7.067E-005	1
10	0.51	0.50958	0.00041826	1
11	0.479	0.47437	0.0046273	1
12	0.447	0.44254	0.0044636	1
13	0.422	0.41366	0.0083444	1
14	0.397	0.38738	0.0096206	1
15	0.372	0.36341	0.00859	1
16	0.353	0.34149	0.011508	1
17	0.34	0.32141	0.018595	1
18	0.315	0.30296	0.012041	1
19	0.302	0.28599	0.016013	1
20	0.283	0.27034	0.012658	1
21	0.271	0.2559	0.015103	1

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RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate		
T	=	4.2221E-003
S	=	3.5381E-004

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AQTESOLV RESULTS
Version 1.10

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TEST DESCRIPTION

Data set.......... swgwi-2.dat
Data set title..... SWGW/2(I)

Knowns and Constants:
No. of data points.................. 139
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.1667

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ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

Estimate	Std.	Error	
T	=	5.8281E-003 +/-	2.8966E-004
S	=	1.4838E-005 +/-	5.9118E-006

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals.............. 139
Number of estimated parameters.... 2
Degrees of freedom................ 137
Residual mean..................... 0.005871
Residual standard deviation....... 0.02125
Residual variance................. 0.0004515

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0083	1.349	1.406	-0.057037	1
0.0166	1.558	1.4035	0.15453	1
0.025	1.356	1.4011	-0.045148	1
0.0333	1.488	1.399	0.088989	1
0.0416	1.406	1.397	0.0090223	1
0.05	1.425	1.395	0.030002	1
0.0583	1.431	1.3931	0.037896	1
0.0666	1.4	1.3913	0.0087413	1
0.075	1.431	1.3894	0.041566	1
0.0833	1.4	1.3877	0.012332	1
0.0916	1.419	1.3859	0.033066	1
0.1	1.4	1.3842	0.015793	1
0.1083	1.406	1.3825	0.023473	1
0.1166	1.4	1.3809	0.019131	1

0.125	1.4	1.3792	0.020787	1
0.1333	1.4	1.3776	0.022404	1
0.1416	1.394	1.376	0.018003	1
0.15	1.394	1.3744	0.019605	1
0.1583	1.387	1.3728	0.014172	1
0.1666	1.387	1.3713	0.015724	1
0.175	1.387	1.3697	0.017281	1
0.1833	1.387	1.3682	0.018806	1
0.1916	1.381	1.3667	0.014319	1
0.2	1.381	1.3652	0.015839	1
0.2083	1.375	1.3637	0.011329	1
0.2166	1.375	1.3622	0.012808	1
0.225	1.375	1.3607	0.014295	1
0.2333	1.375	1.3592	0.015755	1
0.2416	1.368	1.3578	0.010205	1
0.25	1.368	1.3563	0.011664	1
0.2583	1.368	1.3549	0.013096	1
0.2666	1.368	1.3535	0.01452	1
0.275	1.362	1.352	0.0099532	1
0.2833	1.362	1.3506	0.011361	1
0.2916	1.362	1.3492	0.012762	1
0.3	1.362	1.3478	0.014172	1
0.3083	1.356	1.3464	0.0095583	1
0.3166	1.356	1.3451	0.010938	1
0.325	1.349	1.3437	0.0053267	1
0.3333	1.356	1.3423	0.013693	1
0.35	1.349	1.3396	0.0094224	1
0.3666	1.343	1.3369	0.0061116	1
0.3833	1.343	1.3342	0.008794	1
0.4	1.337	1.3315	0.0054542	1
0.4166	1.337	1.3289	0.0080776	1
0.4333	1.331	1.3263	0.0046966	1
0.45	1.331	1.3237	0.0072962	1
0.4666	1.331	1.3211	0.0098616	1
0.4833	1.324	1.3186	0.0054245	1
0.5	1.324	1.316	0.00797	1
0.5166	1.318	1.3135	0.0044835	1
0.5333	1.318	1.311	0.006996	1
0.55	1.312	1.3085	0.0034926	1
0.5666	1.312	1.306	0.0059592	1
0.5833	1.312	1.3036	0.0084257	1
0.6	1.305	1.3011	0.0038778	1
0.6166	1.305	1.2987	0.0063013	1
0.6333	1.299	1.2963	0.0027256	1
0.65	1.299	1.2939	0.0051366	1
0.6666	1.299	1.2915	0.0075203	1
0.6833	1.293	1.2891	0.0039056	1
0.7	1.293	1.2867	0.0062785	1
0.7166	1.286	1.2844	0.0016251	1
0.7333	1.286	1.282	0.003974	1
0.75	1.286	1.2797	0.0063112	1
0.7666	1.28	1.2774	0.0026231	1
0.7833	1.28	1.2751	0.0049379	1
0.8	1.274	1.2728	0.0012416	1
0.8166	1.274	1.2705	0.003521	1
0.8333	1.267	1.2682	-0.0011965	1
0.85	1.267	1.2659	0.0010757	1
0.8666	1.267	1.2637	0.0033242	1
0.8833	1.261	1.2614	-0.00042372	1
0.9	1.261	1.2592	0.0018185	1
0.9166	1.261	1.257	0.0040378	1
0.9333	1.255	1.2547	0.00026092	1
0.95	1.255	1.2525	0.0024747	1
0.9666	1.249	1.2503	-0.0013339	1
0.9833	1.249	1.2481	0.00086167	1
1	1.249	1.246	0.0030483	1
1.2	1.217	1.2204	-0.0034152	1
1.4	1.192	1.196	-0.0039617	1
1.6	1.167	1.1725	-0.0054586	1

