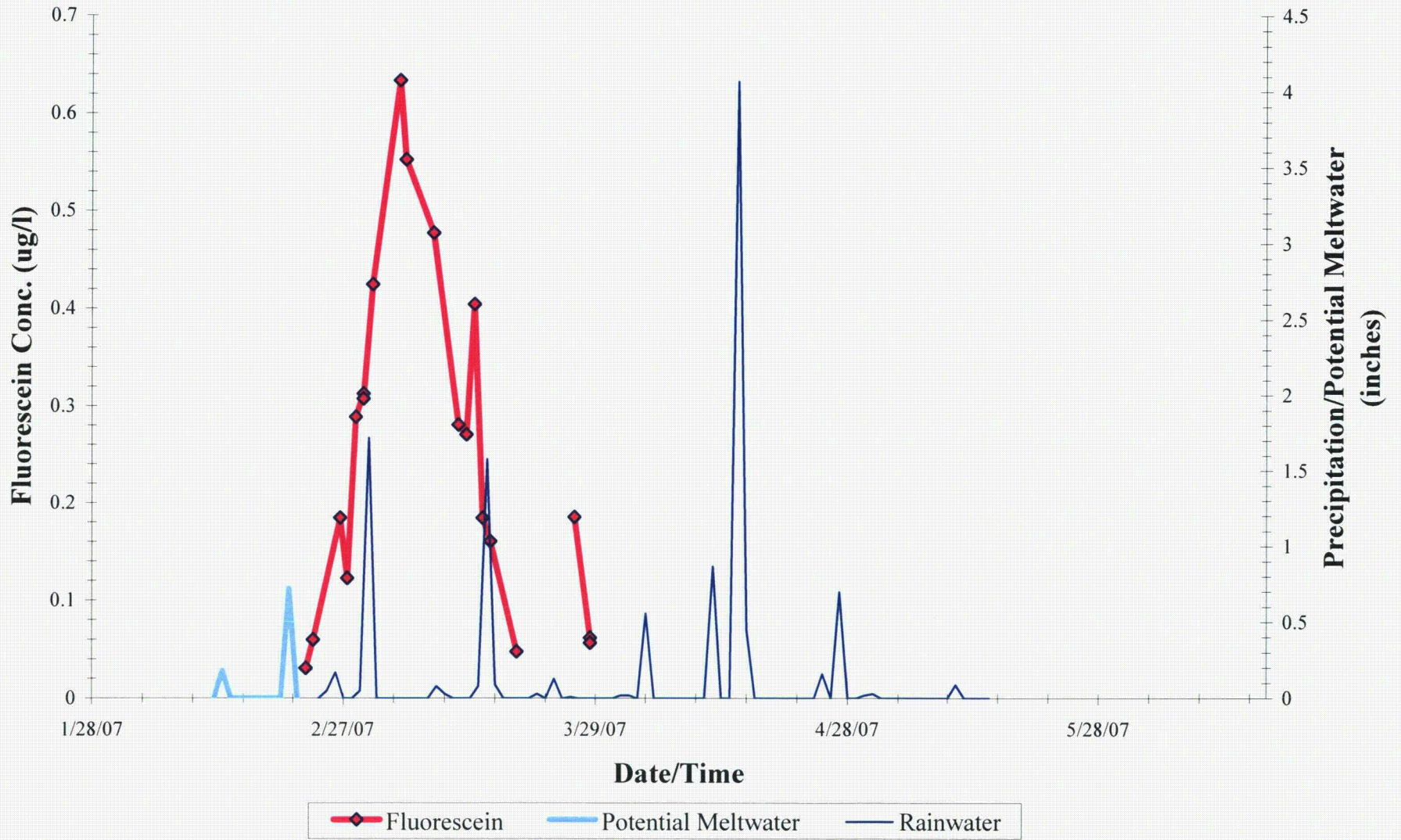
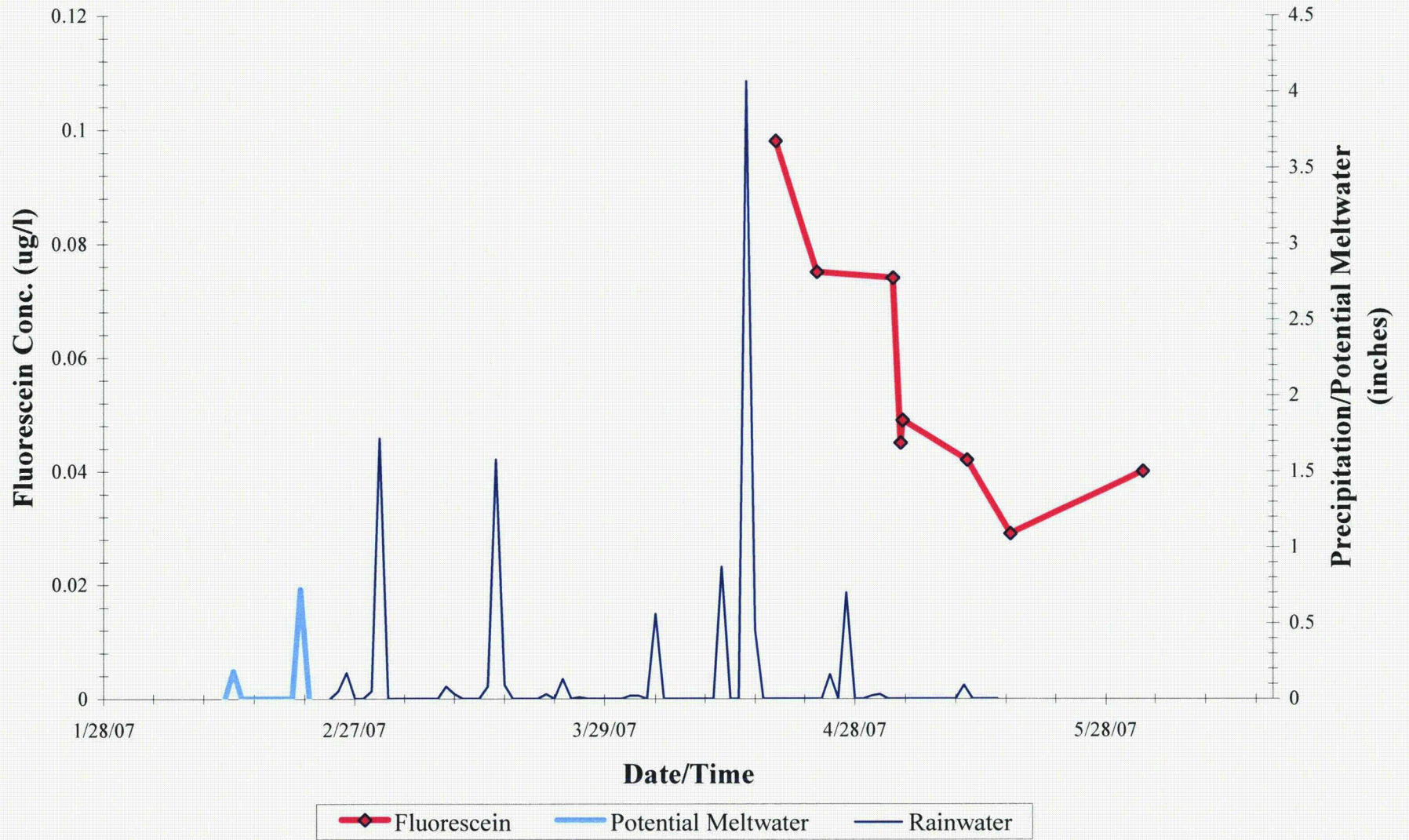


# MW-54-163

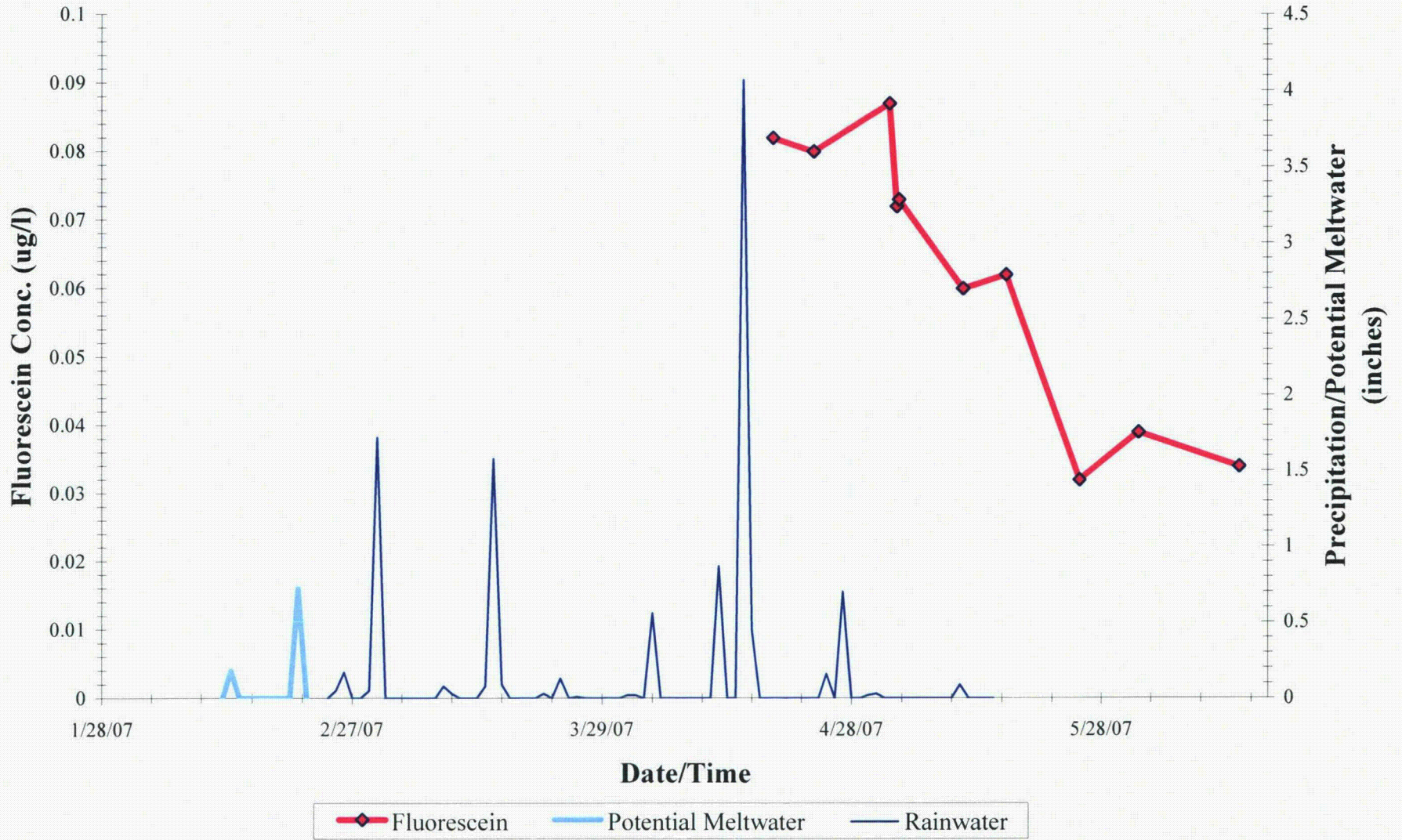


# MW-54-174

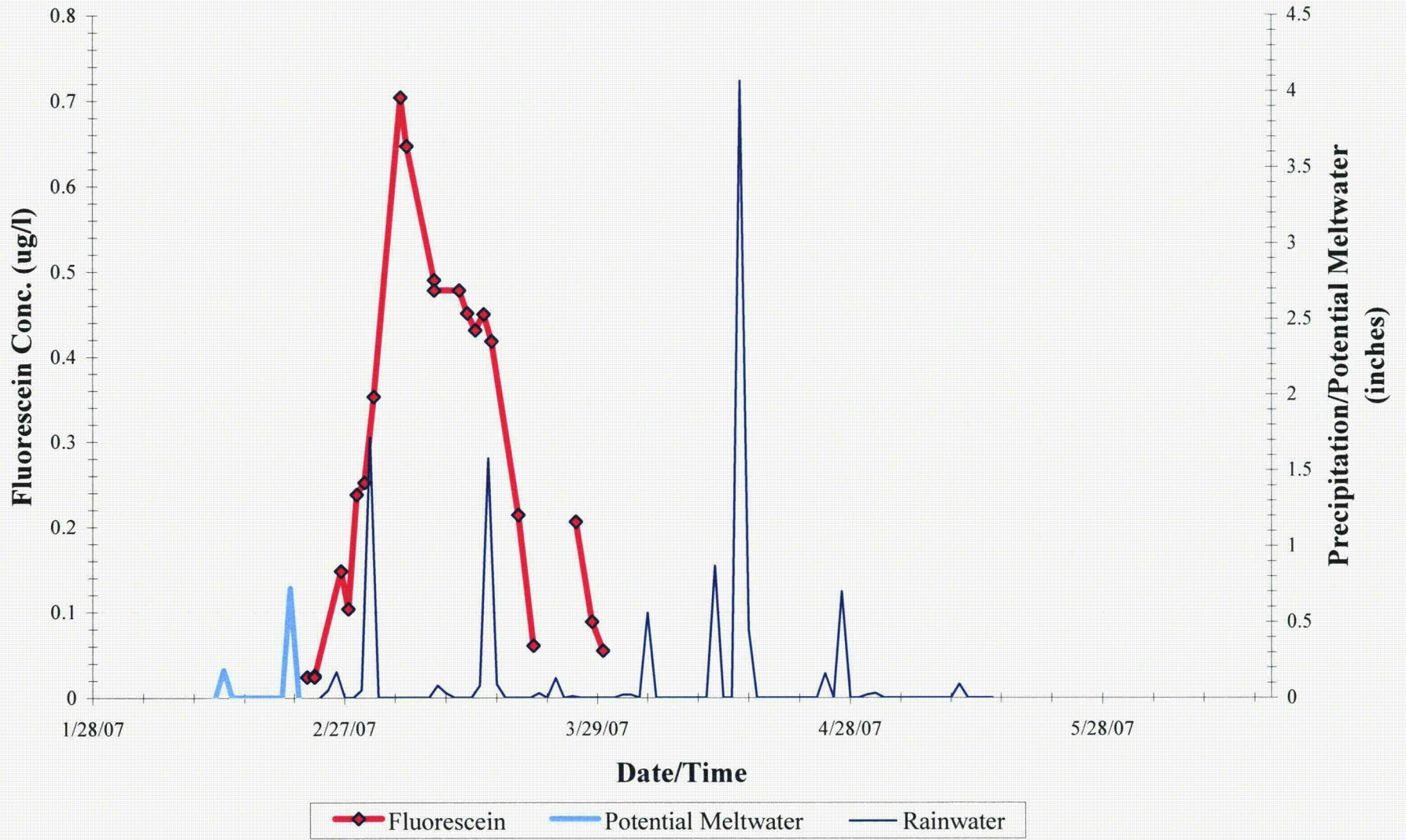




# MW-54-192

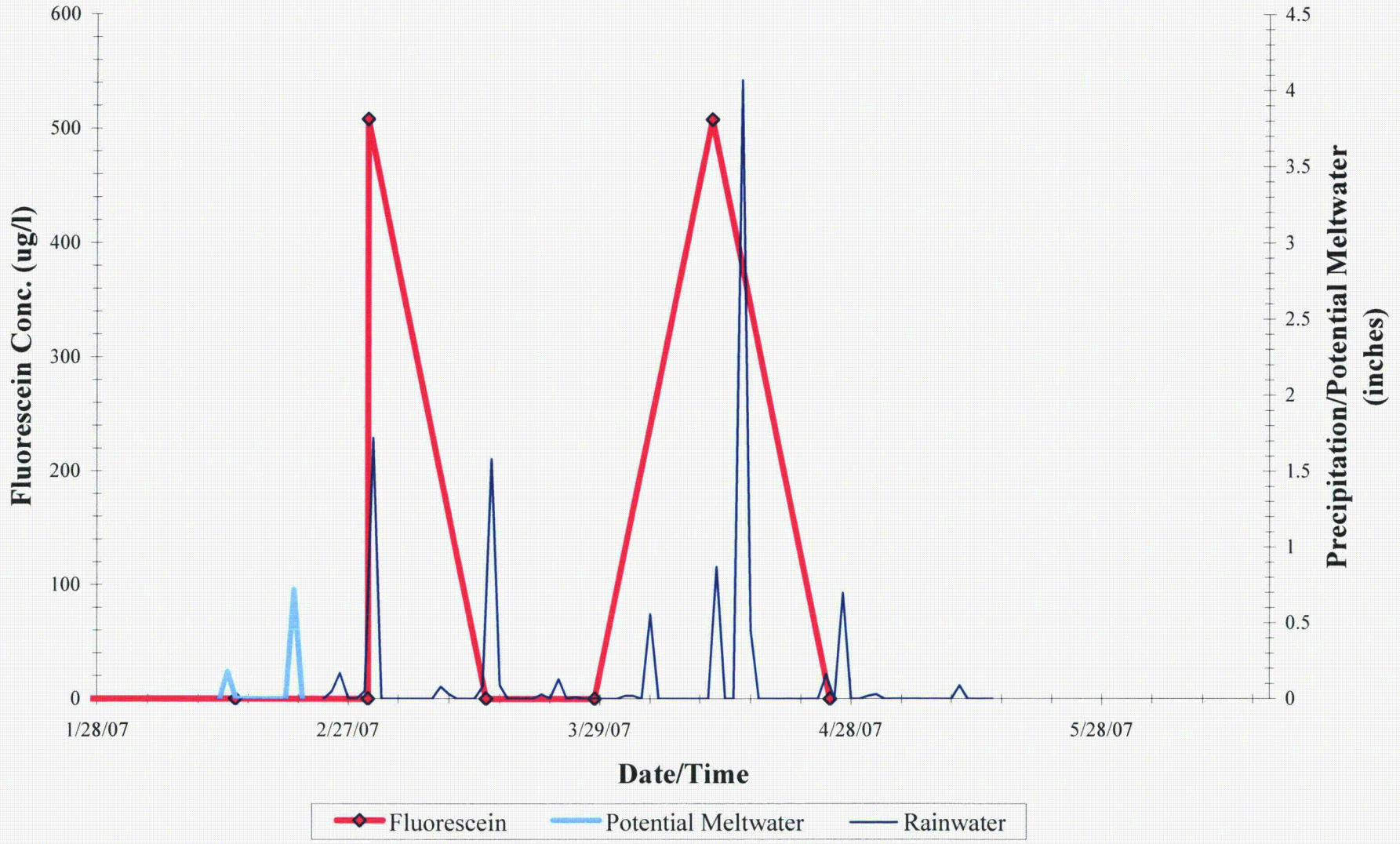


MW-54-200

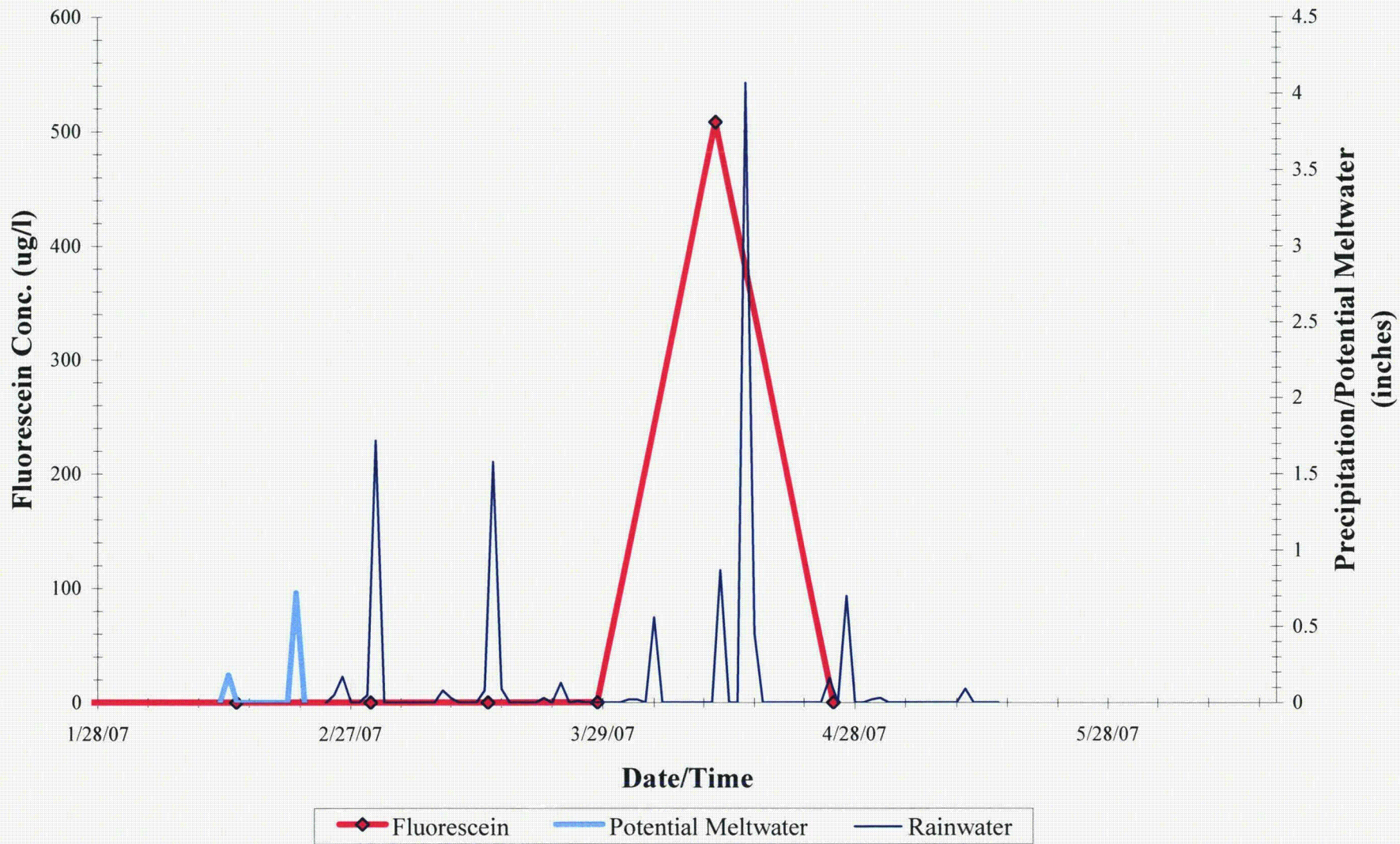




# MW-55-24

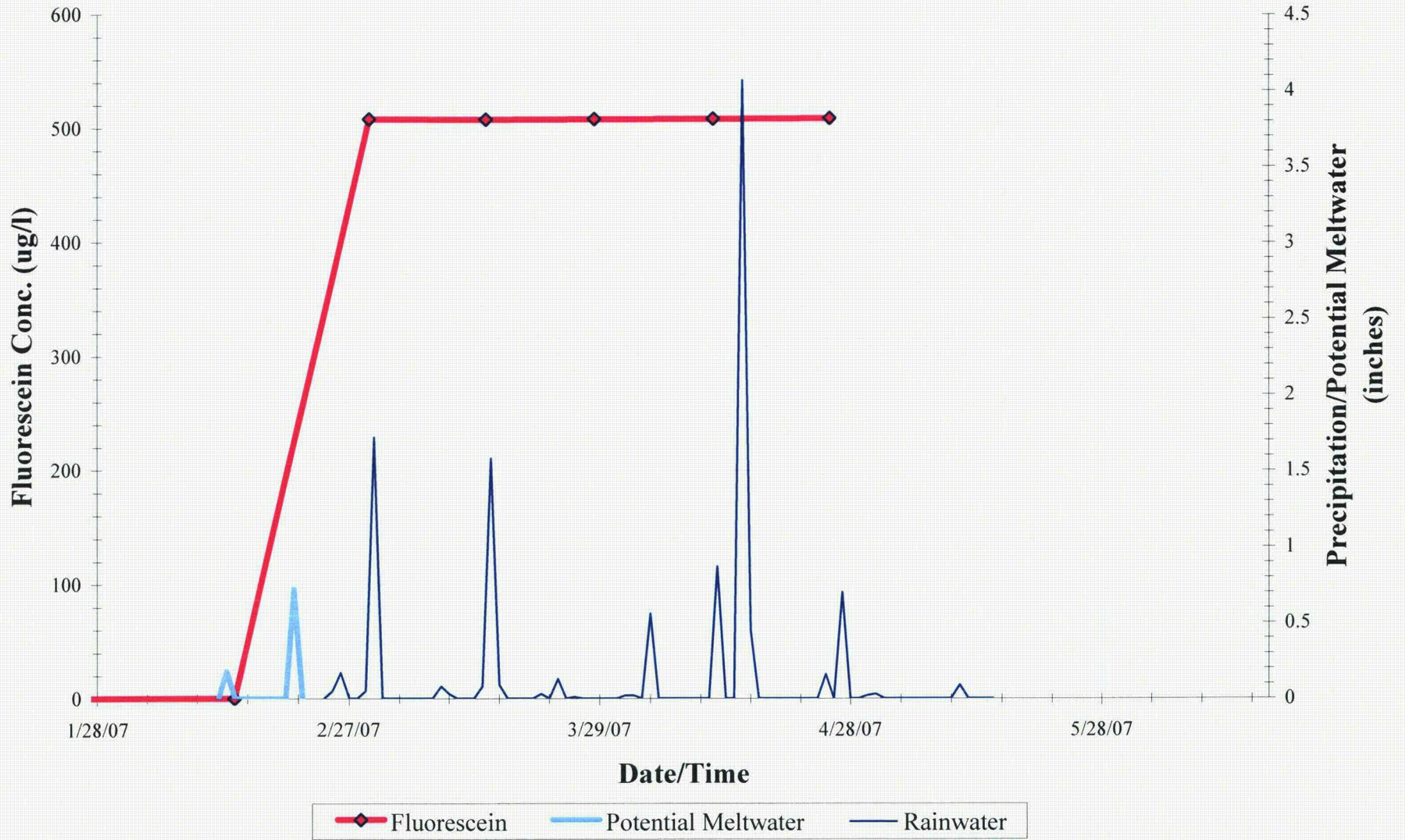


MW-55-34

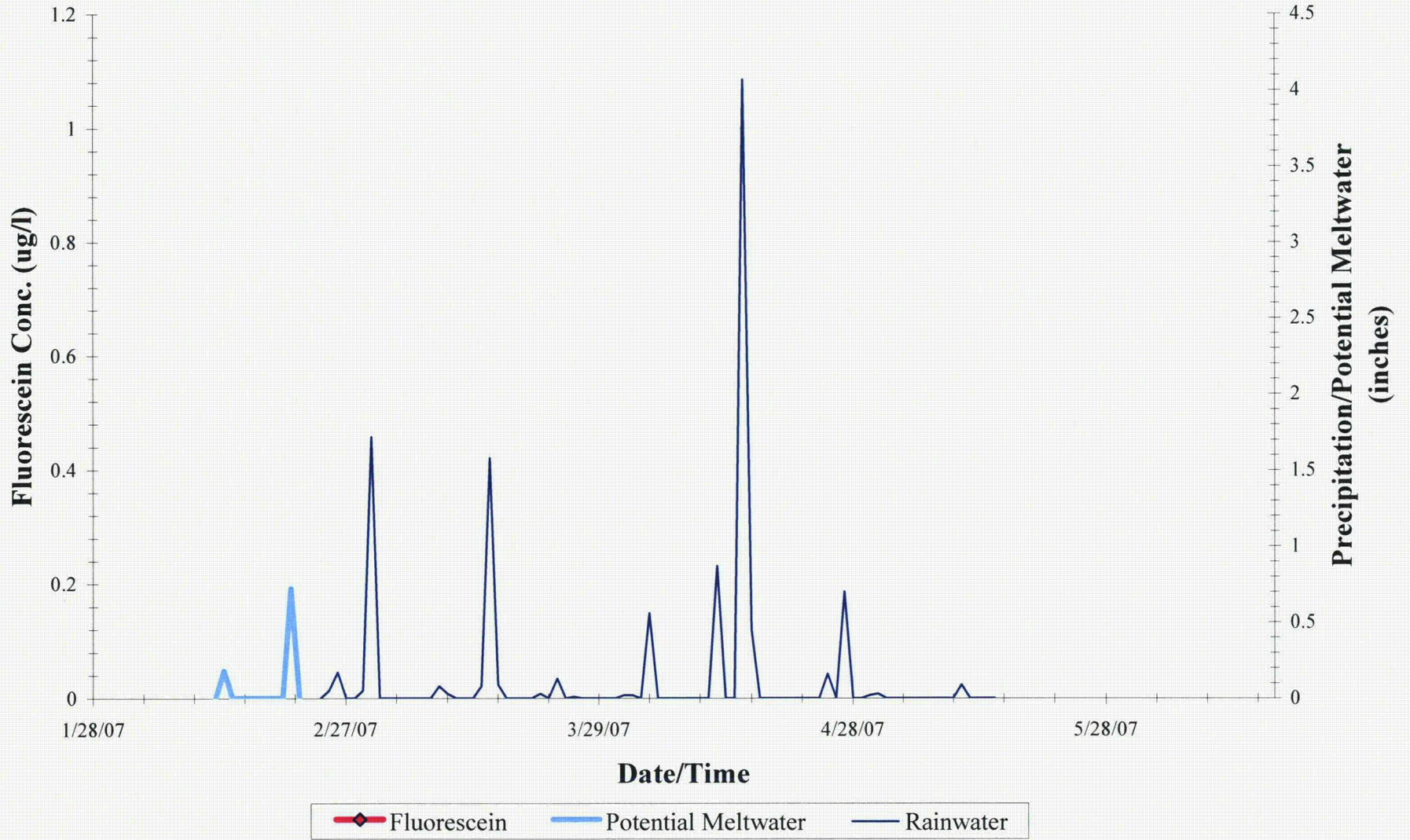




# MW-55-54

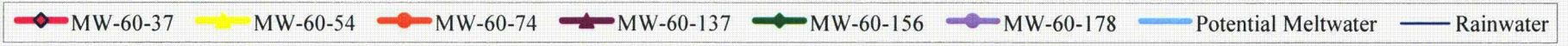
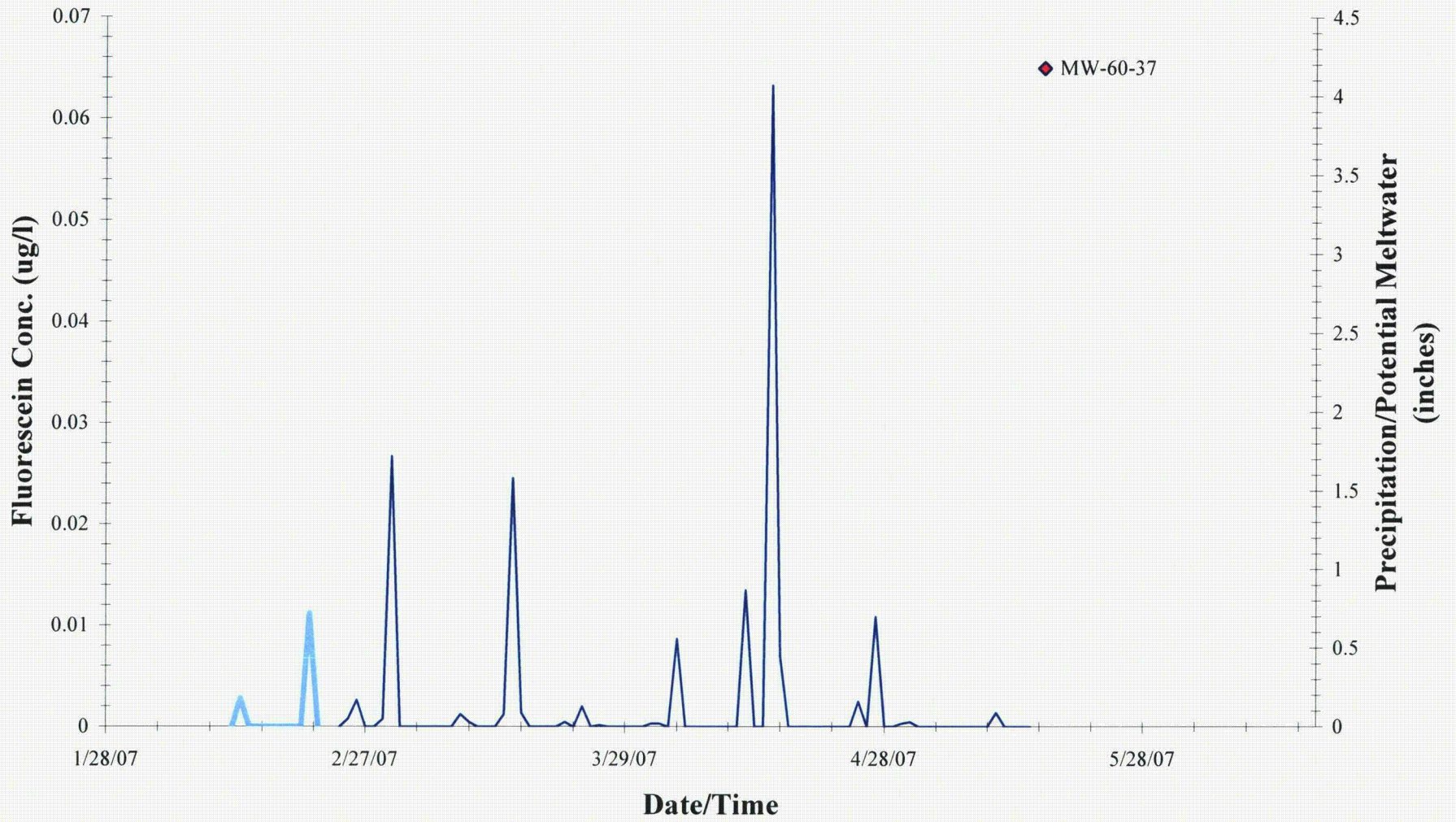


# MW-57-20

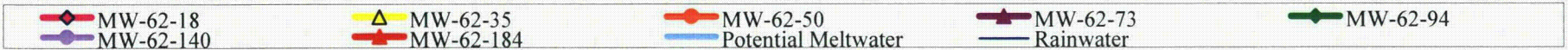
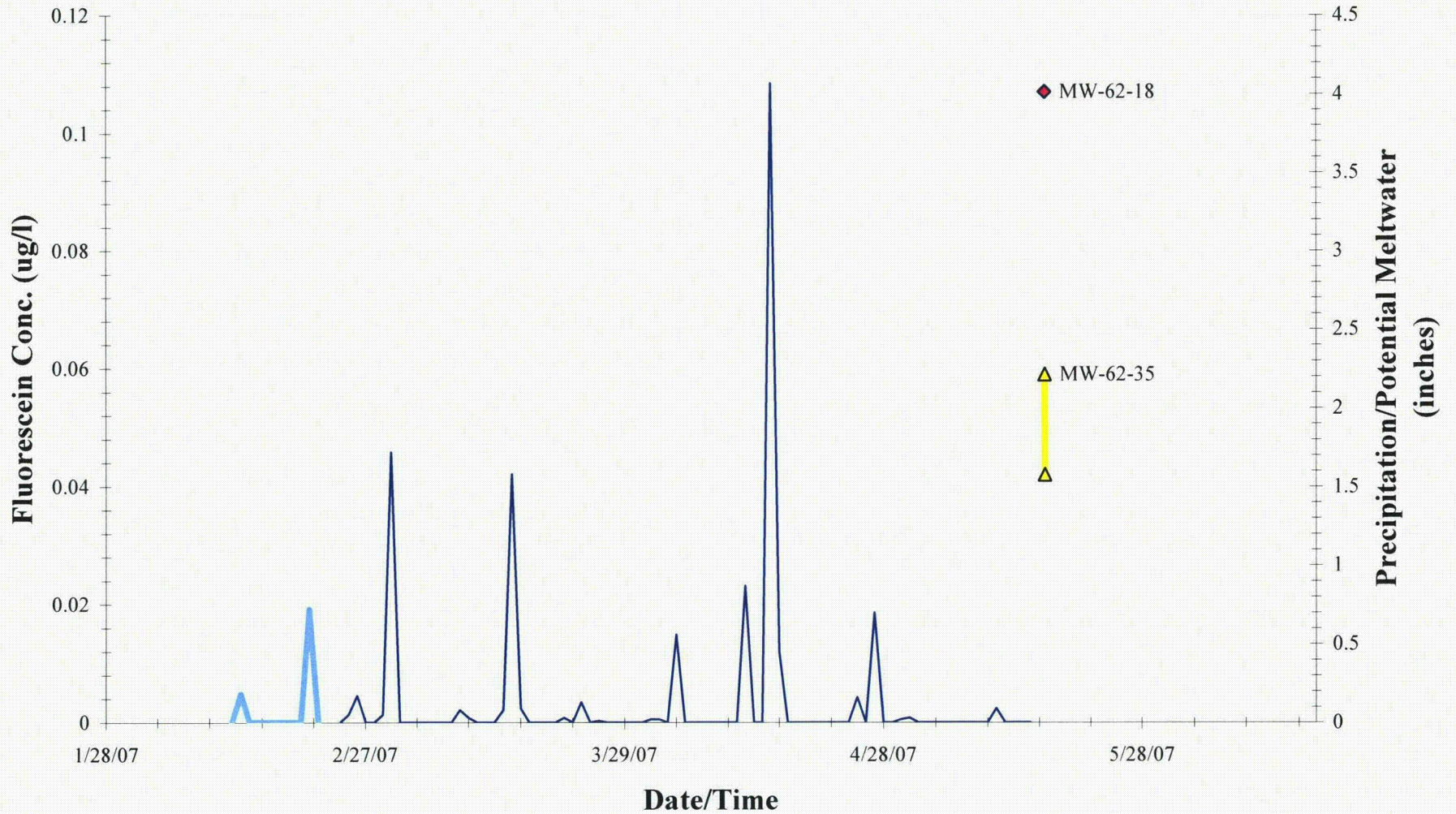




# MW-60

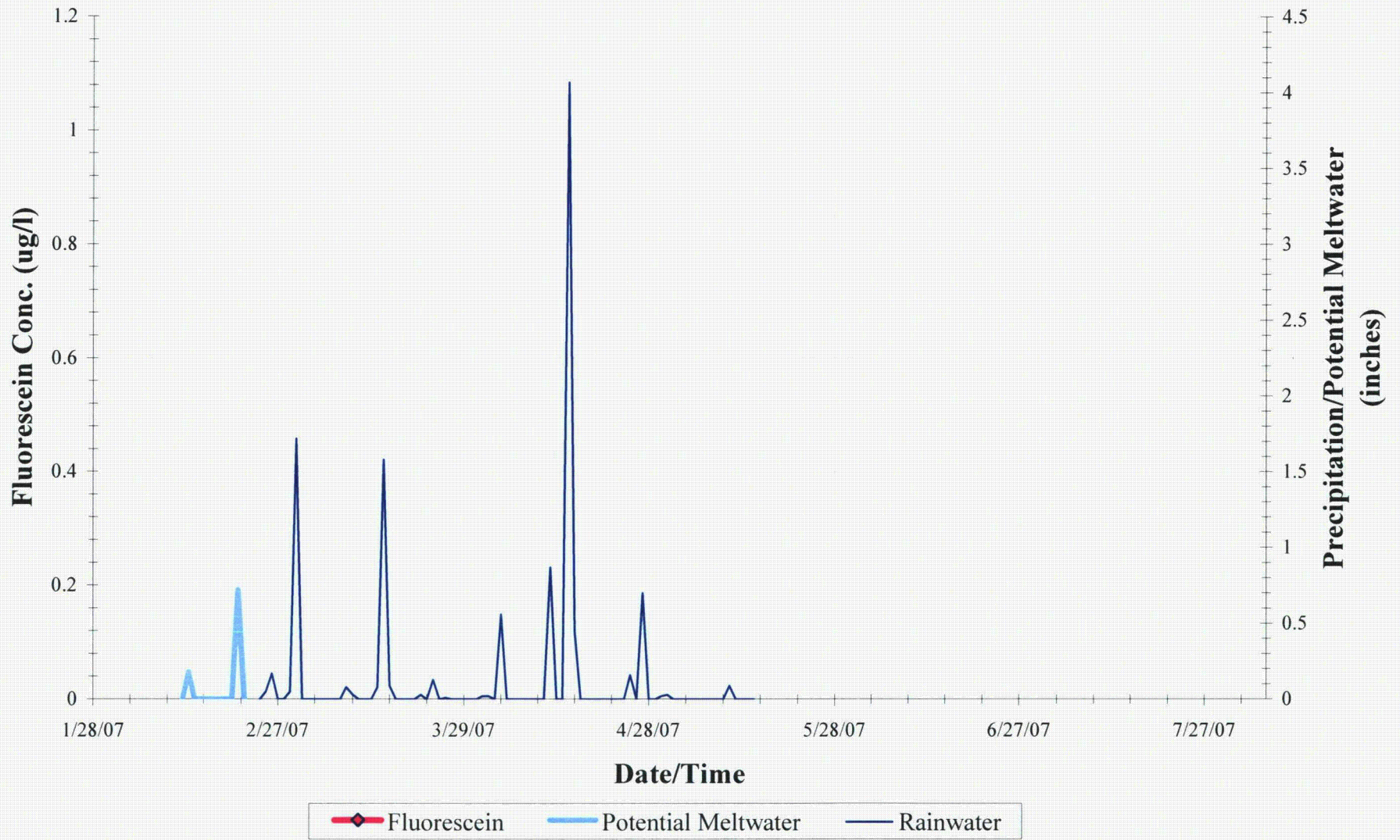


# MW-62

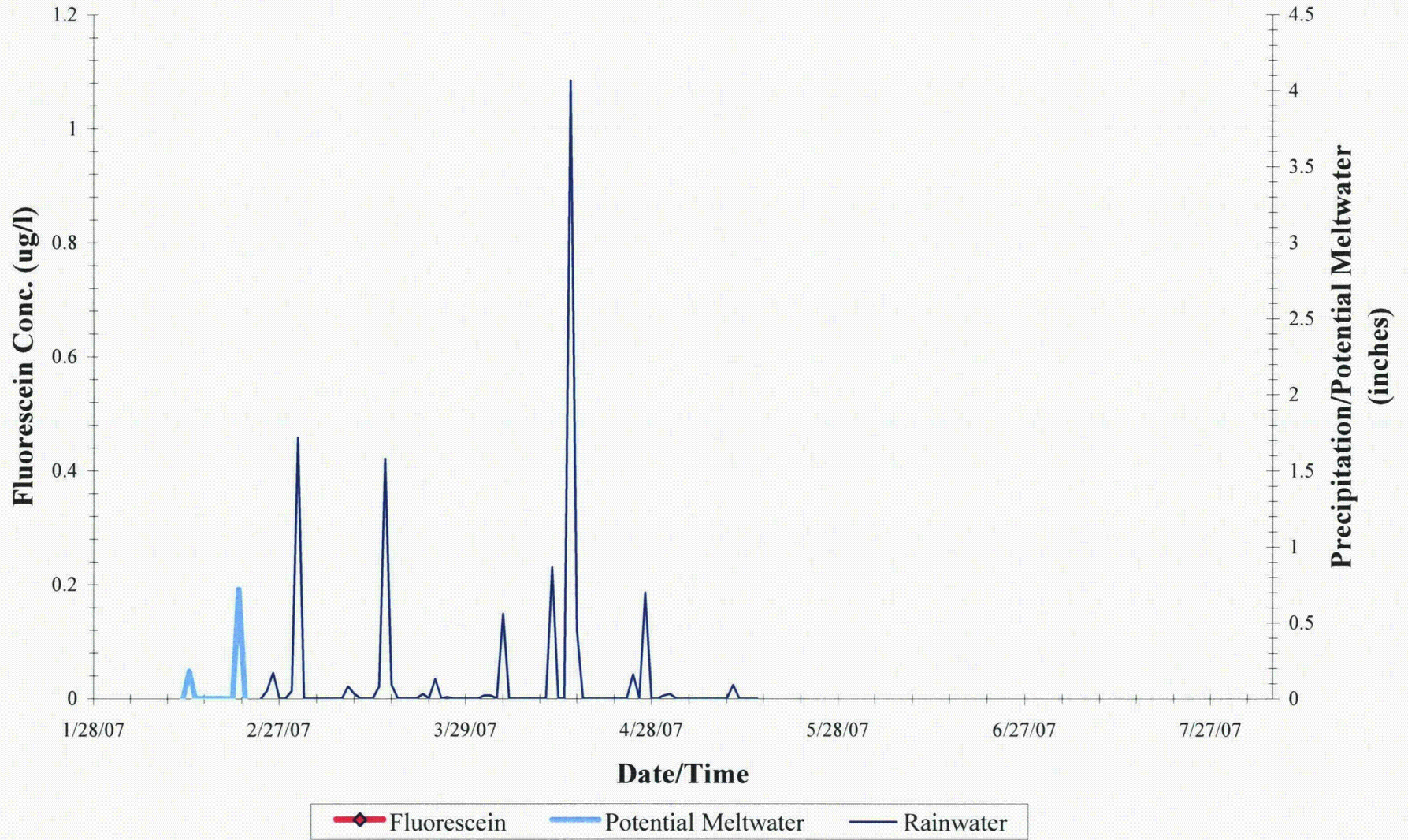




# MW-63

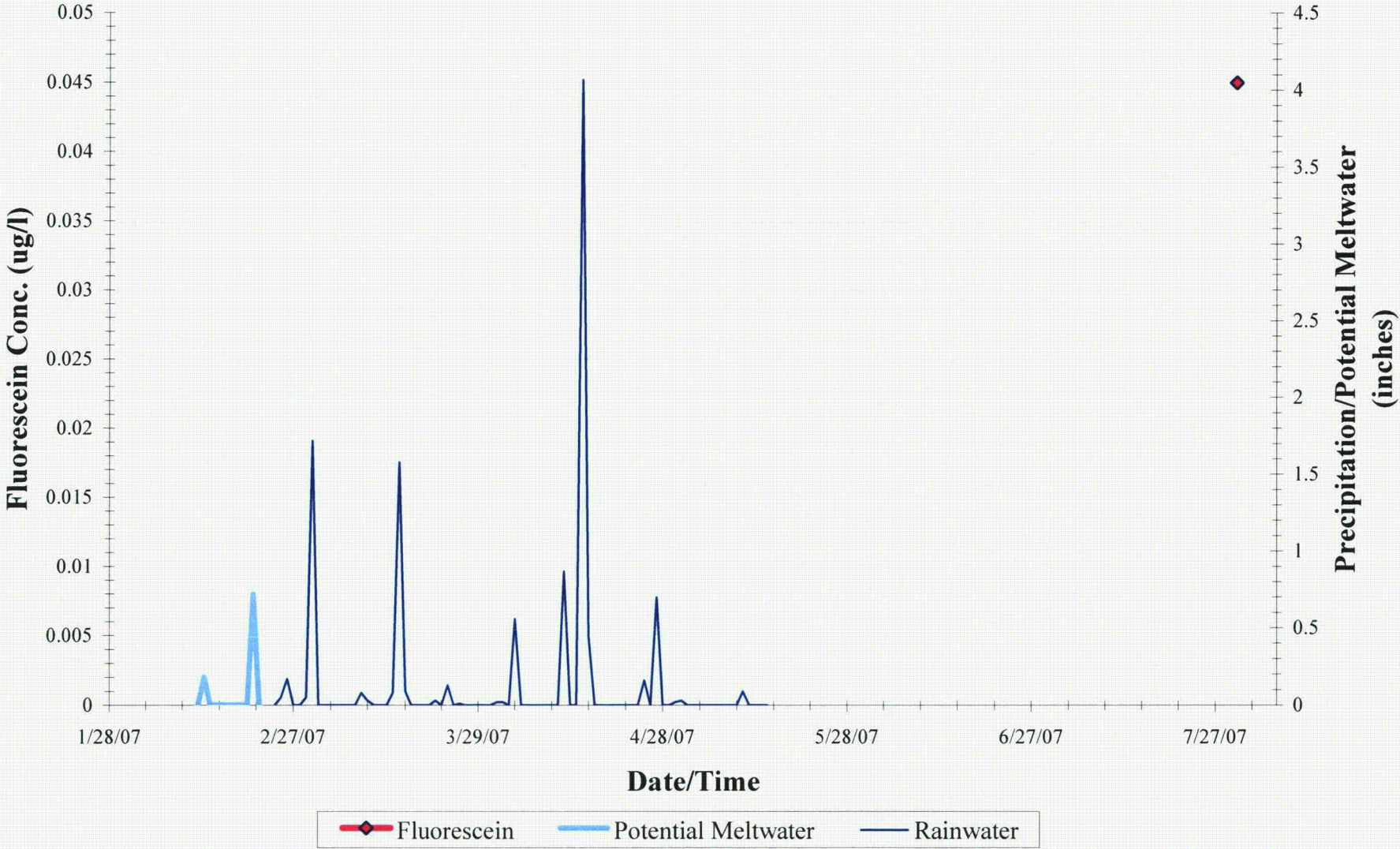


MW-66-21

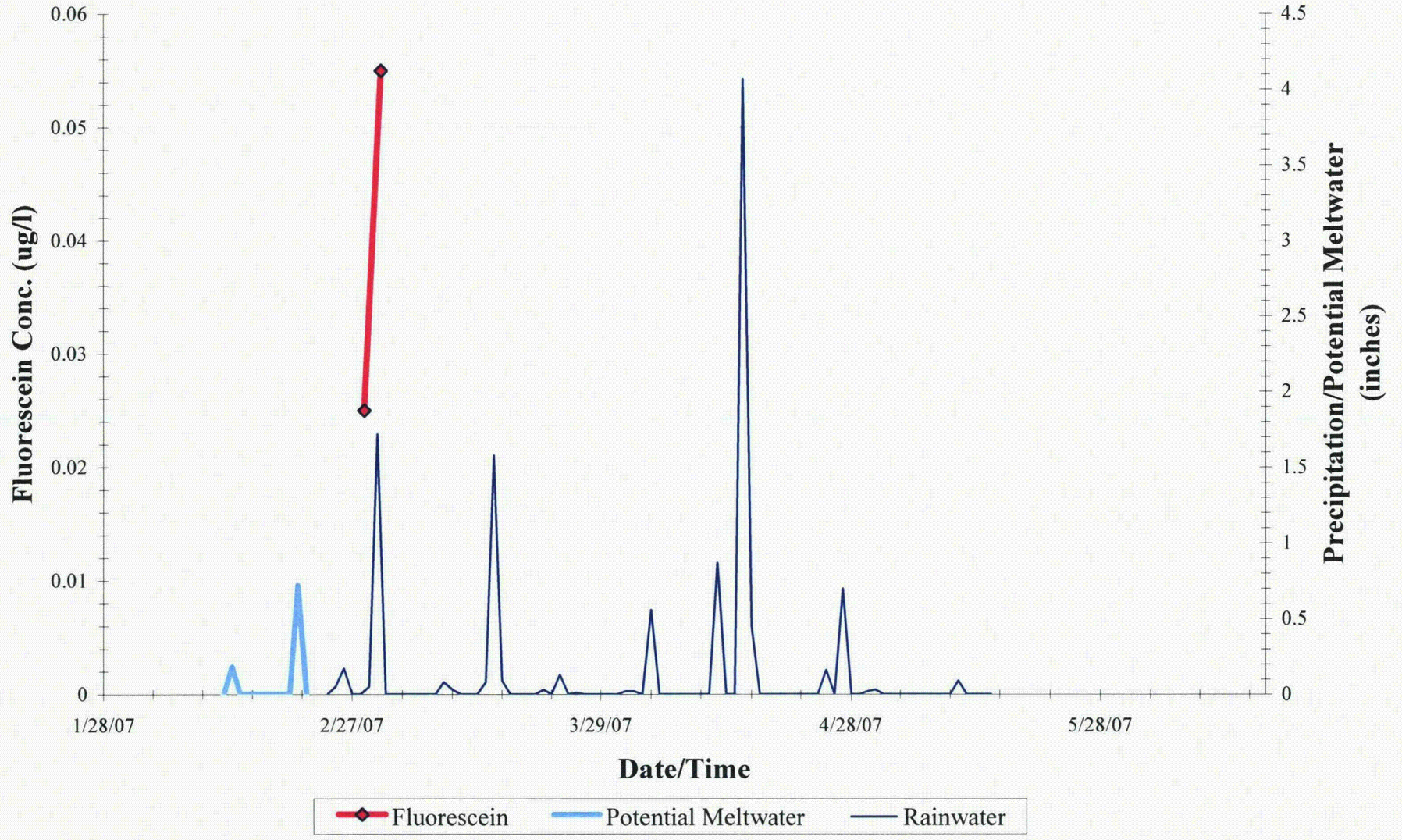




MW-66-36

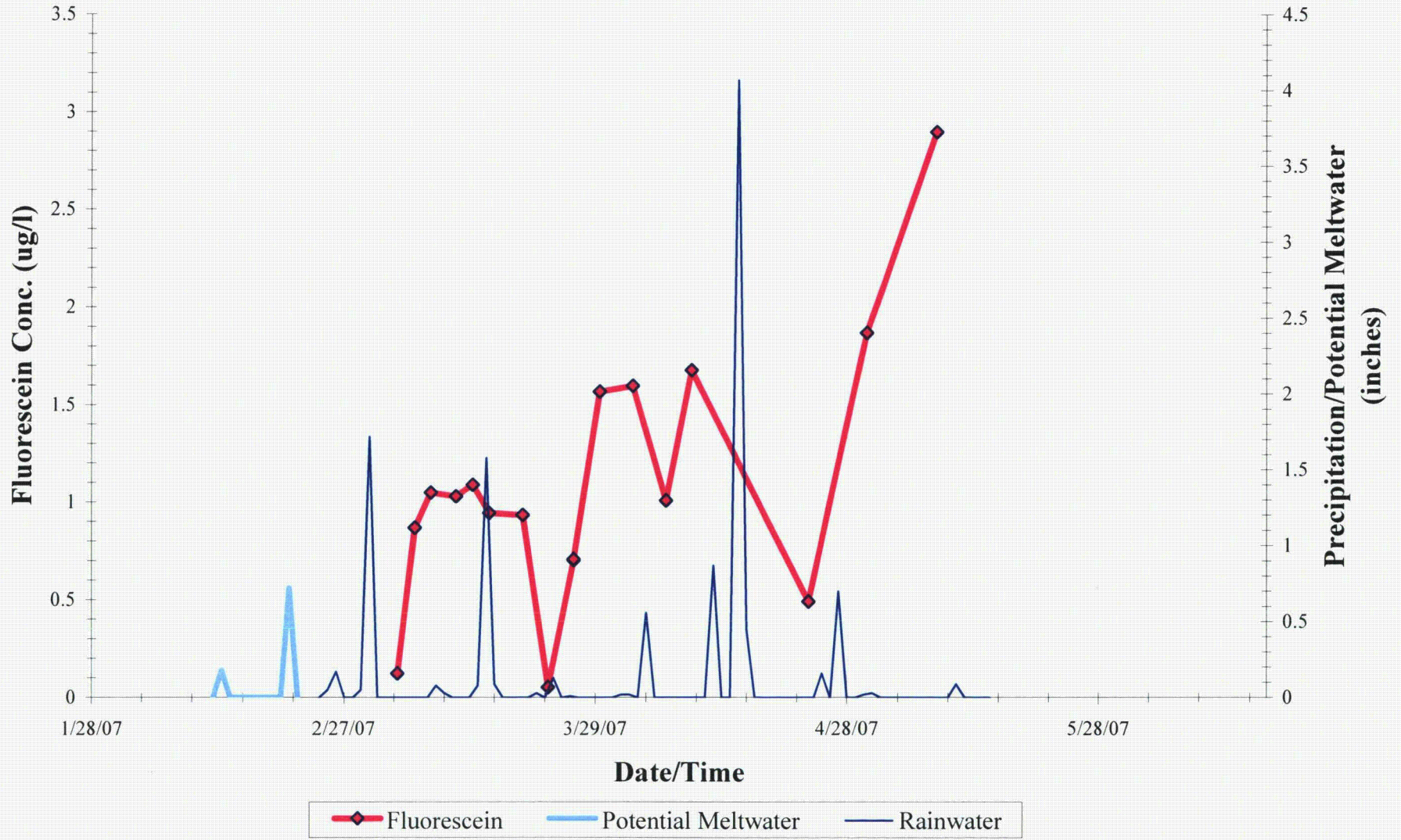


# MW-66-48

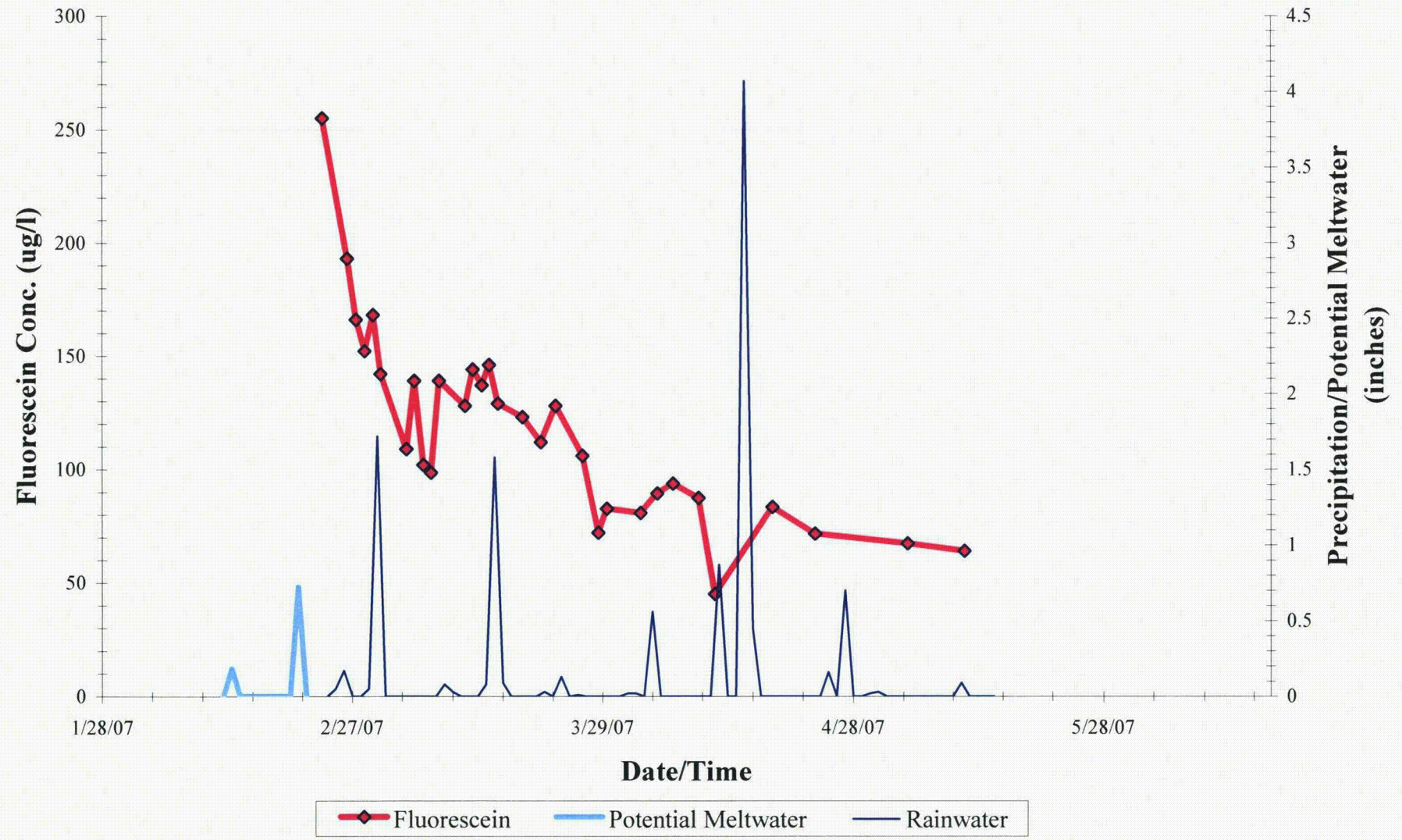




# MW-111

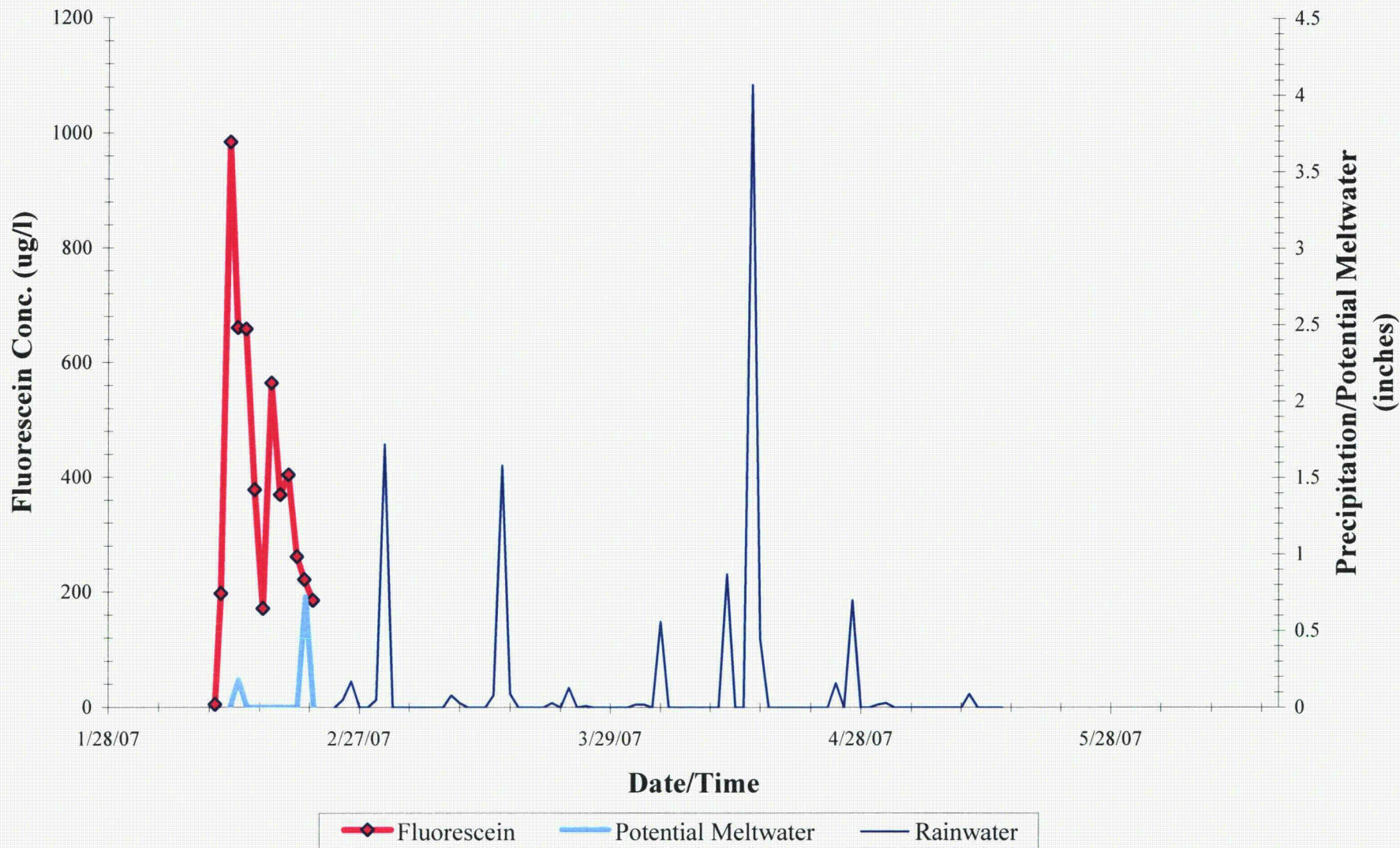


# RW-1-97

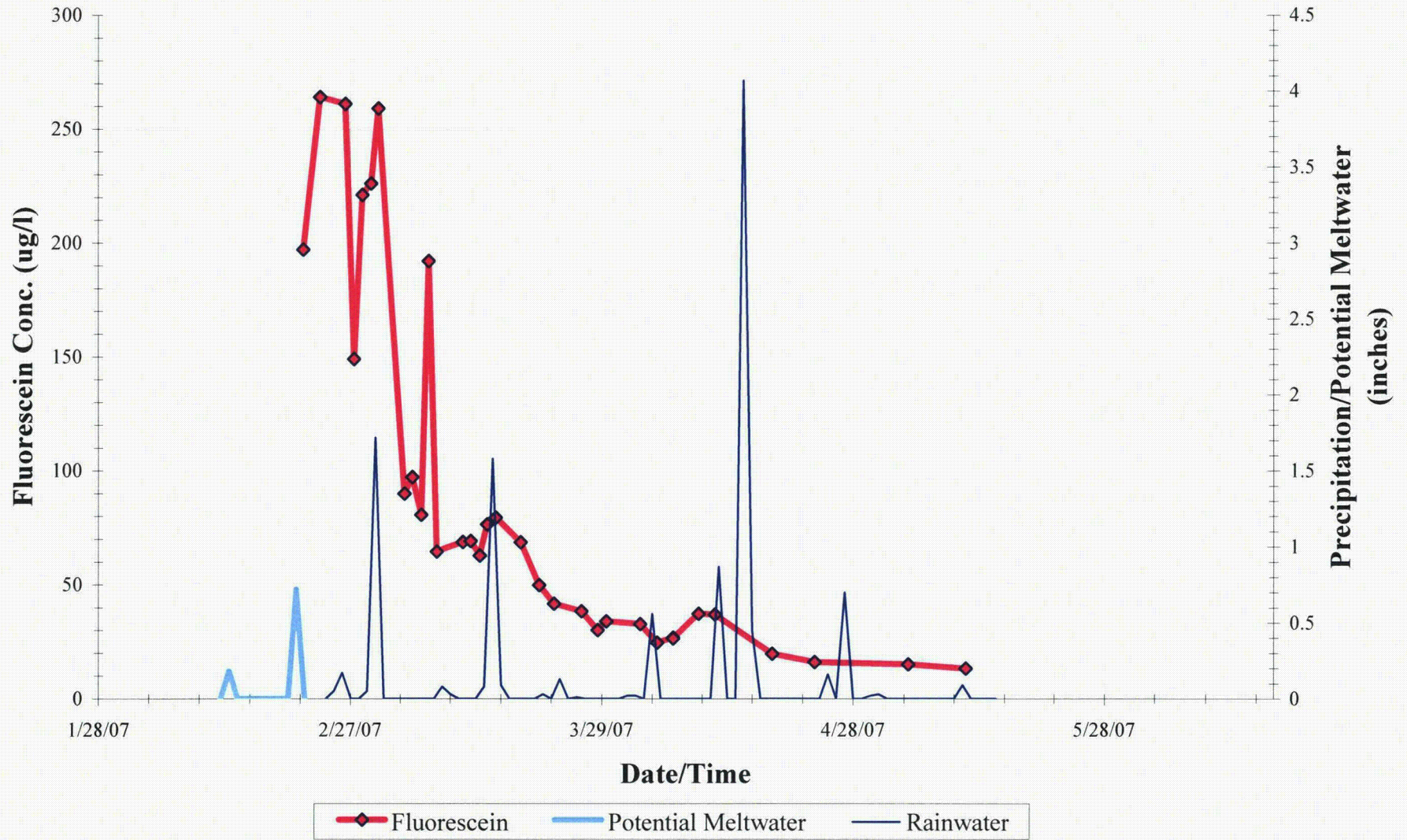




# RW-1-110

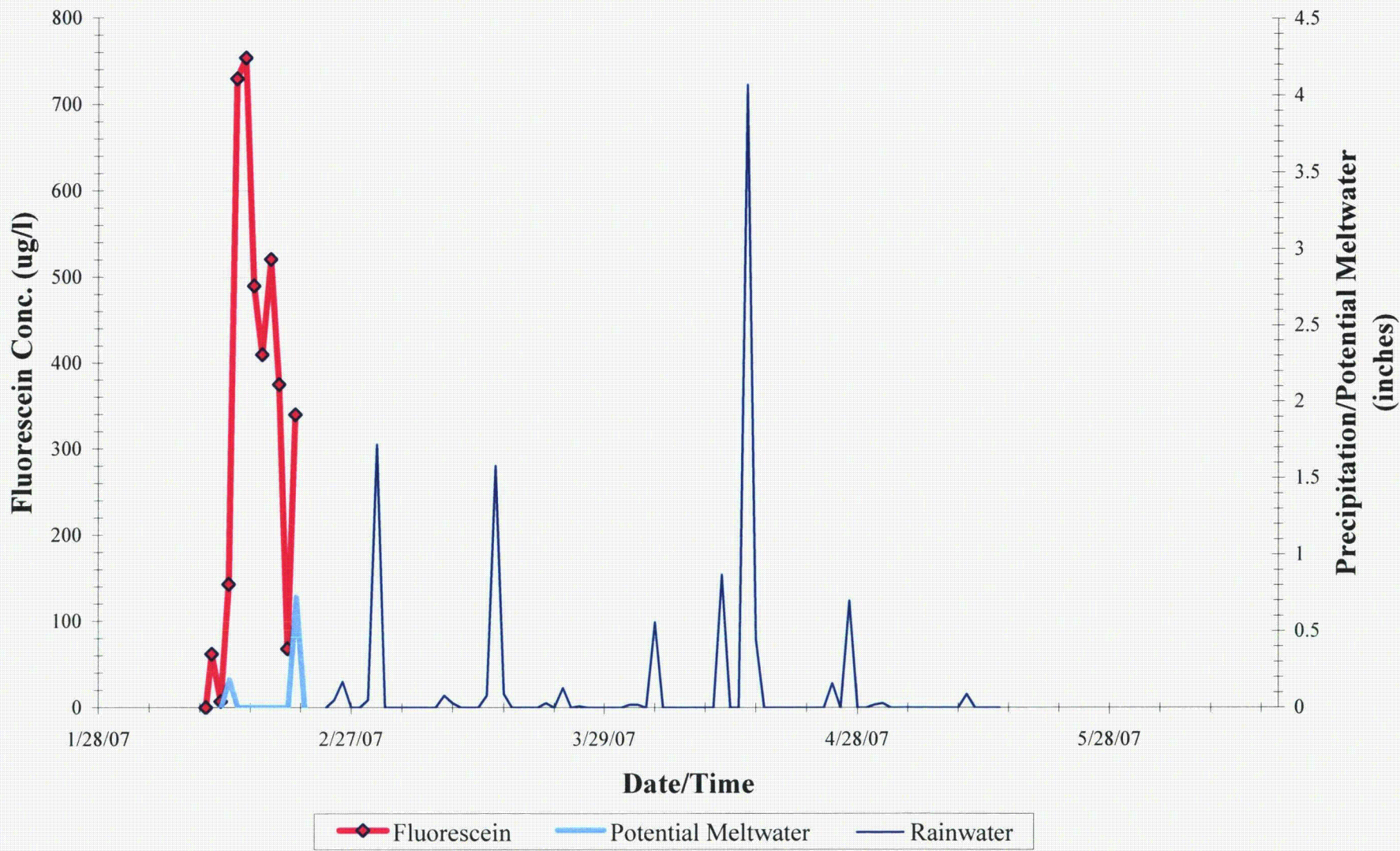


# RW-1-118





# RW-1-140



## Results

Charcoal Samplers

**Table 1. Results for charcoal samplers analyzed for the presence of fluorescein, eosine and rhodamine WT (RWT) dyes. Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).**