1.8	1.148	1.1498	-0.0018062	1
2	1.122	1.1279	-0.0059266	1
2.2	1.097	1.1068	-0.0097566	1
2.4	1.078	1.0862	-0.0082439	1
2.6	1.059	1.0663	-0.0073444	1
2.8	1.04	1.047	-0.0070199	1
3	1.015	1.0282	-0.013237	1
3.2	1.003	1.01	-0.0069668	1
3.4	0.984	0.99218	-0.0081828	1
3.6	0.965	0.97486	-0.0098616	1
3.8	0.946	0.95798	-0.011982	1
4	0.933	0.94152	-0.0085242	1
4.2	0.914	0.92547	-0.011471	1
4.4	0.902	0.90981	-0.0078055	1
4.6	0.883	0.89451	-0.011513	1
4.8	0.864	0.87958	-0.015579	1
5	0.851	0.86499	-0.01399	1
5.2	0.839	0.85073	-0.011734	1
5.4	0.826	0.8368	-0.0108	1
5.6	0.813	0.82318	-0.010177	1
5.8	0.801	0.80985	-0.0088544	1
6	0.788	0.79682	-0.0088224	1
6.2	0.775	0.78407	-0.009072	1
6.4	0.763	0.77159	-0.0085945	1
6.6	0.75	0.75938	-0.0093816	1
6.8	0.738	0.74743	-0.0094254	1
7	0.725	0.73572	-0.010718	1
7.2	0.712	0.72425	-0.012253	1
7.4	0.706	0.71302	-0.0070237	1
7.6	0.693	0.70202	-0.0090225	1
7.8	0.681	0.69124	-0.010244	1
8	0.674	0.68068	-0.006681	1
8.2	0.662	0.67033	-0.0083289	1
8.4	0.649	0.66018	-0.011182	1
8.6	0.643	0.65023	-0.0072342	1
8.8	0.637	0.64048	-0.003481	1
9	0.624	0.63092	-0.0069173	1
9.2	0.611	0.62154	-0.010538	1
9.4	0.611	0.61234	-0.0013392	1
9.6	0.599	0.60332	-0.0043158	1
9.8	0.586	0.59446	-0.0084637	1
10	0.586	0.58578	0.00022122	1
11	0.542	0.54472	-0.002725	1
12	0.51	0.5073	0.0027016	1
13	0.479	0.47311	0.0058925	1
14	0.454	0.44181	0.012186	1
15	0.422	0.41312	0.0088769	1
16	0.403	0.38678	0.016223	1
17	0.378	0.36255	0.01545	1
18	0.359	0.34024	0.018761	1
19	0.346	0.31967	0.026333	1
20	0.328	0.30068	0.027324	1
21	0.315	0.28312	0.031878	1
22	0.302	0.26688	0.03512	1
23	0.29	0.25183	0.038165	1
24	0.277	0.23788	0.039116	1

==========

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate		
T	=	5.8281E-003
S	=	1.4838E-005

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AQTESOLV RESULTS
Version 1.10

12/12/94 09:03:36

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TEST DESCRIPTION

Data set.......... swgwj-2.dat
Data set title..... SWGW/2(J)

Knowns and Constants:
No. of data points.................. 135
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.1667

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

Estimate	Std.	Error	
T	=	5.9617E-003 +/-	2.3291E-004
S	=	1.2733E-004 +/-	2.8674E-005

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 135
Number of estimated parameters.... 2
Degrees of freedom................ 133
Residual mean..................... 0.00482
Residual standard deviation....... 0.02038
Residual variance................. 0.0004154

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0083	1.242	1.2128	0.029157	1
0.0166	1.343	1.209	0.13404	1
0.025	1.192	1.2055	-0.013542	1
0.0333	1.261	1.2025	0.058501	1
0.0416	1.261	1.1997	0.06134	1
0.05	1.204	1.1969	0.0070636	1
0.0583	1.255	1.1944	0.060639	1
0.0666	1.217	1.1919	0.02512	1
0.075	1.217	1.1894	0.027552	1
0.0833	1.236	1.1871	0.048888	1
0.0916	1.204	1.1848	0.019167	1
0.1	1.217	1.1826	0.034421	1
0.1083	1.211	1.1804	0.030602	1
0.1166	1.198	1.1783	0.019742	1