Results reported through 8/3/07

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q0766	10	CB5 (control point)	11/13/06 1437	11/20/06 0804	ND		ND		ND	
Q0996	10	CB5 (control point)	11/20/06 0804	11/28/06 1335	ND		ND		ND	
Q0767	20	CB24 (control point)	11/13/06 1450	11/20/06 0758	516.2 *	0.434	ND		571.8 *	2.95
Q0767D	20	CB24 (control point)	11/13/06 1450	11/20/06 0758	516.3 *	1.49	ND		570.6 *	2.71
Q0997	20	CB24 (control point)	11/20/06 0758	11/28/06 1330	512.6 *	0.347	ND		ND	
Q0997D	20	CB24 (control point)	11/20/06 0758	11/28/06 1330	ND		ND		ND	
Q0768	30	Hudson River downstream	11/14/06 1109	11/20/06 1101	516.4 *	0.508	ND		572.0 *	1.60
Q0998	30	Hudson River downstream	11/20/06 1101	11/27/06 1327	519.4 *	0.476	ND		ND	
Q1221	30	Hudson River downstream	11/27/06 1327	12/4/06 0846	ND		ND		ND	
Q1221D	30	Hudson River downstream	11/27/06 1327	12/4/06 0846	ND		ND		ND	
Q2070	30	Hudson River downstream	1/23/07 1155	2/2/07 1037	514.4 *	0.405	ND		ND	
Q2469	30	Hudson River downstream	2/2/07 1037	2/8/07 1530	515.3 *	0.419	ND		ND	
Q2398	30	Hudson River downstream	2/8/07 1530	2/9/07 1348	ND		ND		ND	
Q2551	30	Hudson River downstream	2/9/07 1348	2/10/07 1248	ND		ND		ND	
Q2514	30	Hudson River downstream	2/10/07 1248	2/11/07 1055	ND		ND		ND	
Q2635	30	Hudson River downstream	2/11/07 1055	2/12/07 1429	ND		ND		ND	
Q2850	30	Hudson River downstream	2/12/07 1429	2/13/07 1130	ND		ND		ND	
Q2908	30	Hudson River downstream	2/13/07 1130	2/14/07 1156	ND		ND		ND	
Q3229	30	Hudson River downstream	2/14/07 1156	2/16/07 1048	ND		ND		ND	
Q3295	30	Hudson River downstream	2/16/07 1048	2/19/07 1155	516.2 *	0.361	ND		ND	
Q3492	30	Hudson River downstream	2/19/07 1155	2/21/07 1435	ND		ND		ND	
Q3838	30	Hudson River downstream	2/21/07 1435	2/23/07 1317	ND		ND		ND	
Q3581	30	Hudson River downstream	2/23/07 1317	2/26/07 1405	ND		ND		ND	
Q3929	30	Hudson River downstream	2/26/07 1405	2/28/07 1455	ND		ND		ND	
Q3929D	30	Hudson River downstream	2/26/07 1405	2/28/07 1455	ND		ND		ND	
Q4154	30	Hudson River downstream	2/28/07 1455	3/2/07 1415	ND		ND		ND	
Q4172	30	Hudson River downstream	3/2/07 1415	3/5/07 1505	ND		ND		ND	
Q4172D	30	Hudson River downstream	3/2/07 1415	3/5/07 1505	515.6 *	0.382	ND		ND	
Q4543	30	Hudson River downstream	3/5/07 1505	3/7/07 1615	ND		ND		ND	
Q4730	30	Hudson River downstream	3/7/07 1615	3/9/07 1330	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4781	30	Hudson River downstream	3/9/07 1330	3/12/07 1355	ND		ND		ND	
Q5041	30	Hudson River downstream	3/12/07 1355	3/14/07 1432	ND		ND		ND	
Q5443	30	Hudson River downstream	3/14/07 1432	3/16/07 1025	ND		ND		ND	
Q5443D	30	Hudson River downstream	3/14/07 1432	3/16/07 1025	ND		ND		ND	
Q5326	30	Hudson River downstream	3/16/07 1025	3/19/07 1423	515.0 *	0.426	ND		ND	
Q5326D	30	Hudson River downstream	3/16/07 1025	3/19/07 1423	514.4 *	0.440	ND		ND	
Q5651	30	Hudson River downstream	3/19/07 1423	3/23/07 1415	ND		ND		ND	
Q5752	30	Hudson River downstream	3/23/07 1415	3/26/07 1419	514.4 *	0.613	ND		ND	
Q6139	30	Hudson River downstream	3/26/07 1419	3/29/07 1430	ND		ND		ND	
Q6139D	30	Hudson River downstream	3/26/07 1419	3/29/07 1430	ND		ND		ND	
Q6289	30	Hudson River downstream	3/29/07 1430	4/2/07 1405	ND		ND		ND	
Q6522	30	Hudson River downstream	4/2/07 1405	4/6/07 1400	ND		ND		ND	
Q6683	30	Hudson River downstream	4/6/07 1400	4/10/07 1408	ND		ND		ND	
Q6976	30	Hudson River downstream	4/10/07 1408	4/17/07 1532	ND		ND		ND	
Q7293	30	Hudson River downstream	4/17/07 1532	4/24/07 1453	ND		ND		ND	
Q7581	30	Hudson River downstream	4/24/07 1453	5/1/07 1310	ND		ND		ND	
Q8208	30	Hudson River downstream	5/3/07 1510	5/10/07 1120	ND		ND		ND	
<b>Q0999</b>	<b>40</b>	<b>Hudson River upstream</b>	<b>11/22/06 0905</b>	<b>11/28/06 1010</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q0999D	40	Hudson River upstream	11/22/06 0905	11/28/06 1010	ND		ND		ND	
Q2045	40	Hudson River upstream	1/23/07 1045	2/1/07 1025	515.4 *	0.361	ND		ND	
Q7393	40	Hudson River upstream	4/19/07 1340	4/26/07 1011	ND		ND		ND	
Q8064	40	Hudson River upstream	4/26/07 1011	5/8/07 1030	ND		ND		ND	
<b>Q0769</b>	<b>60</b>	<b>MH2</b>	<b>11/13/06 1357</b>	<b>11/20/06 0824</b>	<b>ND</b>		<b>ND</b>		<b>569.4 *</b>	<b>1.50</b>
Q1001	60	MH2	11/20/06 0824	11/28/06 0815	ND		ND		ND	
Q3926	60	MH2	2/26/07 1302	2/28/07 1135	ND		ND		ND	
Q4128	60	MH2	2/28/07 1135	3/2/07 1033	ND		ND		ND	
Q4128D	60	MH2	2/28/07 1135	3/2/07 1033	ND		ND		ND	
Q4232	60	MH2	3/2/07 1033	3/5/07 0926	ND		ND		ND	
Q4605	60	MH2	3/5/07 0926	3/7/07 1114	ND		ND		ND	
Q4719	60	MH2	3/7/07 1114	3/9/07 0742	ND		ND		ND	
Q4719D	60	MH2	3/7/07 1114	3/9/07 0742	ND		ND		ND	
Q4835	60	MH2	3/9/07 0742	3/12/07 0925	ND		ND		ND	
Q5007	60	MH2	3/12/07 0925	3/14/07 0900	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5409	60	MH2	3/14/07 0900	3/16/07 0811	ND		ND		ND	
Q5364	60	MH2	3/16/07 0811	3/19/07 1135	ND		ND		ND	
Q5689	60	MH2	3/19/07 1135	3/23/07 0903	ND		ND		ND	
Q5789	60	MH2	3/23/07 0903	3/26/07 1132	ND		ND		ND	
Q6105	60	MH2	3/26/07 1132	3/29/07 1419	ND		ND		ND	
Q6254	60	MH2	3/29/07 1419	4/2/07 1045	ND		ND		ND	
Q6558	60	MH2	4/2/07 1045	4/6/07 0809	ND		ND		ND	
Q6648	60	MH2	4/6/07 0809	4/9/07 0850	ND		ND		ND	
Q6943	60	MH2	4/9/07 0850	4/16/07 0902	ND		ND		ND	
Q7208	60	MH2	4/16/07 0902	4/23/07 0824	ND		ND		ND	
Q7461	60	MH2	4/23/07 0824	4/30/07 0745	ND		ND		ND	
Q8038	60	MH2	5/3/07 0843	5/8/07 1441	ND		ND		ND	
<b>Q0770</b>	<b>80</b>	<b>MH4</b>	<b>11/14/06 0838</b>	<b>11/20/06 0832</b>	<b>514.9</b>	<b>1.64</b>	<b>ND</b>		<b>ND</b>	
Q1002	80	MH4	11/20/06 0832	11/28/06 0810	515.1	2.17	ND		ND	
Q1002D	80	MH4	11/20/06 0832	11/28/06 0810	515.0	2.17	ND		ND	
Q3927	80	MH4	2/26/07 1243	2/28/07 1007	515.9	883	ND		ND	
Q4129	80	MH4	2/28/07 1007	3/2/07 0940	515.3	28.2	ND		ND	
Q4233	80	MH4	3/2/07 0940	3/5/07 0906	515.5	8.42	ND		ND	
Q4233D	80	MH4	3/2/07 0940	3/5/07 0906	515.7	241	ND		ND	
Q4606	80	MH4	3/5/07 0906	3/7/07 1051	515.4	3.80	ND		ND	
Q4606D	80	MH4	3/5/07 0906	3/7/07 1051	516.0	1.10	ND		ND	
Q4721	80	MH4	3/7/07 1051	3/9/07 0754	513.4 **	1.01	ND		ND	
Q4721D	80	MH4	3/7/07 1051	3/9/07 0754	515.9	2.06	ND		ND	
Q4836	80	MH4	3/9/07 0754	3/12/07 0845	515.4	11.2	ND		ND	
Q4836D	80	MH4	3/9/07 0754	3/12/07 0845	516.0	977	ND		ND	
Q5008	80	MH4	3/12/07 0845	3/14/07 0830	ND		ND		ND	
Q5008D	80	MH4	3/12/07 0845	3/14/07 0830	ND		ND		ND	
Q5410	80	MH4	3/14/07 0830	3/16/07 0820	515.7	15.8	ND		ND	
Q5365	80	MH4	3/16/07 0820	3/19/07 1102	516.2	1.03	ND		ND	
Q5690	80	MH4	3/19/07 1102	3/23/07 0819	515.3	41.4	ND		ND	
Q5790	80	MH4	3/23/07 0819	3/26/07 0844	516.4	2,730	ND		ND	
Q6106	80	MH4	3/26/07 0844	3/29/07 1141	514.7	3.23	ND		ND	
Q6255	80	MH4	3/29/07 1141	4/2/07 0855	516.1	3,160	ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6559	80	MH4	4/2/07 0855	4/6/07 0842	516.5	916	ND		ND	
Q6649	80	MH4	4/6/07 0842	4/9/07 0838	ND		ND		ND	
Q6649D	80	MH4	4/6/07 0842	4/9/07 0838	ND		ND		ND	
Q6944	80	MH4	4/9/07 0838	4/16/07 0913	516.5	2,580	ND		ND	
Q7209	80	MH4	4/16/07 0913	4/23/07 0839	515.3	33.0	ND		ND	
Q7209D	80	MH4	4/16/07 0913	4/23/07 0839	515.3	124	ND		ND	
Q7462	80	MH4	4/23/07 0839	4/30/07 0759	515.5	17.4	ND		ND	
Q8039	80	MH4	5/4/07 1009	5/8/07 1452	515.0 **	1.15	ND		ND	
<b>Q3928</b>	<b>90</b>	<b>MH4A</b>	<b>2/26/07 1255</b>	<b>2/28/07 1017</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q4130	90	MH4A	2/28/07 1017	3/2/07 0945	ND		ND		ND	
Q4130D	90	MH4A	2/28/07 1017	3/2/07 0945	ND		ND		ND	
Q4234	90	MH4A	3/2/07 0945	3/5/07 0902	ND		ND		ND	
Q4607	90	MH4A	3/5/07 0902	3/7/07 1040	ND		ND		ND	
Q4722	90	MH4A	3/7/07 1040	3/9/07 0816	ND		ND		ND	
Q4722D	90	MH4A	3/7/07 1040	3/9/07 0816	ND		ND		ND	
Q4837	90	MH4A	3/9/07 0816	3/12/07 0850	ND		ND		ND	
Q5009	90	MH4A	3/12/07 0850	3/14/07 0849	ND		ND		ND	
Q5411	90	MH4A	3/14/07 0849	3/16/07 0754	ND		ND		ND	
Q5366	90	MH4A	3/16/07 0754	3/20/07 0800	ND		ND		ND	
Q5691	90	MH4A	3/20/07 0800	3/23/07 0815	ND		ND		ND	
Q5791	90	MH4A	3/23/07 0815	3/26/07 0913	ND		ND		ND	
Q6107	90	MH4A	3/26/07 0913	3/29/07 1140	ND		ND		ND	
Q6256	90	MH4A	3/29/07 1114	4/2/07 0846	ND		ND		ND	
Q6561	90	MH4A	4/2/07 0846	4/6/07 0831	ND		ND		ND	
Q6650	90	MH4A	4/6/07 0831	4/9/07 0909	ND		ND		ND	
Q6945	90	MH4A	4/9/07 0909	4/17/07 1127	ND		ND		ND	
Q7210	90	MH4A	4/17/07 1127	4/23/07 0851	ND		ND		ND	
Q7463	90	MH4A	4/23/07 0851	4/30/07 0807	ND		ND		ND	
Q8041	90	MH4A	5/3/07 0853	5/8/07 1502	ND		ND		ND	
<b>Q0771</b>	<b>100</b>	<b>MH5</b>	<b>11/14/06 1415</b>	<b>11/20/06 1000</b>	<b>514.2</b>	<b>0.919</b>	<b>ND</b>		<b>ND</b>	
Q1003	100	MH5	11/20/06 1000	11/27/06 0858	514.9	1.56	ND		ND	
Q1222	100	MH5	11/28/06 0808	12/5/06 1030	516.0	0.970	ND		ND	
Q2046	100	MH5	1/15/07 1320	2/1/07 0910	515.8	1.50	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2046D	100	MH5	1/15/07 1320	2/1/07 0910	515.4	1.25	ND		ND	
Q2434	100	MH5	2/1/07 0910	2/8/07 1020	516.0	0.992	ND		ND	
Q2375	100	MH5	2/8/07 1020	2/9/07 1100	515.4 *	0.380	ND		ND	
Q2375D	100	MH5	2/8/07 1020	2/9/07 1100	514.5 *	0.378	ND		ND	
Q2492	100	MH5	2/9/07 1100	2/10/07 0853	516.2	1.18	ND		ND	
Q2492D	100	MH5	2/9/07 1100	2/10/07 0853	516.4 *	0.373	ND		ND	
Q2586	100	MH5	2/10/07 0853	2/11/07 0825	516.2	1.39	ND		ND	
Q2586D	100	MH5	2/10/07 0853	2/11/07 0825	ND		ND		ND	
Q2612	100	MH5	2/11/07 0825	2/12/07 0855	515.5	19.1	ND		ND	
Q2612D	100	MH5	2/11/07 0825	2/12/07 0855	515.5	23.5	ND		ND	
Q2827	100	MH5	2/12/07 0855	2/13/07 0845	516.3	378	ND		ND	
Q2827D	100	MH5	2/12/07 0855	2/13/07 0845	515.6	285	ND		ND	
Q2885	100	MH5	2/13/07 0845	2/14/07 0830	515.9	637	ND		ND	
Q2885D	100	MH5	2/13/07 0845	2/14/07 0830	516.1	944	ND		ND	
Q3207	100	MH5	2/14/07 0830	2/16/07 0855	515.9	1,960	ND		ND	
Q3207D	100	MH5	2/14/07 0830	2/16/07 0855	516.2	1,250	ND		ND	
Q3330	100	MH5	2/16/07 0855	2/19/07 0930	516.0	2,680	ND		ND	
Q3469	100	MH5	2/19/07 0930	2/21/07 0843	515.3	4.59	ND		ND	
Q3815	100	MH5	2/21/07 0743	2/23/07 0824	515.4	6.01	ND		ND	
Q3815D	100	MH5	2/21/07 0743	2/23/07 0824	514.7	16.1	ND		ND	
Q3557	100	MH5	2/23/07 0824	2/26/07 1000	515.4	11.7	ND		ND	
Q3903	100	MH5	2/26/07 1000	2/28/07 0957	515.2	9.03	ND		ND	
Q3903D	100	MH5	2/26/07 1000	2/28/07 0957	515.3	175	ND		ND	
Q4105	100	MH5	2/28/07 0957	3/2/07 1000	515.6	10.2	ND		ND	
Q4105D	100	MH5	2/28/07 0957	3/2/07 1000	515.3	2.65	ND		ND	
Q4209D	100	MH5	3/2/07 1000	3/5/07 0813	ND		ND		ND	
Q4209	100	MH5	3/2/07 1000	3/5/07 0913	ND		ND		ND	
Q4579	100	MH5	3/5/07 0913	3/7/07 1046	515.1	29.6	ND		ND	
Q4579D	100	MH5	3/5/07 0913	3/7/07 1046	515.3	17.6	ND		ND	
Q4697	100	MH5	3/7/07 1046	3/9/07 0820	515.3	188	ND		ND	
Q4697D	100	MH5	3/7/07 1046	3/9/07 0820	515.3	55.6	ND		ND	
Q4812	100	MH5	3/9/07 0820	3/12/07 0906	516.4	0.878	ND		ND	
Q4812D	100	MH5	3/9/07 0820	3/12/07 0906	515.5	90.5	ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5010	100	MH5	3/12/07 0906	3/14/07 0853	514.9	66.5	ND		ND	
Q5412	100	MH5	3/14/07 0853	3/16/07 0806	515.7	75.1	ND		ND	
Q5412D	100	MH5	3/14/07 0853	3/16/07 0806	515.5	40.6	ND		ND	
Q5367	100	MH5	3/16/07 0806	3/19/07 1057	515.0	74.5	ND		ND	
Q5692	100	MH5	3/19/07 1057	3/23/07 0826	515.3	34.4	ND		ND	
Q5692D	100	MH5	3/19/07 1057	3/23/07 0826	515.3	8.39	ND		ND	
Q5792	100	MH5	3/23/07 0826	3/26/07 0854	515.1	241	ND		ND	
Q6108	100	MH5	3/26/07 0854	3/29/07 1124	514.9	38.1	ND		ND	
Q6108D	100	MH5	3/26/07 0854	3/29/07 1124	515.2	125	ND		ND	
Q6257	100	MH5	3/29/07 1124	4/2/07 0851	515.1	128	ND		ND	
Q6257D	100	MH5	3/29/07 1124	4/2/07 0851	515.1	62.8	ND		ND	
Q6562	100	MH5	4/2/07 0851	4/6/07 0837	515.8	5.36	ND		ND	
Q6651	100	MH5	4/6/07 0837	4/9/07 0904	515.5	5.10	ND		ND	
Q6651D	100	MH5	4/6/07 0837	4/9/07 0904	515.3	16.6	ND		ND	
Q6946	100	MH5	4/9/07 0904	4/16/07 0922	515.4	40.8	ND		ND	
Q7211	100	MH5	4/16/07 0922	4/23/07 0844	516.5	619	ND		ND	
Q7211D	100	MH5	4/16/07 0922	4/23/07 0844	515.2	195	ND		ND	
Q7464	100	MH5	4/23/07 0844	4/30/07 0803	515.2	51.7	ND		ND	
Q8042	100	MH5	5/3/07 0849	5/8/07 1456	516.8 *	1.12	ND		ND	
Q8042D	100	MH5	5/3/07 0849	5/8/07 1456	514.8 *	0.947	ND		ND	
<b>Q0772</b>	<b>120</b>	<b>MH6</b>	<b>11/13/06 1412</b>	<b>11/20/06 0837</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1004	120	MH6	11/20/06 0837	11/28/06 0808	ND		ND		ND	
Q1004D	120	MH6	11/20/06 0837	11/28/06 0808	ND		ND		ND	
Q2071	120	MH6	1/15/07 1314	2/1/07 0940	ND		ND		ND	
Q2470	120	MH6	2/1/07 0940	2/8/07 0826	ND		ND		ND	
Q2470D	120	MH6	2/1/07 0940	2/8/07 0826	ND		ND		ND	
Q2399	120	MH6	2/8/07 0826	2/9/07 0830	ND		ND		ND	
Q2552	120	MH6	2/9/07 0830	2/10/07 0854	ND		ND		ND	
Q2552D	120	MH6	2/9/07 0830	2/10/07 0854	ND		ND		ND	
Q2515	120	MH6	2/10/07 0854	2/11/07 0850	ND		ND		ND	
Q2636	120	MH6	2/11/07 0850	2/12/07 0821	ND		ND		ND	
Q2636D	120	MH6	2/11/07 0850	2/12/07 0821	ND		ND		ND	
Q2851	120	MH6	2/12/07 0824	2/13/07 0753	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2851D	120	MH6	2/12/07 0824	2/13/07 0753	ND		ND		ND	
Q2909	120	MH6	2/13/07 0753	2/14/07 0817	ND		ND		ND	
Q3230	120	MH6	2/14/07 0817	2/16/07 0755	ND		ND		ND	
Q3230D	120	MH6	2/14/07 0817	2/16/07 0755	ND		ND		ND	
Q3296	120	MH6	2/16/07 0755	2/19/07 0905	ND		ND		ND	
Q3296D	120	MH6	2/16/07 0755	2/19/07 0905	ND		ND		ND	
Q3493	120	MH6	2/19/07 0905	2/21/07 0855	ND		ND		ND	
Q3839	120	MH6	2/21/07 0855	2/23/07 0755	515.3	25.0	ND		ND	
Q3582	120	MH6	2/23/07 0755	2/26/07 0904	516.5	531	ND		ND	
Q3582D	120	MH6	2/23/07 0755	2/26/07 0904	516.3	399	ND		ND	
Q3930	120	MH6	2/26/07 0804	2/28/07 0921	515.5	165	ND		ND	
Q4155	120	MH6	2/28/07 0921	3/2/07 0839	516.1	374	ND		ND	
Q4155D	120	MH6	2/28/07 0921	3/2/07 0839	516.1	347	ND		ND	
Q4173	120	MH6	3/2/07 0839	3/5/07 0905	515.4	13.0	ND		ND	
Q4544	120	MH6	3/5/07 0905	3/7/07 0918	515.1	31.5	ND		ND	
Q4544D	120	MH6	3/5/07 0905	3/7/07 0918	515.1	5.92	ND		ND	
Q4731	120	MH6	3/7/07 0818	3/9/07 0820	515.3	42.7	ND		ND	
Q4782	120	MH6	3/9/07 0820	3/12/07 0820	515.5	47.6	ND		ND	
Q4782D	120	MH6	3/9/07 0820	3/12/07 0820	515.6	73.2	ND		ND	
Q5042	120	MH6	3/12/07 0820	3/14/07 0850	515.5	98.6	ND		ND	
Q5444	120	MH6	3/14/07 0850	3/16/07 0754	515.6	67.2	ND		ND	
Q5327	120	MH6	3/16/07 0754	3/19/07 0830	515.3	75.0	ND		ND	
Q5652	120	MH6	3/19/07 0830	3/23/07 0753	515.3	47.8	ND		ND	
Q5652D	120	MH6	3/19/07 0830	3/23/07 0753	515.1	42.4	ND		ND	
Q5753	120	MH6	3/23/07 0753	3/26/07 0925	515.1	17.4	ND		ND	
Q5753D	120	MH6	3/23/07 0753	3/26/07 0925	515.1	18.7	ND		ND	
Q6141	120	MH6	3/26/07 0925	3/29/07 0830	514.9	27.9	ND		ND	
Q6290	120	MH6	3/29/07 0830	4/2/07 0812	515.1	71.3	ND		ND	
Q6290D	120	MH6	3/29/07 0830	4/2/07 0812	515.1	75.2	ND		ND	
Q6523	120	MH6	4/2/07 0812	4/6/07 0833	515.1	230	ND		ND	
Q6523D	120	MH6	4/2/07 0812	4/6/07 0833	515.2	261	ND		ND	
Q6684	120	MH6	4/6/07 0833	4/10/07 0900	515.1	87.9	ND		ND	
Q6684D	120	MH6	4/6/07 0833	4/10/07 0900	514.9	101	ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6977	120	MH6	4/10/07 0900	4/17/07 1123	515.1	95.3	ND		ND	
Q6977D	120	MH6	4/10/07 0900	4/17/07 1123	515.2	21.7	ND		ND	
Q7294	120	MH6	4/17/07 1123	4/24/07 0801	515.3	122	ND		ND	
Q7294D	120	MH6	4/17/07 1123	4/24/07 0801	515.2	56.7	ND		ND	
Q7582	120	MH6	4/24/07 0801	5/1/07 0757	515.1	260	ND		ND	
Q8066	120	MH6	5/3/07 0851	5/9/07 1506	515.1	424	ND		ND	
<b>Q0773</b>	<b>320</b>	<b>MW-33</b>	<b>11/14/06 0923</b>	<b>11/20/06 1030</b>	<b>514.9</b>	<b>2.73</b>	<b>ND</b>		<b>ND</b>	
Q1005	320	MW-33	11/20/06 1030	11/27/06 0827	515.8	1.95	ND		ND	
Q1223	320	MW-33	11/27/06 0827	12/4/06 1104	515.5	2.27	ND		ND	
Q2072	320	MW-33	1/15/07 1325	2/1/07 0950	515.2	2.53	ND		ND	
Q2401	320	MW-33	2/8/07 0842	2/9/07 0837	ND		ND		ND	
Q2553	320	MW-33	2/9/07 0837	2/10/07 0859	ND		ND		ND	
Q2516	320	MW-33	2/10/07 0859	2/11/07 0855	ND		ND		ND	
Q2637	320	MW-33	2/11/07 0855	2/12/07 0826	ND		ND		ND	
Q2852	320	MW-33	2/12/07 0826	2/13/07 0759	ND		ND		ND	
Q2910	320	MW-33	2/13/07 0759	2/14/07 0824	ND		ND		ND	
Q3231	320	MW-33	2/14/07 0824	2/16/07 0800	515.8 *	0.491	ND		ND	
Q3297	320	MW-33	2/16/07 0800	2/19/07 0910	515.6	0.687	ND		ND	
Q3494	320	MW-33	2/19/07 0910	2/21/07 0904	516.0 *	0.615	ND		ND	
Q3841	320	MW-33	2/21/07 0904	2/23/07 0813	515.6	7.07	ND		ND	
Q3583	320	MW-33	2/23/07 0813	2/26/07 0915	515.4	66.3	ND		ND	
Q3931	320	MW-33	2/26/07 0815	2/28/07 0926	515.5	31.4	ND		ND	
Q4156	320	MW-33	2/28/07 0926	3/2/07 0853	515.3	113	ND		ND	
Q4174	320	MW-33	3/2/07 0853	3/5/07 0857	515.3	209	ND		ND	
Q4545	320	MW-33	3/5/07 0857	3/7/07 0935	515.2	146	ND		ND	
Q4732	320	MW-33	3/7/07 0935	3/9/07 0811	515.4	87.3	ND		ND	
Q4783	320	MW-33	3/9/07 0811	3/12/07 0827	515.7	154	ND		ND	
Q5043	320	MW-33	3/12/07 0827	3/14/07 0848	515.3	92.3	ND		ND	
Q5445	320	MW-33	3/14/07 0848	3/16/07 0750	515.5	56.9	ND		ND	
Q5328	320	MW-33	3/16/07 0750	3/20/07 0750	515.5	96.1	ND		ND	
Q5653	320	MW-33	3/20/07 0759	3/23/07 0800	515.3	78.8	ND		ND	
Q5754	320	MW-33	3/23/07 0800	3/26/07 0916	515.2	130	ND		ND	
Q6142	320	MW-33	3/26/07 0916	3/29/07 0837	514.9	82.4	ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6291	320	MW-33	3/29/07 0837	4/2/07 0824	515.1	74.4	ND		ND	
Q6524	320	MW-33	4/2/07 0824	4/6/07 0828	515.3	87.6	ND		ND	
Q6685	320	MW-33	4/6/07 0828	4/10/07 0907	515.1	105	ND		ND	
Q6978	320	MW-33	4/10/07 0907	4/17/07 1139	515.1	72.0	ND		ND	
Q7295	320	MW-33	4/17/07 1139	4/24/07 0809	515.3	47.0	ND		ND	
Q7583	320	MW-33	4/24/07 0809	5/1/07 0801	515.1	40.7	ND		ND	
Q8067	320	MW-33	5/3/07 0901	5/9/07 1443	514.9	30.0	ND		ND	
R0055	320	MW-33	5/9/07 1443	6/13/07 1235	514.9	63.6	ND		ND	
R1950	320	MW-33	6/13/07 1235	8/3/07 0900	515.6	26.9	ND		ND	
<b>Q0774</b>	<b>330</b>	<b>MW-34</b>	<b>11/14/06 0934</b>	<b>11/20/06 1035</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1006	330	MW-34	11/20/06 1035	11/27/06 0836	ND		ND		ND	
Q1224	330	MW-34	11/27/06 0836	12/4/06 1115	ND		ND		ND	
Q2073	330	MW-34	1/15/07 1330	2/1/07 0953	ND		ND		ND	
Q2471	330	MW-34	2/1/07 0953	2/8/07 0848	ND		ND		ND	
Q2402	330	MW-34	2/8/07 0848	2/9/07 0844	ND		ND		ND	
Q2554	330	MW-34	2/9/07 0844	2/10/07 0905	ND		ND		ND	
Q2517	330	MW-34	2/10/07 0905	2/11/07 0902	ND		ND		ND	
Q2638	330	MW-34	2/11/07 0902	2/12/07 0832	ND		ND		ND	
Q2853	330	MW-34	2/12/07 0832	2/13/07 0804	ND		ND		ND	
Q2911	330	MW-34	2/13/07 0804	2/14/07 0828	ND		ND		ND	
Q3232	330	MW-34	2/14/07 0828	2/16/07 0805	ND		ND		ND	
Q3298	330	MW-34	2/16/07 0805	2/19/07 0915	ND		ND		ND	
Q3495	330	MW-34	2/19/07 0915	2/21/07 0915	ND		ND		ND	
Q3842	330	MW-34	2/21/07 0915	2/23/07 0808	ND		ND		ND	
Q3584	330	MW-34	2/23/07 0808	2/26/07 0921	ND		ND		ND	
Q3932	330	MW-34	2/26/07 0821	2/28/07 0925	ND		ND		ND	
Q4157	330	MW-34	2/28/07 0925	3/2/07 0921	ND		ND		ND	
Q4175	330	MW-34	3/2/07 0921	3/5/07 0845	ND		ND		ND	
Q4546	330	MW-34	3/5/07 0845	3/7/07 1025	ND		ND		ND	
Q4733	330	MW-34	3/7/07 1025	3/9/07 0759	ND		ND		ND	
Q4784	330	MW-34	3/9/07 0759	3/12/07 0915	ND		ND		ND	
Q5044	330	MW-34	3/12/07 0915	3/14/07 0837	ND		ND		ND	
Q5446	330	MW-34	3/14/07 0837	3/16/07 0740	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5329	330	MW-34	3/16/07 0740	3/20/07 0753	ND		ND		ND	
Q5654	330	MW-34	3/20/07 0753	3/23/07 0805	ND		ND		ND	
Q5755	330	MW-34	3/23/07 0805	3/26/07 0905	ND		ND		ND	
Q6143	330	MW-34	3/26/07 0905	3/29/07 1120	ND		ND		ND	
Q6292	330	MW-34	3/29/07 1120	4/2/07 0834	ND		ND		ND	
Q6525	330	MW-34	4/2/07 0834	4/6/07 0819	516.5 *	1.52	ND		ND	
Q6686	330	MW-34	4/6/07 0819	4/10/07 0912	ND		ND		ND	
Q6979	330	MW-34	4/10/07 0912	4/16/07 1145	ND		ND		ND	
Q7296	330	MW-34	4/16/07 1145	4/24/07 0817	ND		ND		ND	
Q7584	330	MW-34	4/24/07 0817	5/1/07 0805	512.6 *	0.980	ND		ND	
Q8068	330	MW-34	5/3/07 0904	5/9/07 1446	ND		ND		ND	
<b>Q0775</b>	<b>340</b>	<b>MW-35</b>	<b>11/14/06 0942</b>	<b>11/20/06 1040</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1007	340	MW-35	11/20/06 1040	11/27/06 0845	ND		ND		ND	
Q1225	340	MW-35	11/27/06 0845	12/4/06 1120	ND		ND		ND	
Q2047	340	MW-35	1/15/07 1335	2/1/07 1359	ND		ND		ND	
Q2435	340	MW-35	2/1/07 1359	2/8/07 1000	ND		ND		ND	
Q2376	340	MW-35	2/8/07 1000	2/9/07 1048	ND		ND		ND	
Q2493	340	MW-35	2/9/07 1048	2/10/07 0840	ND		ND		ND	
Q2587	340	MW-35	2/10/07 0840	2/11/07 0810	ND		ND		ND	
Q2613	340	MW-35	2/11/07 0810	2/12/07 0913	ND		ND		ND	
Q2828	340	MW-35	2/12/07 0916	2/13/07 1055	ND		ND		ND	
Q2886	340	MW-35	2/13/07 1055	2/14/07 0815	ND		ND		ND	
Q3208	340	MW-35	2/14/07 0815	2/16/07 0820	ND		ND		ND	
Q3331	340	MW-35	2/16/07 0820	2/19/07 0920	ND		ND		ND	
Q3470	340	MW-35	2/19/07 0920	2/21/07 0835	ND		ND		ND	
Q3816	340	MW-35	2/21/07 0835	2/23/07 0804	ND		ND		ND	
Q3558	340	MW-35	2/23/07 0804	2/26/07 0953	ND		ND		ND	
Q3904	340	MW-35	2/26/07 0953	2/28/07 0930	516.8 *	0.520	ND		ND	
Q4106	340	MW-35	2/28/07 0930	3/2/07 0925	ND		ND		ND	
Q4210	340	MW-35	3/2/07 0925	3/5/07 0848	515.2 *	0.495	ND		ND	
Q4581	340	MW-35	3/5/07 0848	3/7/07 1028	516.2 *	0.601	ND		ND	
Q4698	340	MW-35	3/7/07 1028	3/9/07 0803	ND		ND		ND	
Q4813	340	MW-35	3/9/07 0803	3/12/07 0916	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5011	340	MW-35	3/12/07 0916	3/14/07 0840	ND		ND		ND	
Q5413	340	MW-35	3/14/07 0840	3/16/07 0743	ND		ND		ND	
Q5368	340	MW-35	3/16/07 0743	3/20/07 0756	517.2 *	0.863	ND		ND	
Q5693	340	MW-35	3/20/07 0756	3/23/07 0807	515.0 *	0.837	ND		ND	
Q5793	340	MW-35	3/23/07 0807	3/26/07 0859	ND		ND		ND	
Q6109	340	MW-35	3/26/07 0859	3/29/07 1136	516.2 *	1.86	ND		ND	
Q6258	340	MW-35	3/29/07 1136	4/2/07 0834	ND		ND		ND	
Q6563	340	MW-35	4/2/07 0834	4/6/07 0819	ND		ND		ND	
Q6652	340	MW-35	4/6/07 0819	4/9/07 0923	ND		ND		ND	
Q7212	340	MW-35	4/17/07 1153	4/23/07 0908	516.4 *	1.34	ND		ND	
Q7465	340	MW-35	4/23/07 0908	4/30/07 0815	515.4 *	1.62	ND		ND	
Q8043	340	MW-35	5/3/07 0904	5/9/07 1451	515.0 *	0.988	ND		ND	
<b>Q0776</b>	<b>350</b>	<b>MW-36-26</b>	<b>11/14/06 1344</b>	<b>11/20/06 1130</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1008	350	MW-36-26	11/20/06 1130	11/27/06 1110	ND		ND		ND	
Q1226	350	MW-36-26	11/27/06 1110	12/5/06 1135	ND		ND		ND	
Q2048	350	MW-36-26	1/15/07 1303	2/1/07 1059	ND		ND		ND	
Q2436	350	MW-36-26	2/1/07 1059	2/8/07 1045	ND		ND		ND	
Q2377	350	MW-36-26	2/8/07 1045	2/9/07 1114	ND		ND		ND	
Q2494	350	MW-36-26	2/9/07 1114	2/10/07 0908	ND		ND		ND	
Q2588	350	MW-36-26	2/10/07 0908	2/11/07 0835	ND		ND		ND	
Q2614	350	MW-36-26	2/11/07 0835	2/12/07 0935	ND		ND		ND	
Q2829	350	MW-36-26	2/12/07 0935	2/13/07 1435	ND		ND		ND	
Q2887	350	MW-36-26	2/13/07 1435	2/14/07 1050	ND		ND		ND	
Q3209	350	MW-36-26	2/14/07 1050	2/16/07 0905	ND		ND		ND	
Q3332	350	MW-36-26	2/16/07 0905	2/19/07 0945	ND		ND		ND	
Q3471	350	MW-36-26	2/19/07 0945	2/21/07 0852	ND		ND		ND	
Q3817	350	MW-36-26	2/21/07 0852	2/23/07 0833	ND		ND		ND	
Q3559	350	MW-36-26	2/23/07 0833	2/26/07 1008	ND		ND		ND	
Q3905	350	MW-36-26	2/26/07 1008	2/28/07 1027	ND		ND		ND	
Q4107	350	MW-36-26	2/28/07 1027	3/2/07 0900	ND		ND		ND	
Q4211	350	MW-36-26	3/2/07 0900	3/5/07 1103	ND		ND		ND	
Q4582	350	MW-36-26	3/5/07 1103	3/7/07 1345	ND		ND		ND	
Q4699	350	MW-36-26	3/7/07 1345	3/9/07 0940	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4814	350	MW-36-26	3/9/07 0940	3/12/07 1140	ND		ND		ND	
Q5012	350	MW-36-26	3/12/07 1140	3/14/07 1024	ND		ND		ND	
Q5414	350	MW-36-26	3/14/07 1024	3/16/07 1159	ND		ND		ND	
Q5369	350	MW-36-26	3/16/07 1159	3/19/07 1110	ND		ND		ND	
Q5694	350	MW-36-26	3/19/07 1110	3/23/07 1036	ND		ND		ND	
Q5794	350	MW-36-26	3/23/07 1036	3/26/07 0921	ND		ND		ND	
Q6110	350	MW-36-26	3/26/07 0921	3/29/07 1454	ND		ND		ND	
Q6259	350	MW-36-26	3/29/07 1454	4/2/07 0905	ND		ND		ND	
Q6564	350	MW-36-26	4/2/07 0905	4/6/07 1059	ND		ND		ND	
Q6653	350	MW-36-26	4/6/07 1059	4/9/07 1026	ND		ND		ND	
Q6947	350	MW-36-26	4/9/07 1026	4/16/07 0942	ND		ND		ND	
Q7213	350	MW-36-26	4/16/07 0942	4/23/07 1040	516.9 *	1.18	ND		ND	
Q7466	350	MW-36-26	4/23/07 1040	4/30/07 0824	ND		ND		ND	
Q8044	350	MW-36-26	5/3/07 0908	5/9/07 1343	ND		ND		ND	
<b>Q0777</b>	<b>360</b>	<b>MW-36-41</b>	<b>11/14/06 1358</b>	<b>11/20/06 1140</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1009	360	MW-36-41	11/20/06 1140	11/27/06 1106	ND		ND		ND	
Q1227	360	MW-36-41	11/27/06 1106	12/5/06 1121	ND		ND		ND	
Q2049	360	MW-36-41	1/15/07 1254	2/1/07 1106	ND		ND		ND	
Q2437	360	MW-36-41	2/1/07 1106	2/8/07 1050	ND		ND		ND	
Q2378	360	MW-36-41	2/8/07 1050	2/9/07 1117	ND		ND		ND	
Q2495	360	MW-36-41	2/9/07 1117	2/10/07 0913	ND		ND		ND	
Q2589	360	MW-36-41	2/10/07 0913	2/11/07 0839	ND		ND		ND	
Q2615	360	MW-36-41	2/11/07 0839	2/12/07 0940	ND		ND		ND	
Q2830	360	MW-36-41	2/12/07 0940	2/13/07 1440	ND		ND		ND	
Q2888	360	MW-36-41	2/13/07 1440	2/14/07 1055	ND		ND		ND	
Q3210	360	MW-36-41	2/14/07 1055	2/16/07 0910	ND		ND		ND	
Q3333	360	MW-36-41	2/16/07 0910	2/19/07 0948	ND		ND		ND	
Q3472	360	MW-36-41	2/19/07 0948	2/21/07 0856	ND		ND		ND	
Q3818	360	MW-36-41	2/21/07 0856	2/23/07 0830	ND		ND		ND	
Q3561	360	MW-36-41	2/23/07 0838	2/26/07 1012	ND		ND		ND	
Q3906	360	MW-36-41	2/26/07 1012	2/28/07 1031	ND		ND		ND	
Q4108	360	MW-36-41	2/28/07 1031	3/2/07 0903	ND		ND		ND	
Q4212	360	MW-36-41	3/2/07 0903	3/5/07 1107	515.8 *	0.323	ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4583	360	MW-36-41	3/5/07 1107	3/7/07 1349	ND		ND		ND	
Q4701	360	MW-36-41	3/7/07 1349	3/9/07 0944	ND		ND		ND	
Q4815	360	MW-36-41	3/9/07 0944	3/12/07 1144	ND		ND		ND	
Q5013	360	MW-36-41	3/12/07 1144	3/14/07 1027	ND		ND		ND	
Q5415	360	MW-36-41	3/14/07 1027	3/16/07 1203	ND		ND		ND	
Q5370	360	MW-36-41	3/16/07 1203	3/19/07 1114	ND		ND		ND	
Q5695	360	MW-36-41	3/19/07 1114	3/23/07 1040	ND		ND		ND	
Q5795	360	MW-36-41	3/23/07 1040	3/26/07 0925	ND		ND		ND	
Q6111	360	MW-36-41	3/26/07 0925	3/29/07 1457	ND		ND		ND	
Q6261	360	MW-36-41	3/29/07 1457	4/2/07 0909	ND		ND		ND	
Q6565	360	MW-36-41	4/2/07 0909	4/6/07 1103	ND		ND		ND	
Q6654	360	MW-36-41	4/6/07 1103	4/9/07 1030	ND		ND		ND	
Q6948	360	MW-36-41	4/9/07 1030	4/16/07 0946	516.4 *	0.732	ND		ND	
Q7214	360	MW-36-41	4/16/07 0946	4/23/07 1044	515.3	5.17	ND		ND	
Q7467	360	MW-36-41	4/23/07 1044	4/30/07 0827	516.2	1.37	ND		ND	
Q8045	360	MW-36-41	5/3/07 0909	5/9/07 1336	ND		ND		ND	
<b>Q0778</b>	<b>370</b>	<b>MW-36-53</b>	<b>11/14/06 1406</b>	<b>11/20/06 1150</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1010	370	MW-36-53	11/20/06 1150	11/27/06 1058	ND		ND		ND	
Q1228	370	MW-36-53	11/27/06 1058	12/5/06 1125	ND		ND		ND	
Q2050	370	MW-36-53	1/15/07 1258	2/1/07 1102	ND		ND		ND	
Q2438	370	MW-36-53	2/1/07 1102	2/8/07 1055	ND		ND		ND	
Q2379	370	MW-36-53	2/8/07 1055	2/9/07 1121	ND		ND		ND	
Q2496	370	MW-36-53	2/9/07 1121	2/10/07 0918	ND		ND		ND	
Q2590	370	MW-36-53	2/10/07 0918	2/11/07 0843	ND		ND		ND	
Q2616	370	MW-36-53	2/11/07 0843	2/12/07 0945	ND		ND		ND	
Q2831	370	MW-36-53	2/12/07 0945	2/13/07 1445	ND		ND		ND	
Q2889	370	MW-36-53	2/13/07 1445	2/14/07 1100	ND		ND		ND	
Q3211	370	MW-36-53	2/14/07 1100	2/16/07 0915	ND		ND		ND	
Q3334	370	MW-36-53	2/16/07 0915	2/19/07 0953	ND		ND		ND	
Q3473	370	MW-36-53	2/19/07 0953	2/21/07 0900	ND		ND		ND	
Q3819	370	MW-36-53	2/21/07 0900	2/23/07 0843	ND		ND		ND	
Q3562	370	MW-36-53	2/23/07 0843	2/26/07 1017	ND		ND		ND	
Q3907	370	MW-36-53	2/26/07 1017	2/28/07 1036	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4109	370	MW-36-53	2/28/07 1036	3/2/07 0907	ND		ND		ND	
Q4213	370	MW-36-53	3/2/07 0907	3/5/07 1112	ND		ND		ND	
Q4584	370	MW-36-53	3/5/07 1112	3/7/07 1354	ND		ND		ND	
Q4702	370	MW-36-53	3/7/07 1354	3/9/07 0948	ND		ND		ND	
Q4816	370	MW-36-53	3/9/07 0948	3/12/07 1148	ND		ND		ND	
Q5014	370	MW-36-53	3/12/07 1148	3/14/07 1031	ND		ND		ND	
Q5416	370	MW-36-53	3/14/07 1031	3/16/07 1208	ND		ND		ND	
Q5371	370	MW-36-53	3/16/07 1208	3/19/07 1119	ND		ND		ND	
Q5696	370	MW-36-53	3/19/07 1119	3/23/07 1045	ND		ND		ND	
Q5796	370	MW-36-53	3/23/07 1045	3/26/07 0930	ND		ND		ND	
Q6112	370	MW-36-53	3/26/07 0930	3/29/07 1459	ND		ND		ND	
Q6262	370	MW-36-53	3/29/07 1459	4/2/07 0914	ND		ND		ND	
Q6566	370	MW-36-53	4/2/07 0914	4/6/07 1108	ND		ND		ND	
Q6655	370	MW-36-53	4/6/07 1108	4/9/07 1035	ND		ND		ND	
Q6949	370	MW-36-53	4/9/07 1035	4/16/07 0951	ND		ND		ND	
Q7215	370	MW-36-53	4/16/07 0951	4/23/07 1049	ND		ND		ND	
Q7468	370	MW-36-53	4/23/07 1049	4/30/07 0830	ND		ND		ND	
Q8046	370	MW-36-53	5/3/07 0910	5/9/07 1340	ND		ND		ND	
<b>Q0779</b>	<b>380</b>	<b>MW-37-22</b>	<b>11/14/06 1424</b>	<b>11/20/06 1026</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1011	380	MW-37-22	11/20/06 1026	11/27/06 1049	ND		ND		ND	
Q1229	380	MW-37-22	11/27/06 1049	12/4/06 1337	ND		ND		ND	
Q2074	380	MW-37-22	1/15/07 1242	2/1/07 1016	ND		ND		ND	
Q2472	380	MW-37-22	2/1/07 1016	2/8/07 1000	ND		ND		ND	
Q2403	380	MW-37-22	2/8/07 1000	2/9/07 0854	ND		ND		ND	
Q2555	380	MW-37-22	2/9/07 0854	2/10/07 0915	ND		ND		ND	
Q2518	380	MW-37-22	2/10/07 0915	2/11/07 0912	ND		ND		ND	
Q2639	380	MW-37-22	2/11/07 0912	2/12/07 0840	ND		ND		ND	
Q2854	380	MW-37-22	2/12/07 0840	2/13/07 0811	ND		ND		ND	
Q2912	380	MW-37-22	2/13/07 0811	2/14/07 0837	ND		ND		ND	
Q3233	380	MW-37-22	2/14/07 0837	2/16/07 0818	ND		ND		ND	
Q3299	380	MW-37-22	2/16/07 0818	2/19/07 0925	ND		ND		ND	
Q3496	380	MW-37-22	2/19/07 0925	2/21/07 0857	ND		ND		ND	
Q3843	380	MW-37-22	2/21/07 0957	2/23/07 0825	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3585	380	MW-37-22	2/23/07 0825	2/26/07 0935	517.0 *	0.716	ND		ND	
Q3933	380	MW-37-22	2/26/07 0835	2/28/07 0948	515.8	2.91	ND		ND	
Q4158	380	MW-37-22	2/28/07 0948	3/2/07 0804	515.2	10.0	ND		ND	
Q4176	380	MW-37-22	3/2/07 0804	3/5/07 0912	515.1	28.9	ND		ND	
Q4547	380	MW-37-22	3/5/07 0912	3/7/07 1040	515.0	90.0	ND		ND	
Q4734	380	MW-37-22	3/7/07 1040	3/9/07 0830	515.3	99.8	ND		ND	
Q4785	380	MW-37-22	3/9/07 0830	3/12/07 0837	515.7	168	ND		ND	
Q5045	380	MW-37-22	3/12/07 0837	3/14/07 0916	515.3	209	ND		ND	
Q5447	380	MW-37-22	3/14/07 0916	3/16/07 0805	515.6	256	ND		ND	
Q5330	380	MW-37-22	3/16/07 0805	3/19/07 0842	515.4	287	ND		ND	
Q5655	380	MW-37-22	3/19/07 0842	3/23/07 0814	515.5	429	ND		ND	
Q5756	380	MW-37-22	3/23/07 0814	3/26/07 0930	516.5	550	ND		ND	
Q6144	380	MW-37-22	3/26/07 0930	3/29/07 0848	516.7	539	ND		ND	
Q6293	380	MW-37-22	3/29/07 0848	4/2/07 0844	516.3	506	ND		ND	
Q6526	380	MW-37-22	4/2/07 0844	4/6/07 0841	515.2	455	ND		ND	
Q6687	380	MW-37-22	4/6/07 0841	4/10/07 0840	515.1	394	ND		ND	
Q6981	380	MW-37-22	4/10/07 0840	4/16/07 1005	516.3	616	ND		ND	
Q7297	380	MW-37-22	4/16/07 1005	4/24/07 1041	516.2	433	ND		ND	
Q7585	380	MW-37-22	4/24/07 1041	5/1/07 0903	515.1	232	ND		ND	
Q8069	380	MW-37-22	5/3/07 0917	5/9/07 1512	514.9	165	ND		ND	
<b>Q0781</b>	<b>390</b>	<b>MW-37-32</b>	<b>11/14/06 1434</b>	<b>11/20/06 1018</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1012	390	MW-37-32	11/20/06 1018	11/27/06 1018	ND		ND		ND	
Q1230	390	MW-37-32	11/27/06 1018	12/4/06 1328	ND		ND		ND	
Q2075	390	MW-37-32	1/15/07 1213	2/1/07 1009	ND		ND		ND	
Q2473	390	MW-37-32	2/1/07 1009	2/8/07 1004	ND		ND		ND	
Q2404	390	MW-37-32	2/8/07 1004	2/9/07 0856	ND		ND		ND	
Q2556	390	MW-37-32	2/9/07 0856	2/10/07 0917	ND		ND		ND	
Q2519	390	MW-37-32	2/10/07 0917	2/11/07 0913	ND		ND		ND	
Q2641	390	MW-37-32	2/11/07 0913	2/12/07 0842	ND		ND		ND	
Q2855	390	MW-37-32	2/12/07 0842	2/13/07 0814	ND		ND		ND	
Q2913	390	MW-37-32	2/13/07 0814	2/14/07 0839	ND		ND		ND	
Q3234	390	MW-37-32	2/14/07 0839	2/16/07 0820	ND		ND		ND	
Q3301	390	MW-37-32	2/16/07 0820	2/19/07 0930	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3497	390	MW-37-32	2/19/07 0930	2/21/07 0959	ND		ND		ND	
Q3844	390	MW-37-32	2/21/07 0959	2/23/07 0829	ND		ND		ND	
Q3586	390	MW-37-32	2/23/07 0829	2/26/07 0935	ND		ND		ND	
Q3934	390	MW-37-32	2/26/07 0835	2/28/07 0952	ND		ND		ND	
Q4159	390	MW-37-32	2/28/07 0952	3/2/07 0808	ND		ND		ND	
Q4177	390	MW-37-32	3/2/07 0808	3/5/07 0917	515.8	0.831	ND		ND	
Q4548	390	MW-37-32	3/5/07 0917	3/7/07 1043	516.1 *	0.767	ND		ND	
Q4735	390	MW-37-32	3/7/07 1043	3/9/07 0835	515.7	1.80	ND		ND	
Q4786	390	MW-37-32	3/9/07 0835	3/12/07 0845	515.7	4.79	ND		ND	
Q5046	390	MW-37-32	3/12/07 0845	3/14/07 0920	515.5	4.35	ND		ND	
Q5448	390	MW-37-32	3/14/07 0920	3/16/07 0808	515.7	4.00	ND		ND	
Q5331	390	MW-37-32	3/16/07 0808	3/19/07 0847	515.3	5.98	ND		ND	
Q5656	390	MW-37-32	3/19/07 0847	3/23/07 0820	515.3	16.7	ND		ND	
Q5757	390	MW-37-32	3/23/07 0820	3/26/07 0935	515.3	23.7	ND		ND	
Q6145	390	MW-37-32	3/26/07 0935	3/29/07 0852	515.0	15.6	ND		ND	
Q6294	390	MW-37-32	3/29/07 0852	4/2/07 0849	515.1	5.95	ND		ND	
Q6527	390	MW-37-32	4/2/07 0849	4/6/07 0845	515.8	2.41	ND		ND	
Q6688	390	MW-37-32	4/6/07 0845	4/10/07 0844	516.2	0.859	ND		ND	
Q6982	390	MW-37-32	4/10/07 0844	4/16/07 1008	516.6	0.870	ND		ND	
Q7298	390	MW-37-32	4/16/07 1008	4/24/07 1037	517.4 **	0.866	ND		ND	
Q7586	390	MW-37-32	4/24/07 1037	5/1/07 0906	516.0 **	0.568	ND		ND	
Q8070	390	MW-37-32	5/3/07 0918	5/9/07 1515	ND		ND		ND	
<b>Q0782</b>	<b>400</b>	<b>MW-37-40</b>	<b>11/14/06 1444</b>	<b>11/20/06 0958</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1013	400	MW-37-40	11/20/06 0958	11/27/06 1038	ND		ND		ND	
Q1231	400	MW-37-40	11/27/06 1038	12/4/06 1140	ND		ND		ND	
Q2076	400	MW-37-40	1/15/07 1234	2/1/07 1021	ND		ND		ND	
Q2474	400	MW-37-40	2/1/07 1021	2/8/07 1011	ND		ND		ND	
Q2405	400	MW-37-40	2/8/07 1011	2/9/07 0900	ND		ND		ND	
Q2557	400	MW-37-40	2/9/07 0900	2/10/07 0921	ND		ND		ND	
Q2521	400	MW-37-40	2/10/07 0921	2/11/07 0916	ND		ND		ND	
Q2642	400	MW-37-40	2/11/07 0916	2/12/07 0845	ND		ND		ND	
Q2856	400	MW-37-40	2/12/07 0845	2/13/07 0816	ND		ND		ND	
Q2914	400	MW-37-40	2/13/07 0816	2/14/07 0842	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3235	400	MW-37-40	2/14/07 0842	2/16/07 0822	ND		ND		ND	
Q3302	400	MW-37-40	2/16/07 0822	2/19/07 0933	ND		ND		ND	
Q3498	400	MW-37-40	2/19/07 0933	2/21/07 1005	ND		ND		ND	
Q3845	400	MW-37-40	2/21/07 1005	2/23/07 0833	ND		ND		ND	
Q3587	400	MW-37-40	2/23/07 0833	2/26/07 0943	ND		ND		ND	
Q3935	400	MW-37-40	2/26/07 0843	2/28/07 0958	ND		ND		ND	
Q4161	400	MW-37-40	2/28/07 0958	3/2/07 0813	ND		ND		ND	
Q4178	400	MW-37-40	3/2/07 0813	3/5/07 0921	ND		ND		ND	
Q4549	400	MW-37-40	3/5/07 0921	3/7/07 1051	ND		ND		ND	
Q4736	400	MW-37-40	3/7/07 1051	3/9/07 0841	ND		ND		ND	
Q4787	400	MW-37-40	3/9/07 0841	3/12/07 0851	ND		ND		ND	
Q5047	400	MW-37-40	3/12/07 0851	3/14/07 0930	ND		ND		ND	
Q5449	400	MW-37-40	3/14/07 0830	3/16/07 0814	ND		ND		ND	
Q5332	400	MW-37-40	3/16/07 0814	3/19/07 0900	ND		ND		ND	
Q5657	400	MW-37-40	3/19/07 0900	3/23/07 0827	ND		ND		ND	
Q5657R	400	MW-37-40	3/19/07 0900	3/23/07 0827	ND		ND		ND	
Q5758	400	MW-37-40	3/23/07 0827	3/26/07 0940	ND		ND		ND	
Q6146	400	MW-37-40	3/26/07 0940	3/29/07 0857	ND		ND		ND	
Q6295	400	MW-37-40	3/29/07 0851	4/2/07 0855	ND		ND		ND	
Q6528	400	MW-37-40	4/2/07 0855	4/6/07 0851	ND		ND		ND	
Q6689	400	MW-37-40	4/6/07 0851	4/10/07 0849	ND		ND		ND	
Q6983	400	MW-37-40	4/10/07 0849	4/16/07 1013	ND		ND		ND	
Q7299	400	MW-37-40	4/16/07 1013	4/24/07 1033	ND		ND		ND	
Q7587	400	MW-37-40	4/24/07 1033	5/1/07 0909	ND		ND		ND	
Q8071	400	MW-37-40	5/3/07 0921	5/9/07 1519	ND		ND		ND	
<b>Q0783</b>	<b>410</b>	<b>MW-37-57</b>	<b>11/14/06 1456</b>	<b>11/20/06 1011</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1014	410	MW-37-57	11/20/06 1011	11/27/06 1032	ND		ND		ND	
Q1232	410	MW-37-57	11/27/06 1032	12/4/06 1148	ND		ND		ND	
Q2077	410	MW-37-57	1/15/07 1221	2/1/07 1041	ND		ND		ND	
Q2475	410	MW-37-57	2/1/07 1041	2/8/07 1047	ND		ND		ND	
Q2406	410	MW-37-57	2/8/07 1047	2/9/07 0904	ND		ND		ND	
Q2558	410	MW-37-57	2/9/07 0904	2/10/07 0935	ND		ND		ND	
Q2522	410	MW-37-57	2/10/07 0935	2/11/07 0920	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2643	410	MW-37-57	2/11/07 0920	2/12/07 0850	ND		ND		ND	
Q2857	410	MW-37-57	2/12/07 0850	2/13/07 0820	ND		ND		ND	
Q2915	410	MW-37-57	2/13/07 0820	2/14/07 0845	ND		ND		ND	
Q3236	410	MW-37-57	2/14/07 0845	2/16/07 0825	ND		ND		ND	
Q3303	410	MW-37-57	2/16/07 0825	2/19/07 0935	ND		ND		ND	
Q3499	410	MW-37-57	2/19/07 0935	2/21/07 1010	ND		ND		ND	
Q3846	410	MW-37-57	2/21/07 1010	2/23/07 0840	ND		ND		ND	
Q3588	410	MW-37-57	2/23/07 0840	2/26/07 0948	ND		ND		ND	
Q3936	410	MW-37-57	2/26/07 0848	2/28/07 1004	ND		ND		ND	
Q4162	410	MW-37-57	2/28/07 1004	3/2/07 0817	ND		ND		ND	
Q4179	410	MW-37-57	3/2/07 0817	3/5/07 0938	ND		ND		ND	
Q4550	410	MW-37-57	3/5/07 0938	3/7/07 1057	ND		ND		ND	
Q4737	410	MW-37-57	3/7/07 1057	3/9/07 0847	ND		ND		ND	
Q4788	410	MW-37-57	3/9/07 0847	3/12/07 0855	ND		ND		ND	
Q5048	410	MW-37-57	3/12/07 0855	3/14/07 0934	516.6 *	0.425	ND		ND	
Q5450	410	MW-37-57	3/14/07 0734	3/16/07 0819	516.2 *	0.440	ND		ND	
Q5333	410	MW-37-57	3/16/07 0819	3/19/07 0907	517.2 *	0.387	ND		ND	
Q5658	410	MW-37-57	3/19/07 0907	3/23/07 0834	515.6 *	0.445	ND		ND	
Q5759	410	MW-37-57	3/23/07 0834	3/26/07 0948	ND		ND		ND	
Q6147	410	MW-37-57	3/26/07 0948	3/29/07 0903	ND		ND		ND	
Q6296	410	MW-37-57	3/29/07 0903	4/2/07 0901	ND		ND		ND	
Q6529	410	MW-37-57	4/2/07 0901	4/6/07 0859	ND		ND		ND	
Q6690	410	MW-37-57	4/6/07 0859	4/10/07 0853	ND		ND		ND	
Q6984	410	MW-37-57	4/10/07 0853	4/16/07 1018	ND		ND		ND	
Q7301	410	MW-37-57	4/16/07 1018	4/24/07 1028	ND		ND		ND	
Q7588	410	MW-37-57	4/24/07 1028	5/1/07 0912	ND		ND		ND	
Q8072	410	MW-37-57	5/3/07 0922	5/9/07 1523	ND		ND		ND	
<b>Q0784</b>	<b>420</b>	<b>MW-38</b>	<b>11/14/06 1109</b>	<b>11/20/06 1053</b>	<b>ND</b>		<b>ND</b>		<b>567.6 *</b>	<b>1.34</b>
Q1015	420	MW-38	11/20/06 1053	11/27/06 1317	ND		ND		ND	
Q1233	420	MW-38	11/27/06 1317	12/4/06 0856	ND		ND		ND	
Q1913	420	MW-38	1/12/07 1330	1/17/07 1441	ND		ND		ND	
Q3264	420	MW-38	1/17/07 1441	2/15/07 1055	ND		ND		ND	
Q4084	420	MW-38	2/15/07 1055	3/1/07 1400	514.2 *	0.663	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5398	420	MW-38	3/1/07 1400	3/12/07 1405	ND		ND		ND	
Q5969	420	MW-38	3/12/07 1405	3/27/07 0842	514.9 *	0.762	ND		ND	
Q6735	420	MW-38	3/27/07 0842	4/10/07 1516	ND		ND		ND	
Q7323	420	MW-38	4/10/07 1516	4/25/07 1445	ND		ND		ND	
Q8198	420	MW-38	4/25/07 1445	5/10/07 1141	ND		ND		ND	
<b>Q0785</b>	<b>440</b>	<b>MW-39A (67')</b>	<b>11/17/06 1403</b>	<b>11/21/06 0826</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1016	440	MW-39A (67')	11/21/06 0826	11/28/06 1114	ND		ND		ND	
Q1234	440	MW-39A (67')	11/28/06 1114	12/6/06 1423	ND		ND		ND	
Q1914	440	MW-39A (67')	1/10/07 1040	1/24/07 1040	ND		ND		ND	
Q3265	440	MW-39A (67')	1/24/07 1040	2/8/07 1130	ND		ND		ND	
<b>Q0786</b>	<b>450</b>	<b>MW-39B (86')</b>	<b>11/17/06 1400</b>	<b>11/21/06 0829</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1017	450	MW-39B (86')	11/21/06 0829	11/28/06 1122	ND		ND		ND	
Q1235	450	MW-39B (86')	11/28/06 1122	12/6/06 1424	ND		ND		ND	
Q1915	450	MW-39B (86')	1/10/07 1040	1/24/07 1040	ND		ND		ND	
Q3266	450	MW-39B (86')	1/24/07 1040	2/8/07 1130	ND		ND		ND	
<b>Q0787</b>	<b>460</b>	<b>MW-39C (100')</b>	<b>11/17/06 1355</b>	<b>11/21/06 0850</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1018	460	MW-39C (100')	11/21/06 0850	11/28/06 1126	ND		ND		ND	
Q1236	460	MW-39C (100')	11/28/06 1126	12/6/06 1425	ND		ND		ND	
Q1916	460	MW-39C (100')	1/10/07 1040	1/24/07 1040	ND		ND		ND	
Q3267	460	MW-39C (100')	1/24/07 1040	2/8/07 1130	ND		ND		ND	
<b>Q1237</b>	<b>470</b>	<b>MW-39D (105')</b>	<b>11/28/06 1130</b>	<b>12/6/06 1426</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1917	470	MW-39D (105')	1/10/07 1040	1/24/07 1040	ND		ND		ND	
Q3268	470	MW-39D (105')	1/24/07 1040	2/8/07 1130	ND		ND		ND	
<b>Q0825</b>	<b>473</b>	<b>MW-41-15</b>	<b>11/15/06 1130</b>	<b>11/20/06 1400</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1057	473	MW-41-15	11/20/06 1400	11/27/06 1425	ND		ND		ND	
Q1238	473	MW-41-15	11/27/06 1425	12/7/06 1101	ND		ND		ND	
Q1918	473	MW-41-15	1/16/07 0819	1/24/07 1126	ND		ND		ND	
Q3269	473	MW-41-15	1/24/07 1126	2/15/07 1325	ND		ND		ND	
Q6739	473	MW-41-15	2/15/07 1325	4/11/07 1120	ND		ND		ND	
Q7327	473	MW-41-15	4/11/07 1120	4/25/07 0827	ND		ND		ND	
Q8022	473	MW-41-15	4/25/07 0827	5/8/07 1130	ND		ND		ND	
<b>Q0827</b>	<b>474</b>	<b>MW-41-42</b>	<b>11/15/06 1200</b>	<b>11/20/06 1408</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1058	474	MW-41-42	11/20/06 1404	11/27/06 1430	ND		ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1239	474	MW-41-42	11/27/06 1430	12/7/06 1122	ND		ND		ND	
Q1919	474	MW-41-42	1/16/07 0817	1/24/07 1130	ND		ND		ND	
Q3270	474	MW-41-42	1/24/07 1130	2/15/07 1330	ND		ND		ND	
Q6741	474	MW-41-42	2/15/07 1325	4/11/07 1123	ND		ND		ND	
Q7328	474	MW-41-42	4/11/07 1123	4/25/07 0830	ND		ND		ND	
Q8023	474	MW-41-42	4/25/07 0830	5/8/07 1134	ND		ND		ND	
<b>Q0826</b>	<b>475</b>	<b>MW-41-64</b>	<b>11/15/06 1140</b>	<b>11/20/06 1404</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1059	475	MW-41-64	11/20/06 1408	11/27/06 1420	ND		ND		ND	
Q1241	475	MW-41-64	11/27/06 1420	12/7/06 1106	ND		ND		ND	
Q1921	475	MW-41-64	1/16/07 0811	1/24/07 1135	ND		ND		ND	
Q3271	475	MW-41-64	1/24/07 1135	2/15/07 1315	ND		ND		ND	
Q6742	475	MW-41-64	2/15/07 1325	4/11/07 1310	ND		ND		ND	
Q7329	475	MW-41-64	4/11/07 1310	4/25/07 0835	ND		ND		ND	
Q8024	475	MW-41-64	4/25/07 0835	5/8/07 1138	ND		ND		ND	
<b>Q0788</b>	<b>480</b>	<b>MW-42-51</b>	<b>11/16/06 1500</b>	<b>11/21/06 0938</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1019	480	MW-42-51	11/21/06 0938	11/28/06 1320	ND		ND		ND	
Q1242	480	MW-42-51	11/28/06 1320	12/6/06 1327	ND		ND		ND	
Q1922	480	MW-42-51	1/9/07 1428	1/24/07 1307	ND		ND		ND	
Q3272	480	MW-42-51	1/24/07 1307	2/15/07 0825	ND		ND		ND	
Q4085	480	MW-42-51	2/15/07 0825	3/1/07 1510	515.4	173	ND		ND	
Q4152	480	MW-42-51	3/1/07 1510	3/2/07 1332	515.3	6.92	ND		ND	
Q4207	480	MW-42-51	3/2/07 1332	3/5/07 1343	515.8	0.926	ND		ND	
Q4577	480	MW-42-51	3/5/07 1343	3/7/07 1540	515.2	1.36	ND		ND	
Q4758	480	MW-42-51	3/7/07 1540	3/9/07 1151	516.3	0.720	ND		ND	
Q4809	480	MW-42-51	3/9/07 1151	3/12/07 1253	516.6	0.884	ND		ND	
Q5049	480	MW-42-51	3/12/07 1253	3/14/07 1352	515.8 *	0.795	ND		ND	
Q5451	480	MW-42-51	3/14/07 1352	3/16/07 1145	515.7	1.37	ND		ND	
Q5334	480	MW-42-51	3/16/07 1145	3/20/07 0917	515.6	1.35	ND		ND	
Q5659	480	MW-42-51	3/20/07 0917	3/23/07 1310	517.8	0.424	ND		ND	
Q5659R	480	MW-42-51	3/20/07 0917	3/23/07 1310	516.8 *	0.437	ND		ND	
Q5761	480	MW-42-51	3/23/07 1310	3/26/07 1334	515.6	1.57	ND		ND	
Q6148	480	MW-42-51	3/26/07 1334	3/29/07 1300	514.4	2.61	ND		ND	
Q6297	480	MW-42-51	3/29/07 1300	4/2/07 1255	515.6	3.79	ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6530	480	MW-42-51	4/2/07 1255	4/6/07 1254	515.6	2.77	ND		ND	
Q6691	480	MW-42-51	4/6/07 1254	4/10/07 1129	515.8	1.81	ND		ND	
Q6985	480	MW-42-51	4/10/07 1129	4/17/07 1356	515.7	2.66	ND		ND	
Q7302	480	MW-42-51	4/17/07 1356	4/24/07 0737	514.9	7.41	ND		ND	
Q7589	480	MW-42-51	4/24/07 0737	5/1/07 0950	514.6	2.55	ND		ND	
Q8209	480	MW-42-51	5/3/07 1030	5/10/07 0918	515.3	2.11	ND		ND	
<b>Q0789</b>	<b>490</b>	<b>MW-42-79</b>	<b>11/16/06 1059</b>	<b>11/21/06 0943</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1021	490	MW-42-79	11/21/06 0943	11/28/06 1312	ND		ND		ND	
Q1243	490	MW-42-79	11/28/06 1312	12/6/06 1310	ND		ND		ND	
Q1923	490	MW-42-79	1/9/07 1433	1/24/07 1314	ND		ND		ND	
Q3273	490	MW-42-79	1/24/07 1314	2/15/07 0830	515.3	18.4	ND		ND	
Q4086	490	MW-42-79	2/15/07 0830	3/1/07 1515	515.3	63.4	ND		ND	
Q4153	490	MW-42-79	3/1/07 1515	3/2/07 1338	515.5	4.25	ND		ND	
Q4208	490	MW-42-79	3/2/07 1338	3/5/07 1350	515.3	19.1	ND		ND	
Q4578	490	MW-42-79	3/5/07 1350	3/7/07 1548	515.2	54.9	ND		ND	
Q4759	490	MW-42-79	3/7/07 1548	3/9/07 1200	515.1	26.7	ND		ND	
Q4810	490	MW-42-79	3/9/07 1200	3/12/07 1303	515.5	39.3	ND		ND	
Q5050	490	MW-42-79	3/12/07 1303	3/14/07 1358	515.3	17.7	ND		ND	
Q5452	490	MW-42-79	3/14/07 1358	3/16/07 1151	515.2	14.0	ND		ND	
Q5335	490	MW-42-79	3/16/07 1151	3/20/07 0920	515.4	11.7	ND		ND	
Q5661	490	MW-42-79	3/20/07 0920	3/23/07 1318	515.3	15.9	ND		ND	
Q5762	490	MW-42-79	3/23/07 1318	3/26/07 1341	515.3	71.2	ND		ND	
Q6149	490	MW-42-79	3/26/07 1341	3/29/07 1307	514.8	25.7	ND		ND	
Q6298	490	MW-42-79	3/29/07 1307	4/2/07 1308	515.3	11.1	ND		ND	
Q6531	490	MW-42-79	4/2/07 1308	4/6/07 1303	515.3	6.07	ND		ND	
Q6692	490	MW-42-79	4/6/07 1303	4/10/07 1134	515.1	7.58	ND		ND	
Q6986	490	MW-42-79	4/10/07 1134	4/17/07 1401	515.0	48.4	ND		ND	
Q7303	490	MW-42-79	4/17/07 1401	4/24/07 0742	515.4	17.1	ND		ND	
Q7590	490	MW-42-79	4/24/07 0742	5/1/07 0953	515.3	10.4	ND		ND	
Q8210	490	MW-42-79	5/3/07 1033	5/10/07 0922	514.9	22.5	ND		ND	
<b>Q0790</b>	<b>510</b>	<b>MW-47-56</b>	<b>11/16/06 0925</b>	<b>11/21/06 1000</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1022	510	MW-47-56	11/21/06 1000	11/28/06 1050	ND		ND		ND	
Q1244	510	MW-47-56	11/28/06 1050	12/6/06 1408	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1929	510	MW-47-56	1/12/07 1447	1/24/07 1143	ND		ND		ND	
Q3274	510	MW-47-56	1/24/07 1143	2/15/07 0955	ND		ND		ND	
Q4089	510	MW-47-56	2/15/07 0955	3/1/07 1509	ND		ND		ND	
Q4596	510	MW-47-56	NDT	3/7/07 0918	ND		ND		ND	
Q4728	510	MW-47-56	3/7/07 0923	3/9/07 1057	ND		ND		ND	
Q4844	510	MW-47-56	3/9/07 1057	3/12/07 1121	ND		ND		ND	
Q5015	510	MW-47-56	3/12/07 1121	3/14/07 1059	ND		ND		ND	
Q5417	510	MW-47-56	3/14/07 1059	3/16/07 0939	ND		ND		ND	
Q5372	510	MW-47-56	3/16/07 0939	3/20/07 0937	ND		ND		ND	
Q5697	510	MW-47-56	3/20/07 0937	3/23/07 1438	ND		ND		ND	
Q5797	510	MW-47-56	3/23/07 1438	3/26/07 1054	ND		ND		ND	
Q6113	510	MW-47-56	3/26/07 1054	3/29/07 1324	ND		ND		ND	
Q6263	510	MW-47-56	3/29/07 1324	4/2/07 1133	ND		ND		ND	
Q6567	510	MW-47-56	4/2/07 1133	4/6/07 0950	ND		ND		ND	
Q6656	510	MW-47-56	4/6/07 0950	4/9/07 1128	ND		ND		ND	
Q6950	510	MW-47-56	4/9/07 1128	4/17/07 1324	ND		ND		ND	
Q7216	510	MW-47-56	4/17/07 1324	4/23/07 0753	ND		ND		ND	
Q7469	510	MW-47-56	4/23/07 0753	4/30/07 0935	ND		ND		ND	
Q8047	510	MW-47-56	5/3/07 1014	5/8/07 1336	ND		ND		ND	
<b>Q0791</b>	<b>520</b>	<b>MW-47-80</b>	<b>11/16/06 0934</b>	<b>11/21/06 1008</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1023	520	MW-47-80	11/21/06 1008	11/28/06 1045	ND		ND		ND	
Q1245	520	MW-47-80	11/28/06 1045	12/6/06 1358	ND		ND		ND	
Q1930	520	MW-47-80	1/12/07 1500	1/24/07 1151	ND		ND		ND	
Q3275	520	MW-47-80	1/24/07 1151	2/13/07 1000	ND		ND		ND	
Q4090	520	MW-47-80	2/13/07 1000	3/1/07 1514	ND		ND		ND	
Q4595	520	MW-47-80	NDT	3/7/07 0923	ND		ND		ND	
Q4729	520	MW-47-80	3/7/07 0918	3/9/07 1101	ND		ND		ND	
Q4845	520	MW-47-80	3/9/07 1101	3/12/07 1125	ND		ND		ND	
Q5016	520	MW-47-80	3/12/07 1125	3/14/07 1103	ND		ND		ND	
Q5418	520	MW-47-80	3/14/07 1103	3/16/07 0943	ND		ND		ND	
Q5373	520	MW-47-80	3/16/07 0943	3/20/07 0941	ND		ND		ND	
Q5698	520	MW-47-80	3/20/07 0941	3/23/07 1442	ND		ND		ND	
Q5798	520	MW-47-80	3/23/07 1442	3/26/07 1058	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6114	520	MW-47-80	3/26/07 1058	3/29/07 1327	ND		ND		ND	
Q6264	520	MW-47-80	3/29/07 1327	4/2/07 1137	ND		ND		ND	
Q6568	520	MW-47-80	4/2/07 1137	4/6/07 0954	ND		ND		ND	
Q6657	520	MW-47-80	4/6/07 0954	4/9/07 1133	ND		ND		ND	
Q6951	520	MW-47-80	4/9/07 1133	4/17/07 1328	ND		ND		ND	
Q7217	520	MW-47-80	4/17/07 1328	4/23/07 0757	ND		ND		ND	
Q7470	520	MW-47-80	4/23/07 0757	4/30/07 0938	ND		ND		ND	
Q8048	520	MW-47-80	5/3/07 1016	5/8/07 1340	ND		ND		ND	
<b>Q1246</b>	<b>550</b>	<b>MW-49-26</b>	<b>11/29/06 1126</b>	<b>12/7/06 0840</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2051	550	MW-49-26	1/15/07 1402	2/1/07 1328	ND		ND		ND	
Q2439	550	MW-49-26	2/1/07 1328	2/8/07 1515	ND		ND		ND	
Q2381	550	MW-49-26	2/8/07 1515	2/9/07 1335	ND		ND		ND	
Q2497	550	MW-49-26	2/9/07 1335	2/10/07 0950	ND		ND		ND	
Q2591	550	MW-49-26	2/10/07 0950	2/11/07 0925	ND		ND		ND	
Q2617	550	MW-49-26	2/11/07 0925	2/12/07 1405	ND		ND		ND	
Q2832	550	MW-49-26	2/12/07 1405	2/13/07 1145	ND		ND		ND	
Q2890	550	MW-49-26	2/13/07 1145	2/14/07 0840	ND		ND		ND	
Q3212	550	MW-49-26	2/14/07 0840	2/16/07 1310	ND		ND		ND	
Q3335	550	MW-49-26	2/16/07 1310	2/19/07 1012	ND		ND		ND	
Q3474	550	MW-49-26	2/19/07 1012	2/21/07 0955	ND		ND		ND	
Q3821	550	MW-49-26	2/21/07 0955	2/23/07 0900	ND		ND		ND	
Q3563	550	MW-49-26	2/23/07 0900	2/26/07 0830	ND		ND		ND	
Q3908	550	MW-49-26	2/26/07 0830	2/28/07 1310	ND		ND		ND	
Q4110	550	MW-49-26	2/28/07 1310	3/2/07 1320	ND		ND		ND	
Q4214	550	MW-49-26	3/2/07 1320	3/5/07 1000	ND		ND		ND	
Q4585	550	MW-49-26	3/5/07 1000	3/7/07 0949	ND		ND		ND	
Q4703	550	MW-49-26	3/7/07 0949	3/9/07 1005	ND		ND		ND	
Q4817	550	MW-49-26	3/9/07 1005	3/12/07 0957	ND		ND		ND	
Q5017	550	MW-49-26	3/12/07 0957	3/14/07 0927	ND		ND		ND	
Q5419	550	MW-49-26	3/14/07 0927	3/16/07 0850	ND		ND		ND	
Q5374	550	MW-49-26	3/16/07 0850	3/19/07 0955	ND		ND		ND	
Q5699	550	MW-49-26	3/19/07 0955	3/23/07 0855	ND		ND		ND	
Q5799	550	MW-49-26	3/23/07 0855	3/26/07 0945	ND		ND		ND	



Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6115	550	MW-49-26	3/26/07 0945	3/29/07 1438	ND		ND		ND	
Q6265	550	MW-49-26	3/29/07 1438	4/2/07 1053	ND		ND		ND	
Q6569	550	MW-49-26	4/2/07 1053	4/6/07 0855	ND		ND		ND	
Q6658	550	MW-49-26	4/6/07 0855	4/9/07 1059	ND		ND		ND	
Q6952	550	MW-49-26	4/9/07 1059	4/17/07 0810	ND		ND		ND	
Q7218	550	MW-49-26	4/17/07 0810	4/23/07 0922	ND		ND		ND	
Q7471	550	MW-49-26	4/23/07 0922	4/30/07 0910	516.6 *	0.859	ND		ND	
Q8049	550	MW-49-26	5/3/07 0803	5/9/07 0743	516.4 *	1.36	ND		ND	
<b>Q1247</b>	<b>560</b>	<b>MW-49-42</b>	<b>11/29/06 1136</b>	<b>12/7/06 0836</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2052	560	MW-49-42	1/15/07 1411	2/1/07 1338	ND		ND		ND	
Q2441	560	MW-49-42	2/1/07 1338	2/8/07 1520	ND		ND		ND	
Q2382	560	MW-49-42	2/8/07 1520	2/9/07 1325	ND		ND		ND	
Q2592	560	MW-49-42	2/10/07 0954	2/11/07 0930	ND		ND		ND	
Q2611	560	MW-49-42	2/9/07 1325	2/11/07 1425	ND		ND		ND	
Q2618	560	MW-49-42	2/11/07 0930	2/12/07 1410	ND		ND		ND	
Q2833	560	MW-49-42	2/12/07 1410	2/13/07 1150	ND		ND		ND	
Q2891	560	MW-49-42	2/13/07 1150	2/14/07 0845	ND		ND		ND	
Q3213	560	MW-49-42	2/14/07 0845	2/16/07 1315	ND		ND		ND	
Q3336	560	MW-49-42	2/16/07 1315	2/19/07 1008	ND		ND		ND	
Q3475	560	MW-49-42	2/19/07 1208	2/21/07 1000	ND		ND		ND	
Q3822	560	MW-49-42	2/21/07 1000	2/23/07 0905	ND		ND		ND	
Q3564	560	MW-49-42	2/23/07 0905	2/26/07 0835	ND		ND		ND	
Q3909	560	MW-49-42	2/26/07 0835	2/28/07 1315	ND		ND		ND	
Q4111	560	MW-49-42	2/28/07 1315	3/2/07 1325	ND		ND		ND	
Q4215	560	MW-49-42	3/2/07 1325	3/5/07 1005	ND		ND		ND	
Q4586	560	MW-49-42	3/5/07 1005	3/7/07 0953	ND		ND		ND	
Q4704	560	MW-49-42	3/7/07 0953	3/9/07 1010	ND		ND		ND	
Q4818	560	MW-49-42	3/9/07 1010	3/12/07 1001	ND		ND		ND	
Q5018	560	MW-49-42	3/12/07 1001	3/14/07 0931	ND		ND		ND	
Q5421	560	MW-49-42	3/14/07 0931	3/16/07 0855	ND		ND		ND	
Q5375	560	MW-49-42	3/16/07 0855	3/19/07 1000	ND		ND		ND	
Q5701	560	MW-49-42	3/19/07 1000	3/23/07 0900	ND		ND		ND	
Q5801	560	MW-49-42	3/23/07 0900	3/26/07 0949	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6116	560	MW-49-42	3/26/07 0949	3/29/07 1443	ND		ND		ND	
Q6266	560	MW-49-42	3/29/07 1443	4/2/07 1057	ND		ND		ND	
Q6570	560	MW-49-42	4/2/07 1057	4/6/07 0900	ND		ND		ND	
Q6659	560	MW-49-42	4/6/07 0900	4/9/07 1103	ND		ND		ND	
Q6953	560	MW-49-42	4/9/07 1103	4/17/07 0814	ND		ND		ND	
Q7219	560	MW-49-42	4/17/07 0814	4/23/07 0926	ND		ND		ND	
Q7472	560	MW-49-42	4/23/07 0926	4/30/07 0913	ND		ND		ND	
Q8050	560	MW-49-42	5/3/07 0805	5/9/07 0746	ND		ND		ND	
<b>Q1248</b>	<b>570</b>	<b>MW-49-65</b>	<b>11/29/06 1142</b>	<b>12/7/06 0825</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2053	570	MW-49-65	1/15/07 1406	2/1/07 1330	ND		ND		ND	
Q2442	570	MW-49-65	2/1/07 1330	2/8/07 1525	ND		ND		ND	
Q2383	570	MW-49-65	2/8/07 1525	2/9/07 1328	ND		ND		ND	
Q2498	570	MW-49-65	2/9/07 1328	2/10/07 0958	ND		ND		ND	
Q2593	570	MW-49-65	2/10/07 0958	2/11/07 0935	ND		ND		ND	
Q2619	570	MW-49-65	2/11/07 0935	2/12/07 1415	ND		ND		ND	
Q2834	570	MW-49-65	2/12/07 1415	2/13/07 1155	ND		ND		ND	
Q2892	570	MW-49-65	2/13/07 1155	2/14/07 0850	ND		ND		ND	
Q3214	570	MW-49-65	2/14/07 0850	2/16/07 1320	ND		ND		ND	
Q3337	570	MW-49-65	2/16/07 1320	2/19/07 1024	ND		ND		ND	
Q3476	570	MW-49-65	2/19/07 1024	2/21/07 1005	ND		ND		ND	
Q3823	570	MW-49-65	2/21/07 1005	2/23/07 0910	ND		ND		ND	
Q3565	570	MW-49-65	2/23/07 0910	2/26/07 0840	ND		ND		ND	
Q3910	570	MW-49-65	2/26/07 0840	2/28/07 1320	ND		ND		ND	
Q4112	570	MW-49-65	2/28/07 1320	3/2/07 1330	ND		ND		ND	
Q4216	570	MW-49-65	3/2/07 1330	3/5/07 1010	ND		ND		ND	
Q4587	570	MW-49-65	3/5/07 1010	3/7/07 0959	ND		ND		ND	
Q4705	570	MW-49-65	3/7/07 0959	3/9/07 1015	ND		ND		ND	
Q4819	570	MW-49-65	3/9/07 1015	3/12/07 1006	ND		ND		ND	
Q5019	570	MW-49-65	3/12/07 1006	3/14/07 0936	ND		ND		ND	
Q5422	570	MW-49-65	3/14/07 0936	3/16/07 0900	ND		ND		ND	
Q5376	570	MW-49-65	3/16/07 0900	3/19/07 1005	ND		ND		ND	
Q5702	570	MW-49-65	3/19/07 1005	3/23/07 0905	ND		ND		ND	
Q5802	570	MW-49-65	3/23/07 0905	3/26/07 0954	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6117	570	MW-49-65	3/26/07 0954	3/29/07 1448	ND		ND		ND	
Q6267	570	MW-49-65	3/29/07 1448	4/2/07 1102	ND		ND		ND	
Q6571	570	MW-49-65	4/2/07 1102	4/6/07 0905	ND		ND		ND	
Q6661	570	MW-49-65	4/6/07 0905	4/9/07 1108	ND		ND		ND	
Q6954	570	MW-49-65	4/9/07 1108	4/17/07 0818	ND		ND		ND	
Q7221	570	MW-49-65	4/17/07 0818	4/23/07 0930	ND		ND		ND	
Q7473	570	MW-49-65	4/23/07 0930	4/30/07 0916	ND		ND		ND	
Q8051	570	MW-49-65	5/3/07 0807	5/9/07 0749	ND		ND		ND	
<b>Q0792</b>	<b>580</b>	<b>MW-50-42</b>	<b>11/14/06 1450</b>	<b>11/20/06 0840</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1024	580	MW-50-42	11/20/06 0840	11/27/06 0931	ND		ND		ND	
Q1249	580	MW-50-42	11/27/06 0951	12/5/06 1425	ND		ND		ND	
Q2078	580	MW-50-42	1/15/07 1020	2/1/07 1049	ND		ND		ND	
Q2476	580	MW-50-42	2/1/07 1049	2/8/07 1114	ND		ND		ND	
Q2407	580	MW-50-42	2/8/07 1114	2/9/07 1040	ND		ND		ND	
Q2559	580	MW-50-42	2/9/07 1040	2/10/07 0946	ND		ND		ND	
Q2523	580	MW-50-42	2/10/07 0946	2/11/07 0929	ND		ND		ND	
Q2644	580	MW-50-42	2/11/07 0929	2/12/07 1057	ND		ND		ND	
Q2858	580	MW-50-42	2/12/07 1057	2/13/07 0828	ND		ND		ND	
Q2916	580	MW-50-42	2/13/07 0828	2/14/07 0854	ND		ND		ND	
Q3237	580	MW-50-42	2/14/07 0854	2/16/07 0833	ND		ND		ND	
Q3304	580	MW-50-42	2/16/07 0833	2/19/07 0940	ND		ND		ND	
Q3501	580	MW-50-42	2/19/07 0940	2/21/07 1023	ND		ND		ND	
Q3847	580	MW-50-42	2/21/07 1023	2/23/07 0851	ND		ND		ND	
Q3589	580	MW-50-42	2/23/07 0851	2/26/07 1001	ND		ND		ND	
Q3937	580	MW-50-42	2/26/07 1001	2/28/07 1016	ND		ND		ND	
Q4163	580	MW-50-42	2/28/07 1016	3/2/07 0904	ND		ND		ND	
Q4181	580	MW-50-42	3/2/07 0904	3/5/07 0950	ND		ND		ND	
Q4551	580	MW-50-42	3/5/07 0950	3/7/07 1120	ND		ND		ND	
Q4738	580	MW-50-42	3/7/07 1120	3/9/07 0940	ND		ND		ND	
Q4789	580	MW-50-42	3/9/07 0940	3/12/07 0934	ND		ND		ND	
Q5051	580	MW-50-42	3/12/07 0834	3/14/07 0949	ND		ND		ND	
Q5453	580	MW-50-42	3/14/07 0949	3/16/07 0835	ND		ND		ND	
Q5336	580	MW-50-42	3/16/07 0835	3/19/07 1320	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5662	580	MW-50-42	3/19/07 1320	3/23/07 0850	ND		ND		ND	
Q5763	580	MW-50-42	3/23/07 0850	3/26/07 1017	ND		ND		ND	
Q6150	580	MW-50-42	3/26/07 1017	3/29/07 0918	ND		ND		ND	
Q6299	580	MW-50-42	3/29/07 0918	4/2/07 0915	ND		ND		ND	
Q6532	580	MW-50-42	4/2/07 0915	4/6/07 1046	ND		ND		ND	
Q6693	580	MW-50-42	4/6/07 1046	4/10/07 1059	ND		ND		ND	
Q6987	580	MW-50-42	4/10/07 1059	4/16/07 1025	ND		ND		ND	
Q7304	580	MW-50-42	4/16/07 1025	4/24/07 1012	ND		ND		ND	
Q7591	580	MW-50-42	4/24/07 1012	5/1/07 0919	ND		ND		ND	
Q8073	580	MW-50-42	5/3/07 0816	5/9/07 1054	ND		ND		ND	
<b>Q0793</b>	<b>590</b>	<b>MW-50-67</b>	<b>11/14/06 1440</b>	<b>11/20/06 0820</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1025	590	MW-50-67	11/20/06 0820	11/27/06 1004	ND		ND		ND	
Q1250	590	MW-50-67	11/27/06 1004	12/5/06 1422	ND		ND		ND	
Q2079	590	MW-50-67	1/15/07 1035	2/1/07 1101	ND		ND		ND	
Q2477	590	MW-50-67	2/1/07 1101	2/8/07 1121	ND		ND		ND	
Q2408	590	MW-50-67	2/8/07 1121	2/9/07 1042	ND		ND		ND	
Q2561	590	MW-50-67	2/9/07 1042	2/10/07 0948	ND		ND		ND	
Q2524	590	MW-50-67	2/10/07 0948	2/11/07 0933	ND		ND		ND	
Q2645	590	MW-50-67	2/11/07 0933	2/12/07 1102	ND		ND		ND	
Q2859	590	MW-50-67	2/12/07 1102	2/13/07 0831	ND		ND		ND	
Q2917	590	MW-50-67	2/13/07 0831	2/14/07 0855	ND		ND		ND	
Q3238	590	MW-50-67	2/14/07 0855	2/16/07 0835	ND		ND		ND	
Q3305	590	MW-50-67	2/16/07 0835	2/19/07 0945	ND		ND		ND	
Q3502	590	MW-50-67	2/19/07 0945	2/21/07 1028	ND		ND		ND	
Q3848	590	MW-50-67	2/21/07 1028	2/23/07 0858	ND		ND		ND	
Q3590	590	MW-50-67	2/23/07 0858	2/26/07 1004	ND		ND		ND	
Q3938	590	MW-50-67	2/26/07 1004	2/28/07 1021	ND		ND		ND	
Q4164	590	MW-50-67	2/28/07 1021	3/2/07 0909	ND		ND		ND	
Q4182	590	MW-50-67	3/2/07 0909	3/5/07 1302	ND		ND		ND	
Q4552	590	MW-50-67	3/5/07 1302	3/7/07 1128	ND		ND		ND	
Q4739	590	MW-50-67	3/7/07 1128	3/9/07 0945	ND		ND		ND	
Q4790	590	MW-50-67	3/9/07 0945	3/12/07 0938	ND		ND		ND	
Q5052	590	MW-50-67	3/12/07 0838	3/14/07 1000	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5454	590	MW-50-67	3/14/07 1000	3/16/07 0840	ND		ND		ND	
Q5337	590	MW-50-67	3/16/07 0840	3/19/07 1324	ND		ND		ND	
Q5663	590	MW-50-67	3/19/07 1324	3/23/07 0855	ND		ND		ND	
Q5764	590	MW-50-67	3/23/07 0855	3/26/07 1023	ND		ND		ND	
Q6151	590	MW-50-67	3/26/07 1023	3/29/07 0923	ND		ND		ND	
Q6301	590	MW-50-67	3/29/07 0923	4/2/07 0919	ND		ND		ND	
Q6533	590	MW-50-67	4/2/07 0919	4/6/07 1050	ND		ND		ND	
Q6694	590	MW-50-67	4/6/07 1050	4/10/07 1104	ND		ND		ND	
Q6988	590	MW-50-67	4/10/07 1104	4/16/07 1029	ND		ND		ND	
Q7305	590	MW-50-67	4/16/07 1029	4/24/07 1016	ND		ND		ND	
Q7592	590	MW-50-67	4/24/07 1016	5/1/07 0922	ND		ND		ND	
Q8074	590	MW-50-67	5/3/07 0814	5/9/07 1058	ND		ND		ND	
<b>Q0794</b>	<b>610</b>	<b>MW-52A (21')</b>	<b>11/14/06 1405</b>	<b>11/20/06 1107</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1026	610	MW-52A (21')	11/20/06 1107	11/27/06 0905	ND		ND		ND	
Q1251	610	MW-52A (21')	11/27/06 0905	12/4/06 1309	ND		ND		ND	
Q2106	610	MW-52A (21')	1/15/07 1350	1/22/07 1300	ND		ND		ND	
<b>Q0795</b>	<b>620</b>	<b>MW-52B (51')</b>	<b>11/14/06 1350</b>	<b>11/20/06 1112</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1027	620	MW-52B (51')	11/20/06 1112	11/27/06 0911	ND		ND		ND	
Q1252	620	MW-52B (51')	11/27/06 0911	12/4/06 1310	ND		ND		ND	
Q2107	620	MW-52B (51')	1/15/07 1350	1/22/07 1302	ND		ND		ND	
<b>Q1253</b>	<b>625</b>	<b>MW-52C (66')</b>	<b>11/30/06 1320</b>	<b>12/4/06 1311</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2108	625	MW-52C (66')	1/15/07 1350	1/22/07 1305	ND		ND		ND	
<b>Q1254</b>	<b>630</b>	<b>MW-52D (120')</b>	<b>11/30/06 1321</b>	<b>12/4/06 1312</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2109	630	MW-52D (120')	1/15/07 1350	1/22/07 1308	ND		ND		ND	
<b>Q1255</b>	<b>635</b>	<b>MW-52E (125')</b>	<b>11/30/06 1322</b>	<b>12/4/06 1314</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2110	635	MW-52E (125')	1/15/07 1350	1/22/07 1310	ND		ND		ND	
<b>Q0796</b>	<b>640</b>	<b>MW-52-12</b>	<b>11/14/06 1345</b>	<b>11/20/06 1115</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1028	640	MW-52-12	11/20/06 1115	11/27/06 0901	ND		ND		ND	
Q1256	640	MW-52-12	11/27/06 0901	12/4/06 1315	ND		ND		ND	
Q2094	640	MW-52-12	1/15/07 1347	2/1/07 1124	ND		ND		ND	
Q2423	640	MW-52-12	2/1/07 1124	2/8/07 1554	ND		ND		ND	
Q2457	640	MW-52-12	2/8/07 1554	2/9/07 1132	ND		ND		ND	
Q2549	640	MW-52-12	2/9/07 1132	2/10/07 1526	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2550	640	MW-52-12	2/10/07 1526	2/11/07 1408	ND		ND		ND	
Q2670	640	MW-52-12	2/11/07 1408	2/12/07 1501	ND		ND		ND	
Q2826	640	MW-52-12	2/12/07 1501	2/13/07 1415	ND		ND		ND	
Q2943	640	MW-52-12	2/13/07 1415	2/14/07 1405	ND		ND		ND	
Q3205	640	MW-52-12	2/14/07 1405	2/15/07 1422	ND		ND		ND	
Q3206	640	MW-52-12	2/15/07 1422	2/16/07 1303	ND		ND		ND	
Q3294	640	MW-52-12	2/16/07 1303	2/19/07 1400	ND		ND		ND	
Q3468	640	MW-52-12	2/19/07 1400	2/21/07 1400	ND		ND		ND	
Q3873	640	MW-52-12	2/21/07 1400	2/23/07 1050	ND		ND		ND	
Q3556	640	MW-52-12	2/23/07 1050	2/26/07 1353	ND		ND		ND	
Q3902	640	MW-52-12	2/26/07 1353	2/28/07 0916	ND		ND		ND	
Q4104	640	MW-52-12	2/28/07 0916	3/2/07 1443	ND		ND		ND	
Q4171	640	MW-52-12	3/2/07 1442	3/5/07 1355	ND		ND		ND	
Q4542	640	MW-52-12	3/5/07 1355	3/7/07 1410	ND		ND		ND	
Q4696	640	MW-52-12	3/7/07 1410	3/9/07 1500	ND		ND		ND	
Q4923	640	MW-52-12	3/9/07 1500	3/12/07 1400	ND		ND		ND	
Q5078	640	MW-52-12	3/12/07 1400	3/14/07 1302	ND		ND		ND	
Q5397	640	MW-52-12	3/14/07 1302	3/16/07 0916	ND		ND		ND	
Q5325	640	MW-52-12	3/16/07 0916	3/19/07 1415	ND		ND		ND	
Q5650	640	MW-52-12	3/19/07 1415	3/23/07 1355	ND		ND		ND	
Q5751	640	MW-52-12	3/23/07 1355	3/26/07 1135	ND		ND		ND	
Q6104	640	MW-52-12	3/26/07 1135	3/29/07 1456	ND		ND		ND	
Q6253	640	MW-52-12	3/29/07 1456	4/2/07 1012	ND		ND		ND	
Q6521	640	MW-52-12	4/2/07 1012	4/6/07 0820	ND		ND		ND	
Q6647	640	MW-52-12	4/6/07 0810	4/9/07 1416	ND		ND		ND	
Q6975	640	MW-52-12	4/9/07 1416	4/16/07 0908	ND		ND		ND	
Q7222	640	MW-52-12	4/16/07 0908	4/23/07 0833	ND		ND		ND	
Q7474	640	MW-52-12	4/23/07 0833	4/30/07 0754	ND		ND		ND	
Q8052	640	MW-52-12	5/3/07 0846	5/8/07 1449	ND		ND		ND	
<b>Q0797</b>	<b>650</b>	<b>MW-53-82</b>	<b>11/15/06 1353</b>	<b>11/20/06 1336</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1029	650	MW-53-82	11/20/06 1336	11/27/06 1149	ND		ND		ND	
Q1257	650	MW-53-82	11/27/06 1149	12/6/06 1118	ND		ND		ND	
Q2081	650	MW-53-80	1/16/07 0922	2/1/07 1420	ND		542.8	5.25	ND	

## Results

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OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2478	650	MW-53-80	2/1/07 1420	2/8/07 1447	ND		ND		ND	
Q2409	650	MW-53-80	2/8/07 1447	2/9/07 1318	ND		ND		ND	
Q2562	650	MW-53-80	2/9/07 1318	2/10/07 1106	ND		ND		ND	
Q2525	650	MW-53-80	2/10/07 1106	2/11/07 1010	ND		ND		ND	
Q2646	650	MW-53-80	2/11/07 1010	2/12/07 1346	ND		ND		ND	
Q2861	650	MW-53-80	2/12/07 1346	2/13/07 1055	515.4	0.923	ND		ND	
Q2918	650	MW-53-80	2/13/07 1055	2/14/07 1121	515.6	3.89	ND		ND	
Q3239	650	MW-53-80	2/14/07 1121	2/16/07 1010	515.5	20.3	ND		ND	
Q3306	650	MW-53-80	2/16/07 1010	2/19/07 1105	515.4	90.1	ND		ND	
Q3503	650	MW-53-80	2/19/07 1105	2/21/07 1155	515.3	85.3	ND		ND	
Q3849	650	MW-53-80	2/21/07 1155	2/23/07 1145	515.5	66.1	ND		ND	
Q3591	650	MW-53-80	2/23/07 1145	2/26/07 1329	515.3	162	ND		ND	
Q3939	650	MW-53-80	2/26/07 1329	2/28/07 1420	515.3	71.0	ND		ND	
Q4165	650	MW-53-80	2/28/07 1420	3/2/07 1311	515.1	45.4	ND		ND	
Q4183	650	MW-53-80	3/2/07 1311	3/5/07 1328	515.1	2.73	ND		ND	
Q4553	650	MW-53-80	3/5/07 1328	3/7/07 1518	515.3	4.60	ND		ND	
Q4741	650	MW-53-80	3/7/07 1518	3/9/07 1118	515.8	2.43	ND		ND	
Q4791	650	MW-53-80	3/9/07 1118	3/12/07 1130	515.0	0.788	ND		ND	
Q5053	650	MW-53-80	3/12/07 1130	3/14/07 1333	515.7	1.77	ND		ND	
Q5455	650	MW-53-80	3/14/07 1333	3/16/07 1120	517.8 **	0.570	ND		ND	
Q5338	650	MW-53-80	3/16/07 1120	3/20/07 0900	516.4	0.715	ND		ND	
Q5664	650	MW-53-80	3/20/07 0900	3/23/07 1135	517.0 **	0.406	ND		ND	
Q5765	650	MW-53-80	3/23/07 1135	3/26/07 1317	ND		ND		ND	
Q6152	650	MW-53-80	3/26/07 1317	3/29/07 1242	ND		ND		ND	
Q6302	650	MW-53-80	3/29/07 1242	4/2/07 1143	ND		ND		ND	
Q6534	650	MW-53-80	4/2/07 1143	4/6/07 1133	ND		ND		ND	
Q6695	650	MW-53-80	4/6/07 1133	4/10/07 1148	ND		ND		ND	
Q6989	650	MW-53-80	4/10/07 1148	4/17/07 1338	ND		ND		ND	
Q7306	650	MW-53-80	4/17/07 1338	4/24/07 1111	ND		ND		ND	
Q7593	650	MW-53-80	4/24/07 1111	5/1/07 0936	ND		ND		ND	
Q8211	650	MW-53-80	5/3/07 1023	5/10/07 0908	ND		ND		ND	
<b>Q0798</b>	<b>660</b>	<b>MW-53-120</b>	<b>11/15/06 1340</b>	<b>11/20/06 1325</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1030	660	MW-53-120	11/20/06 1325	11/27/06 1140	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1258	660	MW-53-120	11/27/06 1140	12/6/06 1057	ND		ND		ND	
Q2082	660	MW-53-120	1/16/07 0915	2/1/07 1425	ND		ND		ND	
Q2479	660	MW-53-120	2/1/07 1425	2/8/07 1450	ND		ND		ND	
Q2410	660	MW-53-120	2/8/07 1450	2/9/07 1320	ND		ND		ND	
Q2563	660	MW-53-120	2/9/07 1320	2/10/07 1109	ND		ND		ND	
Q2526	660	MW-53-120	2/10/07 1109	2/11/07 1011	ND		ND		ND	
Q2647	660	MW-53-120	2/11/07 1011	2/12/07 1349	ND		ND		ND	
Q2862	660	MW-53-120	2/12/07 1349	2/13/07 1058	ND		ND		ND	
Q2919	660	MW-53-120	2/13/07 1058	2/14/07 1123	ND		ND		ND	
Q3241	660	MW-53-120	2/14/07 1123	2/16/07 1015	ND		ND		ND	
Q3307	660	MW-53-120	2/16/07 1015	2/19/07 1110	ND		ND		ND	
Q3504	660	MW-53-120	2/19/07 1110	2/21/07 1159	ND		ND		ND	
Q3850	660	MW-53-120	2/21/07 1159	2/23/07 1149	ND		ND		ND	
Q3592	660	MW-53-120	2/23/07 1149	2/26/07 1333	ND		ND		ND	
Q3941	660	MW-53-120	2/26/07 1333	2/28/07 1427	ND		ND		ND	
Q4166	660	MW-53-120	2/28/07 1427	3/2/07 1317	ND		ND		ND	
Q4184	660	MW-53-120	3/2/07 1317	3/5/07 1332	ND		ND		ND	
Q4554	660	MW-53-120	3/5/07 1332	3/7/07 1523	ND		ND		ND	
Q4742	660	MW-53-120	3/7/07 1523	3/9/07 1122	ND		ND		ND	
Q4792	660	MW-53-120	3/9/07 1122	3/12/07 1136	ND		ND		ND	
Q5054	660	MW-53-120	3/12/07 1136	3/14/07 1340	ND		ND		ND	
Q5456	660	MW-53-120	3/14/07 1340	3/16/07 1124	ND		ND		ND	
Q5339	660	MW-53-120	3/16/07 1124	3/20/07 0903	ND		ND		ND	
Q5665	660	MW-53-120	3/20/07 0903	3/23/07 1142	ND		ND		ND	
Q5766	660	MW-53-120	3/23/07 1142	3/26/07 1322	ND		ND		ND	
Q6153	660	MW-53-120	3/26/07 1322	3/29/07 1250	ND		ND		ND	
Q6303	660	MW-53-120	3/29/07 1250	4/2/07 1148	ND		ND		ND	
Q6535	660	MW-53-120	4/2/07 1148	4/6/07 1140	ND		ND		ND	
Q6696	660	MW-53-120	4/6/07 1140	4/10/07 1154	ND		ND		ND	
Q6990	660	MW-53-120	4/10/07 1154	4/17/07 1343	ND		ND		ND	
Q7307	660	MW-53-120	4/17/07 1343	4/24/07 1116	ND		ND		ND	
Q7594	660	MW-53-120	4/24/07 1116	5/1/07 0940	ND		ND		ND	
Q8212	660	MW-53-120	5/3/07 1025	5/10/07 0913	ND		ND		ND	