0.125	1.204	1.1761	0.02787	1
0.1333	1.198	1.1741	0.023938	1
0.1416	1.198	1.172	0.025975	1
0.15	1.198	1.17	0.028007	1
0.1583	1.185	1.168	0.016987	1
0.1666	1.192	1.1661	0.025942	1
0.175	1.185	1.1641	0.020896	1
0.1833	1.179	1.1622	0.016805	1
0.1916	1.179	1.1603	0.018692	1
0.2	1.173	1.1584	0.014582	1
0.2083	1.173	1.1566	0.01643	1
0.2166	1.173	1.1547	0.01826	1
0.225	1.167	1.1529	0.014095	1
0.2333	1.167	1.1511	0.015891	1
0.2416	1.16	1.1493	0.010672	1
0.25	1.16	1.1475	0.012458	1
0.2583	1.16	1.1458	0.014209	1
0.2666	1.154	1.1441	0.0099455	1
0.275	1.154	1.1423	0.011689	1
0.2833	1.154	1.1406	0.0134	1
0.2916	1.148	1.1389	0.0090972	1
0.3	1.148	1.1372	0.010803	1
0.3083	1.148	1.1355	0.012477	1
0.3166	1.141	1.1339	0.007139	1
0.325	1.141	1.1322	0.0088102	1
0.3333	1.135	1.1305	0.0044507	1
0.35	1.135	1.1273	0.0077204	1
0.3666	1.129	1.1241	0.0049311	1
0.3833	1.129	1.1209	0.0081236	1
0.4	1.122	1.1177	0.0042802	1
0.4166	1.116	1.1146	0.0013841	1
0.4333	1.116	1.1115	0.0044741	1
0.45	1.11	1.1085	0.0015328	1
0.4666	1.103	1.1055	-0.0024565	1
0.4833	1.103	1.1025	0.0005435	1
0.5	1.097	1.0995	-0.0024842	1
0.5166	1.097	1.0966	0.00044377	1
0.5333	1.091	1.0936	-0.0026364	1
0.55	1.091	1.0907	0.00025854	1
0.5666	1.085	1.0879	-0.0028878	1
0.5833	1.078	1.085	-0.0070403	1
0.6	1.078	1.0822	-0.0042155	1
0.6166	1.078	1.0794	-0.0014295	1
0.6333	1.072	1.0766	-0.004648	1
0.65	1.066	1.0739	-0.0078873	1
0.6666	1.066	1.0712	-0.0051633	1
0.6833	1.059	1.0684	-0.0094425	1
0.7	1.059	1.0657	-0.0067409	1
0.7166	1.053	1.0631	-0.010074	1
0.7333	1.053	1.0604	-0.0074096	1
0.75	1.053	1.0578	-0.0047629	1
0.7666	1.047	1.0551	-0.0081494	1
0.7833	1.04	1.0525	-0.012537	1
0.8	1.04	1.0499	-0.0099419	1
0.8166	1.034	1.0474	-0.013378	1
0.8333	1.034	1.0448	-0.010815	1
0.85	1.034	1.0423	-0.0082678	1
0.8666	1.028	1.0398	-0.011751	1
0.8833	1.028	1.0372	-0.009234	1
0.9	1.021	1.0347	-0.013732	1
0.9166	1.021	1.0323	-0.011259	1
0.9333	1.015	1.0298	-0.014786	1
0.95	1.015	1.0273	-0.012327	1
0.9666	1.015	1.0249	-0.009896	1
0.9833	1.009	1.0225	-0.013464	1
1	1.009	1.02	-0.011046	1
1.2	0.977	0.99205	-0.015046	1
1.4	0.946	0.96563	-0.019632	1
1.6	0.921	0.94059	-0.019586	1

1.8	0.895	0.91674	-0.021745	1
2	0.876	0.89398	-0.017982	1
2.2	0.851	0.87219	-0.021195	1
2.4	0.832	0.8513	-0.019301	1
2.6	0.813	0.83123	-0.018229	1
2.8	0.794	0.81192	-0.017918	1
3	0.775	0.79332	-0.018317	1
3.2	0.756	0.77538	-0.019379	1
3.4	0.744	0.75806	-0.014065	1
3.6	0.731	0.74134	-0.010337	1
3.8	0.712	0.72516	-0.013163	1
4	0.7	0.70951	-0.0095142	1
4.2	0.687	0.69436	-0.0073626	1
4.4	0.668	0.67968	-0.011684	1
4.6	0.662	0.66546	-0.0034559	1
4.8	0.649	0.65166	-0.0026572	1
5	0.63	0.63827	-0.0082687	1
5.2	0.624	0.62527	-0.0012724	1
5.4	0.611	0.61265	-0.0016515	1
5.6	0.599	0.60039	-0.0013903	1
5.8	0.586	0.58847	-0.0024744	1
6	0.58	0.57689	0.0031102	1
6.2	0.567	0.56562	0.0013764	1
6.4	0.561	0.55466	0.0063363	1
6.6	0.548	0.544	0.0040015	1
6.8	0.542	0.53362	0.0083828	1
7	0.529	0.52351	0.0054906	1
7.2	0.523	0.51367	0.0093346	1
7.4	0.51	0.50408	0.005924	1
7.6	0.504	0.49473	0.0092678	1
7.8	0.498	0.48563	0.012374	1
8	0.485	0.47675	0.0082516	1
8.2	0.479	0.46809	0.010907	1
8.4	0.473	0.45965	0.013348	1
8.6	0.466	0.45142	0.014582	1
8.8	0.454	0.44339	0.010615	1
9	0.447	0.43555	0.011454	1
9.2	0.441	0.4279	0.013104	1
9.4	0.435	0.42043	0.014571	1
9.6	0.428	0.41314	0.014862	1
9.8	0.422	0.40602	0.015982	1
10	0.416	0.39907	0.016935	1
11	0.378	0.36663	0.011371	1
12	0.353	0.33768	0.015318	1
13	0.321	0.31176	0.0092364	1
14	0.296	0.28849	0.0075119	1
15	0.271	0.26753	0.0034716	1
16	0.246	0.24861	-0.0026062	1
17	0.227	0.23148	-0.0044827	1
18	0.208	0.21595	-0.0079524	1
19	0.189	0.20184	-0.012837	1
20	0.17	0.18898	-0.018983	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate		
T	=	5.9617E-003
S	=	1.2733E-004

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A Q T E S O L V   R E S U L T S
Version 1.10

12/12/94   15:58:57

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TEST DESCRIPTION

Data set.......... swgwk-2.dat
Data set title..... SWGW/2(K)

Knowns and Constants:
No. of data points.................. 145
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.1667

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

Estimate	Std. Error	
T =	2.4103E-003 +/-	3.3393E-004
S =	7.5013E-006 +/-	8.6370E-006

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 145
Number of estimated parameters.... 2
Degrees of freedom................ 143
Residual mean..................... 0.00217
Residual standard deviation....... 0.03104
Residual variance................. 0.0009637