## Results

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OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
<b>Q0799</b>	<b>670</b>	<b>MW-54A (37')</b>	<b>11/15/06 0845</b>	<b>11/20/06 1335</b>	ND		ND		ND	
Q1031	670	MW-54A (37')	11/20/06 1335	11/28/06 1002	ND		ND		ND	
Q1259	670	MW-54A (37')	11/28/06 1002	12/5/06 1148	ND		ND		ND	
Q2111	670	MW-54A (37')	1/22/07 1315	1/22/07 1015	ND		ND		ND	
<b>Q0801</b>	<b>680</b>	<b>MW-54B (145')</b>	<b>11/15/06 0840</b>	<b>11/20/06 1330</b>	ND		ND		ND	
Q1032	680	MW-54B (145')	11/20/06 1330	11/28/06 1004	ND		ND		ND	
Q1261	680	MW-54B (145')	11/28/06 1004	12/5/06 1150	ND		ND		ND	
Q2112	680	MW-54B (145')	1/22/07 1315	1/22/07 1017	ND		ND		ND	
<b>Q0802</b>	<b>690</b>	<b>MW-54C (175')</b>	<b>11/15/06 0913</b>	<b>11/20/06 1320</b>	ND		ND		ND	
Q1033	690	MW-54C (175')	11/20/06 1320	11/28/06 1006	ND		ND		ND	
Q1262	690	MW-54C (175')	11/28/06 1006	12/5/06 1151	ND		ND		ND	
Q2113	690	MW-54C (175')	1/22/07 1315	1/22/07 1017	ND		ND		ND	
<b>Q1263</b>	<b>700</b>	<b>MW-54D (191')</b>	<b>11/28/06 1008</b>	<b>12/5/06 1152</b>	ND		ND		ND	
Q2114	700	MW-54D (191')	1/22/07 1315	1/22/07 1018	ND		ND		ND	
<b>Q0803</b>	<b>710</b>	<b>MW-55-24</b>	<b>11/14/06 1000</b>	<b>11/20/06 1045</b>	514.6 *	0.953	ND		ND	
Q1034	710	MW-55-24	11/20/06 1045	11/27/06 0838	515.6 *	1.13	ND		ND	
Q1264	710	MW-55-24	11/27/06 0838	12/5/06 1000	517.0 *	0.454	ND		ND	
Q1931	710	MW-55-24	1/12/07 1424	1/24/07 1027	515.6 *	0.623	ND		ND	
Q3276	710	MW-55-24	1/24/07 1027	2/13/07 1035	517.7 *	0.421	ND		ND	
Q4091	710	MW-55-24	2/13/07 1035	3/1/07 0855	514.8	1.23	ND		ND	
Q5403	710	MW-55-24	3/1/07 0855	3/15/07 0858	515.7	3.55	ND		ND	
Q5981	710	MW-55-24	3/15/07 0858	3/28/07 0759	514.6	6.26	ND		ND	
Q6751	710	MW-55-24	3/28/07 0759	4/11/07 1026	515.3	5.50	ND		ND	
Q7338	710	MW-55-24	4/11/07 1026	4/25/07 1034	515.2	3.72	ND		ND	
Q8030	710	MW-55-24	4/25/07 1034	5/9/07 1455	518.0 *	0.785	ND		ND	
<b>Q0804</b>	<b>720</b>	<b>MW-55-34</b>	<b>11/14/06 1013</b>	<b>11/20/06 1047</b>	ND		ND		ND	
Q1035	720	MW-55-34	11/20/06 1047	11/27/06 0815	ND		ND		ND	
Q1265	720	MW-55-34	11/27/06 0815	12/5/06 0956	517.0 *	0.412	ND		ND	
Q1932	720	MW-55-34	1/12/07 1418	1/24/07 1010	ND		ND		ND	
Q3277	720	MW-55-34	1/24/07 1010	2/13/07 1030	517.8 *	0.488	ND		ND	
Q4092	720	MW-55-34	2/13/07 1030	3/1/07 0851	515.5	0.754	ND		ND	
Q5404	720	MW-55-34	3/1/07 0851	3/15/07 0901	515.3	6.08	ND		ND	
Q5982	720	MW-55-34	3/15/07 0901	3/28/07 0805	514.6	7.87	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6752	720	MW-55-34	3/28/07 0805	4/11/07 1031	514.9	4.33	ND		ND	
Q7339	720	MW-55-34	4/11/07 1031	4/25/07 1030	515.6	2.94	ND		ND	
Q8031	720	MW-55-34	4/25/07 1030	5/9/07 1500	515.6	1.38	ND		ND	
<b>Q0805</b>	<b>730</b>	<b>MW-55-54</b>	<b>11/14/06 1022</b>	<b>11/20/06 1049</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1036	730	MW-55-54	11/20/06 1049	11/27/06 0830	ND		ND		ND	
Q1266	730	MW-55-54	11/27/06 0830	12/5/06 0958	ND		ND		ND	
Q1933	730	MW-55-54	1/12/07 1423	1/24/07 1019	ND		ND		ND	
Q3278	730	MW-55-54	1/24/07 1019	2/13/07 1025	ND		ND		ND	
Q4093	730	MW-55-54	2/13/07 1025	3/1/07 0847	515.2	23.1	ND		ND	
Q5405	730	MW-55-54	3/1/07 0847	3/15/07 0905	515.5	27.7	ND		ND	
Q5983	730	MW-55-54	3/15/07 0905	3/28/07 0812	515.1	28.7	ND		ND	
Q6753	730	MW-55-54	3/28/07 0812	4/11/07 1036	515.7	4.24	ND		ND	
Q7341	730	MW-55-54	4/11/07 1036	4/25/07 1025	515.8	5.86	ND		ND	
Q8032	730	MW-55-54	4/25/07 1025	5/9/07 1457	516.2	1.83	ND		ND	
<b>Q0806</b>	<b>740</b>	<b>MW-56A (55')</b>	<b>11/15/06 1416</b>	<b>11/20/06 1310</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1037	740	MW-56A (55')	11/20/06 1310	11/27/06 1350	ND		ND		ND	
Q1934	740	MW-56-54	1/10/07 0957	1/24/07 1137	ND		ND		ND	
Q3279	740	MW 56-54	1/24/07 1137	2/15/07 0940	ND		ND		ND	
Q4094	740	MW-56-54	2/15/07 0940	3/1/07 1454	ND		ND		ND	
Q4131	740	MW-56-54	3/1/07 1454	3/2/07 1245	ND		ND		ND	
Q4235	740	MW-56-54	3/2/07 1245	3/5/07 1404	ND		ND		ND	
Q4608	740	MW-56-54	3/5/07 1404	3/7/07 0906	ND		ND		ND	
Q4723	740	MW-56-54	3/7/07 0906	3/9/07 1048	ND		ND		ND	
Q4838	740	MW-56-54	3/9/07 1048	3/12/07 1109	ND		ND		ND	
Q5021	740	MW-56-54	3/12/07 1109	3/14/07 1047	ND		ND		ND	
Q5423	740	MW-56-54	3/14/07 1047	3/16/07 0928	ND		ND		ND	
Q5377	740	MW-56-54	3/16/07 0928	3/20/07 1256	ND		ND		ND	
Q5703	740	MW-56-54	3/20/07 1256	3/23/07 1424	ND		ND		ND	
Q5803	740	MW-56-54	3/23/07 1424	3/26/07 1047	ND		ND		ND	
Q6118	740	MW-56-54	3/26/07 1047	3/29/07 1340	ND		ND		ND	
Q6268	740	MW-56-54	3/29/07 1340	4/2/07 1120	ND		ND		ND	
Q6572	740	MW-56-54	4/2/07 1120	4/6/07 0939	ND		ND		ND	
Q6662	740	MW-56-54	4/6/07 0939	4/9/07 1119	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6955	740	MW-56-54	4/9/07 1119	4/17/07 1310	ND		ND		ND	
Q7223	740	MW-56-54	4/17/07 1310	4/23/07 0809	ND		ND		ND	
Q7475	740	MW-56-54	4/23/07 0809	4/30/07 0929	ND		ND		ND	
Q8053	740	MW-56-54	5/3/07 1007	5/8/07 1348	ND		ND		ND	
<b>Q0807</b>	<b>750</b>	<b>MW-56B (75')</b>	<b>11/15/06 1422</b>	<b>11/20/06 1302</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1038	750	MW-56B (75')	11/20/06 1302	11/27/06 1355	ND		ND		ND	
Q1267	750	MW-56B (75')	11/27/06 1355	12/5/06 0842	ND		ND		ND	
Q1935	750	MW-56-85	1/10/07 1012	1/24/07 1132	ND		ND		ND	
Q3281	750	MW-56-85	1/24/07 1132	2/15/07 0945	ND		ND		ND	
Q4095	750	MW-56-85	2/15/07 0945	3/1/07 1500	ND		ND		ND	
Q4132	750	MW-56-85	3/1/07 1500	3/2/07 1249	ND		ND		ND	
Q4236	750	MW-56-85	3/2/07 1249	3/5/07 1410	ND		ND		ND	
Q4609	750	MW-56-85	3/5/07 1410	3/7/07 0910	ND		ND		ND	
Q4724	750	MW-56-85	3/7/07 0910	3/9/07 1051	ND		ND		ND	
Q4839	750	MW-56-85	3/9/07 1051	3/12/07 1112	ND		ND		ND	
Q5022	750	MW-56-85	3/12/07 1112	3/14/07 1050	ND		ND		ND	
Q5424	750	MW-56-85	3/14/07 1050	3/16/07 0932	ND		ND		ND	
Q5378	750	MW-56-85	3/16/07 0932	3/20/07 1301	ND		ND		ND	
Q5704	750	MW-56-85	3/20/07 1301	3/23/07 1428	ND		ND		ND	
Q5804	750	MW-56-85	3/23/07 1428	3/26/07 1043	ND		ND		ND	
Q6119	750	MW-56-85	3/26/07 1043	3/29/07 1344	ND		ND		ND	
Q6269	750	MW-56-85	3/29/07 1344	4/2/07 1124	ND		ND		ND	
Q6573	750	MW-56-85	4/2/07 1124	4/6/07 0943	ND		ND		ND	
Q6663	750	MW-56-85	4/6/07 0943	4/9/07 1124	ND		ND		ND	
Q6956	750	MW-56-85	4/9/07 1124	4/17/07 1314	ND		ND		ND	
Q7224	750	MW-56-85	4/17/07 1314	4/23/07 0813	ND		ND		ND	
Q7476	750	MW-56-85	4/23/07 0813	4/30/07 0932	ND		ND		ND	
Q8054	750	MW-56-85	5/3/07 1010	5/8/07 1352	ND		ND		ND	
<b>Q0808</b>	<b>770</b>	<b>MW-57-11</b>	<b>11/15/06 0755</b>	<b>11/20/06 1306</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1039	770	MW-57-11	11/20/06 1306	11/27/06 1124	ND		ND		ND	
Q1268	770	MW-57-11	11/27/06 1124	12/4/06 1046	ND		ND		ND	
Q2054	770	MW-57-11	1/15/07 1204	2/1/07 1006	ND		ND		ND	
Q2443	770	MW-57-11	2/1/07 1006	2/8/07 1500	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2384	770	MW-57-11	2/8/07 1500	2/9/07 1405	ND		ND		ND	
Q2499	770	MW-57-11	2/9/07 1405	2/10/07 1118	ND		ND		ND	
Q2594	770	MW-57-11	2/10/07 1118	2/11/07 1530	ND		ND		ND	
Q2621	770	MW-57-11	2/11/07 1330	2/12/07 1050	ND		ND		ND	
Q2835	770	MW-57-11	2/12/07 1050	2/13/07 1310	ND		ND		ND	
Q2893	770	MW-57-11	2/13/07 1310	2/14/07 1040	ND		ND		ND	
Q3215	770	MW-57-11	2/14/07 1040	2/16/07 1038	ND		ND		ND	
Q3338	770	MW-57-11	2/16/07 1038	2/19/07 1056	ND		ND		ND	
Q3477	770	MW-57-11	2/19/07 1056	2/21/07 1034	ND		ND		ND	
Q3824	770	MW-57-11	2/21/07 1034	2/23/07 1009	ND		ND		ND	
Q3566	770	MW-57-11	2/23/07 1009	2/26/07 1040	515.5	7.20	ND		ND	
Q3911	770	MW-57-11	2/26/07 1040	2/28/07 1358	515.2	12.6	ND		ND	
Q4113	770	MW-57-11	2/28/07 1358	3/2/07 0847	515.3	19.8	ND		ND	
Q4217	770	MW-57-11	3/2/07 0847	3/5/07 1041	515.3	16.7	ND		ND	
Q4588	770	MW-57-11	3/5/07 1041	3/7/07 1413	515.3	28.8	ND		ND	
Q4706	770	MW-57-11	3/7/07 1413	3/9/07 0912	515.1	17.2	ND		ND	
Q4821	770	MW-57-11	3/9/07 0912	3/12/07 1035	515.5	32.5	ND		ND	
Q5023	770	MW-57-11	3/12/07 1035	3/14/07 1000	515.1	24.5	ND		ND	
Q5425	770	MW-57-11	3/14/07 1000	3/16/07 1144	515.5	25.2	ND		ND	
Q5379	770	MW-57-11	3/16/07 1144	3/19/07 1029	515.5	19.0	ND		ND	
Q5705	770	MW-57-11	3/19/07 1029	3/23/07 1018	515.6	27.3	ND		ND	
Q5805	770	MW-57-11	3/23/07 1018	3/26/07 1018	515.3	6.67	ND		ND	
Q6121	770	MW-57-11	3/26/07 1018	3/29/07 1504	515.3	5.31	ND		ND	
Q6270	770	MW-57-11	3/29/07 1504	4/2/07 0940	515.8	2.66	ND		ND	
Q6574	770	MW-57-11	4/2/07 0940	4/6/07 1128	515.8	2.86	ND		ND	
Q6664	770	MW-57-11	4/6/07 1128	4/9/07 0953	515.0	1.61	ND		ND	
Q6957	770	MW-57-11	4/9/07 0953	4/16/07 1047	516.1	4.10	ND		ND	
Q7225	770	MW-57-11	4/16/07 1047	4/23/07 0951	517.2 **	0.728	ND		ND	
Q7477	770	MW-57-11	4/23/07 0951	4/30/07 0847	518.4 **	1.16	ND		ND	
Q8055	770	MW-57-11	5/3/07 0824	5/9/07 1525	518.0 *	0.740	ND		ND	
<b>Q0809</b>	<b>780</b>	<b>MW-57-20</b>	<b>11/15/06 0805</b>	<b>11/20/06 1307</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1041	780	MW-57-20	11/20/06 1307	11/27/06 1127	ND		ND		ND	
Q1269	780	MW-57-20	11/27/06 1127	12/4/06 1041	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2055	780	MW-57-20	1/15/07 1155	2/1/07 1002	ND		ND		ND	
Q2444	780	MW-57-20	2/1/07 1002	2/8/07 1455	ND		ND		ND	
Q2385	780	MW-57-20	2/8/07 1455	2/9/07 1408	ND		ND		ND	
Q2501	780	MW-57-20	2/9/07 1408	2/10/07 1114	ND		ND		ND	
Q2595	780	MW-57-20	2/10/07 1114	2/11/07 1050	ND		ND		ND	
Q2622	780	MW-57-20	2/11/07 1050	2/12/07 1045	ND		ND		ND	
Q2836	780	MW-57-20	2/12/07 1045	2/13/07 1305	ND		ND		ND	
Q2894	780	MW-57-20	2/13/07 1305	2/14/07 1035	ND		ND		ND	
Q3216	780	MW-57-20	2/14/07 1035	2/16/07 1035	ND		ND		ND	
Q3339	780	MW-57-20	2/16/07 1035	2/19/07 1053	ND		ND		ND	
Q3478	780	MW-57-20	2/19/07 1053	2/21/07 1030	ND		ND		ND	
Q3825	780	MW-57-20	2/21/07 1030	2/23/07 1005	ND		ND		ND	
Q3567	780	MW-57-20	2/23/07 1005	2/26/07 1036	ND		ND		ND	
Q3912	780	MW-57-20	2/26/07 1036	2/28/07 1402	ND		ND		ND	
Q4114	780	MW-57-20	2/28/07 1402	3/2/07 0844	ND		ND		ND	
Q4218	780	MW-57-20	3/2/07 0844	3/5/07 1038	ND		ND		ND	
Q4589	780	MW-57-20	3/5/07 1038	3/7/07 1411	ND		ND		ND	
Q4707	780	MW-57-20	3/7/07 1411	3/9/07 0909	ND		ND		ND	
Q4822	780	MW-57-20	3/9/07 0909	3/12/07 1032	ND		ND		ND	
Q5024	780	MW-57-20	3/12/07 1032	3/14/07 0957	ND		ND		ND	
Q5426	780	MW-57-20	3/14/07 0957	3/16/07 1140	ND		ND		ND	
Q5381	780	MW-57-20	3/16/07 1140	3/19/07 1026	ND		ND		ND	
Q5706	780	MW-57-20	3/19/07 1026	3/23/07 1014	ND		ND		ND	
Q5806	780	MW-57-20	3/23/07 1014	3/26/07 1014	ND		ND		ND	
Q6122	780	MW-57-20	3/26/07 1014	3/29/07 1505	ND		ND		ND	
Q6271	780	MW-57-20	3/29/07 1505	4/2/07 0936	ND		ND		ND	
Q6575	780	MW-57-20	4/2/07 0936	4/6/07 1124	ND		ND		ND	
Q6665	780	MW-57-20	4/6/07 1124	4/9/07 0949	ND		ND		ND	
Q6958	780	MW-57-20	4/9/07 0949	4/16/07 1044	ND		ND		ND	
Q7226	780	MW-57-20	4/16/07 1044	4/23/07 0948	ND		ND		ND	
Q7478	780	MW-57-20	4/23/07 0948	4/30/07 0844	ND		ND		ND	
Q8056	780	MW-57-20	5/3/07 0822	5/9/07 1528	ND		ND		ND	
<b>Q0810</b>	<b>790</b>	<b>MW-57-45</b>	<b>11/15/06 0813</b>	<b>11/20/06 1305</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1042	790	MW-57-45	11/20/06 1305	11/27/06 1120	ND		ND		ND	
Q1270	790	MW-57-45	11/27/06 1120	12/4/06 1038	ND		ND		ND	
Q2056	790	MW-57-45	1/15/07 1159	2/1/07 0958	ND		ND		ND	
Q2445	790	MW-57-45	2/1/07 0958	2/8/07 1450	ND		ND		ND	
Q2386	790	MW-57-45	2/8/07 1450	2/9/07 1412	ND		ND		ND	
Q2502	790	MW-57-45	2/9/07 1412	2/10/07 1110	ND		ND		ND	
Q2596	790	MW-57-45	2/10/07 1110	2/11/07 1043	ND		ND		ND	
Q2623	790	MW-57-45	2/11/07 1043	2/12/07 1040	ND		ND		ND	
Q2837	790	MW-57-45	2/12/07 1040	2/13/07 1300	ND		ND		ND	
Q2895	790	MW-57-45	2/13/07 1300	2/14/07 1030	ND		ND		ND	
Q3217	790	MW-57-45	2/14/07 1030	2/16/07 1030	ND		ND		ND	
Q3341	790	MW-57-45	2/16/07 1030	2/19/07 1047	ND		ND		ND	
Q3479	790	MW-57-45	2/19/07 1047	2/21/07 1025	ND		ND		ND	
Q3826	790	MW-57-45	2/21/07 1025	2/23/07 1002	ND		ND		ND	
Q3568	790	MW-57-45	2/23/07 1002	2/26/07 1032	ND		ND		ND	
Q3913	790	MW-57-45	2/26/07 1032	2/28/07 1407	ND		ND		ND	
Q4115	790	MW-57-45	2/28/07 1407	3/2/07 0840	ND		ND		ND	
Q4219	790	MW-57-45	3/2/07 0840	3/5/07 1034	ND		ND		ND	
Q4590	790	MW-57-45	3/5/07 1034	3/7/07 1407	ND		ND		ND	
Q4708	790	MW-57-45	3/7/07 1407	3/9/07 0906	ND		ND		ND	
Q4823	790	MW-57-45	3/9/07 0906	3/12/07 1028	ND		ND		ND	
Q5025	790	MW-57-45	3/12/07 1028	3/14/07 0953	ND		ND		ND	
Q5427	790	MW-57-45	3/14/07 0953	3/16/07 1136	ND		ND		ND	
Q5382	790	MW-57-45	3/16/07 1136	3/19/07 1022	ND		ND		ND	
Q5707	790	MW-57-45	3/19/07 1022	3/23/07 1010	ND		ND		ND	
Q5807	790	MW-57-45	3/23/07 1010	3/26/07 1010	ND		ND		ND	
Q6123	790	MW-57-45	3/26/07 1010	3/29/07 1503	ND		ND		ND	
Q6272	790	MW-57-45	3/29/07 1503	4/2/07 0932	ND		ND		ND	
Q6576	790	MW-57-45	4/2/07 0932	4/6/07 1119	ND		ND		ND	
Q6666	790	MW-57-45	4/6/07 1119	4/9/07 0945	ND		ND		ND	
Q6959	790	MW-57-45	4/9/07 0945	4/16/07 1039	ND		ND		ND	
Q7227	790	MW-57-45	4/16/07 1039	4/23/07 0944	ND		ND		ND	
Q7479	790	MW-57-45	4/23/07 0944	4/30/07 0841	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8057	790	MW-57-45	5/3/07 0820	5/9/07 1531	ND		ND		ND	
<b>Q1271</b>	<b>800</b>	<b>MW-58-26</b>	<b>11/29/06 1336</b>	<b>12/5/06 1316</b>	<b>515.2 *</b>	<b>1.09</b>	<b>ND</b>		<b>ND</b>	
Q2057	800	MW-58-26	1/16/07 0950	2/1/07 1019	515.7 *	2.42	ND		ND	
Q2446	800	MW-58-26	2/1/07 1019	2/8/07 1435	516.0 *	1.11	ND		ND	
Q2387	800	MW-58-26	2/8/07 1435	2/9/07 1350	ND		ND		ND	
Q2597	800	MW-58-26	2/10/07 1053	2/11/07 1025	ND		ND		ND	
Q2610	800	MW-58-26	2/9/07 1350	2/11/07 1434	ND		ND		ND	
Q2624	800	MW-58-26	2/11/07 1025	2/12/07 1020	ND		ND		ND	
Q2838	800	MW-58-26	2/12/07 1020	2/13/07 1115	ND		ND		ND	
Q2896	800	MW-58-26	2/13/07 1115	2/14/07 1010	ND		ND		ND	
Q3218	800	MW-58-26	2/14/07 1010	2/16/07 0945	ND		ND		ND	
Q3342	800	MW-58-26	2/16/07 0945	2/19/07 1105	ND		ND		ND	
Q3481	800	MW-58-26	2/19/07 1105	2/21/07 1042	ND		ND		ND	
Q3827	800	MW-58-26	2/21/07 1042	2/23/07 0942	ND		ND		ND	
Q3569	800	MW-58-26	2/23/07 0942	2/26/07 0855	ND		ND		ND	
Q3914	800	MW-58-26	2/26/07 0855	2/28/07 1335	ND		ND		ND	
Q4116	800	MW-58-26	2/28/07 1335	3/2/07 1308	ND		ND		ND	
Q4221	800	MW-58-26	3/2/07 1308	3/5/07 1046	515.9 *	1.39	ND		ND	
Q4591	800	MW-58-26	3/5/07 1046	3/7/07 1333	516.3 *	0.933	ND		ND	
Q4709	800	MW-58-26	3/7/07 1333	3/9/07 0920	516.1 *	1.09	ND		ND	
Q4824	800	MW-58-26	3/9/07 0920	3/12/07 1043	516.4 *	0.991	ND		ND	
Q5026	800	MW-58-26	3/12/07 1043	3/14/07 1008	515.0 *	0.581	ND		ND	
Q5428	800	MW-58-26	3/14/07 1008	3/16/07 0913	514.2 *	0.676	ND		ND	
Q5383	800	MW-58-26	3/16/07 0913	3/19/07 1038	515.8 *	0.704	ND		ND	
Q5708	800	MW-58-26	3/19/07 1038	3/23/07 0955	514.4 *	2.38	ND		ND	
Q5808	800	MW-58-26	3/23/07 0955	3/26/07 1026	515.2 *	1.09	ND		ND	
Q5808D	800	MW-58-26	3/23/07 0955	3/26/07 1026	514.8 *	1.01	ND		ND	
Q6124	800	MW-58-26	3/26/07 1026	3/29/07 1515	515.6 *	2.04	ND		ND	
Q6273	800	MW-58-26	3/29/07 1515	4/2/07 0957	516.0 *	0.807	ND		ND	
Q6577	800	MW-58-26	4/2/07 0957	4/6/07 0919	ND		ND		ND	
Q6667	800	MW-58-26	4/6/07 0919	4/9/07 1009	ND		ND		ND	
Q6961	800	MW-58-26	4/9/07 1009	4/17/07 1044	514.8 *	1.50	ND		ND	
Q7228	800	MW-58-26	4/17/07 1044	4/23/07 1006	515.0 *	1.08	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7481	800	MW-58-26	4/23/07 1006	4/30/07 0855	516.2 *	1.11	ND		ND	
Q8203	800	MW-58-26	5/3/07 0832	5/10/07 0828	ND		ND		ND	
<b>Q1272</b>	<b>810</b>	<b>MW-58-65</b>	<b>11/29/06 1342</b>	<b>12/5/06 1314</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2058	810	MW-58-65	1/16/07 0945	2/1/07 1021	517.2 *	1.31	ND		ND	
Q2447	810	MW-58-65	2/1/07 1021	2/8/07 1440	517.2 *	0.913	ND		ND	
Q2388	810	MW-58-65	2/8/07 1440	2/9/07 1355	ND		ND		ND	
Q2503	810	MW-58-65	2/9/07 1355	2/10/07 1057	ND		ND		ND	
Q2598	810	MW-58-65	2/10/07 1057	2/11/07 1030	ND		ND		ND	
Q2625	810	MW-58-65	2/11/07 1030	2/12/07 1025	ND		ND		ND	
Q2839	810	MW-58-65	2/12/07 1025	2/13/07 1120	ND		ND		ND	
Q2897	810	MW-58-65	2/13/07 1120	2/14/07 1015	ND		ND		ND	
Q3219	810	MW-58-65	2/14/07 1015	2/16/07 0950	517.8 *	0.401	ND		ND	
Q3343	810	MW-58-65	2/16/07 0950	2/19/07 1110	ND		ND		ND	
Q3482	810	MW-58-65	2/19/07 1110	2/21/07 1046	ND		ND		ND	
Q3828	810	MW-58-65	2/21/07 1046	2/23/07 0947	ND		ND		ND	
Q3570	810	MW-58-65	2/23/07 0947	2/26/07 0900	ND		ND		ND	
Q3915	810	MW-58-65	2/26/07 0900	2/28/07 1340	ND		ND		ND	
Q4117	810	MW-58-65	2/28/07 1340	3/2/07 1313	ND		ND		ND	
Q4222	810	MW-58-65	3/2/07 1313	3/5/07 1050	515.6 *	0.824	ND		ND	
Q4592	810	MW-58-65	3/5/07 1050	3/7/07 1338	516.4 *	0.849	ND		ND	
Q4710	810	MW-58-65	3/7/07 1338	3/9/07 0925	ND		ND		ND	
Q4825	810	MW-58-65	3/9/07 0925	3/12/07 1047	515.8 *	0.792	ND		ND	
Q5027	810	MW-58-65	3/12/07 1047	3/14/07 1012	ND		ND		ND	
Q5429	810	MW-58-65	3/14/07 1012	3/16/07 0918	ND		ND		ND	
Q5384	810	MW-58-65	3/16/07 0918	3/19/07 1043	518.2 *	0.832	ND		ND	
Q5709	810	MW-58-65	3/19/07 1043	3/23/07 0959	515.6 *	1.05	ND		ND	
Q5809	810	MW-58-65	3/23/07 0959	3/26/07 1030	517.1 *	0.838	ND		ND	
Q6125	810	MW-58-65	3/26/07 1030	3/29/07 1518	ND		ND		ND	
Q6274	810	MW-58-65	3/29/07 1518	4/2/07 1001	515.8 *	0.918	ND		ND	
Q6578	810	MW-58-65	4/2/07 1001	4/6/07 0924	ND		ND		ND	
Q6668	810	MW-58-65	4/6/07 0924	4/9/07 1014	ND		ND		ND	
Q6962	810	MW-58-65	4/9/07 1014	4/17/07 1048	517.8 *	1.01	ND		ND	
Q7229	810	MW-58-65	4/17/07 1048	4/23/07 1009	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7482	810	MW-58-65	4/23/07 1009	4/30/07 0859	516.8 *	1.09	ND		ND	
Q8204	810	MW-58-65	5/3/07 0834	5/10/07 0832	514.6 *	1.14	ND		ND	
<b>Q1273</b>	<b>830</b>	<b>MW-59-31</b>	<b>11/29/06 1257</b>	<b>12/5/06 1339</b>	<b>516.2 *</b>	<b>0.474</b>	<b>ND</b>		<b>ND</b>	
Q2083	830	MW-59-31	1/16/07 1008	2/1/07 1321	519.8 *	0.497	ND		ND	
Q2481	830	MW-59-31	2/1/07 1321	2/8/07 1420	515.0 *	0.942	ND		ND	
Q2411	830	MW-59-31	2/8/07 1420	2/9/07 1134	ND		ND		ND	
Q2564	830	MW-59-31	2/9/07 1134	2/10/07 1046	ND		ND		ND	
Q2527	830	MW-59-31	2/10/07 1046	2/11/07 0745	ND		ND		ND	
Q2648	830	MW-59-31	2/11/07 0745	2/12/07 1326	ND		ND		ND	
Q2863	830	MW-59-31	2/12/07 1326	2/13/07 1034	ND		ND		ND	
Q2921	830	MW-59-31	2/13/07 1034	2/14/07 1055	ND		ND		ND	
Q3242	830	MW-59-31	2/14/07 1055	2/16/07 0910	ND		ND		ND	
Q3308	830	MW-59-31	2/16/07 0910	2/19/07 1045	ND		ND		ND	
Q3505	830	MW-59-31	2/19/07 1045	2/21/07 1129	ND		ND		ND	
Q3851	830	MW-59-31	2/21/07 1129	2/23/07 1044	ND		ND		ND	
Q3593	830	MW-59-31	2/23/07 1044	2/26/07 1146	ND		ND		ND	
Q3942	830	MW-59-31	2/26/07 1146	2/28/07 1342	ND		ND		ND	
Q4167	830	MW-59-31	2/28/07 1342	3/2/07 1117	ND		ND		ND	
Q4185	830	MW-59-31	3/2/07 1117	3/5/07 1116	ND		ND		ND	
Q4555	830	MW-59-31	3/5/07 1116	3/7/07 1426	ND		ND		ND	
Q4743	830	MW-59-31	3/7/07 1426	3/9/07 1006	ND		ND		ND	
Q4793	830	MW-59-31	3/9/07 1006	3/12/07 1026	ND		ND		ND	
Q5055	830	MW-59-31	3/12/07 1026	3/14/07 1136	ND		ND		ND	
Q5457	830	MW-59-31	3/14/07 1136	3/16/07 1013	ND		ND		ND	
Q5341	830	MW-59-31	3/16/07 1013	3/19/07 1125	ND		ND		ND	
Q5666	830	MW-59-31	3/19/07 1125	3/23/07 1043	ND		ND		ND	
Q5767	830	MW-59-31	3/23/07 1043	3/26/07 1102	ND		ND		ND	
Q6154	830	MW-59-31	3/26/07 1102	3/29/07 1135	ND		ND		ND	
Q6304	830	MW-59-31	3/29/07 1135	4/2/07 1046	ND		ND		ND	
Q6536	830	MW-59-31	4/2/07 1046	4/6/07 1048	ND		ND		ND	
Q6697	830	MW-59-31	4/6/07 1048	4/10/07 1016	ND		ND		ND	
Q6991	830	MW-59-31	4/10/07 1016	4/17/07 0940	ND		ND		ND	
Q7308	830	MW-59-31	4/17/07 0940	4/24/07 0949	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7595	830	MW-59-31	4/24/07 0949	5/1/07 0827	515.0 *	1.09	ND		ND	
Q8213	830	MW-59-31	5/3/07 0942	5/10/07 0841	ND		ND		ND	
<b>Q1274</b>	<b>840</b>	<b>MW-59-45</b>	<b>11/29/06 1311</b>	<b>12/5/06 1346</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2084	840	MW-59-45	1/16/07 1004	2/1/07 1339	514.2 *	0.770	ND		ND	
Q2482	840	MW-59-45	2/1/07 1339	2/8/07 1428	ND		ND		ND	
Q2412	840	MW-59-45	2/8/07 1428	2/9/07 1136	ND		ND		ND	
Q2565	840	MW-59-45	2/9/07 1136	2/10/07 1050	ND		ND		ND	
Q2528	840	MW-59-45	2/10/07 1050	2/11/07 0748	ND		ND		ND	
Q2649	840	MW-59-45	2/11/07 0748	2/12/07 1329	ND		ND		ND	
Q2864	840	MW-59-45	2/12/07 1329	2/13/07 1037	ND		ND		ND	
Q2922	840	MW-59-45	2/13/07 1037	2/14/07 1050	ND		ND		ND	
Q3243	840	MW-59-45	2/14/07 1059	2/16/07 0921	ND		ND		ND	
Q3309	840	MW-59-45	2/16/07 0921	2/19/07 1047	ND		ND		ND	
Q3506	840	MW-59-45	2/19/07 1047	2/21/07 1136	ND		ND		ND	
Q3852	840	MW-59-45	2/21/07 1136	2/23/07 1049	ND		ND		ND	
Q3594	840	MW-59-45	2/23/07 1049	2/26/07 1151	ND		ND		ND	
Q3943	840	MW-59-45	2/26/07 1151	2/28/07 1349	ND		ND		ND	
Q4168	840	MW-59-45	2/28/07 1340	3/2/07 1120	ND		ND		ND	
Q4186	840	MW-59-45	3/2/07 1120	3/5/07 1124	ND		ND		ND	
Q4556	840	MW-59-45	3/5/07 1124	3/7/07 1433	ND		ND		ND	
Q4744	840	MW-59-45	3/7/07 1433	3/9/07 1010	ND		ND		ND	
Q4794	840	MW-59-45	3/9/07 1010	3/12/07 1031	ND		ND		ND	
Q5056	840	MW-59-45	3/12/07 1031	3/14/07 1145	ND		ND		ND	
Q5458	840	MW-59-45	3/14/07 1145	3/16/07 1020	ND		ND		ND	
Q5342	840	MW-59-45	3/16/07 1020	3/19/07 1130	ND		ND		ND	
Q5667	840	MW-59-45	3/19/07 1130	3/23/07 1048	ND		ND		ND	
Q6155	840	MW-59-45	3/26/07 1107	3/29/07 1145	ND		ND		ND	
Q6305	840	MW-59-45	3/29/07 1145	4/2/07 1057	ND		ND		ND	
Q6537	840	MW-59-45	4/2/07 1057	4/6/07 1054	ND		ND		ND	
Q6698	840	MW-59-45	4/6/07 1054	4/10/07 1020	ND		ND		ND	
Q6992	840	MW-59-45	4/10/07 1020	4/17/07 0935	ND		ND		ND	
Q7309	840	MW-59-45	4/17/07 0935	4/24/07 0954	ND		ND		ND	
Q7596	840	MW-59-45	4/24/07 0954	5/1/07 0830	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8214	840	MW-59-45	5/3/07 0940	5/10/07 0845	ND		ND		ND	
<b>Q0811</b>	<b>850</b>	<b>MW-60A (37')</b>	<b>11/14/06 1320</b>	<b>11/20/06 0816</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1043	850	MW-60A (37')	11/20/06 0816	11/27/06 0906	ND		ND		ND	
Q1936	850	MW-60A (37')	1/12/07 1105	1/17/07 1020	ND		ND		ND	
Q2059	850	MW-60A (37')	1/17/07 1020	2/1/07 1037	ND		ND		ND	
Q2448	850	MW-60A (37')	2/1/07 1037	2/8/07 0900	ND		ND		ND	
Q2389	850	MW-60A (37')	2/8/07 0900	2/9/07 1005	ND		ND		ND	
Q2504	850	MW-60A (37')	2/9/07 1005	2/10/07 0810	ND		ND		ND	
Q2599	850	MW-60A (37')	2/10/07 0810	2/11/07 0745	ND		ND		ND	
Q2626	850	MW-60A (37')	2/11/07 0745	2/12/07 0810	ND		ND		ND	
Q2841	850	MW-60A (37')	2/12/07 0840	2/13/07 0825	ND		ND		ND	
Q2898	850	MW-60A (37')	2/13/07 0825	2/14/07 0945	ND		ND		ND	
Q3221	850	MW-60A (37')	2/14/07 0945	2/16/07 1015	ND		ND		ND	
Q3344	850	MW-60A (37')	2/16/07 1015	2/19/07 0845	ND		ND		ND	
Q3483	850	MW-60A (37')	2/19/07 0845	2/21/07 1105	ND		ND		ND	
Q3829	850	MW-60A (37')	2/21/07 1105	2/23/07 1025	ND		ND		ND	
Q3571	850	MW-60A (37')	2/23/07 1025	2/26/07 0930	ND		ND		ND	
Q3916	850	MW-60A (37')	2/26/07 0930	2/28/07 1115	ND		ND		ND	
Q4118	850	MW-60A (37')	2/28/07 1115	3/2/07 1405	ND		ND		ND	
Q4223	850	MW-60A (37')	3/2/07 1405	3/5/07 0940	ND		ND		ND	
Q4593	850	MW-60A (37')	3/5/07 0940	3/7/07 1125	ND		ND		ND	
Q4711	850	MW-60A (37')	3/7/07 1125	3/9/07 0843	ND		ND		ND	
Q4826	850	MW-60A (37')	3/9/07 0843	3/12/07 0938	ND		ND		ND	
Q5028	850	MW-60A (37')	3/12/07 0938	3/14/07 0912	ND		ND		ND	
Q5430	850	MW-60A (37')	3/14/07 0912	3/16/07 0815	ND		ND		ND	
Q5385	850	MW-60A (37')	3/16/07 0815	3/19/07 1145	ND		ND		ND	
Q5710	850	MW-60A (37')	3/19/07 1145	3/23/07 1115	ND		ND		ND	
Q5810	850	MW-60A (37')	3/23/07 1115	3/26/07 1138	ND		ND		ND	
Q6126	850	MW-60A (37')	3/26/07 1138	3/29/07 1406	ND		ND		ND	
Q6275	850	MW-60A (37')	3/29/07 1406	4/2/07 1031	ND		ND		ND	
Q6579	850	MW-60A (37')	4/2/07 1031	4/6/07 0753	ND		ND		ND	
Q6669	850	MW-60A (37')	4/6/07 0753	4/9/07 0835	ND		ND		ND	
Q6963	850	MW-60A (37')	4/9/07 0835	4/17/07 0742	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q0812	860	MW-60B (55')	11/14/06 1340	11/20/06 0820	ND		ND		ND	
Q1044	860	MW-60B (55')	11/20/06 0820	11/27/06 0911	ND		ND		ND	
Q1937	860	MW-60B (55')	1/12/07 1105	1/17/07 1020	ND		ND		ND	
Q2061	860	MW-60B (55')	1/17/07 1020	2/1/07 1037	ND		ND		ND	
Q2449	860	MW-60B (55')	2/1/07 1037	2/8/07 0900	ND		ND		ND	
Q2390	860	MW-60B (55')	2/8/07 0900	2/9/07 1005	ND		ND		ND	
Q2505	860	MW-60B (55')	2/9/07 1005	2/10/07 0810	ND		ND		ND	
Q2601	860	MW-60B (55')	2/10/07 0810	2/11/07 0745	ND		ND		ND	
Q2627	860	MW-60B (55')	2/11/07 0745	2/12/07 0840	ND		ND		ND	
Q2842	860	MW-60B (55')	2/12/07 0840	2/13/07 0825	ND		ND		ND	
Q2899	860	MW-60B (55')	2/13/07 0825	2/14/07 0945	ND		ND		ND	
Q3222	860	MW-60B (55')	2/14/07 0945	2/16/07 1015	ND		ND		ND	
Q3345	860	MW-60B (55')	2/16/07 1015	2/19/07 0845	ND		ND		ND	
Q3484	860	MW-60B (55')	2/19/07 0845	2/21/07 1105	ND		ND		ND	
Q3830	860	MW-60B (55')	2/21/07 1105	2/23/07 1025	ND		ND		ND	
Q3572	860	MW-60B (55')	2/23/07 1025	2/26/07 0930	ND		ND		ND	
Q3917	860	MW-60B (55')	2/26/07 0930	2/28/07 1115	ND		ND		ND	
Q4119	860	MW-60B (55')	2/28/07 1115	3/2/07 1405	ND		ND		ND	
Q4224	860	MW-60B (55')	3/2/07 1405	3/5/07 0940	ND		ND		ND	
Q4594	860	MW-60B (55')	3/5/07 0940	3/7/07 1125	ND		ND		ND	
Q4712	860	MW-60B (55')	3/7/07 1125	3/9/07 0843	ND		ND		ND	
Q4827	860	MW-60B (55')	3/9/07 0843	3/12/07 0938	ND		ND		ND	
Q5029	860	MW-60B (55')	3/12/07 0938	3/14/07 0912	ND		ND		ND	
Q5431	860	MW-60B (55')	3/14/07 0912	3/16/07 0815	ND		ND		ND	
Q5386	860	MW-60B (55')	3/16/07 0815	3/19/07 1145	ND		ND		ND	
Q5711	860	MW-60B (55')	3/19/07 1145	3/23/07 1115	ND		ND		ND	
Q5811	860	MW-60B (55')	3/23/07 1115	3/26/07 1138	ND		ND		ND	
Q6127	860	MW-60B (55')	3/26/07 1138	3/29/07 1406	ND		ND		ND	
Q6276	860	MW-60B (55')	3/29/07 1406	4/2/07 1031	ND		ND		ND	
Q6581	860	MW-60B (55')	4/2/07 1031	4/6/07 0753	ND		ND		ND	
Q6670	860	MW-60B (55')	4/6/07 0753	4/9/07 0835	ND		ND		ND	
Q6964	860	MW-60B (55')	4/9/07 0835	4/17/07 0742	ND		ND		ND	
Q1938	870	MW-60C (75')	1/12/07 1105	1/17/07 1020	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2062	870	MW-60C (75')	1/17/07 1020	2/1/07 1037	ND		ND		ND	
Q2450	870	MW-60C (75')	2/1/07 1037	2/8/07 0900	ND		ND		ND	
Q2391	870	MW-60C (75')	2/8/07 0900	2/9/07 1005	ND		ND		ND	
Q2506	870	MW-60C (75')	2/9/07 1005	2/10/07 0810	ND		ND		ND	
Q2602	870	MW-60C (75')	2/10/07 0810	2/11/07 0745	ND		ND		ND	
Q2628	870	MW-60C (75')	2/11/07 0745	2/12/07 0840	ND		ND		ND	
Q2944	870	MW-60C (75')	2/12/07 0840	2/13/07 0825	ND		ND		ND	
Q2901	870	MW-60C (75')	2/13/07 0825	2/14/07 0943	ND		ND		ND	
Q3223	870	MW-60C (75')	2/14/07 0945	2/16/07 1015	ND		ND		ND	
Q3346	870	MW-60C (75')	2/16/07 1015	2/19/07 0845	ND		ND		ND	
Q3485	870	MW-60C (75')	2/19/07 0845	2/21/07 1105	ND		ND		ND	
Q3831	870	MW-60C (75')	2/21/07 1105	2/23/07 1025	ND		ND		ND	
Q3573	870	MW-60C (75')	2/23/07 1025	2/26/07 0930	ND		ND		ND	
Q3918	870	MW-60C (75')	2/26/07 0930	2/28/07 1115	ND		ND		ND	
Q4121	870	MW-60C (75')	2/28/07 1115	3/2/07 1405	ND		ND		ND	
Q4225	870	MW-60C (75')	3/2/07 1405	3/5/07 0940	ND		ND		ND	
Q4597	870	MW-60C (75')	3/5/07 0940	3/7/07 1125	ND		ND		ND	
Q4713	870	MW-60C (75')	3/7/07 1125	3/9/07 0843	ND		ND		ND	
Q4828	870	MW-60C (75')	3/9/07 0843	3/12/07 0938	ND		ND		ND	
Q5030	870	MW-60C (75')	3/12/07 0938	3/14/07 0912	ND		ND		ND	
Q5432	870	MW-60C (75')	3/14/07 0912	3/16/07 0815	ND		ND		ND	
Q5387	870	MW-60C (75')	3/16/07 0815	3/19/07 1145	ND		ND		ND	
Q5712	870	MW-60C (75')	3/19/07 1145	3/23/07 1115	ND		ND		ND	
Q5812	870	MW-60C (75')	3/23/07 1115	3/26/07 1138	ND		ND		ND	
Q6128	870	MW-60C (75')	3/26/07 1138	3/29/07 1406	ND		ND		ND	
Q6277	870	MW-60C (75')	3/29/07 1406	4/2/07 1031	ND		ND		ND	
Q6582	870	MW-60C (75')	4/2/07 1031	4/6/07 0753	ND		ND		ND	
Q6671	870	MW-60C (75')	4/6/07 0753	4/9/07 0835	ND		ND		ND	
Q6965	870	MW-60C (75')	4/9/07 0835	4/17/07 0742	ND		ND		ND	
<b>Q1939</b>	<b>880</b>	<b>MW-60D (136')</b>	<b>1/12/07 1105</b>	<b>1/17/07 1020</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2063	880	MW-60D (136')	1/17/07 1020	2/1/07 1037	ND		ND		ND	
Q2451	880	MW-60D (136')	2/1/07 1037	2/8/07 0900	ND		ND		ND	
Q2392	880	MW-60D (136')	2/8/07 0900	2/9/07 1005	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2507	880	MW-60D (136')	2/9/07 1005	2/10/07 0810	ND		ND		ND	
Q2603	880	MW-60D (136')	2/10/07 0810	2/11/07 0745	ND		ND		ND	
Q2629	880	MW-60D (136')	2/11/07 0745	2/12/07 0840	ND		ND		ND	
Q2843	880	MW-60D (136')	2/12/07 0840	2/13/07 0825	ND		ND		ND	
Q2902	880	MW-60D (136')	2/13/07 0825	2/14/07 0945	ND		ND		ND	
Q3224	880	MW-60D (136')	2/14/07 0945	2/16/07 1015	ND		ND		ND	
Q3347	880	MW-60D (136')	2/16/07 1015	2/19/07 0845	ND		ND		ND	
Q3486	880	MW-60D (136')	2/19/07 0845	2/21/07 1105	ND		ND		ND	
Q3832	880	MW-60D (136')	2/21/07 1105	2/23/07 1025	ND		ND		ND	
Q3574	880	MW-60D (136')	2/23/07 1025	2/26/07 0930	ND		ND		ND	
Q3919	880	MW-60D (136')	2/26/07 0930	2/28/07 1115	ND		ND		ND	
Q4122	880	MW-60D (136')	2/28/07 1115	3/2/07 1405	ND		ND		ND	
Q4226	880	MW-60D (136')	3/2/07 1405	3/5/07 0940	ND		ND		ND	
Q4598	880	MW-60D (136')	3/5/07 0940	3/7/07 1125	ND		ND		ND	
Q4714	880	MW-60D (136')	3/7/07 1125	3/9/07 0843	ND		ND		ND	
Q4829	880	MW-60D (136')	3/9/07 0843	3/12/07 0938	ND		ND		ND	
Q5031	880	MW-60D (136')	3/12/07 0938	3/14/07 0912	ND		ND		ND	
Q5433	880	MW-60D (136')	3/14/07 0912	3/16/07 0815	ND		ND		ND	
Q5388	880	MW-60D (136')	3/16/07 0815	3/19/07 1145	ND		ND		ND	
Q5713	880	MW-60D (136')	3/19/07 1145	3/23/07 1115	ND		ND		ND	
Q5813	880	MW-60D (136')	3/23/07 1115	3/26/07 1138	ND		ND		ND	
Q6129	880	MW-60D (136')	3/26/07 1138	3/29/07 1406	ND		ND		ND	
Q6278	880	MW-60D (136')	3/29/07 1406	4/2/07 1031	ND		ND		ND	
Q6583	880	MW-60D (136')	4/2/07 1031	4/6/07 0753	ND		ND		ND	
Q6672	880	MW-60D (136')	4/6/07 0753	4/9/07 0835	ND		ND		ND	
Q6966	880	MW-60D (136')	4/9/07 0835	4/17/07 0742	ND		ND		ND	
<b>Q1941</b>	<b>890</b>	<b>MW-60E (175')</b>	<b>1/12/07 1105</b>	<b>1/17/07 1020</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2064	890	MW-60E (175')	1/17/07 1020	2/1/07 1037	ND		ND		ND	
Q2452	890	MW-60E (175')	2/1/07 1037	2/8/07 0900	ND		ND		ND	
Q2393	890	MW-60E (175')	2/8/07 0900	2/9/07 1005	ND		ND		ND	
Q2508	890	MW-60E (175')	2/9/07 1005	2/10/07 0810	ND		ND		ND	
Q2604	890	MW-60E (175')	2/10/07 0810	2/11/07 0745	ND		ND		ND	
Q2630	890	MW-60E (175')	2/11/07 0745	2/12/07 0840	ND		ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2844	890	MW-60E (175')	2/12/07 0840	2/13/07 0825	ND		ND		ND	
Q2903	890	MW-60E (175')	2/13/07 0825	2/14/07 0945	ND		ND		ND	
Q3225	890	MW-60E (175')	2/14/07 0945	2/16/07 1015	ND		ND		ND	
Q3348	890	MW-60E (175')	2/16/07 1015	2/19/07 0845	ND		ND		ND	
Q3487	890	MW-60E (175')	2/19/07 0845	2/21/07 1105	ND		ND		ND	
Q3833	890	MW-60E (175')	2/21/07 1105	2/23/07 1025	ND		ND		ND	
Q3575	890	MW-60E (175')	2/23/07 1025	2/26/07 0930	ND		ND		ND	
Q3921	890	MW-60E (175')	2/26/07 0930	2/28/07 1115	ND		ND		ND	
Q4123	890	MW-60E (175')	2/28/07 1115	3/2/07 1405	ND		ND		ND	
Q4227	890	MW-60E (175')	3/2/07 1405	3/5/07 0940	ND		ND		ND	
Q4599	890	MW-60E (175')	3/5/07 0940	3/7/07 1125	ND		ND		ND	
Q4715	890	MW-60E (175')	3/7/07 1125	3/9/07 0843	ND		ND		ND	
Q4830	890	MW-60E (175')	3/9/07 0843	3/12/07 0938	ND		ND		ND	
Q5032	890	MW-60E (175')	3/12/07 0938	3/14/07 0912	ND		ND		ND	
Q5434	890	MW-60E (175')	3/14/07 0912	3/16/07 0815	ND		ND		ND	
Q5389	890	MW-60E (175')	3/16/07 0815	3/19/07 1145	ND		ND		ND	
Q5714	890	MW-60E (175')	3/19/07 1145	3/23/07 1115	ND		ND		ND	
Q5814	890	MW-60E (175')	3/23/07 1115	3/26/07 1138	ND		ND		ND	
Q6130	890	MW-60E (175')	3/26/07 1138	3/29/07 1406	ND		ND		ND	
Q6279	890	MW-60E (175')	3/29/07 1406	4/2/07 1031	ND		ND		ND	
Q6584	890	MW-60E (175')	4/2/07 1031	4/6/07 0753	ND		ND		ND	
Q6673	890	MW-60E (175')	4/6/07 0753	4/9/07 0835	ND		ND		ND	
Q6967	890	MW-60E (175')	4/9/07 0835	4/17/07 0742	ND		ND		ND	
<b>Q1275</b>	<b>900</b>	<b>MW-59-68</b>	<b>11/29/06 1319</b>	<b>12/5/06 1333</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2085	900	MW-59-68	1/16/07 0958	2/1/07 1357	517.4 *	0.655	ND		ND	
Q2483	900	MW-59-68	2/1/07 1357	2/8/07 1432	518.2 *	0.530	ND		ND	
Q2413	900	MW-59-68	2/8/07 1432	2/9/07 1142	ND		ND		ND	
Q2566	900	MW-59-68	2/9/07 1142	2/10/07 1051	ND		ND		ND	
Q2529	900	MW-59-68	2/10/07 1051	2/11/07 0751	ND		ND		ND	
Q2650	900	MW-59-68	2/11/07 0751	2/12/07 1332	ND		ND		ND	
Q2865	900	MW-59-68	2/12/07 1332	2/13/07 1038	ND		ND		ND	
Q2923	900	MW-59-68	2/13/07 1038	2/14/07 1100	ND		ND		ND	
Q3244	900	MW-59-68	2/14/07 1100	2/16/07 0925	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3310	900	MW-59-68	2/16/07 0925	2/19/07 1050	ND		ND		ND	
Q3507	900	MW-59-68	2/19/07 1050	2/21/07 1140	ND		ND		ND	
Q3853	900	MW-59-68	2/21/07 1140	2/23/07 1056	ND		ND		ND	
Q3595	900	MW-59-68	2/23/07 1056	2/26/07 1157	ND		ND		ND	
Q3944	900	MW-59-68	2/26/07 1157	2/28/07 1555	ND		ND		ND	
Q4169	900	MW-59-68	2/28/07 1355	3/2/07 1130	ND		ND		ND	
Q4187	900	MW-59-68	3/2/07 1130	3/5/07 1130	ND		ND		ND	
Q4557	900	MW-59-68	3/5/07 1130	3/7/07 1440	ND		ND		ND	
Q4745	900	MW-59-68	3/7/07 1440	3/9/07 1016	ND		ND		ND	
Q4795	900	MW-59-68	3/9/07 1016	3/12/07 1036	ND		ND		ND	
Q5057	900	MW-59-68	3/12/07 1036	3/14/07 1148	ND		ND		ND	
Q5459	900	MW-59-68	3/14/07 1148	3/16/07 1025	ND		ND		ND	
Q5343	900	MW-59-68	3/16/07 1025	3/19/07 1136	ND		ND		ND	
Q5668	900	MW-59-68	3/19/07 1136	3/23/07 1052	ND		ND		ND	
Q5768	900	MW-59-68	3/23/07 1052	3/26/07 1142	ND		ND		ND	
Q6156	900	MW-59-68	3/26/07 1142	3/29/07 1154	ND		ND		ND	
Q6306	900	MW-59-68	3/29/07 1154	4/2/07 1103	ND		ND		ND	
Q6538	900	MW-59-68	4/2/07 1103	4/6/07 1103	ND		ND		ND	
Q6699	900	MW-59-68	4/6/07 1103	4/10/07 1025	ND		ND		ND	
Q6993	900	MW-59-68	4/10/07 1025	4/17/07 0930	ND		ND		ND	
Q7310	900	MW-59-68	4/17/07 0930	4/24/07 1000	ND		ND		ND	
Q7597	900	MW-59-68	4/24/07 1000	5/1/07 0833	ND		ND		ND	
Q8215	900	MW-59-68	5/3/07 0940	5/10/07 0849	ND		ND		ND	
<b>Q2102</b>	<b>910</b>	<b>MW-66A (50')</b>	<b>1/22/07 1345</b>	<b>2/1/07 0940</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2430	910	MW-66A (50')	2/1/07 1016	2/8/07 1325	ND		ND		ND	
Q2465	910	MW-66A (50')	2/8/07 1325	2/9/07 0945	ND		ND		ND	
Q2582	910	MW-66A (50')	2/9/07 1325	2/10/07 0755	ND		ND		ND	
Q2545	910	MW-66A (50')	2/10/07 0755	2/11/07 0803	ND		ND		ND	
Q2666	910	MW-66A (50')	2/11/07 0803	2/12/07 0937	ND		ND		ND	
Q2881	910	MW-66A (50')	2/12/07 0937	2/13/07 0940	ND		ND		ND	
Q2938	910	MW-66A (50')	2/13/07 0940	2/14/07 0947	ND		ND		ND	
Q3259	910	MW-66A (50')	2/14/07 0947	2/16/07 1315	ND		ND		ND	
Q3326	910	MW-66A (50')	2/16/07 1315	2/19/07 0843	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3523	910	MW-66A (50')	2/19/07 0843	2/21/07 0802	ND		ND		ND	
Q3869	910	MW-66A (50')	2/21/07 0802	2/23/07 0913	ND		ND		ND	
Q3611	910	MW-66A (50')	2/23/07 0913	2/26/07 1020	ND		ND		ND	
Q3959	910	MW-66A (50')	2/26/07 1020	2/28/07 1041	516.0 (3)	4.07	ND		ND	
Q4148	910	MW-66A (50')	2/28/07 1041	3/2/07 1023	ND		ND		ND	
Q4203	910	MW-66A (50')	3/2/07 1023	3/5/07 0827	ND		ND		ND	
Q4573	910	MW-66A (50')	3/5/07 0827	3/7/07 0959	ND		ND		ND	
Q4754	910	MW-66A (50')	3/7/07 0959	3/9/07 0742	ND		ND		ND	
Q4805	910	MW-66A (50')	3/9/07 0742	3/12/07 0805	ND		ND		ND	
Q5071	910	MW-66A (50')	3/12/07 0805	3/14/07 1015	ND		ND		ND	
Q5473	910	MW-66A (50')	3/14/07 1015	3/16/07 0854	ND		ND		ND	
Q5356	910	MW-66A (50')	3/16/07 0854	3/19/07 1008	ND		ND		ND	
Q5682	910	MW-66A (50')	3/19/07 1008	3/23/07 0918	518.6 *	1.00	ND		ND	
Q5782	910	MW-66A (50')	3/23/07 0918	3/26/07 0819	ND		ND		ND	
Q6170	910	MW-66A (50')	3/26/07 0819	3/29/07 0943	ND		ND		ND	
Q6319	910	MW-66A (50')	3/29/07 0943	4/2/07 0941	ND		ND		ND	
Q6551	910	MW-66A (50')	4/2/07 0941	4/6/07 0925	ND		ND		ND	
Q6713	910	MW-66A (50')	4/6/07 0925	4/10/07 0827	ND		ND		ND	
Q7003	910	MW-66A (50')	4/10/07 0827	4/17/07 0754	ND		ND		ND	
Q7315	910	MW-66A (50')	4/17/07 0754	4/24/07 0838	ND		ND		ND	
Q7603	910	MW-66A (50')	4/24/07 0838	5/1/07 1034	ND		ND		ND	
Q8216	910	MW-66A (50')	5/3/07 0751	5/10/07 1053	ND		ND		ND	
<b>Q2103</b>	<b>920</b>	<b>MW-66B (115')</b>	<b>1/22/07 1345</b>	<b>2/1/07 0940</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2431	920	MW-66B (115')	2/1/07 0940	2/8/07 1325	ND		ND		ND	
Q2466	920	MW-66B (115')	2/8/07 1325	2/9/07 0947	ND		ND		ND	
Q2583	920	MW-66B (115')	2/9/07 1325	2/10/07 0755	ND		ND		ND	
Q2546	920	MW-66B (115')	2/10/07 0755	2/11/07 0803	ND		ND		ND	
Q2667	920	MW-66B (115')	2/11/07 0803	2/12/07 0937	ND		ND		ND	
Q2882	920	MW-66B (115')	2/12/07 0937	2/13/07 0940	ND		ND		ND	
Q2939	920	MW-66B (115')	2/13/07 0940	2/14/07 0947	ND		ND		ND	
Q3261	920	MW-66B (115')	2/14/07 0947	2/16/07 1315	ND		ND		ND	
Q3327	920	MW-66B (115')	2/16/07 1315	2/19/07 0843	ND		ND		ND	
Q3524	920	MW-66B (115')	2/19/07 0843	2/21/07 0802	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3870	920	MW-66B (115')	2/21/07 0802	2/23/07 0913	ND		ND		ND	
Q3612	920	MW-66B (115')	2/23/07 0913	2/26/07 1020	ND		ND		ND	
Q3961	920	MW-66B (115')	2/26/07 1020	2/28/07 1041	517.9 *	1.07	ND		ND	
Q4149	920	MW-66B (115')	2/28/07 1041	3/2/07 1023	ND		ND		ND	
Q4204	920	MW-66B (115')	3/2/07 1023	3/5/07 0827	ND		ND		ND	
Q4574	920	MW-66B (115')	3/5/07 0827	3/7/07 0959	ND		ND		ND	
Q4755	920	MW-66B (115')	3/7/07 0959	3/9/07 0742	ND		ND		ND	
Q4806	920	MW-66B (115')	3/9/07 0742	3/12/07 0805	ND		ND		ND	
Q5072	920	MW-66B (115')	3/12/07 0805	3/14/07 1015	ND		ND		ND	
Q5474	920	MW-66B (115')	3/14/07 1015	3/16/07 0854	ND		ND		ND	
Q5357	920	MW-66B (115')	3/16/07 0854	3/19/07 1008	ND		ND		ND	
Q5683	920	MW-66B (115')	3/19/07 1008	3/23/07 0918	ND		ND		ND	
Q5783	920	MW-66B (115')	3/23/07 0918	3/26/07 0819	ND		ND		ND	
Q6171	920	MW-66B (115')	3/26/07 0819	3/29/07 0943	ND		ND		ND	
Q6321	920	MW-66B (115')	3/29/07 0943	4/2/07 0941	ND		ND		ND	
Q6552	920	MW-66B (115')	4/2/07 0941	4/6/07 0925	ND		ND		ND	
Q6714	920	MW-66B (115')	4/6/07 0925	4/10/07 0827	ND		ND		ND	
Q7004	920	MW-66B (115')	4/10/07 0827	4/17/07 0754	ND		ND		ND	
Q7316	920	MW-66B (115')	4/17/07 0754	4/24/07 0838	ND		ND		ND	
Q7604	920	MW-66B (115')	4/24/07 0838	5/1/07 1034	ND		ND		ND	
Q8217	920	MW-66B (115')	5/3/07 0751	5/10/07 1053	ND		ND		ND	
<b>Q2104</b>	<b>930</b>	<b>MW-66C (135')</b>	<b>1/22/07 1345</b>	<b>2/1/07 0940</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2432	930	MW-66C (135')	2/1/07 0940	2/8/07 1325	ND		ND		ND	
Q2467	930	MW-66C (135')	2/8/07 1325	2/9/07 0949	ND		ND		ND	
Q2584	930	MW-66C (135')	2/9/07 1325	2/10/07 0755	ND		ND		ND	
Q2547	930	MW-66C (135')	2/10/07 0755	2/11/07 0803	ND		ND		ND	
Q2668	930	MW-66C (135')	2/11/07 0803	2/12/07 0937	ND		ND		ND	
Q2883	930	MW-66C (135')	2/12/07 0937	2/13/07 0940	ND		ND		ND	
Q2941	930	MW-66C (135')	2/13/07 0940	2/14/07 0947	ND		ND		ND	
Q3262	930	MW-66C (135')	2/14/07 0947	2/16/07 1315	ND		ND		ND	
Q3328	930	MW-66C (135')	2/16/07 1315	2/19/07 0843	ND		ND		ND	
Q3525	930	MW-66C (135')	2/19/07 0843	2/21/07 0802	ND		ND		ND	
Q3871	930	MW-66C (135')	2/21/07 0802	2/23/07 0913	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3613	930	MW-66C (135')	2/23/07 0913	2/26/07 1020	ND		ND		ND	
Q3962	930	MW-66C (135')	2/26/07 1020	2/28/07 1041	ND		ND		ND	
Q4150	930	MW-66C (135')	2/28/07 1041	3/2/07 1023	ND		ND		ND	
Q4205	930	MW-66C (135')	3/2/07 1023	3/5/07 0827	ND		ND		ND	
Q4575	930	MW-66C (135')	3/5/07 0827	3/7/07 0959	ND		ND		ND	
Q4756	930	MW-66C (135')	3/7/07 0959	3/9/07 0742	ND		ND		ND	
Q4807	930	MW-66C (135')	3/9/07 0742	3/12/07 0805	ND		ND		ND	
Q5073	930	MW-66C (135')	3/12/07 0805	3/14/07 1015	ND		ND		ND	
Q5475	930	MW-66C (135')	3/14/07 1015	3/16/07 0854	ND		ND		ND	
Q5358	930	MW-66C (135')	3/16/07 0854	3/19/07 1008	ND		ND		ND	
Q5684	930	MW-66C (135')	3/19/07 1008	3/23/07 0918	ND		ND		ND	
Q5784	930	MW-66C (135')	3/23/07 0918	3/26/07 0819	ND		ND		ND	
Q6172	930	MW-66C (135')	3/26/07 0819	3/29/07 0943	ND		ND		ND	
Q6322	930	MW-66C (135')	3/29/07 0943	4/2/07 0941	ND		ND		ND	
Q6553	930	MW-66C (135')	4/2/07 0941	4/6/07 0925	ND		ND		ND	
Q6715	930	MW-66C (135')	4/6/07 0925	4/10/07 0827	ND		ND		ND	
Q7005	930	MW-66C (135')	4/10/07 0827	4/17/07 0754	ND		ND		ND	
Q7317	930	MW-66C (135')	4/17/07 0754	4/24/07 0838	ND		ND		ND	
Q7605	930	MW-66C (135')	4/24/07 0838	5/1/07 1034	ND		ND		ND	
Q8195	930	MW-66C (135')	5/3/07 0751	5/10/07 1053	ND		ND		ND	
<b>Q2105</b>	<b>940</b>	<b>MW-66D (190')</b>	<b>1/23/07 0845</b>	<b>2/1/07 0940</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2433	940	MW-66D (190')	2/1/07 0940	2/8/07 1325	ND		ND		ND	
Q2468	940	MW-66D (190')	2/8/07 1325	2/9/07 0950	ND		ND		ND	
Q2585	940	MW-66D (190')	2/9/07 1325	2/10/07 0755	ND		ND		ND	
Q2548	940	MW-66D (190')	2/10/07 0755	2/11/07 0803	ND		ND		ND	
Q2669	940	MW-66D (190')	2/11/07 0803	2/12/07 0937	ND		ND		ND	
Q2884	940	MW-66D (190')	2/12/07 0937	2/13/07 0940	ND		ND		ND	
Q2942	940	MW-66D (190')	2/13/07 0940	2/14/07 0947	ND		ND		ND	
Q3263	940	MW-66D (190')	2/14/07 0947	2/16/07 1315	ND		ND		ND	
Q3329	940	MW-66D (190')	2/16/07 1315	2/19/07 0843	ND		ND		ND	
Q3526	940	MW-66D (190')	2/19/07 0843	2/21/07 0802	ND		ND		ND	
Q3872	940	MW-66D (190')	2/21/07 0802	2/23/07 0913	ND		ND		ND	
Q3614	940	MW-66D (190')	2/23/07 0913	2/26/07 1020	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3963	940	MW-66D (190')	2/26/07 1020	2/28/07 1041	ND		ND		ND	
Q4151	940	MW-66D (190')	2/28/07 1041	3/2/07 1023	ND		ND		ND	
Q4206	940	MW-66D (190')	3/2/07 1023	3/5/07 0827	ND		ND		ND	
Q4576	940	MW-66D (190')	3/5/07 0827	3/7/07 0959	ND		ND		ND	
Q4757	940	MW-66D (190')	3/7/07 0959	3/9/07 0742	ND		ND		ND	
Q4808	940	MW-66D (190')	3/9/07 0742	3/12/07 0805	ND		ND		ND	
Q5074	940	MW-66D (190')	3/12/07 0805	3/14/07 1015	ND		ND		ND	
Q5476	940	MW-66D (190')	3/14/07 1015	3/16/07 0854	ND		ND		ND	
Q5359	940	MW-66D (190')	3/16/07 0854	3/19/07 1008	ND		ND		ND	
Q5685	940	MW-66D (190')	3/19/07 1008	3/23/07 0918	ND		ND		ND	
Q5785	940	MW-66D (190')	3/23/07 0918	3/26/07 0819	ND		ND		ND	
Q6173	940	MW-66D (190')	3/26/07 0819	3/29/07 0943	ND		ND		ND	
Q6323	940	MW-66D (190')	3/29/07 0943	4/2/07 0941	ND		ND		ND	
Q6554	940	MW-66D (190')	4/2/07 0941	4/6/07 0925	ND		ND		ND	
Q6716	940	MW-66D (190')	4/6/07 0925	4/10/07 0827	ND		ND		ND	
Q7006	940	MW-66D (190')	4/10/07 0827	4/17/07 0754	ND		ND		ND	
Q7318	940	MW-66D (190')	4/17/07 0754	4/24/07 0838	ND		ND		ND	
Q7606	940	MW-66D (190')	4/24/07 0838	5/1/07 1034	ND		ND		ND	
Q8196	940	MW-66D (190')	5/3/07 0751	5/10/07 1053	ND		ND		ND	
<b>Q2066</b>	<b>950</b>	<b>I-2</b>	<b>1/16/07 0800</b>	<b>2/1/07 1418</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2454	950	I-2	2/1/07 1418	2/8/07 0825	ND		ND		ND	
Q2395	950	I-2	2/8/07 0825	2/9/07 0839	ND		ND		ND	
Q2510	950	I-2	2/9/07 0839	2/10/07 0745	ND		ND		ND	
Q2606	950	I-2	2/10/07 0745	2/11/07 0723	ND		ND		ND	
Q2632	950	I-2	2/11/07 0723	2/12/07 0825	ND		ND		ND	
Q2846	950	I-2	2/12/07 0825	2/13/07 0800	ND		ND		ND	
Q2905	950	I-2	2/13/07 0800	2/14/07 0800	ND		ND		ND	
Q3227	950	I-2	2/14/07 0800	2/16/07 0750	ND		ND		ND	
Q3350	950	I-2	2/16/07 0750	2/19/07 0745	ND		ND		ND	
Q3489	950	I-2	2/19/07 0745	2/21/07 0804	ND		ND		ND	
Q3835	950	I-2	2/21/07 0804	2/23/07 0755	ND		ND		ND	
Q3577	950	I-2	2/23/07 0755	2/26/07 1100	ND		ND		ND	
Q3923	950	I-2	2/26/07 1100	2/28/07 0830	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4125	950	I-2	2/28/07 0830	3/2/07 1100	ND		ND		ND	
Q4229	950	I-2	3/2/07 1100	3/5/07 1420	ND		ND		ND	
Q4602	950	I-2	3/5/07 1420	3/7/07 0840	ND		ND		ND	
Q4717	950	I-2	3/7/07 0840	3/9/07 0733	ND		ND		ND	
Q4832	950	I-2	3/9/07 0733	3/12/07 0742	ND		ND		ND	
Q5034	950	I-2	3/12/07 0742	3/14/07 0818	ND		ND		ND	
Q5436	950	I-2	3/14/07 0818	3/16/07 0728	ND		ND		ND	
Q5391	950	I-2	3/16/07 0728	3/19/07 0838	ND		ND		ND	
Q5716	950	I-2	3/19/07 0838	3/23/07 0752	ND		ND		ND	
Q5816	950	I-2	3/23/07 0752	3/26/07 1126	ND		ND		ND	
Q6132	950	I-2	3/26/07 1126	3/29/07 1103	ND		ND		ND	
Q6282	950	I-2	3/29/07 1103	4/2/07 1327	ND		ND		ND	
Q6586	950	I-2	4/3/07 1355	4/6/07 0754	ND		ND		ND	
Q6675	950	I-2	4/6/07 0754	4/9/07 0808	ND		ND		ND	
Q6969	950	I-2	4/9/07 0808	4/16/07 0851	ND		ND		ND	
Q7231	950	I-2	4/16/07 0851	4/23/07 0733	ND		ND		ND	
Q7484	950	I-2	4/23/07 0733	4/30/07 0738	ND		ND		ND	
Q8059	950	I-2	5/3/07 0856	5/8/07 1307	ND		ND		ND	
<b>Q2067</b>	<b>960</b>	<b>U2-C1</b>	<b>1/15/07 1247</b>	<b>2/1/07 1345</b>	<b>515.8 *</b>	<b>0.512</b>	<b>ND</b>		<b>ND</b>	
Q2455	960	U2-C1	2/1/07 1345	2/8/07 1033	515.2 *	0.571	ND		ND	
Q2396	960	U2-C1	2/8/07 1033	2/9/07 1128	ND		ND		ND	
Q2511	960	U2-C1	2/9/07 1128	2/10/07 0927	ND		ND		ND	
Q2607	960	U2-C1	2/10/07 0927	2/11/07 0905	ND		ND		ND	
Q2633	960	U2-C1	2/11/07 0905	2/12/07 0953	ND		ND		ND	
Q2847	960	U2-C1	2/12/07 0953	2/13/07 1454	ND		ND		ND	
Q2906	960	U2-C1	2/13/07 1454	2/14/07 1105	ND		ND		ND	
Q3228	960	U2-C1	2/14/07 1105	2/16/07 1050	515.2 *	0.349	ND		ND	
Q3228D	960	U2-C1	2/14/07 1105	2/16/07 1050	517.2 *	0.324	ND		ND	
Q3351	960	U2-C1	2/16/07 1050	2/19/07 1000	516.9 *	0.393	ND		ND	
Q3351D	960	U2-C1	2/16/07 1050	2/19/07 1000	ND		ND		ND	
Q3490	960	U2-C1	2/19/07 1000	2/21/07 0905	516.2 *	0.465	ND		ND	
Q3836	960	U2-C1	2/21/07 0905	2/23/07 0848	ND		ND		ND	
Q3578	960	U2-C1	2/23/07 0848	2/26/07 1023	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3578D	960	U2-C1	2/23/07 0848	2/26/07 1023	ND		ND		ND	
Q3924	960	U2-C1	2/26/07 1023	2/28/07 1040	ND		ND		ND	
Q3924D	960	U2-C1	2/26/07 1023	2/28/07 1040	ND		ND		ND	
Q4126	960	U2-C1	2/28/07 1040	3/2/07 1020	516.1 *	0.364	ND		ND	
Q4230	960	U2-C1	3/2/07 1020	3/5/07 1114	515.0 *	0.603	ND		ND	
Q4603	960	U2-C1	3/5/07 1114	3/7/07 1400	514.6 *	0.457	ND		ND	
Q4718	960	U2-C1	3/7/07 1400	3/9/07 0903	ND		ND		ND	
Q4833	960	U2-C1	3/9/07 0903	3/12/07 1152	ND		ND		ND	
Q5035	960	U2-C1	3/12/07 1152	3/14/07 1036	ND		ND		ND	
Q5437	960	U2-C1	3/14/07 1036	3/16/07 1211	515.0 *	0.456	ND		ND	
Q5437D	960	U2-C1	3/14/07 1036	3/16/07 1211	516.5 *	0.384	ND		ND	
Q5392	960	U2-C1	3/16/07 1211	3/19/07 1125	ND		ND		ND	
Q5717	960	U2-C1	3/19/07 1125	3/23/07 1047	516.8 *	0.474	ND		ND	
Q5717D	960	U2-C1	3/19/07 1125	3/23/07 1047	515.2 *	1.15	ND		ND	
Q5817	960	U2-C1	3/23/07 1047	3/26/07 0933	ND		ND		ND	
Q6133	960	U2-C1	3/26/07 0933	3/29/07 1148	ND		ND		ND	
Q6133D	960	U2-C1	3/26/07 0933	3/29/07 1148	516.0 *	1.60	ND		ND	
Q6283	960	U2-C1	3/29/07 1118	4/2/07 0920	ND		ND		ND	
Q6283D	960	U2-C1	3/29/07 1118	4/2/07 0920	ND		ND		ND	
Q6587	960	U2-C1	4/2/07 0920	4/6/07 1111	ND		ND		ND	
Q6587D	960	U2-C1	4/2/07 0920	4/6/07 1111	ND		ND		ND	
Q6676	960	U2-C1	4/6/07 1111	4/9/07 1043	ND		ND		ND	
Q6970	960	U2-C1	4/9/07 1043	4/16/07 0954	ND		ND		ND	
Q6970D	960	U2-C1	4/9/07 1043	4/16/07 0954	ND		ND		ND	
Q7232	960	U2-C1	4/16/07 0954	4/23/07 1053	ND		ND		ND	
Q7485	960	U2-C1	4/23/07 1053	4/30/07 0833	515.4 *	0.754	ND		ND	
Q8061	960	U2-C1	5/3/07 0913	5/9/07 1350	514.2 *	0.782	ND		ND	
<b>Q0813</b>	<b>970</b>	<b>MW-62A (55')</b>	<b>11/16/06 1428</b>	<b>11/21/06 0758</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1045	970	MW-62A (55')	11/21/06 0758	11/28/06 0832	ND		ND		ND	
Q1276	970	MW-62A (55')	11/28/06 0832	12/5/06 1045	ND		ND		ND	
Q2095	970	MW-62A (55')	1/16/07 1335	2/1/07 1005	ND		ND		ND	
Q2424	970	MW-62A (55')	2/1/07 1005	2/8/07 1400	ND		ND		ND	
Q2458	970	MW-62A (55')	2/8/07 1400	2/9/07 1008	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2575	970	MW-62A (55')	2/9/07 1400	2/10/07 0818	ND		ND		ND	
Q2538	970	MW-62A (55')	2/10/07 0818	2/11/07 0821	ND		ND		ND	
Q2659	970	MW-62A (55')	2/11/07 0821	2/12/07 1005	ND		ND		ND	
Q2874	970	MW-62A (55')	2/12/07 1255	2/13/07 1000	ND		ND		ND	
Q2932	970	MW-62A (55')	2/13/07 1000	2/14/07 1010	ND		ND		ND	
Q3253	970	MW-62A (55')	2/14/07 1010	2/16/07 1158	ND		ND		ND	
Q3319	970	MW-62A (55')	2/16/07 1158	2/19/07 0816	ND		ND		ND	
Q3516	970	MW-62A (55')	2/19/07 0816	2/21/07 0830	ND		ND		ND	
Q3863	970	MW-62A (55')	2/21/07 0830	2/23/07 0940	ND		ND		ND	
Q3605	970	MW-62A (55')	2/23/07 0940	2/26/07 1058	ND		ND		ND	
Q3953	970	MW-62A (55')	2/26/07 1059	2/28/07 1112	ND		ND		ND	
Q4142	970	MW-62A (55')	2/28/07 1112	3/2/07 1005	ND		ND		ND	
Q4196	970	MW-62A (55')	3/2/07 1005	3/5/07 1025	ND		ND		ND	
Q4567	970	MW-62A (55')	3/5/07 1025	3/7/07 1158	ND		ND		ND	
Q4748	970	MW-62A (55')	3/7/07 1159	3/9/07 0920	ND		ND		ND	
Q4798	970	MW-62A (55')	3/9/07 0920	3/12/07 1004	ND		ND		ND	
Q5065	970	MW-62A (55')	3/12/07 1004	3/14/07 1052	ND		ND		ND	
Q5467	970	MW-62A (55')	3/14/07 1114	3/16/07 0928	ND		ND		ND	
Q5350	970	MW-62A (55')	3/16/07 0928	3/19/07 1038	ND		ND		ND	
Q5675	970	MW-62A (55')	3/19/07 1038	3/23/07 0952	ND		ND		ND	
Q5775	970	MW-62A (55')	3/23/07 0952	3/26/07 0849	ND		ND		ND	
Q6164	970	MW-62A (55')	3/26/07 0849	3/29/07 1022	ND		ND		ND	
Q6313	970	MW-62A (55')	3/29/07 1022	4/2/07 1009	ND		ND		ND	
Q6546	970	MW-62A (55')	4/2/07 1009	4/6/07 0953	ND		ND		ND	
Q6707	970	MW-62A (55')	4/6/07 0953	4/10/07 0809	ND		ND		ND	
<b>Q0814</b>	<b>980</b>	<b>MW-62B (83')</b>	<b>11/16/06 1422</b>	<b>11/21/06 0800</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1046	980	MW-62B (83')	11/21/06 0800	11/28/06 0835	ND		ND		ND	
Q1277	980	MW-62B (83')	11/28/06 0835	12/5/06 1050	ND		ND		ND	
Q2096	980	MW-62B (83')	1/16/07 1335	2/1/07 1005	ND		ND		ND	
Q2425	980	MW-62B (83')	2/1/07 1005	2/8/07 1400	ND		ND		ND	
Q2459	980	MW-62B (83')	2/8/07 1400	2/9/07 1009	ND		ND		ND	
Q2576	980	MW-62B (83')	2/9/07 1400	2/10/07 0818	ND		ND		ND	
Q2539	980	MW-62B (83')	2/10/07 0818	2/11/07 0821	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2661	980	MW-62B (83')	2/11/07 0821	2/12/07 1005	ND		ND		ND	
Q2875	980	MW-62B (83')	2/12/07 1005	2/13/07 1000	ND		ND		ND	
Q2933	980	MW-62B (83')	2/13/07 1000	2/14/07 1010	ND		ND		ND	
Q3254	980	MW-62B (83')	2/14/07 1010	2/16/07 1158	ND		ND		ND	
Q3321	980	MW-62B (83')	2/16/07 1158	2/19/07 0816	ND		ND		ND	
Q3517	980	MW-62B (83')	2/19/07 0816	2/21/07 0830	ND		ND		ND	
Q3864	980	MW-62B (83')	2/21/07 0830	2/23/07 0940	ND		ND		ND	
Q3606	980	MW-62B (83')	2/23/07 0940	2/26/07 1058	ND		ND		ND	
Q3954	980	MW-62B (83')	2/26/07 1059	2/28/07 1112	ND		ND		ND	
Q4143	980	MW-62B (83')	2/28/07 1112	3/2/07 1005	ND		ND		ND	
Q4197	980	MW-62B (83')	3/2/07 1005	3/5/07 1025	ND		ND		ND	
Q4568	980	MW-62B (83')	3/5/07 1025	3/7/07 1159	ND		ND		ND	
Q4749	980	MW-62B (83')	3/7/07 1159	3/9/07 0920	ND		ND		ND	
Q4799	980	MW-62B (83')	3/9/07 0920	3/12/07 1004	ND		ND		ND	
Q5066	980	MW-62B (83')	3/12/07 1004	3/14/07 1052	ND		ND		ND	
Q5468	980	MW-62B (83')	3/14/07 1052	3/16/07 0928	ND		ND		ND	
Q5351	980	MW-62B (83')	3/16/07 0928	3/19/07 1038	ND		ND		ND	
Q5676	980	MW-62B (83')	3/19/07 1038	3/23/07 0952	ND		ND		ND	
Q5776	980	MW-62B (83')	3/23/07 0952	3/26/07 0849	ND		ND		ND	
Q6165	980	MW-62B (83')	3/26/07 0849	3/29/07 1022	ND		ND		ND	
Q6314	980	MW-62B (83')	3/29/07 1022	4/2/07 1009	ND		ND		ND	
Q6547	980	MW-62B (83')	4/2/07 1009	4/6/07 0953	ND		ND		ND	
Q6708	980	MW-62B (83')	4/6/07 0953	4/10/07 0809	ND		ND		ND	
<b>Q0815</b>	<b>990</b>	<b>MW-62-18</b>	<b>11/16/06 1406</b>	<b>11/21/06 0805</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1281	990	MW-62-18	11/28/06 0826	12/5/06 1054	ND		ND		ND	
Q2099	990	MW-62-18	1/16/07 1325	2/1/07 1029	ND		ND		ND	
Q2428	990	MW-62-18	2/1/07 1029	2/8/07 1345	ND		ND		ND	
Q2463	990	MW-62-18	2/8/07 1345	2/9/07 1019	ND		ND		ND	
Q2579	990	MW-62-18	2/9/07 1345	2/10/07 0810	ND		ND		ND	
Q2543	990	MW-62-18	2/10/07 0810	2/11/07 0816	ND		ND		ND	
Q2664	990	MW-62-18	2/11/07 0816	2/12/07 0950	ND		ND		ND	
Q2878	990	MW-62-18	2/12/07 0950	2/13/07 0955	ND		ND		ND	
Q2936	990	MW-62-18	2/13/07 0955	2/14/07 1002	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3257	990	MW-62-18	2/14/07 1002	2/16/07 1146	ND		ND		ND	
Q3324	990	MW-62-18	2/16/07 1146	2/19/07 0802	ND		ND		ND	
Q3521	990	MW-62-18	2/19/07 0802	2/21/07 0820	ND		ND		ND	
Q3867	990	MW-62-18	2/21/07 0826	2/23/07 0932	ND		ND		ND	
Q3609	990	MW-62-18	2/23/07 0932	2/26/07 1045	ND		ND		ND	
Q3957	990	MW-62-18	2/26/07 1045	2/28/07 1056	ND		ND		ND	
Q4146	990	MW-62-18	2/28/07 1056	3/2/07 0956	ND		ND		ND	
Q4201	990	MW-62-18	3/2/07 0956	3/5/07 1015	ND		ND		ND	
Q4571	990	MW-62-18	3/5/07 1015	3/7/07 1145	ND		ND		ND	
Q4752	990	MW-62-18	3/7/07 1145	3/9/07 0911	ND		ND		ND	
Q4803	990	MW-62-18	3/9/07 0911	3/12/07 0953	ND		ND		ND	
Q5069	990	MW-62-18	3/12/07 0953	3/14/07 1040	ND		ND		ND	
Q5471	990	MW-62-18	3/14/07 1040	3/16/07 0917	ND		ND		ND	
Q5354	990	MW-62-18	3/16/07 0928	3/19/07 1027	ND		ND		ND	
Q5679	990	MW-62-18	3/19/07 1027	3/23/07 0936	ND		ND		ND	
Q5779	990	MW-62-18	3/23/07 0936	3/26/07 0835	ND		ND		ND	
Q6168	990	MW-62-18	3/26/07 0835	3/29/07 1010	ND		ND		ND	
Q6317	990	MW-62-18	3/29/07 1010	4/2/07 0957	ND		ND		ND	
Q6549	990	MW-62-18	4/2/07 0957	4/6/07 0940	ND		ND		ND	
Q6711	990	MW-62-18	4/6/07 0940	4/10/07 0756	ND		ND		ND	
Q7001	990	MW-62-18	4/10/07 0756	4/17/07 1109	ND		ND		ND	
Q7311	990	MW-62-18	4/17/07 0900	4/23/07 1341	ND		ND		ND	
Q7598	990	MW-62-18	4/24/07 1341	5/1/07 1023	ND		ND		ND	
Q8075	990	MW-62-18	5/3/07 0757	5/9/07 1024	ND		ND		ND	
Q8329	990	MW-62-18	5/9/07 1024	5/16/07 1345	ND		ND		ND	
<b>Q0816</b>	<b>1000</b>	<b>MW-62-35</b>	<b>11/16/06 1415</b>	<b>11/21/06 0800</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1282	1000	MW-62-35	11/28/06 0829	12/5/06 1102	ND		ND		ND	
Q2101	1000	MW-62-35	1/16/07 1330	2/1/07 1035	ND		ND		ND	
Q2429	1000	MW-62-35	2/1/07 1035	2/8/07 1350	ND		ND		ND	
Q2464	1000	MW-62-35	2/8/07 1350	2/9/07 1024	ND		ND		ND	
Q2581	1000	MW-62-35	2/9/07 1345	2/10/07 0815	ND		ND		ND	
Q2544	1000	MW-62-35	2/10/07 0813	2/11/07 0817	ND		ND		ND	
Q2665	1000	MW-62-35	2/11/07 0817	2/12/07 1000	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2879	1000	MW-62-35	2/12/07 1000	2/13/07 0957	ND		ND		ND	
Q2937	1000	MW-62-35	2/13/07 0957	2/14/07 1005	ND		ND		ND	
Q3258	1000	MW-62-35	2/14/07 1005	2/16/07 1150	ND		ND		ND	
Q3325	1000	MW-62-35	2/16/07 1150	2/19/07 0808	ND		ND		ND	
Q3522	1000	MW-62-35	2/19/07 0808	2/21/07 0826	ND		ND		ND	
Q3868	1000	MW-62-35	2/21/07 0828	2/23/07 0935	ND		ND		ND	
Q3610	1000	MW-62-35	2/23/07 0933	2/26/07 1050	ND		ND		ND	
Q3958	1000	MW-62-35	2/26/07 1050	2/28/07 1105	ND		ND		ND	
Q4147	1000	MW-62-35	2/28/07 1105	3/2/07 1000	ND		ND		ND	
Q4202	1000	MW-62-35	3/2/07 1000	3/5/07 1019	ND		ND		ND	
Q4572	1000	MW-62-35	3/5/07 1019	3/5/07 1150	ND		ND		ND	
Q4753	1000	MW-62-35	3/7/07 1150	3/9/07 0914	ND		ND		ND	
Q4804	1000	MW-62-35	3/9/07 0919	3/12/07 0956	ND		ND		ND	
Q5070	1000	MW-62-35	3/12/07 0956	3/14/07 1044	ND		ND		ND	
Q5472	1000	MW-62-35	3/14/07 1044	3/16/07 0920	ND		ND		ND	
Q5355	1000	MW-62-35	3/16/07 0917	3/19/07 1030	ND		ND		ND	
Q5681	1000	MW-62-35	3/19/07 1030	3/23/07 0941	ND		ND		ND	
Q5781	1000	MW-62-35	3/23/07 0941	3/26/07 0840	ND		ND		ND	
Q6169	1000	MW-62-35	3/26/07 0840	3/29/07 1012	ND		ND		ND	
Q6318	1000	MW-62-35	3/29/07 1012	4/2/07 1000	ND		ND		ND	
Q6550	1000	MW-62-35	4/2/07 1000	4/6/07 0943	ND		ND		ND	
Q6712	1000	MW-62-35	4/6/07 0943	4/10/07 0801	ND		ND		ND	
Q7002	1000	MW-62-35	4/10/07 0801	4/17/07 1114	ND		ND		ND	
Q7312	1000	MW-62-35	4/17/07 0905	4/23/07 1345	ND		ND		ND	
Q7599	1000	MW-62-35	4/24/07 1345	5/1/07 1026	ND		ND		ND	
Q8076	1000	MW-62-35	5/3/07 0759	5/9/07 1028	ND		ND		ND	
Q8330	1000	MW-62-35	5/9/07 1028	5/16/07 1345	521.4 (3)	10.9	ND		ND	
<b>Q1047</b>	<b>1010</b>	<b>MW-62C (138')</b>	<b>11/21/06 0805</b>	<b>11/28/06 0826</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1278	1010	MW-62C (138')	11/30/06 1500	12/5/06 1051	ND		ND		ND	
Q2097	1010	MW-62C (138')	1/16/07 1335	2/1/07 1005	ND		ND		ND	
Q2426	1010	MW-62C (138')	2/1/07 1005	2/8/07 1400	ND		ND		ND	
Q2461	1010	MW-62C (138')	2/8/07 1400	2/9/07 1011	ND		ND		ND	
Q2577	1010	MW-62C (138')	2/9/07 1400	2/10/07 0818	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2541	1010	MW-62C (138')	2/10/07 0818	2/11/07 0821	ND		ND		ND	
Q2662	1010	MW-62C (138')	2/11/07 0821	2/12/07 1005	ND		ND		ND	
Q2876	1010	MW-62C (138')	2/12/07 1005	2/13/07 1000	ND		ND		ND	
Q2934	1010	MW-62C (138')	2/13/07 1000	2/14/07 1010	ND		ND		ND	
Q3255	1010	MW-62C (138')	2/14/07 1010	2/16/07 1158	ND		ND		ND	
Q3322	1010	MW-62C (138')	2/16/07 1158	2/19/07 0816	ND		ND		ND	
Q3518	1010	MW-62C (138')	2/19/07 0816	2/21/07 0830	ND		ND		ND	
Q3865	1010	MW-62C (138')	2/21/07 0830	2/23/07 0940	ND		ND		ND	
Q3607	1010	MW-62C (138')	2/23/07 0940	2/26/07 1058	ND		ND		ND	
Q3955	1010	MW-62C (138')	2/26/07 1059	2/28/07 1112	ND		ND		ND	
Q4144	1010	MW-62C (138')	2/28/07 1112	3/2/07 1005	ND		ND		ND	
Q4198	1010	MW-62C (138')	3/2/07 1005	3/5/07 1025	ND		ND		ND	
Q4569	1010	MW-62C (138')	3/5/07 1025	3/7/07 1159	ND		ND		ND	
Q4750	1010	MW-62C (138')	3/7/07 1159	3/9/07 0920	ND		ND		ND	
Q4801	1010	MW-62C (138')	3/9/07 0920	3/12/07 1004	ND		ND		ND	
Q5067	1010	MW-62C (138')	3/12/07 1004	3/14/07 1052	ND		ND		ND	
Q5469	1010	MW-62C (138')	3/14/07 1052	3/16/07 0928	ND		ND		ND	
Q5352	1010	MW-62C (138')	3/16/07 0928	3/19/07 1038	ND		ND		ND	
Q5677	1010	MW-62C (138')	3/19/07 1038	3/23/07 0952	ND		ND		ND	
Q5777	1010	MW-62C (138')	3/23/07 0952	3/26/07 0849	ND		ND		ND	
Q6166	1010	MW-62C (138')	3/26/07 0849	3/29/07 1022	ND		ND		ND	
Q6315	1010	MW-62C (138')	3/29/07 1022	4/2/07 1009	ND		ND		ND	
Q6709	1010	MW-62C (138')	4/6/07 0953	4/10/07 0809	ND		ND		ND	
<b>Q1048</b>	<b>1020</b>	<b>MW-62D (182')</b>	<b>11/21/06 0802</b>	<b>11/28/06 0829</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1279	1020	MW-62D (182')	11/30/06 1501	12/5/06 1052	ND		ND		ND	
Q2098	1020	MW-62D (182')	1/16/07 1335	2/1/07 1005	ND		ND		ND	
Q2427	1020	MW-62D (182')	2/1/07 1005	2/8/07 1400	ND		ND		ND	
Q2462	1020	MW-62D (182')	2/8/07 1400	2/9/07 1015	ND		ND		ND	
Q2578	1020	MW-62D (182')	2/9/07 1400	2/10/07 0818	ND		ND		ND	
Q2542	1020	MW-62D (182')	2/10/07 0818	2/11/07 0821	ND		ND		ND	
Q2663	1020	MW-62D (182')	2/11/07 0821	2/12/07 1005	ND		ND		ND	
Q2877	1020	MW-62D (182')	2/12/07 1005	2/13/07 1000	ND		ND		ND	
Q2935	1020	MW-62D (182')	2/13/07 1000	2/14/07 1010	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3256	1020	MW-62D (182')	2/14/07 1010	2/16/07 1158	ND		ND		ND	
Q3323	1020	MW-62D (182')	2/16/07 1158	2/19/07 0816	ND		ND		ND	
Q3519	1020	MW-62D (182')	2/19/07 0816	2/21/07 0830	ND		ND		ND	
Q3866	1020	MW-62D (182')	2/21/07 0830	2/23/07 0940	ND		ND		ND	
Q3608	1020	MW-62D (182')	2/23/07 0940	2/26/07 1058	ND		ND		ND	
Q3956	1020	MW-62D (182')	2/26/07 1059	2/28/07 1112	ND		ND		ND	
Q4145	1020	MW-62D (182')	2/28/07 1112	3/2/07 1005	ND		ND		ND	
Q4199	1020	MW-62D (182')	3/2/07 1005	3/5/07 1025	ND		ND		ND	
Q4570	1020	MW-62D (182')	3/5/07 1025	3/7/07 1159	ND		ND		ND	
Q4751	1020	MW-62D (182')	3/7/07 1159	3/9/07 0920	ND		ND		ND	
Q4802	1020	MW-62D (182')	3/9/07 0920	3/12/07 1004	ND		ND		ND	
Q5068	1020	MW-62D (182')	3/12/07 1004	3/14/07 1052	ND		ND		ND	
Q5470	1020	MW-62D (182')	3/14/07 1052	3/16/07 0928	ND		ND		ND	
Q5353	1020	MW-62D (182')	3/16/07 0928	3/19/07 1038	ND		ND		ND	
Q5678	1020	MW-62D (182')	3/19/07 1038	3/23/07 0952	ND		ND		ND	
Q5778	1020	MW-62D (182')	3/23/07 0952	3/26/07 0849	ND		ND		ND	
Q6167	1020	MW-62D (182')	3/26/07 0849	3/29/07 1022	ND		ND		ND	
Q6316	1020	MW-62D (182')	3/29/07 1022	4/2/07 1009	ND		ND		ND	
Q6548	1020	MW-62D (182')	4/2/07 1009	4/6/07 0953	ND		ND		ND	
Q6710	1020	MW-62D (182')	4/6/07 0953	4/10/07 0809	ND		ND		ND	
<b>Q0817</b>	<b>1030</b>	<b>MW-63A (52')</b>	<b>11/15/06 1025</b>	<b>11/20/06 1345</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1049	1030	MW-63A (52')	11/20/06 1345	11/28/06 0855	ND		ND		ND	
Q1283	1030	MW-63A (52')	11/28/06 0855	12/5/06 1410	ND		ND		ND	
Q1942	1030	MW-63A (52')	1/12/07 1403	1/23/07 1411	516.0 *	0.689	ND		ND	
Q2086	1030	MW-63A (52')	1/23/07 1411	2/1/07 1145	ND		ND		ND	
Q2484	1030	MW-63A (52')	2/1/07 1145	2/8/07 1207	ND		ND		ND	
Q2414	1030	MW-63A (52')	2/8/07 1207	2/9/07 1059	ND		ND		ND	
Q2567	1030	MW-63A (52')	2/9/07 1059	2/10/07 1012	ND		ND		ND	
Q2530	1030	MW-63A (52')	2/10/07 1012	2/11/07 0737	ND		ND		ND	
Q2651	1030	MW-63A (52')	2/11/07 0737	2/12/07 1141	ND		ND		ND	
Q2866	1030	MW-63A (52')	2/12/07 1141	2/13/07 0832	ND		ND		ND	
Q2924	1030	MW-63A (52')	2/13/07 0852	2/14/07 0911	ND		ND		ND	
Q3245	1030	MW-63A (52')	2/14/07 0911	2/16/07 1300	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3311	1030	MW-63A (52')	2/16/07 1300	2/19/07 1006	ND		ND		ND	
Q3508	1030	MW-63A (52')	2/19/07 1006	2/21/07 1052	ND		ND		ND	
Q3854	1030	MW-63A (52')	2/21/07 1052	2/23/07 1027	ND		ND		ND	
Q3596	1030	MW-63A (52')	2/23/07 1027	2/26/07 1127	ND		ND		ND	
Q3945	1030	MW-63A (52')	2/26/07 1127	2/28/07 1140	ND		ND		ND	
Q4170	1030	MW-63A (52')	2/28/07 1148	3/2/07 1054	ND		ND		ND	
Q4188	1030	MW-63A (52')	3/2/07 1054	3/5/07 1053	ND		ND		ND	
Q4558	1030	MW-63A (52')	3/5/07 1053	3/7/07 1348	ND		ND		ND	
Q5058	1030	MW-63A (52')	3/7/07 1348	3/14/07 1122	ND		ND		ND	
Q5461	1030	MW-63A (52')	3/7/07 1122	3/16/07 0956	ND		ND		ND	
Q5344	1030	MW-63A (52')	3/16/07 0956	3/19/07 1107	ND		ND		ND	
Q5669	1030	MW-63A (52')	3/19/07 1107	3/23/07 1027	ND		ND		ND	
Q5769	1030	MW-63A (52')	3/23/07 1027	3/26/07 1047	ND		ND		ND	
Q6157	1030	MW-63A (52')	3/26/07 1047	3/29/07 1103	516.2 *	0.384	ND		ND	
Q6307	1030	MW-63A (52')	3/29/07 1103	4/2/07 1034	ND		ND		ND	
Q6539	1030	MW-63A (52')	4/2/07 1034	4/6/07 1020	ND		ND		ND	
Q6701	1030	MW-63A (52')	4/6/07 1020	4/10/07 1000	ND		ND		ND	
Q6994	1030	MW-63A (52')	4/10/07 1000	4/17/07 0910	ND		ND		ND	
<b>Q1943</b>	<b>1040</b>	<b>MW-63B (85')</b>	<b>1/12/07 1403</b>	<b>1/23/07 1411</b>	<b>515.8 *</b>	<b>0.472</b>	<b>ND</b>		<b>ND</b>	
Q2087	1040	MW-63B (85')	1/23/07 1411	2/1/07 1151	ND		ND		ND	
Q2485	1040	MW-63B (85')	2/1/07 1151	2/8/07 1208	ND		ND		ND	
Q2415	1040	MW-63B (85')	2/8/07 1208	2/9/07 1059	ND		ND		ND	
Q2568	1040	MW-63B (85')	2/9/07 1059	2/10/07 1012	ND		ND		ND	
Q2531	1040	MW-63B (85')	2/10/07 1012	2/11/07 0737	ND		ND		ND	
Q2652	1040	MW-63B (85')	2/11/07 0737	2/12/07 1141	ND		ND		ND	
Q2867	1040	MW-63B (85')	2/12/07 1141	2/13/07 0852	ND		ND		ND	
Q2925	1040	MW-63B (85')	2/13/07 0852	2/14/07 0911	ND		ND		ND	
Q3246	1040	MW-63B (85')	2/14/07 0911	2/16/07 1300	ND		ND		ND	
Q3312	1040	MW-63B (85')	2/16/07 1300	2/19/07 1006	ND		ND		ND	
Q3509	1040	MW-63B (85')	2/19/07 1006	2/21/07 1052	ND		ND		ND	
Q3855	1040	MW-63B (85')	2/21/07 1052	2/23/07 1027	ND		ND		ND	
Q3597	1040	MW-63B (85')	2/23/07 1027	2/26/07 1127	ND		ND		ND	
Q3946	1040	MW-63B (85')	2/26/07 1127	2/28/07 1148	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4134	1040	MW-63B (85°)	2/28/07 1148	3/2/07 1054	ND		ND		ND	
Q4189	1040	MW-63B (85°)	3/2/07 1054	3/5/07 1053	ND		ND		ND	
Q4559	1040	MW-63B (85°)	3/5/07 1053	3/7/07 1348	ND		ND		ND	
Q5059	1040	MW-63B (85°)	3/7/07 1348	3/14/07 1122	ND		ND		ND	
Q5462	1040	MW-63B (85°)	3/7/07 1122	3/16/07 0956	ND		ND		ND	
Q5345	1040	MW-63B (85°)	3/16/07 0956	3/19/07 1107	ND		ND		ND	
Q5670	1040	MW-63B (85°)	3/19/07 1107	3/23/07 1027	ND		ND		ND	
Q5770	1040	MW-63B (85°)	3/23/07 1027	3/26/07 1047	ND		ND		ND	
Q6158	1040	MW-63B (85°)	3/26/07 1047	3/29/07 1103	ND		ND		ND	
Q6308	1040	MW-63B (85°)	3/29/07 1103	4/2/07 1034	ND		ND		ND	
Q6541	1040	MW-63B (85°)	4/2/07 1034	4/6/07 1020	ND		ND		ND	
Q6702	1040	MW-63B (85°)	4/6/07 1020	4/10/07 1000	ND		ND		ND	
Q6995	1040	MW-63B (85°)	4/10/07 1000	4/17/07 0910	ND		ND		ND	
<b>Q0819</b>	<b>1050</b>	<b>MW-63-18</b>	<b>11/15/06 0955</b>	<b>11/20/06 1400</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1051	1050	MW-63-18	11/20/06 1400	11/28/06 0849	ND		ND		ND	
Q1285	1050	MW-63-18	11/28/06 0849	12/5/06 1405	ND		ND		ND	
Q1946	1050	MW-63-18	1/12/07 1352	1/23/07 1407	ND		ND		ND	
Q2090	1050	MW-63-18	1/23/07 1407	2/1/07 1133	ND		ND		ND	
Q2488	1050	MW-63-18	2/1/07 1133	2/8/07 1149	ND		ND		ND	
Q2418	1050	MW-63-18	2/8/07 1149	2/9/07 1052	ND		ND		ND	
Q2571	1050	MW-63-18	2/9/07 1052	2/10/07 1003	ND		ND		ND	
Q2534	1050	MW-63-18	2/10/07 1003	2/11/07 0729	ND		ND		ND	
Q2655	1050	MW-63-18	2/11/07 0729	2/12/07 1111	ND		ND		ND	
Q2870	1050	MW-63-18	2/12/07 1111	2/13/07 0846	ND		ND		ND	
Q2928	1050	MW-63-18	2/13/07 0846	2/14/07 0904	ND		ND		ND	
Q3249	1050	MW-63-18	2/14/07 0904	2/16/07 1250	ND		ND		ND	
Q3315	1050	MW-63-18	2/16/07 1250	2/19/07 0955	ND		ND		ND	
Q3512	1050	MW-63-18	2/19/07 0955	2/21/07 1040	ND		ND		ND	
Q3858	1050	MW-63-18	2/21/07 1040	2/23/07 1014	ND		ND		ND	
Q3601	1050	MW-63-18	2/23/07 1014	2/26/07 1115	ND		ND		ND	
Q3949	1050	MW-63-18	2/26/07 1115	2/28/07 1132	ND		ND		ND	
Q4137	1050	MW-63-18	2/28/07 1132	3/2/07 1045	ND		ND		ND	
Q4192	1050	MW-63-18	3/2/07 1045	3/5/07 1043	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4563	1050	MW-63-18	3/5/07 1043	3/7/07 1336	ND		ND		ND	
Q5063	1050	MW-63-18	3/7/07 1336	3/14/07 1109	ND		ND		ND	
Q5465	1050	MW-63-18	3/7/07 1118	3/16/07 0945	ND		ND		ND	
Q5348	1050	MW-63-18	3/16/07 0945	3/19/07 1055	ND		ND		ND	
Q5673	1050	MW-63-18	3/19/07 1055	3/23/07 1013	ND		ND		ND	
Q5773	1050	MW-63-18	3/23/07 1013	3/26/07 1035	ND		ND		ND	
Q6162	1050	MW-63-18	3/26/07 1035	3/29/07 1051	ND		ND		ND	
Q6311	1050	MW-63-18	3/29/07 1051	4/2/07 1023	ND		ND		ND	
Q6544	1050	MW-63-18	4/2/07 1023	4/6/07 1008	ND		ND		ND	
Q6705	1050	MW-63-18	4/6/07 1008	4/10/07 0945	ND		ND		ND	
Q6998	1050	MW-63-18	4/10/07 0945	4/17/07 0900	ND		ND		ND	
Q7313	1050	MW-63-18	4/17/07 1109	4/24/07 0849	ND		ND		ND	
Q7601	1050	MW-63-18	4/24/07 0849	5/1/07 0817	ND		ND		ND	
Q8077	1050	MW-63-18	5/3/07 0932	5/9/07 0939	ND		ND		ND	
Q8331	1050	MW-63-18	5/9/07 0939	5/16/07 0924	ND		ND		ND	
<b>Q0821</b>	<b>1060</b>	<b>MW-63-35</b>	<b>11/15/06 1005</b>	<b>11/20/06 1405</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1052	1060	MW-63-35	11/20/06 1405	11/28/06 0853	ND		ND		ND	
Q1286	1060	MW-63-35	11/28/06 0853	12/5/06 1400	ND		ND		ND	
Q1947	1060	MW-63-35	1/12/07 1347	1/23/07 1400	ND		ND		ND	
Q2091	1060	MW-63-35	1/23/07 1400	2/1/07 1139	ND		ND		ND	
Q2489	1060	MW-63-35	2/1/07 1139	2/8/07 1158	ND		ND		ND	
Q2419	1060	MW-63-35	2/8/07 1158	2/9/07 1053	ND		ND		ND	
Q2572	1060	MW-63-35	2/9/07 1053	2/10/07 1006	ND		ND		ND	
Q2535	1060	MW-63-35	2/10/07 1006	2/11/07 0734	ND		ND		ND	
Q2656	1060	MW-63-35	2/11/07 0734	2/12/07 1130	ND		ND		ND	
Q2871	1060	MW-63-35	2/12/07 1130	2/13/07 0849	ND		ND		ND	
Q2929	1060	MW-63-35	2/13/07 0849	2/14/07 0908	ND		ND		ND	
Q3250	1060	MW-63-35	2/14/07 0908	2/16/07 1255	ND		ND		ND	
Q3316	1060	MW-63-35	2/16/07 1255	2/19/07 1000	ND		ND		ND	
Q3513	1060	MW-63-35	2/19/07 1000	2/21/07 1045	ND		ND		ND	
Q3859	1060	MW-63-35	2/21/07 1045	2/23/07 1019	ND		ND		ND	
Q3602	1060	MW-63-35	2/23/07 1019	2/26/07 1120	ND		ND		ND	
Q3950	1060	MW-63-35	2/26/07 1120	2/28/07 1140	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4138	1060	MW-63-35	2/28/07 1140	3/2/07 1049	ND		ND		ND	
Q4193	1060	MW-63-35	3/2/07 1049	3/5/07 1046	ND		ND		ND	
Q4564	1060	MW-63-35	3/5/07 1046	3/7/07 1338	ND		ND		ND	
Q5064	1060	MW-63-35	3/7/07 1338	3/14/07 1114	ND		ND		ND	
Q5466	1060	MW-63-35	3/7/07 1109	3/16/07 0948	ND		ND		ND	
Q5349	1060	MW-63-35	3/16/07 0948	3/19/07 1100	ND		ND		ND	
Q5674	1060	MW-63-35	3/19/07 1100	3/23/07 1017	ND		ND		ND	
Q5774	1060	MW-63-35	3/23/07 1017	3/26/07 1039	ND		ND		ND	
Q6163	1060	MW-63-35	3/26/07 1039	3/29/07 1055	ND		ND		ND	
Q6312	1060	MW-63-35	3/29/07 1055	4/2/07 1026	ND		ND		ND	
Q6545	1060	MW-63-35	4/2/07 1008	4/6/07 1012	ND		ND		ND	
Q6706	1060	MW-63-35	4/6/07 1012	4/10/07 0950	ND		ND		ND	
Q6999	1060	MW-63-35	4/10/07 0950	4/17/07 0905	ND		ND		ND	
Q7314	1060	MW-63-35	4/17/07 1114	4/24/07 0853	ND		ND		ND	
Q7602	1060	MW-63-35	4/24/07 0853	5/1/07 0819	ND		ND		ND	
Q8078	1060	MW-63-35	5/3/07 0933	5/9/07 0942	ND		ND		ND	
Q8332	1060	MW-63-35	5/9/07 0942	5/16/07 0924	ND		ND		ND	
<b>Q0818</b>	<b>1070</b>	<b>MW-63C (125')</b>	<b>11/15/06 1040</b>	<b>11/20/06 1350</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1050	1070	MW-63C (125')	11/20/06 1350	11/28/06 0900	ND		ND		ND	
Q1284	1070	MW-63C (125')	11/28/06 0900	12/5/06 1415	ND		ND		ND	
Q1944	1070	MW-63C (125')	1/12/07 1403	1/23/07 1411	ND		ND		ND	
Q2088	1070	MW-63C (125')	1/23/07 1411	2/1/07 1156	ND		ND		ND	
Q2486	1070	MW-63C (125')	2/1/07 1156	2/8/07 1209	ND		ND		ND	
Q2416	1070	MW-63C (125')	2/8/07 1209	2/9/07 1059	ND		ND		ND	
Q2569	1070	MW-63C (125')	2/9/07 1059	2/10/07 1012	ND		ND		ND	
Q2532	1070	MW-63C (125')	2/10/07 1012	2/11/07 0737	ND		ND		ND	
Q2653	1070	MW-63C (125')	2/11/07 0737	2/12/07 1141	ND		ND		ND	
Q2868	1070	MW-63C (125')	2/12/07 1141	2/13/07 0852	ND		ND		ND	
Q2926	1070	MW-63C (125')	2/13/07 0852	2/14/07 0911	ND		ND		ND	
Q3247	1070	MW-63C (125')	2/14/07 0911	2/16/07 1300	ND		ND		ND	
Q3313	1070	MW-63C (125')	2/16/07 1300	2/19/07 1006	ND		ND		ND	
Q3510	1070	MW-63C (125')	2/19/07 1006	2/21/07 1052	ND		ND		ND	
Q3856	1070	MW-63C (125')	2/21/07 1052	2/23/07 1027	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3598	1070	MW-63C (125')	2/23/07 1027	2/26/07 1127	ND		ND		ND	
Q3947	1070	MW-63C (125')	2/26/07 1127	2/28/07 1148	ND		ND		ND	
Q4135	1070	MW-63C (125')	2/28/07 1148	3/2/07 1054	ND		ND		ND	
Q4190	1070	MW-63C (125')	3/2/07 1054	3/5/07 1053	ND		ND		ND	
Q4561	1070	MW-63C (125')	3/5/07 1053	3/7/07 1348	ND		ND		ND	
Q5061	1070	MW-63C (125')	3/7/07 1348	3/14/07 1122	ND		ND		ND	
Q5463	1070	MW-63C (125')	3/7/07 1122	3/16/07 0956	ND		ND		ND	
Q5346	1070	MW-63C (125')	3/16/07 0956	3/19/07 1107	ND		ND		ND	
Q5671	1070	MW-63C (125')	3/19/07 1107	3/23/07 1027	ND		ND		ND	
Q5771	1070	MW-63C (125')	3/23/07 1027	3/26/07 1047	ND		ND		ND	
Q6159	1070	MW-63C (125')	3/26/07 1047	3/29/07 1103	ND		ND		ND	
Q6309	1070	MW-63C (125')	3/29/07 1103	4/2/07 1034	ND		ND		ND	
Q6542	1070	MW-63C (125')	4/2/07 1034	4/6/07 1020	ND		ND		ND	
Q6703	1070	MW-63C (125')	4/6/07 1020	4/10/07 1000	ND		ND		ND	
Q6996	1070	MW-63C (125')	4/10/07 1000	4/17/07 0910	ND		ND		ND	
<b>Q1945</b>	<b>1080</b>	<b>MW-63D (177')</b>	<b>1/12/07 1403</b>	<b>1/23/07 1411</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2089	1080	MW-63D (177')	1/23/07 1411	2/1/07 1159	ND		ND		ND	
Q2487	1080	MW-63D (177')	2/1/07 1159	2/8/07 1210	ND		ND		ND	
Q2417	1080	MW-63D (177')	2/8/07 1210	2/9/07 1059	ND		ND		ND	
Q2570	1080	MW-63D (177')	2/9/07 1059	2/10/07 1012	ND		ND		ND	
Q2533	1080	MW-63D (177')	2/10/07 1012	2/11/07 0737	ND		ND		ND	
Q2654	1080	MW-63D (177')	2/11/07 0737	2/12/07 1141	ND		ND		ND	
Q2869	1080	MW-63D (177')	2/12/07 1141	2/13/07 0852	ND		ND		ND	
Q2927	1080	MW-63D (177')	2/13/07 0852	2/14/07 0911	ND		ND		ND	
Q3248	1080	MW-63D (177')	2/14/07 0911	2/16/07 1300	ND		ND		ND	
Q3314	1080	MW-63D (177')	2/16/07 1300	2/19/07 1006	ND		ND		ND	
Q3511	1080	MW-63D (177')	2/19/07 1006	2/21/07 1052	ND		ND		ND	
Q3857	1080	MW-63D (177')	2/21/07 1052	2/23/07 1027	ND		ND		ND	
Q3599	1080	MW-63D (177')	2/23/07 1027	2/26/07 1127	ND		ND		ND	
Q3948	1080	MW-63D (177')	2/26/07 1127	2/28/07 1148	ND		ND		ND	
Q4136	1080	MW-63D (177')	2/28/07 1148	3/2/07 1054	ND		ND		ND	
Q4191	1080	MW-63D (177')	3/2/07 1054	3/5/07 1053	ND		ND		ND	
Q4562	1080	MW-63D (177')	3/5/07 1053	3/7/07 1348	ND		ND		ND	