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0083	1.048	1.0986	-0.050642	1
0.0166	0.965	1.0978	-0.13277	1
0.025	1.231	1.097	0.13401	1
0.0333	1.237	1.0963	0.14073	1
0.0416	1.003	1.0956	-0.092583	1
0.05	1.06	1.0949	-0.034916	1
0.0583	1.237	1.0943	0.14272	1
0.0666	1.136	1.0937	0.042345	1
0.075	1.01	1.093	-0.083039	1
0.0833	1.123	1.0924	0.030557	1
0.0916	1.199	1.0919	0.10714	1
0.1	1.073	1.0913	-0.018275	1
0.1083	1.041	1.0907	-0.049707	1
0.1166	1.155	1.0901	0.064853	1

0.125	1.142	1.0896	0.052413	1
0.1333	1.048	1.089	-0.04104	1
0.1416	1.085	1.0885	-0.0034983	1
0.15	1.155	1.088	0.067044	1
0.1583	1.098	1.0874	0.010575	1
0.1666	1.054	1.0869	-0.032899	1
0.175	1.117	1.0864	0.030629	1
0.1833	1.13	1.0859	0.044147	1
0.1916	1.073	1.0853	-0.012339	1
0.2	1.073	1.0848	-0.011823	1
0.2083	1.13	1.0843	0.045684	1
0.2166	1.098	1.0838	0.014187	1
0.225	1.066	1.0833	-0.017307	1
0.2333	1.098	1.0828	0.01519	1
0.2416	1.117	1.0823	0.034685	1
0.25	1.073	1.0818	-0.0088182	1
0.2583	1.073	1.0813	-0.0083295	1
0.2666	1.098	1.0808	0.017157	1
0.275	1.098	1.0804	0.017646	1
0.2833	1.066	1.0799	-0.013873	1
0.2916	1.085	1.0794	0.0056063	1
0.3	1.098	1.0789	0.019089	1
0.3083	1.079	1.0784	0.00056329	1
0.3166	1.079	1.078	0.0010358	1
0.325	1.092	1.0775	0.014512	1
0.3333	1.092	1.077	0.01498	1
0.35	1.073	1.0761	-0.0030827	1
0.3666	1.079	1.0752	0.0038414	1
0.3833	1.085	1.0742	0.010764	1
0.4	1.066	1.0733	-0.0073195	1
0.4166	1.079	1.0724	0.0065852	1
0.4333	1.066	1.0715	-0.0055106	1
0.45	1.079	1.0706	0.0083879	1
0.4666	1.073	1.0697	0.0032756	1
0.4833	1.066	1.0688	-0.0028365	1
0.5	1.073	1.068	0.0050464	1
0.5166	1.066	1.0671	-0.0010808	1
0.5333	1.066	1.0662	-0.0002074	1
0.55	1.06	1.0653	-0.0053385	1
0.5666	1.066	1.0645	0.0015209	1
0.5833	1.066	1.0636	0.0023813	1
0.6	1.066	1.0628	0.0032377	1
0.6166	1.06	1.0619	-0.001915	1
0.6333	1.06	1.0611	-0.0010664	1
0.65	1.06	1.0602	-0.00022158	1
0.6666	1.06	1.0594	0.00061464	1
0.6833	1.06	1.0585	0.0014524	1
0.7	1.054	1.0577	-0.0037133	1
0.7166	1.054	1.0569	-0.0028873	1
0.7333	1.054	1.0561	-0.0020596	1
0.75	1.054	1.0552	-0.001235	1
0.7666	1.054	1.0544	-0.00041845	1
0.7833	1.048	1.0536	-0.0056	1
0.8	1.048	1.0528	-0.0047845	1
0.8166	1.048	1.052	-0.0039768	1
0.8333	1.048	1.0512	-0.0031671	1
0.85	1.048	1.0504	-0.0023601	1
0.8666	1.048	1.0496	-0.0015606	1
0.8833	1.048	1.0488	-0.00075904	1
0.9	1.048	1.048	3.9939E-005	1
0.9166	1.041	1.0472	-0.0061684	1
0.9333	1.041	1.0464	-0.0053745	1
0.95	1.041	1.0456	-0.0045831	1
0.9666	1.041	1.0448	-0.0037988	1
0.9833	1.041	1.044	-0.0030121	1
1	1.035	1.0432	-0.0082278	1
1.2	1.029	1.034	-0.0050042	1
1.4	1.016	1.0251	-0.0090579	1
1.6	1.01	1.0164	-0.0063503	1