**Results**  
**Charcoal Samplers**

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5062	1080	MW-63D (177')	3/7/07 1348	3/14/07 1122	ND		ND		ND	
Q5464	1080	MW-63D (177')	3/7/07 1122	3/16/07 0956	ND		ND		ND	
Q5347	1080	MW-63D (177')	3/16/07 0956	3/19/07 1107	ND		ND		ND	
Q5672	1080	MW-63D (177')	3/19/07 1107	3/23/07 1027	ND		ND		ND	
Q5772	1080	MW-63D (177')	3/23/07 1027	3/26/07 1047	ND		ND		ND	
Q6161	1080	MW-63D (177')	3/26/07 1047	3/29/07 1103	ND		ND		ND	
Q6310	1080	MW-63D (177')	3/29/07 1103	4/2/07 1034	ND		ND		ND	
Q6543	1080	MW-63D (177')	4/2/07 1034	4/6/07 1020	ND		ND		ND	
Q6704	1080	MW-63D (177')	4/6/07 1020	4/10/07 1000	ND		ND		ND	
Q6997	1080	MW-63D (177')	4/10/07 1000	4/17/07 0910	ND		ND		ND	
<b>Q0822</b>	<b>1090</b>	<b>MW-65B (74') (upgradient control)</b>	<b>11/15/06 1406</b>	<b>11/20/06 1345</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1053	1090	MW-65B (74') (upgradient control)	11/20/06 1345	11/27/06 1328	ND		ND		ND	
Q1949	1090	MW-65-80' (upgradient control)	1/10/07 0941	1/24/07 1338	ND		ND		ND	
Q3282	1090	MW-65-80' (upgradient control)	1/24/07 1338	2/15/07 0855	ND		ND		ND	
Q4097	1090	MW-65B (74') (upgradient control)	2/15/07 0855	3/2/07 1218	ND		ND		ND	
Q5582	1090	MW-65B (74') (upgradient control)	3/2/07 1218	3/21/07 1040	ND		ND		ND	
Q5985	1090	MW-65-80 (upgradient control)	3/2/07 1040	3/27/07 1004	ND		ND		ND	
Q6755	1090	MW-65-80 (upgradient control)	3/26/07 1004	4/11/07 1112	ND		ND		ND	
Q7343	1090	MW-65-80 (upgradient control)	4/11/07 1112	4/25/07 0809	ND		ND		ND	
Q7655	1090	MW-65-80 (upgradient control)	4/25/07 0809	5/1/07 1158	ND		ND		ND	
Q8034	1090	MW-65B (74') (upgradient control)	5/1/07 1158	5/8/07 1318	ND		ND		ND	
<b>Q1948</b>	<b>1095</b>	<b>MW-65-48' (upgradient control)</b>	<b>1/10/07 0944</b>	<b>1/24/07 1334</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3283	1095	MW-65-48' (upgradient control)	1/24/07 1334	2/15/07 0850	ND		ND		ND	
Q4096	1095	MW-65-48' (upgradient control)	2/15/07 0850	3/2/07 1212	ND		ND		ND	
Q5581	1095	MW-65-48' (upgradient control)	3/2/07 1212	3/21/07 1035	ND		ND		ND	
Q5984	1095	MW-65-48' (upgradient control)	3/2/07 1035	3/27/07 0959	ND		ND		ND	
Q6754	1095	MW-65-48' (upgradient control)	3/27/07 0959	4/11/07 1107	ND		ND		ND	
Q7342	1095	MW-65-48' (upgradient control)	4/11/07 1107	4/25/07 0805	ND		ND		ND	
Q7654	1095	MW-65-48' (upgradient control)	4/25/07 0805	5/1/07 1157	ND		ND		ND	
Q8033	1095	MW-65-48' (upgradient control)	5/1/07 1157	5/8/07 1315	ND		ND		ND	
<b>Q0823</b>	<b>1100</b>	<b>MW107 (open hole control)</b>	<b>11/14/06 1151</b>	<b>11/20/06 1120</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1054	1100	MW-107 (open hole control)	11/20/06 1120	11/27/06 1344	ND		ND		ND	
Q1287	1100	MW-107 (open hole control)	11/27/06 1344	12/4/06 0810	ND		ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1950	1100	MW-107 (open hole control)	1/12/07 1020	1/24/07 1155	ND		ND		ND	
Q3284	1100	MW-107 (open hole control)	1/24/07 1155	2/15/07 1103	ND		ND		ND	
Q4098	1100	MW-107 (open hole control)	2/15/07 1103	3/1/07 1340	ND		ND		ND	
Q5406	1100	MW-107 (open hole control)	3/1/07 1340	3/13/07 1352	ND		ND		ND	
Q5986	1100	MW-107 (open hole control)	3/13/07 1352	3/26/07 1328	ND		ND		ND	
Q6756	1100	MW-107 (open hole control)	3/27/07 1352	4/11/07 0826	ND		ND		ND	
Q7344	1100	MW-107 (open hole control)	4/11/07 0826	4/25/07 0922	ND		ND		ND	
Q8035	1100	MW-107 (open hole control)	4/25/07 0922	5/9/07 0650	ND		ND		ND	
<b>Q0828</b>	<b>1123</b>	<b>MW-111</b>	<b>11/14/06 0923</b>	<b>11/20/06 1012</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1056	1123	MW-111	11/24/06 1012	11/27/06 0817	ND		ND		ND	
Q1288	1123	MW-111	11/27/06 0817	12/5/06 1011	ND		ND		ND	
Q2065	1123	MW-111	1/15/07 1340	2/1/07 1353	516.8 *	0.682	ND		ND	
Q2453	1123	MW-111	2/1/07 1353	2/8/07 0950	ND		ND		ND	
Q2394	1123	MW-111	2/8/07 0950	2/9/07 1038	ND		ND		ND	
Q2509	1123	MW-111	2/9/07 1038	2/10/07 0830	ND		ND		ND	
Q2605	1123	MW-111	2/10/07 0830	2/11/07 0810	ND		ND		ND	
Q2631	1123	MW-111	2/11/07 0810	2/12/07 0905	ND		ND		ND	
Q2845	1123	MW-111	2/12/07 0905	2/13/07 0855	ND		ND		ND	
Q2904	1123	MW-111	2/13/07 0855	2/14/07 0820	ND		ND		ND	
Q3226	1123	MW-111	2/14/07 0820	2/16/07 0838	ND		ND		ND	
Q3349	1123	MW-111	2/16/07 0838	2/19/07 0908	ND		ND		ND	
Q3488	1123	MW-111	2/19/07 0908	2/21/07 0825	ND		ND		ND	
Q3834	1123	MW-111	2/21/07 0825	2/23/07 0815	ND		ND		ND	
Q3576	1123	MW-111	2/23/07 0815	2/26/07 0945	ND		ND		ND	
Q3922	1123	MW-111	2/26/07 0945	2/28/07 0948	ND		ND		ND	
Q4124	1123	MW-111	2/28/07 0948	3/2/07 0955	516.6	0.544	ND		ND	
Q4228	1123	MW-111	3/2/07 0955	3/5/07 0856	515.5	1.18	ND		ND	
Q4601	1123	MW-111	3/5/07 0856	3/7/07 1035	515.2	7.23	ND		ND	
Q4716	1123	MW-111	3/7/07 1035	3/9/07 0810	515.3	8.94	ND		ND	
Q4831	1123	MW-111	3/9/07 0810	3/12/07 0854	515.6	14.9	ND		ND	
Q5033	1123	MW-111	3/12/07 0854	3/14/07 0845	515.1	16.4	ND		ND	
Q5435	1123	MW-111	3/14/07 0845	3/16/07 0749	515.7	9.53	ND		ND	
Q5390	1123	MW-111	3/16/07 0749	3/20/07 0745	515.5	32.3	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5715	1123	MW-111	3/20/07 0745	3/23/07 0811	515.9	2.17	ND		ND	
Q5815	1123	MW-111	3/23/07 0811	3/26/07 0910	515.2	5.38	ND		ND	
Q6131	1123	MW-111	3/26/07 0910	3/29/07 1129	515.1	57.4	ND		ND	
Q6281	1123	MW-111	3/29/07 1129	4/2/07 0839	515.2	37.1	ND		ND	
Q6585	1123	MW-111	4/2/07 0839	4/6/07 0825	514.9	23.8	ND		ND	
Q6674	1123	MW-111	4/6/07 0825	4/9/07 0915	515.0	19.1	ND		ND	
Q6968	1123	MW-111	4/9/07 0915	4/17/07 1133	515.1	46.9	ND		ND	
Q7230	1123	MW-111	4/17/07 1133	4/23/07 0859	515.5	9.59	ND		ND	
Q7483	1123	MW-111	4/23/07 0859	4/30/07 0810	515.4	21.6	ND		ND	
Q8058	1123	MW-111	5/4/07 0915	5/8/07 1505	514.9	51.2	ND		ND	
<b>Q0829</b>	<b>1125</b>	<b>N. Curtain Drain</b>	<b>11/15/06 1101</b>	<b>11/21/06 0850</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1061	1125	N. Curtain Drain	11/21/06 0850	11/28/06 0850	ND		ND		ND	
Q1289	1125	N. Curtain Drain	11/28/06 0850	12/6/06 0835	ND		ND		ND	
Q1951	1125	N. Curtain Drain	1/15/07 0953	1/23/07 1025	ND		ND		ND	
Q1951D	1125	N. Curtain Drain	1/15/07 0953	1/23/07 1025	ND		ND		ND	
Q3285	1125	N. Curtain Drain	1/23/06 1025	2/15/07 1445	ND		ND		ND	
Q3285D	1125	N. Curtain Drain	1/23/07 1025	2/15/07 1445	ND		ND		ND	
Q4099	1125	N. Curtain Drain	2/15/07 1445	3/1/07 1149	ND		ND		ND	
Q4099D	1125	N. Curtain Drain	2/15/07 1445	3/1/07 1149	ND		ND		ND	
Q4239	1125	N. Curtain Drain	3/1/07 1012	3/5/07 0750	ND		ND		ND	
Q4239D	1125	N. Curtain Drain	3/1/07 1012	3/5/07 0750	ND		ND		ND	
Q4612	1125	N. Curtain Drain	3/5/07 0000	3/7/07 1440	ND		ND		ND	
Q4612D	1125	N. Curtain Drain	3/5/07 0000	3/7/07 1440	ND		ND		ND	
Q4727	1125	N. Curtain Drain	3/7/07 1440	3/9/07 1145	ND		ND		ND	
Q4727D	1125	N. Curtain Drain	3/7/07 1440	3/9/07 1145	ND		ND		ND	
Q4843	1125	N. Curtain Drain	3/9/07 1145	3/12/07 0805	ND		ND		ND	
Q5037	1125	N. Curtain Drain	3/12/07 0805	3/14/07 0725	515.4	8.39	ND		ND	
Q5037D	1125	N. Curtain Drain	3/12/07 0805	3/14/07 0725	ND		ND		ND	
Q5439	1125	N. Curtain Drain	3/14/07 0725	3/16/07 1235	ND		ND		ND	
Q5439D	1125	N. Curtain Drain	3/14/07 0725	3/16/07 1235	515.6	0.799	ND		ND	
Q5394	1125	N. Curtain Drain	3/16/07 1235	3/19/07 0812	ND		ND		ND	
Q5719	1125	N. Curtain Drain	3/19/07 0812	3/23/07 1411	ND		ND		ND	
Q5819	1125	N. Curtain Drain	3/23/07 1411	3/26/07 0814	ND		ND		ND	

## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6135	1125	N. Curtain Drain	3/26/07 0814	3/29/07 1255	515.0	1.96	ND		ND	
Q6135D	1125	N. Curtain Drain	3/26/07 0814	3/29/07 1255	ND		ND		ND	
Q6285	1125	N. Curtain Drain	3/29/07 1255	4/2/07 1305	ND		ND		ND	
Q6589	1125	N. Curtain Drain	4/2/07 1305	4/6/07 1129	ND		ND		ND	
Q6678	1125	N. Curtain Drain	4/6/07 1129	4/9/07 1303	515.4 *	1.17	ND		ND	
Q6972	1125	N. Curtain Drain	4/9/07 1303	4/16/07 1300	515.0	1.16	ND		ND	
Q7234	1125	N. Curtain Drain	4/16/07 1300	4/23/07 1305	ND		ND		ND	
Q7487	1125	N. Curtain Drain	4/23/07 1305	4/30/07 1304	516.4	2.15	ND		ND	
Q8205	1125	N. Curtain Drain	5/3/07 1323	5/11/07 1015	514.9	18.5	ND		ND	
<b>Q0830</b>	<b>1127</b>	<b>Sphere Foundation Sump-U1</b>	<b>11/15/06 1044</b>	<b>11/21/06 0835</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q0830D	1127	Sphere Foundation Sump-U1	11/15/06 1044	11/21/06 0835	ND		ND		ND	
Q1062	1127	Sphere Foundation Sump-U1	11/21/06 0835	11/28/06 0835	ND		ND		ND	
Q1290	1127	Sphere Foundation Sump-U1	11/28/06 0838	12/6/06 0858	ND		ND		ND	
Q1290D	1127	Sphere Foundation Sump-U1	11/28/06 0838	12/6/06 0858	ND		ND		ND	
Q1952	1127	Sphere Foundation Sump-U1	1/15/07 0945	1/23/07 1017	ND		ND		ND	
Q1952D	1127	Sphere Foundation Sump-U1	1/15/07 0945	1/23/07 1017	ND		ND		ND	
Q3286	1127	Sphere Foundation Sump-U1	1/23/07 1017	2/15/07 1440	515.9	2.67	ND		ND	
Q4101	1127	Sphere Foundation Sump-U1	2/15/07 1440	3/1/07 1143	516.0 *	0.316	ND		ND	
Q4101D	1127	Sphere Foundation Sump-U1	2/15/07 1440	3/1/07 1143	515.2	18.2	ND		ND	
Q4133	1127	Sphere Foundation Sump-U1	3/1/07 1143	3/2/07 0820	ND		ND		ND	
Q4133D	1127	Sphere Foundation Sump-U1	3/1/07 1500	3/2/07 1249	ND		ND		ND	
Q4238	1127	Sphere Foundation Sump-U1	3/2/07 0820	3/5/07 0745	ND		ND		ND	
Q4611	1127	Sphere Foundation Sump-U1	3/5/07 0745	3/7/07 1435	ND		ND		ND	
Q4611D	1127	Sphere Foundation Sump-U1	3/5/07 0745	3/7/07 1435	ND		ND		ND	
Q4726	1127	Sphere Foundation Sump-U1	3/7/07 1435	3/9/07 1140	ND		ND		ND	
Q4726D	1127	Sphere Foundation Sump-U1	3/7/07 1435	3/9/07 1140	ND		ND		ND	
Q4842	1127	Sphere Foundation Sump-U1	3/9/07 1140	3/12/07 0801	ND		ND		ND	
Q4842D	1127	Sphere Foundation Sump-U1	3/9/07 1140	3/12/07 0801	ND		ND		ND	
Q5038	1127	Sphere Foundation Sump-U1	3/12/07 0801	3/14/07 0720	ND		ND		ND	
Q5441	1127	Sphere Foundation Sump-U1	3/14/07 0720	3/16/07 1230	ND		ND		ND	
Q5395	1127	Sphere Foundation Sump-U1	3/16/07 1230	3/19/07 0806	ND		ND		ND	
Q5721	1127	Sphere Foundation Sump-U1	3/19/07 0806	3/23/07 1405	ND		ND		ND	
Q5821	1127	Sphere Foundation Sump-U1	3/23/07 1405	3/26/07 0810	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6136	1127	Sphere Foundation Sump-U1	3/26/07 0810	3/29/07 1250	ND		ND		ND	
Q6136D	1127	Sphere Foundation Sump-U1	3/26/07 0810	3/29/07 1250	ND		ND		ND	
Q6286	1127	Sphere Foundation Sump-U1	3/29/07 1250	4/2/07 1300	ND		ND		ND	
Q6286D	1127	Sphere Foundation Sump-U1	3/29/07 1250	4/2/07 1300	ND		ND		ND	
Q6590	1127	Sphere Foundation Sump-U1	4/2/07 1300	4/6/07 1253	ND		ND		ND	
Q6590D	1127	Sphere Foundation Sump-U1	4/2/07 1300	4/6/07 1253	ND		ND		ND	
Q6679	1127	Sphere Foundation Sump-U1	4/6/07 1253	4/9/07 1258	ND		ND		ND	
Q6679D	1127	Sphere Foundation Sump-U1	4/6/07 1253	4/9/07 1258	ND		ND		ND	
Q7235	1127	Sphere Foundation Sump-U1	4/9/07 1258	4/23/07 1258	ND		ND		ND	
Q7488	1127	Sphere Foundation Sump-U1	4/23/07 1258	4/30/07 1320	ND		ND		ND	
Q7488D	1127	Sphere Foundation Sump-U1	4/23/07 1258	4/30/07 1320	ND		ND		ND	
Q8206	1127	Sphere Foundation Sump-U1	5/3/07 1318	5/11/07 1010	516.6	1.22	ND		ND	
<b>Q0824</b>	<b>1150</b>	<b>U3-3</b>	<b>11/15/06 1316</b>	<b>11/20/06 1405</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1055	1150	U3-3	11/20/06 1405	11/27/06 1301	ND		ND		ND	
Q1291	1150	U3-3	11/27/06 1301	12/4/06 1010	ND		ND		ND	
Q3287	1150	U3-3	1/24/07 0955	2/13/07 1330	ND		ND		ND	
Q4102	1150	U3-3	2/13/07 1330	3/1/07 0948	ND		ND		ND	
Q5407	1150	U3-3	3/1/07 0948	3/14/07 1156	516.6 *	0.673	ND		ND	
Q5987	1150	U3-3	3/14/07 1156	3/27/07 1017	516.4 *	0.925	ND		ND	
Q6757	1150	U3-3	3/27/07 1156	4/11/07 1015	ND		ND		ND	
Q7345	1150	U3-3	4/11/07 1015	4/25/07 1047	ND		ND		ND	
Q8036	1150	U3-3	4/25/07 1047	5/8/07 1517	ND		ND		ND	
<b>Q1953</b>	<b>1160</b>	<b>U3-4D</b>	<b>1/4/07 1153</b>	<b>1/24/07 0940</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3288	1160	U3-4D	1/24/07 0940	2/13/07 1409	ND		ND		ND	
Q4103	1160	U3-4D	2/13/07 1409	3/1/07 1012	517.4 *	0.858	ND		ND	
Q5408	1160	U3-4D	3/1/07 1012	3/14/07 1152	ND		ND		ND	
Q5988	1160	U3-4D	3/14/07 1152	3/27/07 1342	517.6 *	0.528	ND		ND	
Q6758	1160	U3-4D	3/27/07 1152	4/11/07 1008	ND		ND		ND	
Q7346	1160	U3-4D	4/11/07 1008	4/25/07 1112	515.8 *	0.868	ND		ND	
Q8037	1160	U3-4D	4/25/07 1112	5/8/07 1527	516.0 *	0.784	ND		ND	
<b>Q1924</b>	<b>1180</b>	<b>MW-44-67</b>	<b>1/8/07 1115</b>	<b>1/24/07 1051</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3289	1180	MW-44-67	1/24/07 1051	2/13/07 1515	ND		ND		ND	
Q4694	1180	MW-44-67	2/13/07 1520	3/5/07 1315	ND		ND		ND	



## Results

Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5991	1180	MW-44-67	3/5/07 1315	3/28/07 1000	ND		ND		ND	
Q6743	1180	MW-44-67	3/28/07 1000	4/11/07 1128	ND		ND		ND	
Q7330	1180	MW-44-67	4/11/07 1128	4/25/07 1326	ND		ND		ND	
Q8025	1180	MW-44-67	4/25/07 1326	5/7/07 0843	ND		ND		ND	
<b>Q1925</b>	<b>1185</b>	<b>MW-44-104</b>	<b>1/10/07 1058</b>	<b>1/24/07 1057</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3290	1185	MW-44-104	1/24/07 1057	2/13/07 1520	ND		ND		ND	
Q4693	1185	MW-44-104	2/13/07 1515	3/5/07 1319	ND		ND		ND	
Q5990	1185	MW-44-104	3/5/07 1319	3/28/07 1006	ND		ND		ND	
Q8026	1185	MW-44-104	3/28/07 1006	5/7/07 1345	ND		ND		ND	
<b>Q1926</b>	<b>1190</b>	<b>MW-45-43</b>	<b>1/10/07 1117</b>	<b>1/24/07 1120</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3291	1190	MW-45-43	1/24/07 1120	2/13/07 1340	ND		ND		ND	
Q4087	1190	MW-45-43	2/15/07 1340	3/1/07 1100	ND		ND		ND	
Q5399	1190	MW-45-43	3/1/07 1100	3/15/07 0922	ND		ND		ND	
Q5973	1190	MW-45-43	3/15/07 0922	3/28/07 0837	ND		ND		ND	
Q6744	1190	MW-45-43	3/28/07 0837	4/11/07 0944	ND		ND		ND	
Q7331	1190	MW-45-43	4/11/07 0944	4/25/07 0850	ND		ND		ND	
Q8027	1190	MW-45-43	4/25/07 0850	5/8/07 1150	ND		ND		ND	
<b>Q1927</b>	<b>1195</b>	<b>MW-45-67</b>	<b>1/10/07 1158</b>	<b>1/24/07 1110</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3292	1195	MW-45-67	1/24/07 1110	2/15/07 1345	ND		ND		ND	
Q4695	1195	MW-45-67	2/15/07 1345	3/8/07 1150	ND		ND		ND	
Q5401	1195	MW-45-67	3/8/07 1150	3/15/07 0925	ND		ND		ND	
Q5974	1195	MW-45-67	3/15/07 0925	3/28/07 0843	ND		ND		ND	
Q6745	1195	MW-45-67	3/28/07 0843	4/11/07 0939	ND		ND		ND	
Q7332	1195	MW-45-67	4/11/07 0939	4/25/07 0855	ND		ND		ND	
Q8028	1195	MW-45-67	4/25/07 0855	5/8/07 0830	ND		ND		ND	
<b>Q1928</b>	<b>1200</b>	<b>MW-46</b>	<b>1/4/07 1136</b>	<b>1/24/07 0950</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q3293	1200	MW-46	1/24/07 0950	2/13/07 1400	ND		ND		ND	
Q4088	1200	MW-46	2/13/07 1400	3/1/07 1027	ND		ND		ND	
Q5402	1200	MW-46	3/1/07 1027	3/14/07 1143	ND		ND		ND	
Q5975	1200	MW-46	3/14/07 1143	3/27/07 1434	ND		ND		ND	
Q8029	1200	MW-46	3/26/07 1434	5/8/07 1534	ND		ND		ND	
<b>Q2092</b>	<b>1210</b>	<b>U3-C1</b>	<b>1/25/07 1450</b>	<b>2/2/07 0918</b>	<b>515.0 *</b>	<b>0.680</b>	<b>ND</b>		<b>ND</b>	
Q2092D	1210	U3-C1	1/25/07 1450	2/2/07 0918	515.8 *	0.488	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2490	1210	U3-C1	2/2/07 0918	2/8/07 1412	517.0 *	0.528	ND		ND	
Q2421	1210	U3-C1	2/8/07 1412	2/9/07 1127	ND		ND		ND	
Q2421D	1210	U3-C1	2/8/07 1412	2/9/07 1127	ND		ND		ND	
Q2573	1210	U3-C1	2/9/07 1127	2/10/07 1038	ND		ND		ND	
Q2536	1210	U3-C1	2/10/07 1038	2/11/07 0954	ND		ND		ND	
Q2657	1210	U3-C1	2/11/07 0954	2/12/07 1305	ND		ND		ND	
Q2872	1210	U3-C1	2/12/07 1138	2/13/07 1028	ND		ND		ND	
Q2930	1210	U3-C1	2/13/07 1028	2/14/07 1032	ND		ND		ND	
Q2930D	1210	U3-C1	2/13/07 1028	2/14/07 1032	ND		ND		ND	
Q3251	1210	U3-C1	2/14/07 1032	2/16/07 0901	515.8 *	0.440	ND		ND	
Q3251D	1210	U3-C1	2/14/07 1032	2/16/07 0901	515.8 *	0.270	ND		ND	
Q3317	1210	U3-C1	2/16/07 0901	2/19/07 1030	516.0 *	0.439	ND		ND	
Q3514	1210	U3-C1	2/19/07 1030	2/21/07 1120	ND		ND		ND	
Q3514D	1210	U3-C1	2/19/07 1030	2/21/07 1120	ND		ND		ND	
Q3861	1210	U3-C1	2/21/07 1120	2/23/07 1130	ND		ND		ND	
Q3603	1210	U3-C1	2/23/07 1130	2/26/07 1312	ND		ND		ND	
Q3603D	1210	U3-C1	2/23/07 1130	2/26/07 1312	ND		ND		ND	
Q3951	1210	U3-C1	2/26/07 1312	2/28/07 1407	ND		ND		ND	
Q4139	1210	U3-C1	2/28/07 1407	3/2/07 1254	515.8 *	0.439	ND		ND	
Q4139D	1210	U3-C1	2/28/07 1407	3/2/07 1254	514.4 *	0.564	ND		ND	
Q4194	1210	U3-C1	3/2/07 1254	3/5/07 1246	515.0 *	0.830	ND		ND	
Q4565	1210	U3-C1	3/5/07 1246	3/7/07 1503	514.9 *	0.573	ND		ND	
Q4746	1210	U3-C1	3/7/07 1503	3/9/07 1053	ND		ND		ND	
Q4746D	1210	U3-C1	3/7/07 1503	3/9/07 1053	ND		ND		ND	
Q4796	1210	U3-C1	3/9/07 1053	3/12/07 1103	ND		ND		ND	
Q5075	1210	U3-C1	3/12/07 1103	3/14/07 1315	515.4 *	0.475	ND		ND	
Q5075D	1210	U3-C1	3/12/07 1103	3/14/07 1315	515.2 *	0.496	ND		ND	
Q5477	1210	U3-C1	3/14/07 1315	3/16/07 1047	516.6 *	0.536	ND		ND	
Q5361	1210	U3-C1	3/16/07 1047	3/19/07 1203	515.2 *	0.569	ND		ND	
Q5361D	1210	U3-C1	3/16/07 1047	3/19/07 1203	516.2 *	0.618	ND		ND	
Q5686	1210	U3-C1	3/19/07 1203	3/23/07 1113	515.0 *	0.508	ND		ND	
Q5786	1210	U3-C1	3/23/07 1113	3/26/07 1257	516.6 *	0.583	ND		ND	
Q5786D	1210	U3-C1	3/23/07 1113	3/26/07 1257	514.4 *	0.477	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6174	1210	U3-C1	3/26/07 1257	3/29/07 1219	514.0 *	0.679	ND		ND	
Q6324	1210	U3-C1	3/29/07 1219	4/2/07 1025	ND		ND		ND	
Q6324D	1210	U3-C1	3/29/07 1219	4/2/07 1025	ND		ND		ND	
Q6555	1210	U3-C1	4/2/07 1025	4/6/07 1113	ND		ND		ND	
Q6717	1210	U3-C1	4/6/07 1113	4/10/07 1043	ND		ND		ND	
Q6717D	1210	U3-C1	4/6/07 1113	4/10/07 1043	ND		ND		ND	
Q7007	1210	U3-C1	4/10/07 1043	4/17/07 1031	ND		ND		ND	
Q7007D	1210	U3-C1	4/10/07 1043	4/17/07 1031	ND		ND		ND	
Q7319	1210	U3-C1	4/17/07 1031	4/24/07 0927	ND		ND		ND	
Q7319D	1210	U3-C1	4/17/07 1031	4/24/07 0927	ND		ND		ND	
Q7607	1210	U3-C1	4/24/07 0927	5/1/07 0845	513.4 *	0.759	ND		ND	
Q8079	1210	U3-C1	5/3/07 0953	5/8/07 1522	514.4 *	0.641	ND		ND	
<b>Q2068</b>	<b>1220</b>	<b>HR-1</b>	<b>1/25/07 1038</b>	<b>2/1/07 1119</b>	<b>513.6 *</b>	<b>0.447</b>	<b>ND</b>		<b>ND</b>	
Q2456	1220	HR-1	2/1/07 1119	2/8/07 1535	ND		ND		ND	
Q2456D	1220	HR-1	2/1/07 1119	2/8/07 1535	ND		ND		ND	
Q2397	1220	HR-1	2/8/07 1535	2/9/07 1340	ND		ND		ND	
Q2397D	1220	HR-1	2/8/07 1535	2/9/07 1340	ND		ND		ND	
Q2512	1220	HR-1	2/9/07 1340	2/10/07 1010	ND		ND		ND	
Q2608	1220	HR-1	2/10/07 1010	2/11/07 0915	ND		ND		ND	
Q2634	1220	HR-1	2/11/07 0915	2/12/07 1010	ND		ND		ND	
Q2848	1220	HR-1	2/12/07 1010	2/13/07 0950	ND		ND		ND	
Q2848D	1220	HR-1	2/12/07 1010	2/13/07 0950	ND		ND		ND	
Q2907	1220	HR-1	2/13/07 0950	2/14/07 1020	ND		ND		ND	
Q3491	1220	HR-1	2/14/07 1020	2/21/07 1015	ND		ND		ND	
Q3491D	1220	HR-1	2/14/07 1020	2/21/07 1015	515.0 *	0.442	ND		ND	
Q3837	1220	HR-1	2/21/07 1015	2/23/07 0930	ND		ND		ND	
Q3837D	1220	HR-1	2/21/07 1015	2/23/07 0930	ND		ND		ND	
Q3579	1220	HR-1	2/23/07 0930	2/26/07 0910	ND		ND		ND	
Q3925	1220	HR-1	2/26/07 0910	2/28/07 1055	ND		ND		ND	
Q4127	1220	HR-1	2/28/07 1055	3/2/07 1040	ND		ND		ND	
Q4231	1220	HR-1	3/2/07 1040	3/5/07 1020	ND		ND		ND	
Q4604	1220	HR-1	3/5/07 1020	3/7/07 1138	ND		ND		ND	
Q4834	1220	HR-1	3/7/07 1138	3/12/07 1018	514.8 *	0.832	ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5036	1220	HR-1	3/12/07 1018	3/14/07 0942	ND		ND		ND	
Q5438	1220	HR-1	3/14/07 0942	3/16/07 0836	ND		ND		ND	
Q5393	1220	HR-1	3/16/07 0836	3/20/07 0845	ND		ND		ND	
Q5718	1220	HR-1	3/20/07 0845	3/23/07 0839	ND		ND		ND	
Q5818	1220	HR-1	3/23/07 0839	3/26/07 1000	ND		ND		ND	
Q6134	1220	HR-1	3/26/07 1000	3/29/07 1428	ND		ND		ND	
Q6284	1220	HR-1	3/29/07 1128	4/2/07 1010	ND		ND		ND	
Q6588	1220	HR-1	4/2/07 1010	4/6/07 0911	ND		ND		ND	
Q6588D	1220	HR-1	4/2/07 1010	4/6/07 0911	ND		ND		ND	
Q6677	1220	HR-1	4/6/07 0911	4/9/07 0936	ND		ND		ND	
Q6971	1220	HR-1	4/9/07 0936	4/17/07 0829	ND		ND		ND	
Q7233	1220	HR-1	4/17/07 0829	4/23/07 1030	ND		ND		ND	
Q7486	1220	HR-1	4/23/07 1030	4/30/07 0904	ND		ND		ND	
Q8062	1220	HR-1	5/3/07 0839	5/9/07 1032	ND		ND		ND	
<b>Q2069</b>	<b>1230</b>	<b>Hudson River Unit 3 Intake</b>	<b>1/25/07 1415</b>	<b>2/1/07 1015</b>	<b>514.6 *</b>	<b>0.868</b>	<b>ND</b>		<b>ND</b>	
Q2069D	1230	Hudson River Unit 3 Intake	1/25/07 1415	2/1/07 1015	512.6 *	0.918	ND		ND	
Q2513	1230	Hudson River Unit 3 Intake	2/1/07 1015	2/10/07 1002	ND		ND		ND	
Q2513D	1230	Hudson River Unit 3 Intake	2/1/07 1015	2/10/07 1002	ND		ND		ND	
Q2609	1230	Hudson River Unit 3 Intake	2/10/07 1002	2/11/07 0920	ND		ND		ND	
Q2849	1230	Hudson River Unit 3 Intake	2/11/07 0920	2/13/07 1002	ND		ND		ND	
Q7394	1230	Hudson River Unit 3 Intake	4/19/07 1344	4/26/07 1022	ND		ND		ND	
Q8065	1230	Hudson River Unit 3 Intake	4/26/07 1022	5/8/07 1048	ND		ND		ND	
<b>Q2093</b>	<b>1260</b>	<b>Unit 3 Discharge Canal</b>	<b>2/2/07 0940</b>	<b>2/5/07 0844</b>	<b>513.0 *</b>	<b>0.305</b>	<b>ND</b>		<b>ND</b>	
Q2491	1260	Unit 3 Discharge Canal	2/5/07 0844	2/8/07 1353	ND		ND		ND	
Q2422	1260	Unit 3 Discharge Canal	2/8/07 1353	2/9/07 1116	ND		ND		ND	
Q2574	1260	Unit 3 Discharge Canal	2/9/07 1116	2/10/07 1029	ND		ND		ND	
Q2574D	1260	Unit 3 Discharge Canal	2/9/07 1116	2/10/07 1029	ND		ND		ND	
Q2537	1260	Unit 3 Discharge Canal	2/10/07 1029	2/11/07 0944	ND		ND		ND	
Q2537D	1260	Unit 3 Discharge Canal	2/10/07 1029	2/11/07 0944	ND		ND		ND	
Q2658	1260	Unit 3 Discharge Canal	2/11/07 0944	2/12/07 1255	ND		ND		ND	
Q2658D	1260	Unit 3 Discharge Canal	2/11/07 0944	2/12/07 1255	ND		ND		ND	
Q2873	1260	Unit 3 Discharge Canal	2/12/07 1305	2/13/07 0902	ND		ND		ND	
Q2873D	1260	Unit 3 Discharge Canal	2/12/07 1305	2/13/07 0902	ND		ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2931	1260	Unit 3 Discharge Canal	2/13/07 0902	2/14/07 1025	ND		ND		ND	
Q3252	1260	Unit 3 Discharge Canal	2/14/07 1025	2/16/07 0849	514.8 *	0.286	ND		ND	
Q3318	1260	Unit 3 Discharge Canal	2/16/07 0849	2/19/07 1015	515.2 *	0.556	ND		570.0 *	4.64
Q3318D	1260	Unit 3 Discharge Canal	2/16/07 0849	2/19/07 1015	516.6 *	0.393	ND		570.6 *	3.28
Q3515	1260	Unit 3 Discharge Canal	2/19/07 1015	2/21/07 1108	ND		ND		ND	
Q3862	1260	Unit 3 Discharge Canal	2/21/07 1108	2/23/07 1115	ND		ND		ND	
Q3862D	1260	Unit 3 Discharge Canal	2/21/07 1108	2/23/07 1115	ND		ND		ND	
Q3604	1260	Unit 3 Discharge Canal	2/23/07 1115	2/26/07 1300	ND		ND		ND	
Q3952	1260	Unit 3 Discharge Canal	2/26/07 1300	2/28/07 1215	ND		ND		ND	
Q3952D	1260	Unit 3 Discharge Canal	2/26/07 1300	2/28/07 1215	ND		ND		ND	
Q4141	1260	Unit 3 Discharge Canal	2/28/07 1215	3/2/07 1143	515.2 *	0.331	ND		ND	
Q4195	1260	Unit 3 Discharge Canal	3/2/07 1143	3/5/07 1147	513.8 *	0.514	ND		ND	
Q4566	1260	Unit 3 Discharge Canal	3/5/07 1147	3/7/07 1455	513.6 *	0.501	ND		ND	
Q4747	1260	Unit 3 Discharge Canal	3/7/07 1455	3/9/07 1033	ND		ND		ND	
Q4797	1260	Unit 3 Discharge Canal	3/9/07 1033	3/12/07 1057	ND		ND		ND	
Q4797D	1260	Unit 3 Discharge Canal	3/9/07 1033	3/12/07 1057	ND		ND		ND	
Q5076	1260	Unit 3 Discharge Canal	3/12/07 1057	3/14/07 1305	ND		ND		ND	
Q5478	1260	Unit 3 Discharge Canal	3/14/07 1305	3/16/07 1033	515.6 *	0.525	ND		ND	
Q5478D	1260	Unit 3 Discharge Canal	3/14/07 1305	3/16/07 1033	516.8 *	0.554	ND		ND	
Q5362	1260	Unit 3 Discharge Canal	3/16/07 1033	3/19/07 1151	ND		ND		ND	
Q5687	1260	Unit 3 Discharge Canal	3/19/07 1151	3/23/07 1104	ND		ND		ND	
Q5787	1260	Unit 3 Discharge Canal	3/23/07 1104	3/26/07 1153	ND		ND		ND	
Q6175	1260	Unit 3 Discharge Canal	3/26/07 1153	3/29/07 1210	ND		ND		ND	
Q6175D	1260	Unit 3 Discharge Canal	3/26/07 1153	3/29/07 1210	ND		ND		ND	
Q6325	1260	Unit 3 Discharge Canal	3/29/07 1210	4/2/07 1117	ND		ND		ND	
Q6556	1260	Unit 3 Discharge Canal	4/2/07 1117	4/6/07 1034	ND		ND		ND	
Q6556D	1260	Unit 3 Discharge Canal	4/2/07 1117	4/6/07 1034	ND		ND		ND	
Q6718	1260	Unit 3 Discharge Canal	4/6/07 1034	4/10/07 1049	ND		ND		ND	
Q7008	1260	Unit 3 Discharge Canal	4/10/07 1049	4/17/07 1028	ND		ND		ND	
Q7321	1260	Unit 3 Discharge Canal	4/17/07 1028	4/24/07 1247	515.1 *	0.836	ND		ND	
Q7321D	1260	Unit 3 Discharge Canal	4/17/07 1028	4/24/07 1247	515.2 *	0.911	ND		ND	
Q7608	1260	Unit 3 Discharge Canal	4/24/07 1247	5/1/07 0852	ND		ND		ND	
Q7608D	1260	Unit 3 Discharge Canal	4/24/07 1247	5/1/07 0852	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8081	1260	Unit 3 Discharge Canal	5/3/07 0957	5/8/07 1541	ND		ND		ND	
Q8081D	1260	Unit 3 Discharge Canal	5/3/07 0957	5/8/07 1541	ND		ND		ND	
<b>Q4237</b>	<b>1270</b>	<b>East Borehole</b>	<b>3/2/07 0805</b>	<b>3/5/07 1335</b>	<b>515.5</b>	<b>40.6</b>	<b>ND</b>		<b>ND</b>	
Q4610	1270	East Borehole	3/5/07 1335	3/7/07 1430	515.4	46.5	ND		ND	
Q4725	1270	East Borehole	3/7/07 1430	3/9/07 1255	515.3	7.92	ND		ND	
Q4841	1270	East Borehole	3/9/07 1255	3/12/07 1250	ND		ND		ND	
Q5039	1270	East Borehole	3/12/07 1250	3/14/07 1303	515.5	4.05	ND		ND	
Q5442	1270	East Borehole	3/14/07 1303	3/16/07 1149	ND		ND		ND	
Q5396	1270	East Borehole	3/16/07 1149	3/19/07 1310	515.5	7.22	ND		ND	
Q5396D	1270	East Borehole	3/16/07 1149	3/19/07 1310	515.4	10.3	ND		ND	
Q5722	1270	East Borehole	3/19/07 1310	3/23/07 1024	515.4	2.67	ND		ND	
Q5822	1270	East Borehole	3/23/07 1024	3/26/07 1019	515.2	2.08	ND		ND	
Q6137	1270	East Borehole	3/26/07 1019	3/29/07 1155	515.5	4.19	ND		ND	
Q6287	1270	East Borehole	3/29/07 1155	4/2/07 0946	516.2 **	0.633	ND		ND	
Q6591	1270	East Borehole	4/2/07 0946	4/6/07 1258	ND		ND		ND	
Q6681	1270	East Borehole	4/6/07 1258	4/9/07 0958	515.8 *	0.687	ND		ND	
Q6973	1270	East Borehole	4/9/07 0958	4/16/07 1052	516.0	1.37	ND		ND	
Q7236	1270	East Borehole	4/16/07 1052	4/23/07 0954	516.0	1.87	ND		ND	
Q7489	1270	East Borehole	4/23/07 0954	4/30/07 0849	516.4	2.76	ND		ND	
Q8063	1270	East Borehole	5/3/07 0826	5/9/07 1533	ND		ND		ND	
Q8063D	1270	East Borehole	5/3/07 0826	5/9/07 1533	ND		ND		ND	
<b>Q4761</b>	<b>1300</b>	<b>MW-108</b>	<b>3/7/07 1320</b>	<b>3/9/07 1045</b>	<b>515.4 *</b>	<b>1.14</b>	<b>ND</b>		<b>ND</b>	
Q4811	1300	MW-108	3/9/07 1045	3/12/07 1111	ND		ND		ND	
Q5077	1300	MW-108	3/12/07 1111	3/14/07 1321	ND		ND		ND	
Q5479	1300	MW-108	3/14/07 1321	3/16/07 1054	ND		ND		ND	
Q5363	1300	MW-108	3/16/07 1054	3/19/07 1210	ND		ND		ND	
Q5688	1300	MW-108	3/19/07 1210	3/23/07 1120	ND		ND		ND	
Q5788	1300	MW-108	3/23/07 1120	3/26/07 1304	ND		ND		ND	
Q6176	1300	MW-108	3/26/07 1304	3/29/07 1226	ND		ND		ND	
Q6326	1300	MW-108	3/29/07 1226	4/2/07 1133	ND		ND		ND	
Q6557	1300	MW-108	4/2/07 1133	4/6/07 1118	ND		ND		ND	
Q6719	1300	MW-108	4/6/07 1118	4/10/07 1037	ND		ND		ND	
Q7009	1300	MW-108	4/10/07 1037	4/17/07 1255	ND		ND		ND	

Results  
Charcoal Samplers

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7322	1300	MW-108	4/17/07 1255	4/24/07 0916	ND		ND		ND	
Q7609	1300	MW-108	4/24/07 0916	5/1/07 0838	ND		ND		ND	
Q8197	1300	MW-108	5/3/07 0830	5/10/07 0822	ND		ND		ND	
<b>Q5723</b>	<b>1310</b>	<b>Containment Spray Sump-U1</b>	<b>3/19/07 1335</b>	<b>3/23/07 1352</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5823	1310	Containment Spray Sump-U1	3/23/07 1352	3/26/07 1240	ND		ND		ND	
Q6138	1310	Containment Spray Sump-U1	3/26/07 1240	3/29/07 1240	ND		ND		ND	
Q6138D	1310	Containment Spray Sump-U1	3/26/07 1240	3/29/07 1240	515.8	3.72	ND		ND	
Q6288	1310	Containment Spray Sump-U1	3/29/07 1240	4/2/07 1253	515.2	6.26	ND		ND	
Q6592	1310	Containment Spray Sump-U1	4/2/07 1253	4/6/07 1247	515.6	5.13	ND		ND	
Q6682	1310	Containment Spray Sump-U1	4/6/07 1247	4/9/07 1250	ND		ND		ND	
Q6974	1310	Containment Spray Sump-U1	4/9/07 1250	4/16/07 1248	515.2	11.9	ND		ND	
Q6974D	1310	Containment Spray Sump-U1	4/9/07 1250	4/16/07 1248	ND		ND		ND	
Q7237	1310	Containment Spray Sump-U1	4/16/07 1248	4/23/07 1247	ND		ND		ND	
Q7490	1310	Containment Spray Sump-U1	4/23/07 1247	4/30/07 1252	515.0	3.21	ND		ND	
Q7490D	1310	Containment Spray Sump-U1	4/23/07 1247	4/30/07 1252	515.6	2.03	ND		ND	
Q8207	1310	Containment Spray Sump-U1	5/3/07 1307	5/11/07 0958	ND		ND		ND	
<b>Q5989</b>	<b>1320</b>	<b>U1 Utility Tunnel Sump</b>	<b>3/15/07 1325</b>	<b>3/27/07 1322</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6759	1320	U1 Utility Tunnel Sump	3/27/07 1325	4/10/07 1303	ND		ND		ND	
Q6759D	1320	U1 Utility Tunnel Sump	3/27/07 1325	4/10/07 1303	ND		ND		ND	
Q7392	1320	U1 Utility Tunnel Sump	4/10/07 1303	4/26/07 1050	ND		ND		ND	
Q8202	1320	U1 Utility Tunnel Sump	4/26/07 1050	5/11/07 0948	ND		ND		ND	
Q8202D	1320	U1 Utility Tunnel Sump	4/26/07 1050	5/11/07 0948	ND		ND		ND	
<b>Q5976</b>	<b>1330</b>	<b>MW-48-23</b>	<b>3/14/07 1459</b>	<b>3/26/07 1407</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6746	1330	MW-48-23	3/26/07 1407	4/10/07 1449	ND		ND		ND	
Q7333	1330	MW-48-23	4/10/07 1449	4/25/07 1431	ND		ND		ND	
Q8199	1330	MW-48-23	4/25/07 1431	5/10/07 1134	ND		ND		ND	
<b>Q5977</b>	<b>1340</b>	<b>MW-48-38</b>	<b>3/14/07 1448</b>	<b>3/26/07 1410</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6747	1340	MW-48-38	3/26/07 1410	4/10/07 1454	ND		ND		ND	
Q7334	1340	MW-48-38	4/10/07 1454	4/25/07 1435	ND		ND		ND	
Q8201	1340	MW-48-38	4/25/07 1435	5/10/07 1130	ND		ND		ND	
<b>Q5970</b>	<b>1350</b>	<b>MW-40A (38')</b>	<b>3/15/07 1017</b>	<b>3/26/07 1349</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6736	1350	MW-40A (38')	3/26/07 1349	4/11/07 0803	ND		ND		ND	
Q7324	1350	MW-40A (38')	4/11/07 0803	4/24/07 1505	ND		ND		ND	



OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
<b>Q5971</b>	<b>1360</b>	<b>MW-40B (73')</b>	<b>3/15/07 1017</b>	<b>3/26/07 1349</b>	ND		ND		ND	
Q6737	1360	MW-40B (73')	3/26/07 1349	4/11/07 0803	ND		ND		ND	
Q7325	1360	MW-40B (73')	4/11/07 0803	4/24/07 1505	ND		ND		ND	
<b>Q5972</b>	<b>1370</b>	<b>MW-40C (173')</b>	<b>3/15/07 1017</b>	<b>3/26/07 1349</b>	ND		ND		ND	
Q6738	1370	MW-40C (173')	3/26/07 1349	4/11/07 0803	ND		ND		ND	
Q7326	1370	MW-40C (173')	4/11/07 0803	4/24/07 1505	ND		ND		ND	
<b>Q6748</b>	<b>1380</b>	<b>MW-51A (53')</b>	<b>4/6/07 1438</b>	<b>4/11/07 0812</b>	ND		ND		ND	
Q7335	1380	MW51A (53')	4/11/07 0812	4/25/07 0950	ND		ND		ND	
<b>Q5978</b>	<b>1390</b>	<b>MW-50B (89')</b>	<b>3/15/07 1036</b>	<b>3/27/07 0910</b>	ND		ND		ND	
Q6749	1390	MW-51B (89')	4/6/07 1438	4/11/07 0812	ND		ND		ND	
Q7336	1390	MW51B (89')	4/11/07 0812	4/25/07 0950	ND		ND		ND	
<b>Q5979</b>	<b>1400</b>	<b>MW-50C (191')</b>	<b>3/15/07 1034</b>	<b>3/27/07 0910</b>	ND		ND		ND	
Q6750	1400	MW-51C (191')	4/6/07 1438	4/11/07 0812	ND		ND		ND	
Q7337	1400	MW51C (191')	4/11/07 0812	4/25/07 0950	ND		ND		ND	

Results  
Water Samples

**Table 2. Results for water samples analyzed for the presence of fluorescein, eosine and rhodamine WT (RWT) dyes.**

Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

Results through 8/3/07

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1292	30	Hudson River downstream	12/4/06 0846	ND		ND		ND	
Q6005	80	MH4	2/28/07 1007	508.1	13.8	ND		ND	
Q4625	80	MH4	3/2/07 0940	508.3	0.482	ND		ND	
Q4626	80	MH4	3/5/07 0906	508.3	41.4	ND		ND	
Q4878	80	MH4	3/7/07 1051	508.3	26.2	ND		ND	
Q4886	80	MH4	3/9/07 0754	508.5	26.8	ND		ND	
Q4934	80	MH4	3/12/07 0845	508.2	18.4	ND		ND	
Q5230	80	MH4	3/14/07 0830	508.7	14.0	ND		ND	
Q6006	80	MH4	3/16/07 0820	508.0	10.3	ND		ND	
Q6007	80	MH4	3/19/07 1102	508.0	15.1	ND		ND	
Q6008	80	MH4	3/23/07 0819	508.0	12.9	ND		ND	
Q6009	80	MH4	3/26/07 0844	508.2	14.7	ND		ND	
Q6009R	80	MH4	3/26/07 0844	508.1	14.5	ND		ND	
Q6413	80	MH4	3/29/07 1141	508.4	12.5	ND		ND	
Q6593	80	MH4	4/2/07 0855	508.4	13.3	ND		ND	
Q6819	80	MH4	4/6/07 0842	508.3	19.2	ND		ND	
Q6819R	80	MH4	4/6/07 0842	508.3	19.3	ND		ND	
Q7110	80	MH4	4/16/07 0913	508.2	1.81	ND		ND	
Q7425	80	MH4	4/23/07 0839	508.5	7.37	ND		ND	
Q7792	80	MH4	4/30/07 0759	508.9	13.8	ND		ND	
Q5509	100	MH5	2/9/07 1100	ND		ND		ND	
Q5510	100	MH5	2/10/07 0853	ND		ND		ND	
Q5511	100	MH5	2/11/07 0825	507.8 **	0.058	ND		ND	
Q2946	100	MH5	2/12/07 0855	508.7	1.18	ND		ND	
Q2971	100	MH5	2/13/07 0845	508.7	7.00	ND		ND	
Q2972	100	MH5	2/14/07 0830	508.7	12.1	ND		ND	
Q3357	100	MH5	2/16/07 0855	508.5	14.9	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3361	100	MH5	2/19/07 0930	508.6	16.7	ND		ND	
Q3363	100	MH5	2/21/07 0843	508.6	15.8	ND		ND	
Q6010	100	MH5	2/23/07 0824	508.0	7.72	ND		ND	
Q3979	100	MH5	2/26/07 1000	508.7	22.4	ND		ND	
Q4258	100	MH5	2/28/07 0957	508.6	16.1	ND		ND	
Q4623	100	MH5	3/2/07 1000	508.1	0.750	ND		ND	
Q4623R	100	MH5	3/2/07 1000	508.7	0.634	ND		ND	
Q4624	100	MH5	3/5/07 0913	508.3	43.1	ND		ND	
Q4875	100	MH5	3/7/07 1046	508.3	36.0	ND		ND	
Q4884	100	MH5	3/9/07 0820	508.5	30.1	ND		ND	
Q4931	100	MH5	3/12/07 0906	508.2	20.8	ND		ND	
Q5231	100	MH5	3/14/07 0853	508.8	21.4	ND		ND	
Q6011	100	MH5	3/16/07 0826	508.0	13.3	ND		ND	
Q6012	100	MH5	3/19/07 1057	508.0	18.8	ND		ND	
Q6013	100	MH5	3/23/07 0826	508.0	13.5	ND		ND	
Q6014	100	MH5	3/26/07 0854	508.2	31.0	ND		ND	
Q6414	100	MH5	3/29/07 1124	508.3	15.3	ND		ND	
Q6594	100	MH5	4/2/07 0851	508.3	11.7	ND		ND	
Q6821	100	MH5	4/6/07 0837	508.4	30.8	ND		ND	
Q7010	100	MH5	4/9/07 0904	508.5	22.8	ND		ND	
Q7010R	100	MH5	4/9/07 0904	508.5	22.8	ND		ND	
Q7426	100	MH5	4/23/07 0844	508.5	8.84	ND		ND	
Q7793	100	MH5	4/30/07 0803	508.7	21.2	ND		ND	
<b>Q6015</b>	<b>120</b>	<b>MH6</b>	<b>2/14/07 0817</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5514	120	MH6	2/16/07 0755	ND		ND		ND	
Q5515	120	MH6	2/19/07 0905	ND		ND		ND	
Q5516	120	MH6	2/21/07 0855	507.4 **	0.083	ND		ND	
Q5517	120	MH6	2/23/07 0755	508.1	5.06	ND		ND	
Q3981	120	MH6	2/26/07 0904	508.7	3.23	ND		ND	
Q4259	120	MH6	2/28/07 0921	508.6	13.8	ND		ND	

**Results**  
**Water Samples**

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
Q4627	120	MH6	3/2/07 0835	508.3	0.168	ND		ND	
Q4627R	120	MH6	3/2/07 0835	507.6	0.115	ND		ND	
Q4628	120	MH6	3/5/07 0905	508.3	1.29	ND		ND	
Q4868	120	MH6	3/7/07 0918	508.3	1.70	ND		ND	
Q4887	120	MH6	3/9/07 0820	508.5	2.89	ND		ND	
Q4924	120	MH6	3/12/07 0820	508.2	3.99	ND		ND	
Q5232	120	MH6	3/14/07 0850	508.7	5.41	ND		ND	
Q6016	120	MH6	3/16/07 0754	508.2	1.20	ND		ND	
Q6017	120	MH6	3/19/07 0830	507.8 **	1.31	ND		ND	
Q6018	120	MH6	3/23/07 0753	507.4 **	0.498	ND		ND	
Q6019	120	MH6	3/26/07 0925	507.9 **	0.593	ND		ND	
Q6416	120	MH6	3/29/07 0830	508.4	1.44	ND		ND	
Q6596	120	MH6	4/2/07 0812	508.7	0.282	ND		ND	
Q6814	120	MH6	4/6/07 0833	508.4	1.61	ND		ND	
Q7012	120	MH6	4/10/07 0900	508.3	3.49	ND		ND	
Q7113	120	MH6	4/17/07 1123	508.4	0.749	ND		ND	
Q7534	120	MH6	4/24/07 0801	508.3	6.92	ND		ND	
Q7816	120	MH6	5/1/07 0757	508.3	5.59	ND		ND	
Q8114	120	MH6	5/9/07 1506	508.1	14.4	ND		ND	
<b>Q0831</b>	<b>200</b>	<b>MW-30-74</b>	<b>11/21/06 1045</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1303	200	MW-30-74	11/28/06 1340	ND		ND		ND	
Q1305	200	MW-30-74	12/4/06 1114	ND		ND		ND	
Q1954	200	MW-30-74	1/17/07 0945	ND		ND		ND	
Q2135	200	MW-30-74	1/25/07 1004	ND		ND		ND	
Q2117	200	MW-30-74	2/2/07 1415	ND		ND		ND	
Q2234	200	MW-30-74	2/8/07 1433	ND		ND		ND	
Q2258	200	MW-30-74	2/9/07 1545	ND		ND		ND	
Q2370	200	MW-30-74	2/10/07 0832	ND		ND		ND	
Q2373	200	MW-30-74	2/11/07 1047	508.3	2.13	ND		ND	
Q2373R	200	MW-30-74	2/11/07 1047	508.3	2.13	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2344	200	MW-30-74	2/12/07 0828	508.2	3.18	ND		ND	
Q3067	200	MW-30-74	2/13/07 0812	508.2	17.8	ND		ND	
Q3071	200	MW-30-74	2/14/07 0828	508.2	17.8	ND		ND	
Q3044	200	MW-30-74	2/15/07 0812	508.2	25.5	ND		ND	
Q3048	200	MW-30-74	2/16/07 0803	508.2	22.9	ND		ND	
Q3052	200	MW-30-74	2/17/07 0941	508.3	22.3	ND		ND	
Q3056	200	MW-30-74	2/18/07 0936	508.1	16.0	ND		ND	
Q3061	200	MW-30-74	2/19/07 1016	508.3	16.7	ND		ND	
Q3101	200	MW-30-74	2/20/07 0825	508.4	10.9	ND		ND	
Q3124	200	MW-30-74	2/21/07 0859	508.1	20.3	ND		ND	
Q3642	200	MW-30-74	2/22/07 0950	508.5	55.5	ND		ND	
Q3618	200	MW-30-74	2/23/07 0816	508.3	78.1	ND		ND	
Q3686	200	MW-30-74	2/26/07 0923	508.4	34.1	ND		ND	
Q3663	200	MW-30-74	2/27/07 1100	508.1	21.5	ND		ND	
Q3874	200	MW-30-74	2/28/07 1125	508.2	18.9	ND		ND	
Q4001	200	MW-30-74	3/1/07 1128	508.2	126	ND		ND	
Q4029	200	MW-30-74	3/2/07 0827	508.3	407	ND		ND	
Q4056	200	MW-30-74	3/5/07 0941	508.2	2,220	ND		ND	
Q4535	200	MW-30-74	3/6/07 0931	508.3	2,450	ND		ND	
Q4515	200	MW-30-74	3/7/07 1140	508.5	5,100	ND		ND	
Q4641	200	MW-30-74	3/8/07 0850	508.5	4,700	ND		ND	
Q4658	200	MW-30-74	3/9/07 0900	508.7	4,980	ND		ND	
Q4905	200	MW-30-74	3/12/07 1047	508.1	5,510	ND		ND	
Q4935	200	MW-30-74	3/13/07 0947	508.7	4,760	ND		ND	
Q4955	200	MW-30-74	3/14/07 1115	508.9	3,950	ND		ND	
Q5242	200	MW-30-74	3/15/07 0858	508.7	3,480	ND		ND	
Q5265	200	MW-30-74	3/16/07 0937	508.5	3,250	ND		ND	
Q5265R	200	MW-30-74	3/16/07 0937	508.5	3,220	ND		ND	
Q5297	200	MW-30-74	3/19/07 0848	508.3	4,680	ND		ND	
Q5557	200	MW-30-74	3/21/07 1318	508.7	4,400	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5623	200	MW-30-74	3/23/07 0824	508.1	3,830	ND		ND	
Q5724	200	MW-30-74	3/26/07 1350	508.3	2,550	ND		ND	
Q5941	200	MW-30-74	3/28/07 1134	508.3	2,610	ND		ND	
Q6076	200	MW-30-74	3/29/07 1145	508.1	3,770	ND		ND	
Q6226	200	MW-30-74	4/2/07 1315	508.2	4,570	ND		ND	
Q6356	200	MW-30-74	4/4/07 1410	508.3	4,430	ND		ND	
Q6452	200	MW-30-74	4/6/07 1157	509.2	4,300	ND		ND	
Q6629	200	MW-30-74	4/9/07 1246	508.0	5,690	ND		ND	
Q6771	200	MW-30-74	4/11/07 1155	508.3	5,000	ND		ND	
Q7025	200	MW-30-74	4/18/07 0820	508.2	3,190	ND		ND	
Q7172	200	MW-30-74	4/23/07 0943	508.1	642	ND		ND	
Q7172V	200	MW-30-74	4/23/07 0943	508.3	617	ND		ND	
Q7616	200	MW-30-74	5/4/07 1205	508.5	1,990	ND		ND	
Q8173	200	MW-30-74	5/11/07 0830	508.5	4,120	ND		ND	
R0019	200	MW-30-69	6/12/07 1020	509.2	2,300	ND		ND	
R1671	200	MW-30-69	7/12/07 1400	508.2	798	ND		ND	
R1671	200	MW-30-69	7/12/07 1400	508.2	798	ND		ND	
R1678	200	MW-30-69	7/18/07 0945	508.2	687	ND		ND	
R1678	200	MW-30-69	7/18/07 0945	508.2	687	ND		ND	
R1681	200	MW-30-69	7/25/07 1126	513.5 **	14.5	ND		ND	
R1681	200	MW-30-69	7/25/07 1126	513.5 **	14.5	ND		ND	
R1938	200	MW-30-69	8/1/07 1144	508.9	663	ND		ND	
<b>Q0832</b>	<b>230</b>	<b>MW-30-88</b>	<b>11/21/06 1030</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1304	230	MW-30-88	11/29/06 1420	ND		ND		ND	
Q1293	230	MW-30-88	12/4/06 1105	ND		ND		ND	
Q1955	230	MW-30-88	1/17/07 0950	ND		ND		ND	
Q2136	230	MW-30-88	1/25/07 1001	ND		ND		ND	
Q2118	230	MW-30-88	2/2/07 1415	ND		ND		ND	
Q2235	230	MW-30-88	2/8/07 1432	ND		ND		ND	
Q2259	230	MW-30-88	2/9/07 1550	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2259R	230	MW-30-88	2/9/07 1550	ND		ND		ND	
Q2369	230	MW-30-88	2/10/07 0840	ND		ND		ND	
Q2374	230	MW-30-88	2/11/07 1052	ND		ND		ND	
Q2345	230	MW-30-88	2/12/07 0838	508.5	0.184	ND		ND	
Q3068	230	MW-30-88	2/13/07 0818	508.2	4.59	ND		ND	
Q3072	230	MW-30-88	2/14/07 0832	508.2	7.36	ND		ND	
Q3045	230	MW-30-88	2/15/07 0819	508.3	21.7	ND		ND	
Q3049	230	MW-30-88	2/16/07 0808	508.3	37.8	ND		ND	
Q3053	230	MW-30-88	2/17/07 0949	508.5	51.7	ND		ND	
Q3057	230	MW-30-88	2/18/07 0943	508.6	64.0	ND		ND	
Q3062	230	MW-30-88	2/19/07 1028	508.3	87.8	ND		ND	
Q3102	230	MW-30-88	2/20/07 0825	508.7	88.7	ND		ND	
Q3125	230	MW-30-88	2/21/07 0906	508.4	88.6	ND		ND	
Q3643	230	MW-30-88	2/22/07 0940	508.4	88.1	ND		ND	
Q3619	230	MW-30-88	2/23/07 0814	508.5	122	ND		ND	
Q3687	230	MW-30-88	2/26/07 0927	508.7	114	ND		ND	
Q3664	230	MW-30-88	2/27/07 1105	508.3	110	ND		ND	
Q3875	230	MW-30-88	2/28/07 1127	508.2	116	ND		ND	
Q4002	230	MW-30-88	3/1/07 1126	508.3	117	ND		ND	
Q4030	230	MW-30-88	3/2/07 0826	508.2	120	ND		ND	
Q4057	230	MW-30-88	3/5/07 0939	508.5	119	ND		ND	
Q4536	230	MW-30-88	3/6/07 0933	508.4	125	ND		ND	
Q4516	230	MW-30-88	3/7/07 1138	508.5	123	ND		ND	
Q4642	230	MW-30-88	3/8/07 0849	508.6	135	ND		ND	
Q4659	230	MW-30-88	3/9/07 0902	508.6	139	ND		ND	
Q4906	230	MW-30-88	3/12/07 1049	508.2	140	ND		ND	
Q4936	230	MW-30-88	3/13/07 0950	508.7	142	ND		ND	
Q4956	230	MW-30-88	3/14/07 1125	508.9	145	ND		ND	
Q5243	230	MW-30-88	3/15/07 0846	508.7	139	ND		ND	
Q5243R	230	MW-30-88	3/15/07 0846	508.8	139	ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
Q5266	230	MW-30-88	3/16/07 0922	508.1	154	ND		ND	
Q5298	230	MW-30-88	3/19/07 0854	508.5	155	ND		ND	
Q5558	230	MW-30-88	3/21/07 1319	508.7	132	ND		ND	
Q5624	230	MW-30-88	3/23/07 0827	508.2	140	ND		ND	
Q5725	230	MW-30-88	3/26/07 1353	508.1	143	ND		ND	
Q5942	230	MW-30-88	3/28/07 1136	508.3	143	ND		ND	
Q6077	230	MW-30-88	3/29/07 1148	508.3	123	ND		ND	
Q6227	230	MW-30-88	4/2/07 1338	508.5	126	ND		ND	
Q6357	230	MW-30-88	4/4/07 1407	508.1	134	ND		ND	
Q6453	230	MW-30-88	4/6/07 1158	508.6	130	ND		ND	
Q6630	230	MW-30-88	4/9/07 1251	508	167	ND		ND	
Q6772	230	MW-30-88	4/11/07 1153	508.1	128	ND		ND	
Q7026	230	MW-30-88	4/18/07 0822	508.6	117	ND		ND	
Q7173	230	MW-30-88	4/23/07 0946	508.3	110	ND		ND	
Q7617	230	MW-30-88	5/4/07 1221	508.7	111	ND		ND	
Q8174	230	MW-30-88	5/11/07 0838	508.3	108	ND		ND	
R0021	230	MW-30-84	6/12/07 1019	508.9	86.0	ND		ND	
R1672	230	MW-30-84	7/12/07 1410	508.5	39.7	ND		ND	
R1672	230	MW-30-84	7/12/07 1410	508.5	39.7	ND		ND	
R1679	230	MW-30-84	7/18/07 1022	508.3	37.1	ND		ND	
R1679	230	MW-30-84	7/18/07 1022	508.3	37.1	ND		ND	
R1682	230	MW-30-84	7/25/07 1300	508.1	34.2	ND		ND	
R1682	230	MW-30-84	7/25/07 1300	508.1	34.2	ND		ND	
<b>Q0833</b>	<b>240</b>	<b>MW-31-53</b>	<b>11/20/06 1400</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1065	240	MW-31-53	11/27/06 1145	ND		ND		ND	
Q1294	240	MW-31-53	12/4/06 1026	ND		ND		ND	
Q1956	240	MW-31-53	1/18/07 0925	ND		ND		ND	
Q2137	240	MW-31-53	1/25/07 1129	ND		ND		ND	
Q2119	240	MW-31-53	2/1/07 0910	ND		ND		ND	
Q2236	240	MW-31-53	2/8/07 1547	508.5	1,600	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2261	240	MW-31-53	2/9/07 1708	508.3	746	ND		ND	
Q2297	240	MW-31-53	2/10/07 1025	508.3	1,140	ND		ND	
Q2316	240	MW-31-53	2/11/07 0738	508.2	682	ND		ND	
Q2346	240	MW-31-53	2/12/07 1014	508.9	391	ND		ND	
Q2674	240	MW-31-53	2/13/07 1208	508.4	275	ND		ND	
Q2702	240	MW-31-53	2/14/07 1023	508.3	177	ND		ND	
Q2973	240	MW-31-53	2/15/07 1012	508.2	149	ND		ND	
Q2987	240	MW-31-53	2/16/07 0940	508.3	79.4	ND		ND	
Q3006	240	MW-31-53	2/17/07 0735	508.3	82.5	ND		ND	
Q3025	240	MW-31-53	2/18/07 0738	509.0	58.0	ND		ND	
Q3073	240	MW-31-53	2/19/07 0755	508.3	50.5	ND		ND	
Q3103	240	MW-31-53	2/20/07 1015	508.6	69.7	ND		ND	
Q3126	240	MW-31-53	2/21/07 1014	508.1	29.1	ND		ND	
Q3644	240	MW-31-53	2/22/07 1315	508.3	35.3	ND		ND	
Q3621	240	MW-31-53	2/23/07 1003	508.2	24.6	ND		ND	
Q3621R	240	MW-31-53	2/23/07 1003	508.4	24.7	ND		ND	
Q3533	240	MW-31-53	2/26/07 1016	508.5	24.5	ND		ND	
Q3665	240	MW-31-53	2/27/07 1243	507.9 **	29.5	ND		ND	
Q3876	240	MW-31-53	2/28/07 1249	508.1	29.9	ND		ND	
Q4003	240	MW-31-53	3/1/07 1409	508.2	11.7	ND		ND	
Q4031	240	MW-31-53	3/2/07 1046	508.0	14.4	ND		ND	
Q4058	240	MW-31-53	3/5/07 1208	508.1	6.16	ND		ND	
Q4267	240	MW-31-53	3/6/07 1140	508.1	1.93	ND		ND	
Q4517	240	MW-31-53	3/7/07 1351	508.4	0.468	ND		ND	
Q4643	240	MW-31-53	3/8/07 1019	509.0	0.206	ND		ND	
Q4661	240	MW-31-53	3/9/07 1010	508.3	5.87	ND		ND	
Q4907	240	MW-31-53	3/12/07 0757	508.2	2.39	ND		ND	
Q5244	240	MW-31-53	3/15/07 1350	508.2	11.0	ND		ND	
Q5267	240	MW-31-53	3/16/07 0730	508.1	15.1	ND		ND	
Q5299	240	MW-31-53	3/19/07 1100	508.3	2.85	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5299R	240	MW-31-53	3/19/07 1100	508.4	2.83	ND		ND	
Q5559	240	MW-31-53	3/21/07 1407	508.2	0.120	ND		ND	
Q5625	240	MW-31-53	3/23/07 0925	507.4 **	0.074	ND		ND	
Q5625R	240	MW-31-53	3/23/07 0925	508.4	0.069	ND		ND	
Q5726	240	MW-31-53	3/26/07 1448	507.0 **	0.039	ND		ND	
Q5943	240	MW-31-53	3/28/07 1358	510.0	0.057	ND		ND	
Q6078	240	MW-31-53	3/29/07 1330	508.7	0.154	ND		ND	
Q6228	240	MW-31-53	4/2/07 1422	508.5	6.21	ND		ND	
Q6358	240	MW-31-53	4/4/07 0925	508.5	0.644	ND		ND	
Q6454	240	MW-31-53	4/6/07 0938	508.3	0.583	ND		ND	
Q6631	240	MW-31-53	4/9/07 1211	508.2	0.387	ND		ND	
Q6773	240	MW-31-53	4/11/07 1054	509.1	0.218	ND		ND	
Q7027	240	MW-31-53	4/18/07 0945	508.5	2.18	ND		ND	
Q7027R	240	MW-31-53	4/18/07 0945	508.5	2.18	ND		ND	
Q7174	240	MW-31-53	4/23/07 0911	508.1	1.68	ND		ND	
Q7618	240	MW-31-53	5/4/07 1034	508.8	0.065	ND		ND	
Q7618R	240	MW-31-53	5/4/07 1034	509.0	0.065	ND		ND	
Q8175	240	MW-31-53	5/11/07 1040	508.5	0.416	ND		ND	
R0022	240	MW-31-49	6/12/07 1424	508.3	0.363	ND		ND	
R0022R	240	MW-31-49	6/12/07 1424	508.7	0.364	ND		ND	
R1939	240	MW-31-49	8/2/07 1023	508.9	1.02	ND		ND	
<b>Q0834</b>	<b>250</b>	<b>MW-31-67</b>	<b>11/20/06 1345</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1066	250	MW-31-67	11/27/06 1210	ND		ND		ND	
Q1295	250	MW-31-67	12/4/06 1020	ND		ND		ND	
Q1957	250	MW-31-67	1/18/07 0925	ND		ND		ND	
Q2138	250	MW-31-67	1/25/07 1127	ND		ND		ND	
Q2121	250	MW-31-67	2/1/07 0920	ND		ND		ND	
Q2237	250	MW-31-67	2/8/07 1547	ND		ND		ND	
Q2262	250	MW-31-67	2/9/07 1711	ND		ND		ND	
Q2298	250	MW-31-67	2/10/07 1019	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2317	250	MW-31-67	2/11/07 0743	508.4	212	ND		ND	
Q2347	250	MW-31-67	2/12/07 1017	508.2	1,030	ND		ND	
Q2675	250	MW-31-67	2/13/07 1212	508.7	3,820	ND		ND	
Q2703	250	MW-31-67	2/14/07 1026	508.3	5,830	ND		ND	
Q2974	250	MW-31-67	2/15/07 1009	508.5	7,500	ND		ND	
Q2988	250	MW-31-67	2/16/07 0942	508.5	8,300	ND		ND	
Q3007	250	MW-31-67	2/17/07 0737	508.5	9,340	ND		ND	
Q3026	250	MW-31-67	2/18/07 0744	508.8	9,310	ND		ND	
Q3074	250	MW-31-67	2/19/07 0805	508.2	10,800	ND		ND	
Q3104	250	MW-31-67	2/20/07 1017	508.6	12,400	ND		ND	
Q3127	250	MW-31-67	2/21/07 1014	508.3	9,230	ND		ND	
Q3645	250	MW-31-67	2/22/07 1320	508.6	9,760	ND		ND	
Q3622	250	MW-31-67	2/23/07 0958	508.5	12,700	ND		ND	
Q3534	250	MW-31-67	2/26/07 1017	508.4	11,700	ND		ND	
Q3666	250	MW-31-67	2/27/07 1245	508.2	10,400	ND		ND	
Q3877	250	MW-31-67	2/28/07 1250	508.3	11,800	ND		ND	
Q4004	250	MW-31-67	3/1/07 1406	508.2	10,500	ND		ND	
Q4032	250	MW-31-67	3/2/07 1049	508.1	10,200	ND		ND	
Q4059	250	MW-31-67	3/5/07 1206	508.3	9,460	ND		ND	
Q4268	250	MW-31-67	3/6/07 1138	508.3	9,590	ND		ND	
Q4518	250	MW-31-67	3/7/07 1349	508.4	8,790	ND		ND	
Q4644	250	MW-31-67	3/8/07 1020	509.0	8,370	ND		ND	
Q4662	250	MW-31-67	3/9/07 1012	508.8	7,540	ND		ND	
Q4908	250	MW-31-67	3/12/07 0759	508.1	6,460	ND		ND	
Q5245	250	MW-31-67	3/15/07 1352	508.5	4,390	ND		ND	
Q5268	250	MW-31-67	3/16/07 0732	508.2	3,470	ND		ND	
Q5301	250	MW-31-67	3/19/07 1102	508.5	2,480	ND		ND	
Q5561	250	MW-31-67	3/21/07 1408	508.5	1,470	ND		ND	
Q5626	250	MW-31-67	3/23/07 0926	508.1	1,310	ND		ND	
Q5727	250	MW-31-67	3/26/07 1449	508.1	767	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5944	250	MW-31-67	3/28/07 1400	508.4	653	ND		ND	
Q6079	250	MW-31-67	3/29/07 1331	508.1	549	ND		ND	
Q6229	250	MW-31-67	4/2/07 1424	508.7	471	ND		ND	
Q6359	250	MW-31-67	4/4/07 0927	508.2	487	ND		ND	
Q6455	250	MW-31-67	4/6/07 0939	508.9	331	ND		ND	
Q6632	250	MW-31-67	4/9/07 1213	508.1	421	ND		ND	
Q6774	250	MW-31-67	4/11/07 1056	508.3	327	ND		ND	
Q7028	250	MW-31-67	4/18/07 0946	508.2	230	ND		ND	
Q7175	250	MW-31-67	4/23/07 0912	508.3	209	ND		ND	
Q7619	250	MW-31-67	5/4/07 1036	508.5	206	ND		ND	
Q8176	250	MW-31-67	5/11/07 1044	508.7	118	ND		ND	
R0023	250	MW-31-63	6/12/07 1420	509.0	82.7	ND		ND	
R1941	250	MW-31-63	8/2/07 1115	508.7	15.3	ND		ND	
<b>Q0835</b>	<b>260</b>	<b>MW-31-89</b>	<b>11/20/06 1340</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1067	260	MW-31-89	11/27/06 1220	ND		ND		ND	
Q1296	260	MW-31-89	12/4/06 1029	ND		ND		ND	
Q1958	260	MW-31-89	1/18/07 0916	ND		ND		ND	
Q2139	260	MW-31-89	1/25/07 1125	ND		ND		ND	
Q2122	260	MW-31-89	2/1/07 0924	ND		ND		ND	
Q2238	260	MW-31-89	2/8/07 1547	ND		ND		ND	
Q2263	260	MW-31-89	2/9/07 1711	508.8 (3)	0.020	ND		ND	
Q2299	260	MW-31-89	2/10/07 1022	ND		ND		ND	
Q2318	260	MW-31-89	2/11/07 0745	ND		ND		ND	
Q2348	260	MW-31-89	2/12/07 1020	508.3	958	ND		ND	
Q2676	260	MW-31-89	2/13/07 1213	508.4	1,810	ND		ND	
Q2704	260	MW-31-89	2/14/07 1027	508.5	1,680	ND		ND	
Q2975	260	MW-31-89	2/15/07 1011	508.1	1,050	ND		ND	
Q2989	260	MW-31-89	2/16/07 0943	508.3	715	ND		ND	
Q3008	260	MW-31-89	2/17/07 0740	508.2	486	ND		ND	
Q3027	260	MW-31-89	2/18/07 0746	508.9	367	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3075	260	MW-31-89	2/19/07 0811	508.2	299	ND		ND	
Q3105	260	MW-31-89	2/20/07 1012	508.7	222	ND		ND	
Q3128	260	MW-31-89	2/21/07 1015	508.3	175	ND		ND	
Q3646	260	MW-31-89	2/22/07 1325	508.3	148	ND		ND	
Q3623	260	MW-31-89	2/23/07 0953	508.7	125	ND		ND	
Q3535	260	MW-31-89	2/26/07 1018	508.4	99.7	ND		ND	
Q3667	260	MW-31-89	2/27/07 1246	508.4	84.4	ND		ND	
Q3878	260	MW-31-89	2/28/07 1252	508.4	77.3	ND		ND	
Q4005	260	MW-31-89	3/1/07 1402	508.2	72.0	ND		ND	
Q4033	260	MW-31-89	3/2/07 1042	508.3	62.6	ND		ND	
Q4061	260	MW-31-89	3/5/07 1204	508.3	38.6	ND		ND	
Q4061R	260	MW-31-89	3/5/07 1204	508.3	38.7	ND		ND	
Q4269	260	MW-31-89	3/6/07 1143	508.1	38.4	ND		ND	
Q4519	260	MW-31-89	3/7/07 1347	508.2	21.0	ND		ND	
Q4645	260	MW-31-89	3/8/07 1025	508.5	23.3	ND		ND	
Q4663	260	MW-31-89	3/9/07 1013	508.3	25.0	ND		ND	
Q4909	260	MW-31-89	3/12/07 0801	508.2	24.9	ND		ND	
Q5246	260	MW-31-89	3/15/07 1353	508.1	30.7	ND		ND	
Q5269	260	MW-31-89	3/16/07 0733	508.1	59.1	ND		ND	
Q5302	260	MW-31-89	3/19/07 1103	508.9	68.4	ND		ND	
Q5562	260	MW-31-89	3/21/07 1409	508.1	29.3	ND		ND	
Q5627	260	MW-31-89	3/23/07 0927	508.1	14.4	ND		ND	
Q5728	260	MW-31-89	3/26/07 1450	508.3	8.26	ND		ND	
Q5945	260	MW-31-89	3/28/07 1401	508.6	8.15	ND		ND	
Q6081	260	MW-31-89	3/29/07 1333	508.4	6.93	ND		ND	
Q6230	260	MW-31-89	4/2/07 1425	508.4	8.31	ND		ND	
Q6361	260	MW-31-89	4/4/07 0928	508.4	6.13	ND		ND	
Q6456	260	MW-31-89	4/6/07 0940	508.3	4.92	ND		ND	
Q6633	260	MW-31-89	4/9/07 1214	508.3	4.99	ND		ND	
Q6775	260	MW-31-89	4/11/07 1057	508.5	4.04	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7029	260	MW-31-89	4/18/07 0947	508.7	2.86	ND		ND	
Q7176	260	MW-31-89	4/23/07 0913	508.4	2.52	ND		ND	
Q7621	260	MW-31-89	5/4/07 1037	508.6	2.18	ND		ND	
Q8177	260	MW-31-89	5/11/07 1045	508.3	2.46	ND		ND	
R0024	260	MW-31-85	6/12/07 1405	508.1	1.79	ND		ND	
R1942	260	MW-31-85	8/2/07 1058	508.5	0.851	ND		ND	
<b>Q0836</b>	<b>270</b>	<b>MW-32-62</b>	<b>11/21/06 0815</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1068	270	MW-32-62	11/28/06 0845	ND		ND		ND	
Q1297	270	MW-32-62	12/4/06 0902	ND		ND		ND	
Q1959	270	MW-32-62	1/18/07 1242	ND		ND		ND	
Q2141	270	MW-32-62	1/25/07 1229	ND		ND		ND	
Q2286	270	MW-32-62	2/7/07 1000	ND		ND		ND	
Q2239	270	MW-32-62	2/8/07 1430	508.3	23,800	ND		ND	
Q2264	270	MW-32-62	2/9/07 1345	508.4	49,000	ND		ND	
Q2301	270	MW-32-62	2/10/07 1103	508.3	14,500	ND		ND	
Q2319	270	MW-32-62	2/11/07 0831	508.3	7,770	ND		ND	
Q2349	270	MW-32-62	2/12/07 1049	508.4	3,950	ND		ND	
Q2677	270	MW-32-62	2/13/07 1051	508.5	2,030	ND		ND	
Q2705	270	MW-32-62	2/14/07 1047	508.3	1,380	ND		ND	
Q2976	270	MW-32-62	2/15/07 1119	508.3	939	ND		ND	
Q2990	270	MW-32-62	2/16/07 1038	508.5	733	ND		ND	
Q3009	270	MW-32-62	2/17/07 0813	508.3	628	ND		ND	
Q3028	270	MW-32-62	2/18/07 0820	509.0	498	ND		ND	
Q3076	270	MW-32-62	2/19/07 0846	508.2	474	ND		ND	
Q3106	270	MW-32-62	2/20/07 1057	508.7	378	ND		ND	
Q3129	270	MW-32-62	2/21/07 1103	508.4	240	ND		ND	
Q3647	270	MW-32-62	2/22/07 1345	508.5	238	ND		ND	
Q3624	270	MW-32-62	2/23/07 1047	508.7	181	ND		ND	
Q3536	270	MW-32-62	2/26/07 1039	508.3	115	ND		ND	
Q3668	270	MW-32-62	2/27/07 1315	508.3	96.4	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3879	270	MW-32-62	2/28/07 1316	508.5	89.3	ND		ND	
Q3879R	270	MW-32-62	2/28/07 1316	508.5	87.9	ND		ND	
Q4006	270	MW-32-62	3/1/07 1347	508.5	79.0	ND		ND	
Q4034	270	MW-32-62	3/2/07 1328	508.4	123	ND		ND	
Q4062	270	MW-32-62	3/5/07 1042	508.5	16.8	ND		ND	
Q4270	270	MW-32-62	3/6/07 1350	508.7	1.60	ND		ND	
Q4521	270	MW-32-62	3/7/07 1516	508.4	23.0	ND		ND	
Q4646	270	MW-32-62	3/8/07 1050	508.5	30.2	ND		ND	
Q4664	270	MW-32-62	3/9/07 1045	508.5	37.8	ND		ND	
Q4910	270	MW-32-62	3/12/07 0828	508.5	48.7	ND		ND	
Q4937	270	MW-32-62	3/13/07 1058	508.9	56.2	ND		ND	
Q4957	270	MW-32-62	3/14/07 0850	509.1	81.9	ND		ND	
Q5247	270	MW-32-62	3/15/07 0950	508.6	79.9	ND		ND	
Q5270	270	MW-32-62	3/16/07 0750	508.3	85.9	ND		ND	
Q5303	270	MW-32-62	3/19/07 1126	508.5	45.0	ND		ND	
Q5563	270	MW-32-62	3/21/07 1427	508.4	34.0	ND		ND	
Q5628	270	MW-32-62	3/23/07 0943	508.9	19.5	ND		ND	
Q5729	270	MW-32-62	3/26/07 1503	508.6	8.93	ND		ND	
Q5946	270	MW-32-62	3/28/07 1417	508.9	10.4	ND		ND	
Q6082	270	MW-32-62	3/29/07 1348	508.7	11.4	ND		ND	
Q6231	270	MW-32-62	4/2/07 1441	508.5	35.3	ND		ND	
Q6362	270	MW-32-62	4/4/07 0944	508.3	40.5	ND		ND	
Q6457	270	MW-32-62	4/6/07 1000	508.5	23.9	ND		ND	
Q6634	270	MW-32-62	4/9/07 1137	508.7	16.5	ND		ND	
Q6776	270	MW-32-62	4/11/07 1004	508.7	26.5	ND		ND	
Q7030	270	MW-32-62	4/18/07 1004	508.6	15.1	ND		ND	
Q7177	270	MW-32-62	4/23/07 0825	508.9	2.19	ND		ND	
Q7177V	270	MW-32-62	4/23/07 0825	509.1	2.15	ND		ND	
Q7622	270	MW-32-62	5/4/07 0935	508.8	14.6	ND		ND	
Q8178	270	MW-32-62	5/11/07 0945	508.7	14.2	ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
R0025	270	MW-32-62	6/14/07 1443	513.0**	2.19	ND		ND	
R1673	270	MW-32-62	7/13/07 0945	513.0 **	1.90	ND		ND	
R1673	270	MW-32-62	7/13/07 0945	513.0 **	1.90	ND		ND	
<b>Q0837</b>	<b>280</b>	<b>MW-32-92</b>	<b>11/21/06 0820</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1069	280	MW-32-92	11/28/06 0843	ND		ND		ND	
Q1298	280	MW-32-92	12/4/06 0913	ND		ND		ND	
Q1961	280	MW-32-92	1/18/07 1243	ND		ND		ND	
Q2142	280	MW-32-92	1/25/07 1231	ND		ND		ND	
Q2287	280	MW-32-92	2/7/07 0955	ND		ND		ND	
Q2241	280	MW-32-92	2/8/07 1430	508.3	24,300	ND		ND	
Q2265	280	MW-32-92	2/9/07 1355	508.5	4,730	ND		ND	
Q2302	280	MW-32-92	2/10/07 1105	508.4	15,100	ND		ND	
Q2321	280	MW-32-92	2/11/07 0834	508.3	7,810	ND		ND	
Q2350	280	MW-32-92	2/12/07 1052	508.2	4,130	ND		ND	
Q2678	280	MW-32-92	2/13/07 1025	508.4	2,100	ND		ND	
Q2706	280	MW-32-92	2/14/07 1053	508.5	1,380	ND		ND	
Q2977	280	MW-32-92	2/15/07 1120	508.3	951	ND		ND	
Q2991	280	MW-32-92	2/16/07 1042	508.5	710	ND		ND	
Q3010	280	MW-32-92	2/17/07 0816	508.4	643	ND		ND	
Q3029	280	MW-32-92	2/18/07 0822	509.0	560	ND		ND	
Q3077	280	MW-32-92	2/19/07 0832	508.2	472	ND		ND	
Q3107	280	MW-32-92	2/20/07 1054	508.7	398	ND		ND	
Q3130	280	MW-32-92	2/21/07 1115	508.3	340	ND		ND	
Q3648	280	MW-32-92	2/22/07 1350	508.5	240	ND		ND	
Q3625	280	MW-32-92	2/23/07 1025	508.7	182	ND		ND	
Q3537	280	MW-32-92	2/26/07 1043	508.4	113	ND		ND	
Q3669	280	MW-32-92	2/27/07 1320	508.5	95.7	ND		ND	
Q3881	280	MW-32-92	2/28/07 1320	508.3	94.3	ND		ND	
Q4007	280	MW-32-92	3/1/07 1331	508.3	83.8	ND		ND	
Q4035	280	MW-32-92	3/2/07 1326	508.1	76.3	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4063	280	MW-32-92	3/5/07 1044	508.5	70.8	ND		ND	
Q4271	280	MW-32-92	3/6/07 1351	508.6	49.7	ND		ND	
Q4522	280	MW-32-92	3/7/07 1526	508.3	19.9	ND		ND	
Q4647	280	MW-32-92	3/8/07 1051	508.4	14.7	ND		ND	
Q4665	280	MW-32-92	3/9/07 1047	508.4	19.4	ND		ND	
Q4911	280	MW-32-92	3/12/07 0837	508.1	38.5	ND		ND	
Q4938	280	MW-32-92	3/13/07 1104	508.9	71.1	ND		ND	
Q4958	280	MW-32-92	3/14/07 0854	509.1	76.7	ND		ND	
Q5248	280	MW-32-92	3/15/07 0953	508.5	85.7	ND		ND	
Q5271	280	MW-32-92	3/16/07 0754	508.3	103	ND		ND	
Q5304	280	MW-32-92	3/19/07 1133	508.9	141	ND		ND	
Q5564	280	MW-32-92	3/21/07 1428	508.5	160	ND		ND	
Q5629	280	MW-32-92	3/23/07 0945	508.1	195	ND		ND	
Q5730	280	MW-32-92	3/26/07 1506	508.1	219	ND		ND	
Q5947	280	MW-32-92	3/28/07 1419	508.4	235	ND		ND	
Q6083	280	MW-32-92	3/29/07 1349	508.3	208	ND		ND	
Q6232	280	MW-32-92	4/2/07 1444	508.7	234	ND		ND	
Q6363	280	MW-32-92	4/4/07 0947	508.3	299	ND		ND	
Q6458	280	MW-32-92	4/6/07 1004	508.5	340	ND		ND	
Q6635	280	MW-32-92	4/9/07 1140	508.1	367	ND		ND	
Q6777	280	MW-32-92	4/11/07 1006	508.2	407	ND		ND	
Q7031	280	MW-32-92	4/18/07 1007	508.3	446	ND		ND	
Q7178	280	MW-32-92	4/23/07 0827	508.3	461	ND		ND	
Q7623	280	MW-32-92	5/4/07 0941	508.7	503	ND		ND	
Q8179	280	MW-32-92	5/11/07 0947	508.4	442	ND		ND	
R0026	280	MW-32-92	6/14/07 1453	509.1	446	ND		ND	
R1674	280	MW-32-92	7/13/07 0950	508.4	275	ND		ND	
R1674	280	MW-32-92	7/13/07 0950	508.4	275	ND		ND	
<b>Q0838</b>	<b>290</b>	<b>MW-32-140</b>	<b>11/21/06 0825</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1070	290	MW-32-140	11/28/06 0833	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1299	290	MW-32-140	12/4/06 0917	ND		ND		ND	
Q1962	290	MW-32-140	1/18/07 1244	ND		ND		ND	
Q2143	290	MW-32-140	1/25/07 1232	ND		ND		ND	
Q2288	290	MW-32-140	2/7/07 0952	ND		ND		ND	
Q2242	290	MW-32-140	2/8/07 1430	510.5	0.051	ND		ND	
Q2242R	290	MW-32-140	2/8/07 1430	510.2	0.050	ND		ND	
Q2266	290	MW-32-140	2/9/07 1415	ND		ND		ND	
Q2303	290	MW-32-140	2/10/07 1119	508.3	15,300	ND		ND	
Q2322	290	MW-32-140	2/11/07 0845	508.3	8,210	ND		ND	
Q2351	290	MW-32-140	2/12/07 1112	508.3	4,240	ND		ND	
Q2679	290	MW-32-140	2/13/07 1032	508.5	2,280	ND		ND	
Q2707	290	MW-32-140	2/14/07 1056	508.5	1,490	ND		ND	
Q2978	290	MW-32-140	2/15/07 1135	508.2	1,360	ND		ND	
Q2992	290	MW-32-140	2/16/07 1050	508.3	744	ND		ND	
Q3011	290	MW-32-140	2/17/07 0825	508.3	660	ND		ND	
Q3030	290	MW-32-140	2/18/07 0833	509.0	583	ND		ND	
Q3078	290	MW-32-140	2/19/07 0849	508.2	492	ND		ND	
Q3108	290	MW-32-140	2/20/07 1110	508.3	373	ND		ND	
Q3131	290	MW-32-140	2/21/07 1141	508.4	332	ND		ND	
Q3649	290	MW-32-140	2/22/07 1355	508.5	228	ND		ND	
Q3626	290	MW-32-140	2/23/07 1031	508.7	190	ND		ND	
Q3538	290	MW-32-140	2/26/07 1048	508.3	113	ND		ND	
Q3538R	290	MW-32-140	2/26/07 1048	508.4	114	ND		ND	
Q3670	290	MW-32-140	2/27/07 1331	508.3	94.5	ND		ND	
Q3882	290	MW-32-140	2/28/07 1336	508.5	92.2	ND		ND	
Q4008	290	MW-32-140	3/1/07 1335	508.3	87.6	ND		ND	
Q4036	290	MW-32-140	3/2/07 1311	508.4	69.5	ND		ND	
Q4064	290	MW-32-140	3/5/07 1047	508.3	74.9	ND		ND	
Q4272	290	MW-32-140	3/6/07 1354	508.3	90.3	ND		ND	
Q4523	290	MW-32-140	3/7/07 1522	508.6	88.2	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4648	290	MW-32-140	3/8/07 1052	509.1	86.4	ND		ND	
Q4666	290	MW-32-140	3/9/07 1055	508.9	90.8	ND		ND	
Q4912	290	MW-32-140	3/12/07 0844	508.3	87.2	ND		ND	
Q4939	290	MW-32-140	3/13/07 1113	508.7	81.5	ND		ND	
Q4959	290	MW-32-140	3/14/07 0902	509.1	75.9	ND		ND	
Q5249	290	MW-32-140	3/15/07 1001	508.3	69.3	ND		ND	
Q5272	290	MW-32-140	3/16/07 0803	508.3	68.9	ND		ND	
Q5305	290	MW-32-140	3/19/07 1142	508.9	56.5	ND		ND	
Q5565	290	MW-32-140	3/21/07 1438	508.5	48.6	ND		ND	
Q5630	290	MW-32-140	3/23/07 0958	508.1	43.0	ND		ND	
Q5731	290	MW-32-140	3/26/07 1514	508.1	43.3	ND		ND	
Q5948	290	MW-32-140	3/28/07 1425	508.3	40.7	ND		ND	
Q6084	290	MW-32-140	3/29/07 1359	508.1	34.1	ND		ND	
Q6233	290	MW-32-140	4/2/07 1447	508.2	31.8	ND		ND	
Q6364	290	MW-32-140	4/4/07 0957	508.2	28.7	ND		ND	
Q6459	290	MW-32-140	4/6/07 1012	508.1	25.4	ND		ND	
Q6636	290	MW-32-140	4/9/07 1145	508.1	20.2	ND		ND	
Q6778	290	MW-32-140	4/11/07 1012	508.1	19.7	ND		ND	
Q7032	290	MW-32-140	4/18/07 1025	508.2	23.0	ND		ND	
Q7179	290	MW-32-140	4/23/07 0834	508.1	20.6	ND		ND	
Q7179R	290	MW-32-140	4/23/07 0834	508.2	20.5	ND		ND	
Q7624	290	MW-32-140	5/4/07 0947	508.3	17.6	ND		ND	
Q8181	290	MW-32-140	5/11/07 1010	508.2	12.6	ND		ND	
Q8181R	290	MW-32-140	5/11/07 1010	508.4	12.5	ND		ND	
R0027	290	MW-32-140	6/14/07 1523	508.1	5.86	ND		ND	
R1675	290	MW-32-140	7/13/07 1000	508.1	3.89	ND		ND	
R1675	290	MW-32-140	7/13/07 1000	508.1	3.89	ND		ND	
<b>Q0839</b>	<b>300</b>	<b>MW-32-160</b>	<b>11/21/06 0820</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1071	300	MW-32-160	11/28/06 0836	ND		ND		ND	
Q1301	300	MW-32-160	12/4/06 0920	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1963	300	MW-32-160	1/18/07 1245	ND		ND		ND	
Q2144	300	MW-32-160	1/25/07 1308	ND		ND		ND	
Q2289	300	MW-32-165	2/7/07 0948	ND		ND		ND	
Q2243	300	MW-32-165	2/8/07 1430	ND		ND		ND	
Q2267	300	MW-32-165'	2/9/07 1420	ND		ND		ND	
Q2304	300	MW-32-165	2/10/07 1122	508.3	36.9	ND		ND	
Q2323	300	MW-32-165	2/11/07 0850	508.2	1,650	ND		ND	
Q2352	300	MW-32-165	2/12/07 1118	508.3	3,850	ND		ND	
Q2352R	300	MW-32-165	2/12/07 1118	508.4	3,840	ND		ND	
Q2681	300	MW-32-165	2/13/07 1033	508.5	4,160	ND		ND	
Q2708	300	MW-32-165	2/14/07 1056	508.3	3,620	ND		ND	
Q2708R	300	MW-32-165	2/14/07 1056	508.3	3,620	ND		ND	
Q2979	300	MW-32-165	2/15/07 1129	508.2	2,650	ND		ND	
Q2993	300	MW-32-165	2/16/07 1052	508.4	1,970	ND		ND	
Q2993R	300	MW-32-165	2/16/07 1052	508.5	1,990	ND		ND	
Q3012	300	MW-32-165	2/17/07 0827	508.3	1,590	ND		ND	
Q3031	300	MW-32-165	2/18/07 0836	509.0	1,270	ND		ND	
Q3079	300	MW32-165	2/19/07 0854	508.1	1,120	ND		ND	
Q3109	300	MW-32-165	2/20/07 1116	508.3	926	ND		ND	
Q3132	300	MW-32-165	2/21/07 1145	508.3	682	ND		ND	
Q3650	300	MW-32-165	2/22/07 1400	508.3	605	ND		ND	
Q3627	300	MW-32-165	2/23/07 1034	508.7	489	ND		ND	
Q3539	300	MW-32-165	2/26/07 1054	508.5	121	ND		ND	
Q3671	300	MW-32-165	2/27/07 1343	508.3	97.7	ND		ND	
Q3883	300	MW-32-165	2/28/07 1342	508.3	92.9	ND		ND	
Q4009	300	MW-32-165	3/1/07 1341	508.3	87.8	ND		ND	
Q4037	300	MW-32-165	3/2/07 1334	508.3	72.4	ND		ND	
Q4065	300	MW-32-165	3/5/07 1049	508.5	98.2	ND		ND	
Q4273	300	MW-32-165	3/6/07 1353	508.6	110	ND		ND	
Q4524	300	MW-32-165	3/7/07 1515	508.6	102	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4649	300	MW-32-165	3/8/07 1058	508.7	102	ND		ND	
Q4667	300	MW-32-165	3/9/07 1057	508.9	97.3	ND		ND	
Q4913	300	MW-32-165	3/12/07 0845	508.4	105	ND		ND	
Q4941	300	MW-32-165	3/13/07 1117	508.8	102	ND		ND	
Q4961	300	MW-32-165	3/14/07 0904	509.1	98.3	ND		ND	
Q5250	300	MW-32-165	3/15/07 1004	508.5	95.1	ND		ND	
Q5273	300	MW-32-165	3/16/07 0806	508.4	94.8	ND		ND	
Q5306	300	MW-32-165	3/19/07 1143	509.1	84.8	ND		ND	
Q5566	300	MW-32-165	3/21/07 1439	508.5	79.5	ND		ND	
Q5631	300	MW-32-165	3/23/07 1002	508.2	88.2	ND		ND	
Q5732	300	MW-32-165	3/26/07 1516	508.1	75.3	ND		ND	
Q5949	300	MW-32-165	3/28/07 1430	508.3	67.8	ND		ND	
Q6085	300	MW-32-165	3/29/07 1403	508.3	62.4	ND		ND	
Q6234	300	MW-32-165	4/2/07 1449	508.7	52.5	ND		ND	
Q6365	300	MW-32-165	4/4/07 0958	508.5	51.8	ND		ND	
Q6461	300	MW-32-165	4/6/07 1014	508.9	53.7	ND		ND	
Q6637	300	MW-32-165	4/9/07 1147	508.1	48.3	ND		ND	
Q6779	300	MW-32-165	4/11/07 1019	508.5	45.2	ND		ND	
Q7033	300	MW-32-165	4/18/07 1026	508.3	38.2	ND		ND	
Q7181	300	MW-32-165	4/23/07 0837	508.1	33.0	ND		ND	
Q7625	300	MW-32-165	5/4/07 0949	508.2	28.6	ND		ND	
Q8182	300	MW-32-165	5/11/07 1023	508.1	25.2	ND		ND	
R0028	300	MW-32-165	6/14/07 1530	508.1	16.4	ND		ND	
R1676	300	MW-32-165	7/13/07 1005	508.1	11.7	ND		ND	
R1676	300	MW-32-165	7/13/07 1005	508.1	11.7	ND		ND	
<b>Q0841</b>	<b>310</b>	<b>MW-32-197</b>	<b>11/21/06 0820</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q1072	310	MW-32-197	11/28/06 0840	ND		ND		ND	
Q1302	310	MW-32-197	12/4/06 0928	ND		ND		ND	
Q1964	310	MW-32-197	1/18/07 1246	ND		ND		ND	
Q2145	310	MW-32-197	1/25/07 1310	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2145R	310	MW-32-197	1/25/07 1310	ND		ND		ND	
Q2290	310	MW-32-196	2/7/07 0945	ND		ND		ND	
Q2244	310	MW-32-196	2/8/07 1430	ND		ND		ND	
Q2268	310	MW-32-196	2/9/07 1423	ND		ND		ND	
Q2305	310	MW-32-196	2/10/07 1123	ND		ND		ND	
Q2324	310	MW-32-196	2/11/07 0852	ND		ND		ND	
Q2353	310	MW-32-196	2/12/07 1119	ND		ND		ND	
Q2682	310	MW-32-196	2/13/07 1057	505.6 (3)	0.026	ND		ND	
Q2709	310	MW-32-196	2/14/07 1057	508.5	1.41	ND		ND	
Q2981	310	MW-32-196	2/15/07 1131	508.1	16.0	ND		ND	
Q2994	310	MW-32-196	2/16/07 1053	508.7	74.5	ND		ND	
Q3013	310	MW-32-196	2/17/07 0829	508.1	143	ND		ND	
Q3032	310	MW-32-196	2/18/07 0839	508.3	247	ND		ND	
Q3081	310	MW-32-196	2/19/07 0855	508.3	417	ND		ND	
Q3110	310	MW-32-196	2/20/07 1122	508.4	385	ND		ND	
Q3133	310	MW-32-196	2/21/07 1146	508.3	525	ND		ND	
Q3651	310	MW-32-196	2/22/07 1405	508.4	581	ND		ND	
Q3628	310	MW-32-196	2/23/07 1041	508.7	569	ND		ND	
Q3541	310	MW-32-196	2/26/07 1056	508.3	621	ND		ND	
Q3672	310	MW-32-196	2/27/07 1344	509.0	558	ND		ND	
Q3884	310	MW-32-196	2/28/07 1343	508.3	543	ND		ND	
Q4010	310	MW-32-196	3/1/07 1343	508.4	488	ND		ND	
Q4038	310	MW-32-196	3/2/07 1334	508.2	380	ND		ND	
Q4066	310	MW-32-196	3/5/07 1050	508.2	326	ND		ND	
Q4274	310	MW-32-196	3/6/07 1356	508.4	297	ND		ND	
Q4525	310	MW-32-196	3/7/07 1529	508.5	210	ND		ND	
Q4650	310	MW-32-196	3/8/07 1059	508.7	168	ND		ND	
Q4668	310	MW-32-196	3/9/07 1058	508.9	159	ND		ND	
Q4914	310	MW-32-196	3/12/07 0846	508.3	160	ND		ND	
Q4942	310	MW-32-196	3/13/07 1118	508.8	142	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4962	310	MW-32-196	3/14/07 0906	509.1	145	ND		ND	
Q5251	310	MW-32-196	3/15/07 1005	508.2	148	ND		ND	
Q5274	310	MW-32-196	3/16/07 0807	508.2	140	ND		ND	
Q5307	310	MW-32-196	3/19/07 1144	508.9	132	ND		ND	
Q5567	310	MW-32-196	3/21/07 1440	508.5	135	ND		ND	
Q5632	310	MW-32-196	3/23/07 1005	508.2	150	ND		ND	
Q5733	310	MW-32-196	3/26/07 1518	508.1	147	ND		ND	
Q5950	310	MW-32-196	3/28/07 1432	508.3	150	ND		ND	
Q6086	310	MW-32-196	3/29/07 1405	508.2	131	ND		ND	
Q6235	310	MW-32-196	4/2/07 1451	508.9	137	ND		ND	
Q6366	310	MW-32-196	4/4/07 0959	508.3	141	ND		ND	
Q6462	310	MW-32-196	4/6/07 1014	508.5	148	ND		ND	
Q6638	310	MW-32-196	4/9/07 1149	508.1	156	ND		ND	
Q6781	310	MW-32-196	4/11/07 1022	508.5	142	ND		ND	
Q7034	310	MW-32-196	4/18/07 1028	508.3	129	ND		ND	
Q7182	310	MW-32-196	4/23/07 0837	508.3	117	ND		ND	
Q7626	310	MW-32-196	5/4/07 0951	508.3	109	ND		ND	
Q8183	310	MW-32-196	5/11/07 1022	508.6	88.0	ND		ND	
R0029	310	MW-32-196	6/14/07 1532	509.1	56.0	ND		ND	
R1677	310	MW-32-196	7/13/07 1010	508.1	38.6	ND		ND	
R1677	310	MW-32-196	7/13/07 1010	508.1	38.6	ND		ND	
<b>Q2284</b>	<b>320</b>	<b>MW-33</b>	<b>2/8/07 0842</b>	<b>507.2 *</b>	<b>0.055</b>	<b>ND</b>		<b>ND</b>	
Q6021	320	MW-33	2/12/07 0826	508.2	0.031	ND		ND	
Q6022	320	MW-33	2/13/07 0759	508.0	0.041	ND		ND	
Q6023	320	MW-33	2/14/07 0824	508.4	0.034	ND		ND	
Q5518	320	MW-33	2/16/07 0800	509.0 *	0.036	ND		ND	
Q5519	320	MW-33	2/19/07 0910	507.2 *	0.034	ND		ND	
Q5521	320	MW-33	2/21/07 0904	510.0 *	0.038	ND		ND	
Q5522	320	MW-33	2/23/07 0813	508.3	1.95	ND		ND	
Q3978	320	MW-33	2/26/07 0915	508.9	2.60	ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
Q6024	320	MW-33	2/28/07 0926	508.0	3.64	ND		ND	
Q4629	320	MW-33	3/2/07 0853	508.3	6.01	ND		ND	
Q4630	320	MW-33	3/5/07 0857	508.3	6.55	ND		ND	
Q4869	320	MW-33	3/7/07 0935	508.2	6.05	ND		ND	
Q4888	320	MW-33	3/9/07 0811	508.6	5.95	ND		ND	
Q4925	320	MW-33	3/12/07 0827	508.1	5.38	ND		ND	
Q5233	320	MW-33	3/14/07 0848	508.6	4.99	ND		ND	
Q6025	320	MW-33	3/16/07 0750	508.0	4.44	ND		ND	
Q6026	320	MW-33	3/20/07 0750	508.2	3.92	ND		ND	
Q6027	320	MW-33	3/23/07 0800	508.0	3.58	ND		ND	
Q6028	320	MW-33	3/26/07 0916	508.2	3.29	ND		ND	
Q6417	320	MW-33	3/29/07 0837	508.5	2.99	ND		ND	
Q6597	320	MW-33	4/2/07 0834	508.5	2.69	ND		ND	
Q6815	320	MW-33	4/6/07 0828	508.4	2.41	ND		ND	
Q7013	320	MW-33	4/10/07 0907	508.5	2.11	ND		ND	
Q7114	320	MW-33	4/17/07 1139	508.3	1.51	ND		ND	
Q7535	320	MW-33	4/24/07 0809	508.5	1.36	ND		ND	
Q7941	320	MW-33	5/1/07 0801	508.4	1.22	ND		ND	
Q8115	320	MW-33	5/9/07 1443	508.2	1.02	ND		ND	
R0030	320	MW-33	6/13/07 1235	508.3	0.931	ND		ND	
R1943	320	MW-33	8/3/07 0900	508.3	0.468	ND		ND	
<b>Q7491</b>	<b>330</b>	<b>MW-34</b>	<b>12/4/06 1115</b>	<b>507.4 *</b>	<b>0.040</b>	<b>ND</b>		<b>ND</b>	
Q7492	330	MW-34	1/15/07 1330	507.2 *	0.063	ND		ND	
Q7493	330	MW-34	2/1/07 0953	506.7 *	0.180	ND		ND	
Q7494	330	MW-34	2/8/07 0848	508.2 *	0.028	ND		ND	
Q7436	330	MW-34	3/23/07 0805	508.2 *	0.042	ND		ND	
Q7437	330	MW-34	3/26/07 0905	508.0 *	0.074	ND		ND	
Q7438	330	MW-34	3/29/07 1120	507.8 *	0.058	ND		ND	
Q7432	330	MW-34	4/2/07 0834	508.0 *	0.073	ND		ND	
Q7431	330	MW-34	4/6/07 0819	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7430	330	MW-34	4/10/07 0912	508.0 *	0.054	ND		ND	
Q7429	330	MW-34	4/17/07 1145	509.6 *	0.037	ND		ND	
<b>Q7495</b>	<b>340</b>	<b>MW-35</b>	<b>12/4/06 1120</b>	<b>503.6 *</b>	<b>0.081</b>	<b>ND</b>		<b>ND</b>	
Q7496	340	MW-35	1/15/07 1335	507.0 *	0.096	ND		ND	
Q7497	340	MW-35	2/1/07 1359	507.4 *	0.095	ND		ND	
Q7498	340	MW-35	2/8/07 1000	508.3 *	0.084	ND		ND	
Q7439	340	MW-35	3/23/07 0807	507.8 *	0.074	ND		ND	
Q7441	340	MW-35	3/26/07 0859	507.8 *	0.100	ND		ND	
Q7442	340	MW-35	3/29/07 1136	505.2 *	0.086	ND		ND	
Q7435	340	MW-35	4/2/07 0834	506.6 *	0.126	ND		ND	
Q7434	340	MW-35	4/6/07 0819	507.2 *	0.143	ND		ND	
Q7433	340	MW-35	4/9/07 0923	507.6 *	0.131	ND		ND	
Q7111	340	MW-35	4/17/07 1153	507.4 *	0.112	ND		ND	
<b>Q7427</b>	<b>360</b>	<b>MW-36-41</b>	<b>4/23/07 1044</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7794	360	MW-36-41	4/30/07 0827	508.0	0.054	ND		ND	
<b>Q5523</b>	<b>380</b>	<b>MW-37-22</b>	<b>2/21/07 0957</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5524	380	MW-37-22	2/23/07 0825	ND		ND		ND	
Q5525	380	MW-37-22	2/26/07 0935	ND		ND		ND	
Q5526	380	MW-37-22	2/28/07 0948	508.6	0.274	ND		ND	
Q4631	380	MW-37-22	3/2/07 0804	508.3	1.06	ND		ND	
Q4632	380	MW-37-22	3/5/07 0912	508.4	3.52	ND		ND	
Q4870	380	MW-37-22	3/7/07 1040	508.1	11.2	ND		ND	
Q4889	380	MW-37-22	3/9/07 0830	508.5	13.8	ND		ND	
Q4926	380	MW-37-22	3/12/07 0837	508.2	19.2	ND		ND	
Q5234	380	MW-37-22	3/14/07 0916	508.8	21.6	ND		ND	
Q6029	380	MW-37-22	3/16/07 0805	508.4	22.0	ND		ND	
Q6030	380	MW-37-22	3/19/07 0842	508.2	17.1	ND		ND	
Q6031	380	MW-37-22	3/23/07 0814	508.2	25.1	ND		ND	
Q6032	380	MW-37-22	3/26/07 0930	508.0	26.8	ND		ND	
Q6418	380	MW-37-22	3/29/07 0848	508.4	29.9	ND		ND	