1.8	0.997	1.0079	-0.010853	1
2	0.991	0.99954	-0.0085446	1
2.2	0.984	0.99141	-0.007408	1
2.4	0.978	0.98343	-0.0054294	1
2.6	0.972	0.9756	-0.0035974	1
2.8	0.959	0.9679	-0.0089023	1
3	0.953	0.96034	-0.007336	1
3.2	0.946	0.95289	-0.0068912	1
3.4	0.94	0.94556	-0.0055617	1
3.6	0.934	0.93834	-0.0043421	1
3.8	0.928	0.93123	-0.0032274	1
4	0.921	0.92421	-0.0032132	1
4.2	0.909	0.9173	-0.0082956	1
4.4	0.902	0.91047	-0.0084708	1
4.6	0.896	0.90374	-0.0077356	1
4.8	0.89	0.89709	-0.007087	1
5	0.883	0.89052	-0.0075222	1
5.2	0.877	0.88404	-0.0070385	1
5.4	0.871	0.87763	-0.0066336	1
5.6	0.871	0.87131	-0.00030519	1
5.8	0.864	0.86505	-0.0010512	1
6	0.852	0.85887	-0.0068696	1
6.2	0.852	0.85276	-0.00075856	1
6.4	0.845	0.84672	-0.0017164	1
6.6	0.839	0.84074	-0.0017413	1
6.8	0.833	0.83483	-0.0018319	1
7	0.827	0.82899	-0.0019866	1
7.2	0.82	0.8232	-0.003204	1
7.4	0.814	0.81748	-0.0034828	1
7.6	0.814	0.81182	0.0021783	1
7.8	0.808	0.80622	0.0017806	1
8	0.801	0.80067	0.00032518	1
8.2	0.801	0.79519	0.0058132	1
8.4	0.795	0.78975	0.0052458	1
8.6	0.789	0.78438	0.0046239	1
8.8	0.782	0.77905	0.0029485	1
9	0.776	0.77378	0.0022206	1
9.2	0.77	0.76856	0.0014412	1
9.4	0.763	0.76339	-0.00038891	1
9.6	0.763	0.75827	0.0047311	1
9.8	0.757	0.7532	0.0038022	1
10	0.751	0.74817	0.0028251	1
11	0.732	0.72376	0.0082428	1
12	0.707	0.70044	0.0065628	1
13	0.688	0.67814	0.009862	1
14	0.662	0.65679	0.005208	1
15	0.637	0.63634	0.0006607	1
16	0.618	0.61673	0.001274	1
17	0.599	0.5979	0.0010963	1
18	0.58	0.57983	0.00017183	1
19	0.568	0.56246	0.0055409	1
20	0.549	0.54576	0.0032406	1
21	0.53	0.52969	0.00030513	1
22	0.517	0.51423	0.002766	1
23	0.505	0.49935	0.0056528	1
24	0.486	0.48501	0.00099266	1
25	0.473	0.47119	0.0018113	1
26	0.46	0.45787	0.0021326	1
27	0.441	0.44502	-0.004021	1
28	0.429	0.43263	-0.0036283	1
29	0.416	0.42067	-0.0046697	1
30	0.404	0.40913	-0.0051263	1

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RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate
T =   2.4103E-003
S =   7.5013E-006

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WATER SAMPLING LOG

Well No. SWGW/2(H) Job Name Steelcote

Job Number Z-301-07 Date Sampled 12/7/94 Sampled By RWS/SJD

Sample No. SWGW/2(H)(12/7/94)

Time Started 12:25 Time Completed 13:05

Weather 30°, overcast

Well Site Conditions clear

Sampling Data

PID Head Space 2 ppm Casing Diameter 2"

Total Depth of Well Below MP 48.60' Gallons per Foot 0.16

DTW Below MP 6.9' Gallons in Well 6.67

Water Column in Well 41.70'

	Yes	No	Sample
Light Phase Immiscibles		X	
Heavy Phase Immiscibles		X	

Field Parameters

Gallons Bailed	Temperature (C)	pH	Sp. Conductivity µmhos/cm	TDS	Time
3	14.2	7.6	1600		
6	14.4	7.6	1550		
9	14.5	7.6	1500		
12	14.5	7.5	1500		
15	14.4	7.5	1550		
After Sampling	14.0	7.5	1500		13:08

Evacuation Method PVC bailer

Water Quality slightly turbid, gray

Sampling Method PVC bailer

Remarks Bailed well down to ≈35'

Well Casing Volumes

1-1/4" = 0.077 2"=0.16 3"=0.37 4"=0.65

1-1/2"=0.10 2-1/2"=0.24 3-1/2"=0.50 6"=1.46

WATER SAMPLING LOG

Well No. SWGW/2(I) Job Name Steelcote

Job Number Z-301-07 Date Sampled 12/7/94 Sampled By RWS/SJD

Sample No. SWGW/2(I)(12/7/94)

Time Started 09:46 Time Completed 10:45

Weather 34°, overcast

Well Site Conditions clear

Sampling Data

PID Head Space 2 ppm Casing Diameter 2"

Total Depth of Well Below MP 43.85' Gallons per Foot 0.16

DTW Below MP 9.35' Gallons in Well 5.52

Water Column in Well 34.50'

	Yes	No	Sample
Light Phase Immiscibles		X	
Heavy Phase Immiscibles		X	

Field Parameters

Gallons Bailed	Temperature (C)	pH	Sp. Conductivity µmhos/cm	TDS	Time
6	14.1	6.7	1585		
11	14.2	7	1570		
13	14.2	7.5	1560		
15	14.2	7.6	1550		
After Sampling	14.2	7.6	1580		

Evacuation Method PVC bailer

Water Quality very turbid, gray

Sampling Method PVC bailer

Remarks Bailed well down to ≈35'

Well Casing Volumes

1-1/4" = 0.077 2"=0.16 3"=0.37 4"=0.65

1-1/2"=0.10 2-1/2"=0.24 3-1/2"=0.50 6"=1.46

WATER SAMPLING LOG

Well No. SWGW/2(J) Job Name Steelcote

Job Number Z-301-07 Date Sampled 12/7/94 Sampled By RWS/SJD

Sample No. SWGW/2(J)(12/7/94), SWGW/2(J)(12/7/94)MS, SWGW/2(J)(12/7/94)MSD

Time Started 10:55 Time Completed 11:30

Weather 30°, overcast

Well Site Conditions clear

Sampling Data

PID Head Space 4 ppm Casing Diameter 2"

Total Depth of Well Below MP 44.40' Gallons per Foot 0.16

DTW Below MP 9.84' Gallons in Well 5.52

Water Column in Well 34.56'

	Yes	No	Sample
Light Phase Immiscibles		X	
Heavy Phase Immiscibles		X	

Field Parameters

Gallons Bailed	Temperature (C)	pH	Sp. Conductivity µmhos/cm	TDS	Time
3	14.0	7.5	1600		
6	13.8	7.4	1635		
9	13.7	7.4	1655		
12	13.6	7.4	1660		
15	13.6	7.4	1675		
After Sampling	11.9	7.4	1774		

Evacuation Method PVC bailer

Water Quality very turbid, grey

Sampling Method PVC bailer

Remarks Bailed well down to ≈37'

Well Casing Volumes

1-1/4" = 0.077 2"=0.16 3"=0.37 4"=0.65

1-1/2"=0.10 2-1/2"=0.24 3-1/2"=0.50 6"=1.46

WATER SAMPLING LOG

Well No. SWGW/2(K) Job Name Steelcote

Job Number Z-301-07 Date Sampled 12/7/94 Sampled By RWS/SJD

Sample No. SWGW/2(K)(12/7/94)

Time Started 11:30 Time Completed 12:20

Weather 30º, overcast

Well Site Conditions clear

Sampling Data

PID Head Space 5 ppm Casing Diameter 2"

Total Depth of Well Below MP 48.64' Gallons per Foot 0.16

DTW Below MP 8.65' Gallons in Well 6.39

Water Column in Well 39.96'

	Yes	No	Sample
Light Phase Immiscibles		X	
Heavy Phase Immiscibles		X	

Field Parameters

Gallons Bailed	Temperature (C)	pH	Sp. Conductivity µmhos/cm	TDS	Time
3	13.8	7.5	1525		
6	13.6	7.4	1550		
9	13.4	7.4	1600		
12	13.2	7.4	1600		
15	13.4	7.5	1650		
After Sampling	13.0	7.4	1700		

Evacuation Method PVC bailer

Water Quality very turbid, gray

Sampling Method PVC bailer

Remarks Bailed well down to ≈40'

Well Casing Volumes

1-1/4" = 0.077 2"=0.16 3"=0.37 4"=0.65

1-1/2"=0.10 2-1/2"=0.24 3-1/2"=0.50 6"=1.46

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SWGW/2 (H) (12/7/94)
LAB ID: 9412590

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 13:05
DATE RECEIVED : 12/07/94 3:10
DATE ANALYZED : 12/12/94
ANALYST : J.M.

DECEMBER 16, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SWGW/2 (I) (12/7/94)
LAB ID: 9412585

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	10 µg/l
1330-20-7	Xylene (Total)	5.0	5.3

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 10:45
DATE RECEIVED : 12/07/94 3:10
DATE ANALYZED : 12/14/94
ANALYST : J.M.

DECEMBER 16, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SWGW/2 (J) (12/7/94)
LAB ID: 9412586

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT
DATE COLLECTED : 12/07/94 11:30
DATE RECEIVED : 12/07/94 3:10
DATE ANALYZED : 12/14/94
ANALYST : J.M.

DECEMBER 16, 1994

WL Cooper RLS

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SWGW/2 (K) (12/7/94)
LAB ID: 9412589

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT
DATE COLLECTED : 12/07/94 12:20
DATE RECEIVED : 12/07/94 3:10
DATE ANALYZED : 12/15/94
ANALYST : J.M.

DECEMBER 16, 1994

WL Cooper RS

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: SWGW/2 (H) (12/7/94)
LAB ID: 9412590

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
117-81-7	bis(2-Ethylhexyl)phthalate	10 µg/l	U µg/l

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 13:05
DATE RECEIVED : 12/07/94 3:10
DATE EXTRACTED : 12/12/94
DATE ANALYZED : 12/13/94
ANALYST : D.C.

DECEMBER 16, 1994

WL Cooper PhD

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: SWGW/2 (I) (12/7/94)
LAB ID: 9412585

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
117-81-7	bis(2-Ethylhexyl)phthalate	10 µg/l	U µg/l

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 10:45
DATE RECEIVED : 12/07/94 3:10
DATE EXTRACTED : 12/12/94
DATE ANALYZED : 12/13/94
ANALYST : D.C.

DECEMBER 16, 1994

WL Cooper RG

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: SWGW/2 (J) (12/7/94)
LAB ID: 9412586

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
117-81-7	bis(2-Ethylhexyl)phthalate	10 µg/l	U µg/l

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 11:30
DATE RECEIVED : 12/07/94 3:10
DATE EXTRACTED : 12/12/94
DATE ANALYZED : 12/13/94
ANALYST : D.C.

DECEMBER 16, 1994

WL Cooper PhD

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: SWGW/2 (K) (12/7/94)
LAB ID: 9412589

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
117-81-7	bis(2-Ethylhexyl)phthalate	10 µg/l	U µg/l

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 12/07/94 12:20
DATE RECEIVED : 12/07/94 3:10
DATE EXTRACTED : 12/12/94
DATE ANALYZED : 12/13/94
ANALYST : D.C.

DECEMBER 16, 1994

WL Cooper RLS

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

SAMPLE ID: SWGW/2 (H) (12-7-94)
LAB ID: 9412590
DATE COLLECTED: 12/7/94 13:05
DATE RECEIVED: 12/7/94 3:10

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL METAL		TOTAL	
BARIUM	EPA 200.7	0.767 mg/l	12/12/94 R.D.
CHROMIUM	EPA 200.7	0.027	12/12/94 R.D.
LEAD	EPA 239.2	0.021	12/12/94 D.S.

DECEMBER 16, 1994

Wayne L. Cooper

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

SAMPLE ID: SWGW/2 (I) (12-7-94)
LAB ID: 9412585
DATE COLLECTED: 12/7/94 10:45
DATE RECEIVED: 12/7/94 3:10

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL METAL		TOTAL	
BARIUM	EPA 200.7	0.758 mg/l	12/12/94 R.D.
CHROMIUM	EPA 200.7	0.021	12/12/94 R.D.
LEAD	EPA 239.2	0.016	12/12/94 D.S.

DECEMBER 16, 1994

Wayne L. Cooper

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
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ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL METAL		TOTAL	
BARIUM	EPA 200.7	1.38 mg/l	12/12/94 R.D.
CHROMIUM	EPA 200.7	0.082	12/12/94 R.D.
LEAD	EPA 239.2	0.043	12/12/94 D.S.

DECEMBER 16, 1994

Wayne L. Cooper

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ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

SAMPLE ID: SWGW/2 (K) (12-7-94)
LAB ID: 9412589
DATE COLLECTED: 12/7/94 12:20
DATE RECEIVED: 12/7/94 3:10

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL METAL		TOTAL	
BARIUM	EPA 200.7	1.70 mg/l	12/12/94 R.D.
CHROMIUM	EPA 200.7	0.173	12/12/94 R.D.
LEAD	EPA 239.2	0.059	12/12/94 D.S.

DECEMBER 16, 1994

Wayne L. Cooper

WAYNE L. COOPER
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11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

METHOD EPA 8315

SAMPLE ID: SWGW/2 (I) (12-7-94)
LAB ID: 9412585
DATE COLLECTED: 12/7/94 10:45
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	<0.05 mg/l

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	<0.05 mg/l

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586 (MS)
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	97%

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586 (MSD)
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	92%

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

ANALYSIS RESULTS

METHOD EPA 8315

SAMPLE ID: SWGW/2 (K) (12-7-94)
LAB ID: 9412589
DATE COLLECTED: 12/7/94 12:20
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	<0.05 mg/l

SAMPLE ID: SWGW/2 (H) (12-7-94)
LAB ID: 9412590
DATE COLLECTED: 12/7/94 13:05
DATE RECEIVED: 12/7/94 3:10

PARAMETER	RESULT
FORMALDEHYDE	<0.05 mg/l

DATE COLLECTED: 12/07/94
DATE RECEIVED : 12/07/94 3:10
DATE ANALYZED : 12/09/94 S.L.

DECEMBER 16, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
23[redacted]ark Dr[redacted]
Maryland Heights, MO 63043
(314) 427-0550

CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

COC # 22844 5138
PROPOSAL #
PROJECT # Steelcote
PO #
PAGE 1 OF 1

COMPANY Shannon + Wilson
CONTACT Larry Rosen
ADDRESS 11500 Olive Blvd
DATE 12/7/94
CITY/STATE/ZIP St. Louis, MO 63141
DUE DATE 12/17/94
PHONE (314) 872 - 8170
FAX ( )
TURN AROUND TIME/INSTRUCTIONS: Normal T.A.T. / Steelcote

KBG 12/7/94

SAMPLE IDENTIFICATION

ITEM	FOR LAB USE ONLY	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	VOA 8240	BNA 8270	Metals *	8315 Formaldehyde													
1	9412585	SWGW/2(I)(12-7-94)	12-7-94	See Bottle	3-Glass Qt 1-500ml plastic 2-40ml VOA	X	X	X	X									*	Cd	Cr	→	200.7
2	9412586	SWGW/2(J)(12-7-94)	↓	↓	↓	X	X	X	X										Pb	→	7421	
3	~~9412587~~	SWGW/2(J)(12-7-94)MS				X	X	X	X													
4	~~9412588~~	SWGW/2(J)(12-7-94)MSD				X	X	X	X													
5	9412589	SWGW/2(K)(12-7-94)				X	X	X	X													
6	9412590	SWGW/2(H)(12-7-94)				X	X	X	X													
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Ed J. Wilt 12/07/94

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER	COMMENTS:
36				Ed J. Wilt	12/07	3:10	Log In	H_2O
6	Ed J. Wilt	12/8/94	8:20	[illegible] Casagrande	12/8/94	815	VOA	
	Ed J. Wilt	12/8/94	1:45	[illegible]	12/8	1:45	Metals	
	[illegible]	12/9	9:20	[illegible]	12/9/94	9:35	[illegible]	
	[illegible]	12/13	10:00	Cliff Nal	12/13	10:00	Retain	

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

11500 Olive Blvd., Suite 276
St. Louis, MO 63141
(314) 872-8170

2055 Hill Road
Fairbanks, AK 99707
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

CHAIN OF CUSTODY RECORD

Page 1 of 1
Laboratory Env.
Attn: Ben Poorat

Analysis Parameters/Sample Container Description
(Include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOA 8240 ~~8260~~	BNA	Formaldehyde	Metals (Cd, Cr, Pb)			Total Number of Containers	Remarks/Matrix
SWGW/2(I)(12-7-94)		10:45	12-7-94		X	↓	↓	↓	↓			6	H_2O
SWGW/2(J)(12-7-94)		11:30	12-7-94		X	↓	↓	↓	↓			↓	↓
SWGW/2(J)(12-7-94)MS		11:30	12-7-94		X	↓	↓	↓	↓			↓	↓
SWGW/2(J)(12-7-94)MSD		11:30	12-7-94		X	↓	↓	↓	↓			↓	↓
SWGW/2(K)(12-7-94)		12:20	12-7-94		X	↓	↓	↓	↓			↓	↓
SWGW/2(H)(12-7-94)		13:05	12-7-94		X	↓	↓	↓	↓			↓	↓

Project Information		Sample Receipt	
Project Number:	Z-301-07	Total Number of Containers	36
Project Name:	Steelcote	COC Seals/Intact? Y/N/NA	N/A
Contact:	Larry Rosen	Received Good Cond./Cold	YES
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	Hand
Sampler:	RWS/SJD	(attach shipping bill, if any)	

Instructions

Requested Turn Around Time: Regular

Special Instructions: Filter metals as per bid.

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [signature] Time: 13:53	Signature: Time:	Signature: Time:
Printed Name: Russell L. Schwab Date: 12-7-94	Printed Name: Date:	Printed Name: Date:
Company: Shannon Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: [signature] Time: 1:58 PM	Signature: Time:	Signature: Time:
Printed Name: Cliff Hardin Date: 12-7-94	Printed Name: Date:	Printed Name: Date:
Company: EPA	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 15436

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: METHOD BLANK
LAB ID: VCBLK346A

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT
DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 12/12/94
ANALYST : J.M.

DECEMBER 16, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: METHOD BLANK
LAB ID: VCBLK348A

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT
DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 12/14/94
ANALYST : J.M.

DECEMBER 16, 1994

WL Cooper RLS
WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: METHOD BLANK
LAB ID: VCBLK349A

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
108-88-3	Toluene	5.0 µg/l	U µg/l
1330-20-7	Xylene (Total)	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 12/15/94
ANALYST : J.M.

DECEMBER 16, 1994

WL Cooper RS

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07, STEELCOTE

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

SAMPLE ID: SWGW/2 (J) (12/7/94)
LAB ID: 9412586

COMPOUND	SPIKE ADDED (µg/kg)	SAMPLE CONC. (µg/kg)	MS CONC. (µg/kg)	MS % REC	#	QC LIMITS REC.
1,1-Dichloroethene	50	U	70	140		61-145
Trichloroethene	50	U	53	106		71-120
Benzene	50	U	49	98		75-130
Toluene	50	U	49	98		76-125
Chlorobenzene	50	U	51	102		76-127

COMPOUND	SPIKE ADDED (µg/kg)	MSD CONC. (µg/kg)	MSD % REC #	% RPD	#	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	50	67	134	4		14	61-145
Trichloroethene	50	49	98	8		14	71-120
Benzene	50	47	94	4		11	75-130
Toluene	50	46	92	6		13	76-125
Chlorobenzene	50	48	96	6		13	76-127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 19 outside limits

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ATTN: LARRY ROSEN

INVOICE # 29797
PROJECT # Z-301-07
STEELCOTE

SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: METHOD BLANK
LAB ID: WASBLK5801

CAS NUMBER		PRACTICAL QUANTITATION LIMIT	RESULTS
117-81-7	bis(2-Ethylhexyl)phthalate	10 µg/l	U µg/l

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : ---
DATE RECEIVED : ---
DATE EXTRACTED : 12/12/94
DATE ANALYZED : 12/13/94
ANALYST : D.C.

DECEMBER 16, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

SHANNON & WILSON, INC.
11500 OLIVE BLVD., SUITE #276
ST. LOUIS, MO 63141

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Maryland Heights, MO 63043-3529
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WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586

COMPOUND	SPIKE ADDED (µg/l)	SAMPLE CONC. (µg/l)	MS CONC. (µg/l)	MS % REC	#	QC LIMITS REC.
Phenol	210	0	120	58		12- 89
2-Chlorophenol	210	0	140	68		27-123
1,4-Dichlorobenzene	104	0	76	73		36- 97
N-Nitroso-Di-nPropylamine	104	0	94	90		41-116
1,2,4-Trichlorobenzene	104	0	84	81		39- 98
4-Chloro-3-Methylphenol	210	0	170	84		23- 97
Acenaphthene	104	0	74	71		46-118
4-Nitrophenol	210	0	170	84	*	10- 80
2,4-Dinitrophenol	104	0	88	85		24- 96
Pentachlorophenol	210	0	180	89		9-103
Pyrene	104	0	65	63		26-127

COMPOUND	SPIKE ADDED (µg/l)	MSD CONC. (µg/l)	MSD % REC #	% RPD	#	QC LIMITS RPD	QC LIMITS REC
Phenol	210	94	45	24		42	12- 89
2-Chlorophenol	210	110	53	25		40	27-123
1,4-Dichlorobenzene	104	55	52	33	*	28	36- 97
N-Nitroso-Di-nPropylamine	104	72	70	26		38	41-116
1,2,4-Trichlorobenzene	104	62	60	30	*	28	39- 98
4-Chloro-3-Methylphenol	210	140	68	21		42	23- 97
Acenaphthene	104	59	57	23		31	46-118
4-Nitrophenol	210	150	74	12		50	10- 80
2,4-Dinitrophenol	104	81	78	9		38	24- 96
Pentachlorophenol	210	170	80	10		50	9-103
Pyrene	104	52	50	24		31	26-127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out 11 outside limits

Spike Recovery: 1 out of 22 outside limits

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QUALITY ASSURANCE QUALITY CONTROL REPORT

MATRIX SPIKE/MATRIX SPIKE DUPLICATE
ICP/AA
(UNITS = mg/l)

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

ELEMENT	SAMPLE RESULTS	SPIKE LEVEL	SPIKE 1 RESULT	%REC	SPIKE 2 RESULT	%REC	PRD
BARIUM	1.38	4.000	5.25	97	5.01	91	6
CHROMIUM	0.082	0.400	0.451	92	0.400	80	12

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QUALITY ASSURANCE QUALITY CONTROL REPORT

MATRIX SPIKE/MATRIX SPIKE DUPLICATE
GRAPHITE FURNACE ATOMIC ABSORPTION
(UNITS = mg/l)

SAMPLE ID: SWGW/2 (J) (12-7-94)
LAB ID: 9412586
DATE COLLECTED: 12/7/94 11:30
DATE RECEIVED: 12/7/94 3:10

ELEMENT	SAMPLE RESULTS	SPIKE LEVEL	SPIKE 1 RESULT	%REC	SPIKE 2 RESULT	%REC	PRD
LEAD	0.043	0.020	0.062	95	0.060	85	11