**Results**  
**Water Samples**

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6598	380	MW-37-22	4/2/07 0849	508.5	26.5	ND		ND	
Q6816	380	MW-37-22	4/6/07 0841	508.4	24.9	ND		ND	
Q7014	380	MW-37-22	4/10/07 0840	508.3	46.8	ND		ND	
Q7115	380	MW-37-22	4/16/07 1005	508.4	24.5	ND		ND	
Q7817	380	MW-37-22	5/1/07 0903	508.4	11.8	ND		ND	
Q8116	380	MW-37-22	5/9/07 1512	508.3	6.97	ND		ND	
<b>Q6033</b>	<b>390</b>	<b>MW-37-32</b>	<b>2/26/07 0935</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5534	390	MW-37-32	2/28/07 0952	ND		ND		ND	
Q5535	390	MW-37-32	3/2/07 0808	ND		ND		ND	
Q5536	390	MW-37-32	3/5/07 0917	ND		ND		ND	
Q4871	390	MW-37-32	3/7/07 1043	508.1 **	0.328	ND		ND	
Q6034	390	MW-37-32	3/9/07 0835	507.8 **	0.283	ND		ND	
Q4927	390	MW-37-32	3/12/07 0845	508.3	0.376	ND		ND	
Q5235	390	MW-37-32	3/14/07 0920	508.3	0.217	ND		ND	
Q6035	390	MW-37-32	3/16/07 0808	507.8 **	0.906	ND		ND	
Q6035R	390	MW-37-32	3/16/07 0808	508.2	0.890	ND		ND	
Q6036	390	MW-37-32	3/19/07 0847	508.2	0.883	ND		ND	
Q6037	390	MW-37-32	3/23/07 0820	508.3	1.27	ND		ND	
Q6038	390	MW-37-32	3/26/07 0935	508.2	1.16	ND		ND	
Q6419	390	MW-37-32	3/29/07 0852	508.4	1.02	ND		ND	
Q6419R	390	MW-37-32	3/29/07 0852	508.4	1.04	ND		ND	
<b>Q4024</b>	<b>441</b>	<b>MW-39A (70')</b>	<b>3/1/07 1424</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5288	441	MW-39A (70')	3/14/07 1530	ND		ND		ND	
Q5964	441	MW-39A (70')	3/28/07 1030	ND		ND		ND	
Q6761	441	MW-39A (70')	4/11/07 1430	ND		ND		ND	
Q6761R	441	MW-39A (70')	4/11/07 1430	ND		ND		ND	
<b>Q7648</b>	<b>442</b>	<b>MW-39-69</b>	<b>5/3/07 1325</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8158	442	MW-39-69	5/11/07 1228	ND		ND		ND	
Q8663	442	MW-39-69	5/21/07 1205	ND		ND		ND	
Q8669	442	MW-39-69	5/21/07 1328	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8673	442	MW-39-69	5/22/07 0919	ND		ND		ND	
<b>Q4025</b>	<b>451</b>	<b>MW-39B (87')</b>	<b>3/1/07 1430</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5289	451	MW-39B (87')	3/14/07 1534	ND		ND		ND	
Q5965	451	MW-39B (87')	3/28/07 1032	ND		ND		ND	
Q6762	451	MW-39B (87')	4/11/07 1435	ND		ND		ND	
<b>Q7649</b>	<b>452</b>	<b>MW-39-85</b>	<b>5/3/07 1321</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8159	452	MW-39-85	5/11/07 1235	ND		ND		ND	
Q8159R	452	MW-39-85	5/11/07 1235	ND		ND		ND	
Q8664	452	MW-39-85	5/21/07 1306	ND		ND		ND	
Q8670	452	MW-39-85	5/21/07 1444	ND		ND		ND	
Q8674	452	MW-39-85	5/22/07 0846	ND		ND		ND	
<b>Q4026</b>	<b>461</b>	<b>MW-39C (104')</b>	<b>3/1/07 1435</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5290	461	MW-39C (104')	3/14/07 1535	ND		ND		ND	
Q5966	461	MW-39C (104')	3/28/07 1042	ND		ND		ND	
Q6763	461	MW-39C (104')	4/11/07 1440	ND		ND		ND	
<b>Q7650</b>	<b>462</b>	<b>MW-39-102</b>	<b>5/3/07 1319</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8161	462	MW-39-102	5/11/07 1122	ND		ND		ND	
Q8665	462	MW-39-103	5/21/07 1127	ND		ND		ND	
Q8671	462	MW-39-103	5/21/07 1351	ND		ND		ND	
Q8675	462	MW-39-103	5/22/07 0847	ND		ND		ND	
<b>Q7651</b>	<b>463</b>	<b>MW-39-126</b>	<b>5/3/07 1335</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8162	463	MW-39-126	5/11/07 1202	ND		ND		ND	
Q8666	463	MW-39-126	5/21/07 1130	ND		ND		ND	
Q8672	463	MW-39-126	5/21/07 1312	ND		ND		ND	
Q8676	463	MW-39-126	5/22/07 0853	ND		ND		ND	
<b>Q7652</b>	<b>464</b>	<b>MW-39-184</b>	<b>5/3/07 1336</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8163	464	MW-39-184	5/11/07 1140	ND		ND		ND	
Q8667	464	MW-39-184	5/21/07 1220	ND		ND		ND	
Q8677	464	MW-39-184	5/22/07 0855	ND		ND		ND	
<b>Q7653</b>	<b>465</b>	<b>MW-39-197</b>	<b>5/3/07 1352</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8164	465	MW-39-197	5/11/07 1218	ND		ND		ND	
Q8668	465	MW-39-197	5/21/07 1320	ND		ND		ND	
Q8678	465	MW-39-197	5/22/07 1050	ND		ND		ND	
<b>Q4027</b>	<b>471</b>	<b>MW-39D (141')</b>	<b>3/1/07 1442</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5291	471	MW-39D (141')	3/14/07 1537	ND		ND		ND	
Q5967	471	MW-39D (141')	3/28/07 1037	ND		ND		ND	
Q6764	471	MW-39D (141')	4/11/07 1445	ND		ND		ND	
<b>Q4028</b>	<b>472</b>	<b>MW-39E (197')</b>	<b>3/1/07 1450</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5292	472	MW-39E (197')	3/14/07 1539	ND		ND		ND	
Q5968	472	MW-39E (197')	3/28/07 1043	ND		ND		ND	
Q6765	472	MW-39E (197')	4/11/07 1450	ND		ND		ND	
<b>Q6039</b>	<b>480</b>	<b>MW-42-51</b>	<b>12/6/06 1327</b>	<b>507.4 *</b>	<b>0.075</b>	<b>ND</b>		<b>ND</b>	
Q6039V	480	MW-42-51	12/6/06 1327	508.2 *	0.079	ND		ND	
Q6041	480	MW-42-51	1/24/07 1307	ND		ND		ND	
Q5527	480	MW-42-51	2/15/07 0825	508.4	1.92	ND		ND	
Q4613	480	MW-42-51	3/1/07 1510	508.7	1.46	ND		ND	
Q4614	480	MW-42-51	3/2/07 1332	508.4	0.667	ND		ND	
Q4615	480	MW-42-51	3/5/07 1345	508.0	0.208	ND		ND	
Q4873	480	MW-42-51	3/7/07 1540	508.2	0.217	ND		ND	
Q4891	480	MW-42-51	3/9/07 1151	508.6	0.153	ND		ND	
Q4929	480	MW-42-51	3/12/07 1253	507.0 **	0.169	ND		ND	
Q5236	480	MW-42-51	3/14/07 1352	508.9	0.112	ND		ND	
Q6042	480	MW-42-51	3/16/07 1145	507.4 **	0.174	ND		ND	
Q6043	480	MW-42-51	3/20/07 0917	507.2 **	0.126	ND		ND	
Q6044	480	MW-42-51	3/23/07 1310	508.0	0.037	ND		ND	
Q6045	480	MW-42-51	3/26/07 1334	507.4 **	0.093	ND		ND	
Q6421	480	MW-42-51	3/29/07 1300	ND		ND		ND	
Q6599	480	MW-42-51	4/2/07 1255	508.8	0.340	ND		ND	
Q6599R	480	MW-42-51	4/2/07 1255	509.2	0.327	ND		ND	
Q6817	480	MW-42-51	4/6/07 1254	508.7	0.135	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7015	480	MW-42-51	4/10/07 1129	509.4	0.139	ND		ND	
Q7116	480	MW-42-51	4/17/07 1356	ND		ND		ND	
Q7536	480	MW-42-51	4/24/07 0737	509.2 (2)	0.162	ND		ND	
Q7818	480	MW-42-51	5/1/07 0950	508.6	0.086	ND		ND	
Q8389	480	MW-42-51	5/10/07 0918	509.4	0.045	ND		ND	
<b>Q6046</b>	<b>490</b>	<b>MW-42-79</b>	<b>12/6/06 1310</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6047	490	MW-42-79	1/24/07 1314	ND		ND		ND	
Q3359	490	MW-42-79	2/15/07 0830	508.8	0.157	ND		ND	
Q4616	490	MW-42-79	3/1/07 1515	508.5	0.101	ND		ND	
Q4617	490	MW-42-79	3/2/07 1338	508.7	0.155	ND		ND	
Q4618	490	MW-42-79	3/5/07 1350	508.4	0.681	ND		ND	
Q4874	490	MW-42-79	3/7/07 1548	508.3	1.73	ND		ND	
Q4892	490	MW-42-79	3/9/07 1200	508.5	1.28	ND		ND	
Q4930	490	MW-42-79	3/12/07 1303	508.1	1.24	ND		ND	
Q5237	490	MW-42-79	3/14/07 1358	508.5	0.980	ND		ND	
Q6048	490	MW-42-79	3/16/07 1151	507.6 **	0.717	ND		ND	
Q6049	490	MW-42-79	3/20/07 0920	508.0	0.595	ND		ND	
Q6050	490	MW-42-79	3/23/07 1318	508.2	0.682	ND		ND	
Q6051	490	MW-42-79	3/26/07 1341	508.0	0.151	ND		ND	
Q6422	490	MW-42-79	3/29/07 1307	508.6	0.569	ND		ND	
Q6601	490	MW-42-79	4/2/07 1308	508.1	0.507	ND		ND	
Q6818	490	MW-42-79	4/6/07 1303	508.6	0.265	ND		ND	
Q7016	490	MW-42-79	4/10/07 1134	ND		ND		ND	
Q7117	490	MW-42-79	4/17/07 1401	508.3	0.431	ND		ND	
Q7537	490	MW-42-79	4/24/07 0742	508.4	0.302	ND		ND	
Q7819	490	MW-42-79	5/1/07 0953	508.4	0.293	ND		ND	
Q8390	490	MW-42-79	5/10/07 0922	508.0	0.366	ND		ND	
<b>Q2291</b>	<b>560</b>	<b>MW-49-42</b>	<b>2/10/07 0954</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8388	560	MW-49-42	5/9/07 0746	ND		ND		ND	
<b>Q8150</b>	<b>610</b>	<b>MW-52-19</b>	<b>5/11/07 1026</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	

Results  
Water Samples

OUL	Station	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
#	#		Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2123	611	MW-52-32	2/2/07 1119	ND		ND		ND	
Q2245	611	MW-52-32	2/8/07 1423	ND		ND		ND	
Q2269	611	MW-52-32	2/9/07 0912	ND		ND		ND	
Q2306	611	MW-52-32	2/10/07 1310	ND		ND		ND	
Q2325	611	MW-52-32	2/11/07 1503	ND		ND		ND	
Q2354	611	MW-52-32	2/12/07 1425	ND		ND		ND	
Q2683	611	MW-52-32	2/13/07 1500	ND		ND		ND	
Q2710	611	MW-52-32	2/14/07 1350	ND		ND		ND	
Q2982	611	MW-52-32	2/15/07 1403	ND		ND		ND	
Q2995	611	MW-52-32	2/16/07 1015	ND		ND		ND	
Q3014	611	MW-52-32	2/17/07 1254	ND		ND		ND	
Q3014R	611	MW-52-32	2/17/07 1254	ND		ND		ND	
Q3033	611	MW-52-32	2/18/07 1218	ND		ND		ND	
Q3082	611	MW-52-32	2/19/07 1352	ND		ND		ND	
Q3111	611	MW-52-32	2/20/07 1315	ND		ND		ND	
Q3134	611	MW-52-32	2/21/07 1335	ND		ND		ND	
Q3652	611	MW-52-32	2/22/07 1035	ND		ND		ND	
Q3629	611	MW-52-32	2/23/07 0945	ND		ND		ND	
Q3542	611	MW-52-32	2/26/07 1340	ND		ND		ND	
Q3673	611	MW-52-32	2/27/07 0820	ND		ND		ND	
Q3885	611	MW-52-32	2/28/07 0902	ND		ND		ND	
Q4011	611	MW-52-32	3/1/07 0931	ND		ND		ND	
Q4039	611	MW-52-32	3/2/07 0920	ND		ND		ND	
Q4039R	611	MW-52-32	3/2/07 0920	ND		ND		ND	
Q4067	611	MW-52-32	3/5/07 1430	ND		ND		ND	
Q4275	611	MW-52-32	3/6/07 0940	ND		ND		ND	
Q4526	611	MW-52-32	3/7/07 1354	ND		ND		ND	
Q4526R	611	MW-52-32	3/7/07 1354	ND		ND		ND	
Q4651	611	MW-52-32	3/8/07 0949	ND		ND		ND	
Q4943	611	MW-52-32	3/13/07 1353	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4963	611	MW-52-32	3/14/07 1042	ND		ND		ND	
Q5252	611	MW-52-32	3/15/07 1031	ND		ND		ND	
Q5275	611	MW-52-32	3/16/07 0924	ND		ND		ND	
Q5308	611	MW-52-32	3/19/07 1405	ND		ND		ND	
Q5308R	611	MW-52-32	3/19/07 1405	ND		ND		ND	
Q5568	611	MW-52-32	3/21/07 0949	ND		ND		ND	
Q5633	611	MW-52-32	3/23/07 1405	ND		ND		ND	
Q5734	611	MW-52-32	3/26/07 1140	ND		ND		ND	
Q5951	611	MW-52-32	3/28/07 0847	ND		ND		ND	
Q6087	611	MW-52-32	3/29/07 1445	ND		ND		ND	
Q6236	611	MW-52-32	4/2/07 0959	ND		ND		ND	
Q6367	611	MW-52-32	4/4/07 1122	ND		ND		ND	
Q6463	611	MW-52-32	4/6/07 0810	ND		ND		ND	
Q6639	611	MW-52-32	4/9/07 1408	ND		ND		ND	
Q6782	611	MW-52-32	4/11/07 0821	ND		ND		ND	
Q6766	611	MW-52-32	4/13/07 1020	ND		ND		ND	
<b>Q8679</b>	<b>612</b>	<b>MW-52-19</b>	<b>5/23/07 1047</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8679R	612	MW-52-19	5/23/07 1047	ND		ND		ND	
Q8686	612	MW-52-19	5/23/07 1527	ND		ND		ND	
Q8690	612	MW-52-19	5/24/07 1043	ND		ND		ND	
<b>Q8681</b>	<b>613</b>	<b>MW-52-50</b>	<b>5/23/07 1049</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8687	613	MW-52-50	5/23/07 1344	ND		ND		ND	
Q8691	613	MW-52-50	5/24/07 1134	510.0 *	0.019	ND		ND	
<b>Q8682</b>	<b>614</b>	<b>MW-52-66</b>	<b>5/23/07 1116</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8692	614	MW-52-66	5/24/07 1443	ND		ND		ND	
<b>Q8151</b>	<b>620</b>	<b>MW-52-50</b>	<b>5/11/07 1028</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
<b>Q2124</b>	<b>621</b>	<b>MW-52-69</b>	<b>2/2/07 1123</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2246	621	MW-52-69	2/8/07 1328	ND		ND		ND	
Q2270	621	MW-52-69	2/9/07 0854	ND		ND		ND	
Q2307	621	MW-52-69	2/10/07 1310	ND		ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2326	621	MW-52-69	2/11/07 1458	ND		ND		ND	
Q2355	621	MW-52-69	2/12/07 1427	ND		ND		ND	
Q2684	621	MW-52-69	2/13/07 1502	ND		ND		ND	
Q2711	621	MW-52-69	2/14/07 1351	ND		ND		ND	
Q2983	621	MW-52-69	2/15/07 1406	ND		ND		ND	
Q2996	621	MW-52-69	2/16/07 1035	ND		ND		ND	
Q3015	621	MW-52-69	2/17/07 1255	ND		ND		ND	
Q3034	621	MW-52-69	2/18/07 1219	ND		ND		ND	
Q3083	621	MW-52-69	2/19/07 1356	ND		ND		ND	
Q3112	621	MW-52-69	2/20/07 1313	ND		ND		ND	
Q3135	621	MW-52-69	2/21/07 1336	ND		ND		ND	
Q3653	621	MW-52-69	2/22/07 1040	ND		ND		ND	
Q3630	621	MW-52-69	2/23/07 0947	ND		ND		ND	
Q3543	621	MW-52-69	2/26/07 1342	ND		ND		ND	
Q3674	621	MW-52-69	2/27/07 0822	ND		ND		ND	
Q3886	621	MW-52-69	2/28/07 0904	ND		ND		ND	
Q4012	621	MW-52-69	3/1/07 0934	ND		ND		ND	
Q4041	621	MW-52-69	3/2/07 0925	ND		ND		ND	
Q4068	621	MW-52-69	3/5/07 1433	ND		ND		ND	
Q4276	621	MW-52-69	3/6/07 0941	ND		ND		ND	
Q4527	621	MW-52-69	3/7/07 1358	ND		ND		ND	
Q4652	621	MW-52-69	3/8/07 0957	ND		ND		ND	
Q4944	621	MW-52-69	3/13/07 1410	ND		ND		ND	
Q4964	621	MW-52-69	3/14/07 1037	ND		ND		ND	
Q5253	621	MW-52-69	3/15/07 1033	ND		ND		ND	
Q5276	621	MW-52-69	3/16/07 0926	ND		ND		ND	
Q5309	621	MW-52-69	3/19/07 1406	ND		ND		ND	
Q5569	621	MW-52-69	3/21/07 0949	ND		ND		ND	
Q5634	621	MW-52-69	3/23/07 1410	ND		ND		ND	
Q5735	621	MW-52-69	3/26/07 1143	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5952	621	MW-52-69	3/28/07 0848	ND		ND		ND	
Q6088	621	MW-52-69	3/29/07 1447	ND		ND		ND	
Q6237	621	MW-52-69	4/2/07 1000	ND		ND		ND	
Q6368	621	MW-52-69	4/4/07 1123	ND		ND		ND	
Q6464	621	MW-52-69	4/6/07 0811	ND		ND		ND	
Q6641	621	MW-52-69	4/9/07 1406	ND		ND		ND	
Q6783	621	MW-52-69	4/11/07 0818	ND		ND		ND	
Q6767	621	MW-52-69	4/13/07 1022	ND		ND		ND	
<b>Q8152</b>	<b>625</b>	<b>MW-52-66</b>	<b>5/11/07 1052</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
<b>Q2125</b>	<b>626</b>	<b>MW-52-99</b>	<b>2/2/07 1126</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2247	626	MW-52-99	2/8/07 1330	ND		ND		ND	
Q2271	626	MW-52-99	2/9/07 0856	ND		ND		ND	
Q2308	626	MW-52-99	2/10/07 1330	ND		ND		ND	
Q2327	626	MW-52-99	2/11/07 1437	ND		ND		ND	
Q2356	626	MW-52-99	2/12/07 1427	ND		ND		ND	
Q2685	626	MW-52-99	2/13/07 1503	ND		ND		ND	
Q2712	626	MW-52-99	2/14/07 1352	ND		ND		ND	
Q2984	626	MW-52-99	2/15/07 1405	ND		ND		ND	
Q2997	626	MW-52-99	2/16/07 1040	ND		ND		ND	
Q3016	626	MW-52-99	2/17/07 1257	ND		ND		ND	
Q3035	626	MW-52-99	2/18/07 1220	ND		ND		ND	
Q3035R	626	MW-52-99	2/18/07 1220	ND		ND		ND	
Q3084	626	MW-52-99	2/19/07 1354	ND		ND		ND	
Q3113	626	MW-52-99	2/20/07 1319	ND		ND		ND	
Q3136	626	MW-52-99	2/21/07 1337	ND		ND		ND	
Q3654	626	MW-52-99	2/22/07 1045	ND		ND		ND	
Q3631	626	MW-52-99	2/23/07 0950	ND		ND		ND	
Q3544	626	MW-52-99	2/26/07 1344	ND		ND		ND	
Q3675	626	MW-52-99	2/27/07 0822	ND		ND		ND	
Q3887	626	MW-52-99	2/28/07 0904	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4013	626	MW-52-99	3/1/07 0935	ND		ND		ND	
Q4042	626	MW-52-99	3/2/07 0926	ND		ND		ND	
Q4069	626	MW-52-99	3/5/07 1436	ND		ND		ND	
Q4277	626	MW-52-99	3/6/07 0946	ND		ND		ND	
Q4528	626	MW-52-99	3/7/07 1359	ND		ND		ND	
Q4653	626	MW-52-99	3/8/07 1002	ND		ND		ND	
Q4945	626	MW-52-99	3/13/07 1417	ND		ND		ND	
Q4965	626	MW-52-99	3/14/07 1039	ND		ND		ND	
Q5254	626	MW-52-99	3/15/07 1034	ND		ND		ND	
Q5277	626	MW-52-99	3/16/07 0930	ND		ND		ND	
Q5310	626	MW-52-99	3/19/07 1407	ND		ND		ND	
Q5570	626	MW-52-99	3/21/07 0949	ND		ND		ND	
Q5635	626	MW-52-99	3/23/07 1413	ND		ND		ND	
Q5736	626	MW-52-99	3/26/07 1145	ND		ND		ND	
Q5953	626	MW-52-99	3/28/07 0849	ND		ND		ND	
Q6089	626	MW-52-99	3/29/07 1448	ND		ND		ND	
Q6238	626	MW-52-99	4/2/07 1001	ND		ND		ND	
Q6369	626	MW-52-99	4/4/07 1124	ND		ND		ND	
Q6465	626	MW-52-99	4/6/07 0812	ND		ND		ND	
Q6642	626	MW-52-99	4/9/07 1405	ND		ND		ND	
Q6784	626	MW-52-99	4/11/07 0820	ND		ND		ND	
Q6768	626	MW-52-99	4/13/07 1025	ND		ND		ND	
<b>Q8683</b>	<b>627</b>	<b>MW-52-124</b>	<b>5/23/07 1125</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8693	627	MW-52-124	5/24/07 1454	ND		ND		ND	
<b>Q8684</b>	<b>628</b>	<b>MW-52-163</b>	<b>5/23/07 1052</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8688	628	MW-52-163	5/23/07 1217	ND		ND		ND	
Q8694	628	MW-52-163	5/24/07 1154	ND		ND		ND	
<b>Q8685</b>	<b>629</b>	<b>MW-52-183</b>	<b>5/23/07 1059</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8689	629	MW-52-183	5/23/07 1524	ND		ND		ND	
Q8695	629	MW-52-183	5/24/07 1205	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8153	630	MW-52-119	5/11/07 1107	ND		ND		ND	
Q2126	631	MW-52-137	2/2/07 1130	ND		ND		ND	
Q2248	631	MW-52-137	2/8/07 1405	ND		ND		ND	
Q2272	631	MW-52-137	2/9/07 0934	ND		ND		ND	
Q2309	631	MW-52-137	2/10/07 1350	ND		ND		ND	
Q2328	631	MW-52-137	2/11/07 1444	ND		ND		ND	
Q2357	631	MW-52-137	2/12/07 1429	ND		ND		ND	
Q2686	631	MW-52-137	2/13/07 1504	ND		ND		ND	
Q2713	631	MW-52-137	2/14/07 1353	ND		ND		ND	
Q2985	631	MW-52-137	2/15/07 1409	ND		ND		ND	
Q2998	631	MW-52-137	2/16/07 1025	ND		ND		ND	
Q3017	631	MW-52-137	2/17/07 1301	ND		ND		ND	
Q3036	631	MW-52-137	2/18/07 1225	ND		ND		ND	
Q3085	631	MW-52-137	2/19/07 1357	ND		ND		ND	
Q3114	631	MW-52-137	2/20/07 1324	ND		ND		ND	
Q3137	631	MW-52-137	2/21/07 1342	ND		ND		ND	
Q3655	631	MW-52-137	2/22/07 1050	ND		ND		ND	
Q3632	631	MW-52-137	2/23/07 0955	ND		ND		ND	
Q3545	631	MW-52-137	2/26/07 1347	ND		ND		ND	
Q3676	631	MW-52-137	2/27/07 0826	ND		ND		ND	
Q3888	631	MW-52-137	2/28/07 0908	ND		ND		ND	
Q4014	631	MW-52-137	3/1/07 0938	ND		ND		ND	
Q4043	631	MW-52-137	3/2/07 0927	ND		ND		ND	
Q4070	631	MW-52-137	3/5/07 1439	ND		ND		ND	
Q4278	631	MW-52-137	3/6/07 0947	ND		ND		ND	
Q4529	631	MW-52-137	3/7/07 1400	ND		ND		ND	
Q4654	631	MW-52-137	3/8/07 1009	ND		ND		ND	
Q4946	631	MW-52-137	3/13/07 1423	ND		ND		ND	
Q4966	631	MW-52-137	3/14/07 1044	ND		ND		ND	
Q5255	631	MW-52-137	3/15/07 1036	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5255R	631	MW-52-137	3/15/07 1036	ND		ND		ND	
Q5278	631	MW-52-137	3/16/07 0934	ND		ND		ND	
Q5311	631	MW-52-137	3/19/07 1411	ND		ND		ND	
Q5571	631	MW-52-137	3/21/07 0952	ND		ND		ND	
Q5636	631	MW-52-137	3/23/07 1420	ND		ND		ND	
Q5737	631	MW-52-137	3/26/07 1148	ND		ND		ND	
Q5954	631	MW-52-137	3/28/07 0852	ND		ND		ND	
Q6090	631	MW-52-137	3/29/07 1451	ND		ND		ND	
Q6239	631	MW-52-137	4/2/07 1004	ND		ND		ND	
Q6370	631	MW-52-137	4/4/07 1128	ND		ND		ND	
Q6466	631	MW-52-137	4/6/07 0815	ND		ND		ND	
Q6643	631	MW-52-137	4/9/07 1410	ND		ND		ND	
Q6785	631	MW-52-137	4/11/07 0823	ND		ND		ND	
Q6769	631	MW-52-137	4/13/07 1027	ND		ND		ND	
<b>Q8154</b>	<b>632</b>	<b>MW-52-163</b>	<b>5/11/07 1045</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
<b>Q8155</b>	<b>633</b>	<b>MW-52-183</b>	<b>5/11/07 1103</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
<b>Q2127</b>	<b>636</b>	<b>MW-52-194</b>	<b>2/2/07 1131</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2249	636	MW-52-194	2/8/07 1417	ND		ND		ND	
Q2273	636	MW-52-194	2/9/07 0900	ND		ND		ND	
Q2310	636	MW-52-194	2/10/07 1335	ND		ND		ND	
Q2329	636	MW-52-194	2/11/07 1445	ND		ND		ND	
Q2358	636	MW-52-194	2/12/07 1431	ND		ND		ND	
Q2687	636	MW-52-194	2/13/07 1504	ND		ND		ND	
Q2714	636	MW-52-194	2/14/07 1354	ND		ND		ND	
Q2986	636	MW-52-194	2/15/07 1410	ND		ND		ND	
Q2999	636	MW-52-194	2/16/07 1020	ND		ND		ND	
Q3018	636	MW-52-194	2/17/07 1303	ND		ND		ND	
Q3037	636	MW-52-194	2/18/07 1227	ND		ND		ND	
Q3086	636	MW-52-194	2/19/07 1401	ND		ND		ND	
Q3115	636	MW-52-194	2/20/07 1328	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3138	636	MW-52-194	2/21/07 1344	ND		ND		ND	
Q3656	636	MW-52-194	2/22/07 1055	ND		ND		ND	
Q3633	636	MW-52-194	2/23/07 1000	ND		ND		ND	
Q3546	636	MW-52-194	2/26/07 1348	ND		ND		ND	
Q3677	636	MW-52-194	2/27/07 0829	ND		ND		ND	
Q3889	636	MW-52-194	2/28/07 0912	ND		ND		ND	
Q4015	636	MW-52-194	3/1/07 0940	ND		ND		ND	
Q4044	636	MW-52-194	3/2/07 0929	ND		ND		ND	
Q4071	636	MW-52-194	3/5/07 1442	ND		ND		ND	
Q4279	636	MW-52-194	3/6/07 0950	ND		ND		ND	
Q4530	636	MW-52-194	3/7/07 1401	ND		ND		ND	
Q4655	636	MW-52-194	3/8/07 1019	ND		ND		ND	
Q4947	636	MW-52-194	3/13/07 1428	ND		ND		ND	
Q4967	636	MW-52-194	3/14/07 1048	ND		ND		ND	
Q5256	636	MW-52-194	3/15/07 1038	ND		ND		ND	
Q5279	636	MW-52-194	3/16/07 0935	ND		ND		ND	
Q5279R	636	MW-52-194	3/16/07 0935	ND		ND		ND	
Q5312	636	MW-52-194	3/19/07 1413	ND		ND		ND	
Q5572	636	MW-52-194	3/21/07 0954	ND		ND		ND	
Q5637	636	MW-52-194	3/23/07 1415	ND		ND		ND	
Q5738	636	MW-52-194	3/26/07 1150	ND		ND		ND	
Q5955	636	MW-52-194	3/28/07 0854	ND		ND		ND	
Q6091	636	MW-52-194	3/29/07 1454	ND		ND		ND	
Q6241	636	MW-52-194	4/2/07 1006	ND		ND		ND	
Q6371	636	MW-52-194	4/4/07 1129	ND		ND		ND	
Q6467	636	MW-52-194	4/6/07 0818	ND		ND		ND	
Q6644	636	MW-52-194	4/9/07 1411	ND		ND		ND	
Q6786	636	MW-52-194	4/11/07 0825	ND		ND		ND	
Q6770	636	MW-52-194	4/13/07 1030	ND		ND		ND	
Q2945	640	MW-52-12	2/11/07 1408	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
Q2232	650	MW-53-80	2/9/07 0950	ND (1)		ND		ND	
Q6052	650	MW-53-80	2/9/07 1318	ND (1)		ND		ND	
Q5512	650	MW-53-80	2/10/07 1106	ND		ND		ND	
Q5513	650	MW-53-80	2/11/07 1010	ND		ND		ND	
Q6053	650	MW-53-80	2/12/07 1346	507.8 **	0.055	ND		ND	
Q6054	650	MW-53-80	2/13/07 1055	508.0	0.235	ND		ND	
Q3092	650	MW-53-80	2/14/07 1121	508.7	0.542	ND		ND	
Q3358	650	MW-53-80	2/16/07 1010	508.4	2.43	ND		ND	
Q3364	650	MW-53-80	2/19/07 1105	508.7	4.15	ND		ND	
Q3365	650	MW-53-80	2/21/07 1155	508.7	5.15	ND		ND	
Q4256	650	MW-53-80	2/23/07 1145	508.7	4.57	ND		ND	
Q3982	650	MW-53-80	2/26/07 1329	508.8	5.17	ND		ND	
Q4257	650	MW-53-80	2/28/07 1420	508.7	4.46	ND		ND	
Q4633	650	MW-53-80	3/2/07 1311	508.5	0.159	ND		ND	
Q4634	650	MW-53-80	3/5/07 1328	508.4	0.049	ND		ND	
Q4872	650	MW-53-80	3/7/07 1518	508.1	0.059	ND		ND	
Q4890	650	MW-53-80	3/9/07 1118	508.4	0.074	ND		ND	
Q4928	650	MW-53-80	3/12/07 1130	508.5	0.070	ND		ND	
Q5238	650	MW-53-80	3/14/07 1333	509.1	0.079	ND		ND	
Q6055	650	MW-53-80	3/16/07 1120	508.6	0.038	ND		ND	
Q6056	650	MW-53-80	3/20/07 0900	ND		ND		ND	
Q6057	650	MW-53-80	3/23/07 1135	ND		ND		ND	
Q6058	650	MW-53-80	3/26/07 1317	ND		ND		ND	
Q2233	660	MW-53-120	2/9/07 0951	ND		ND		ND	
Q2128	671	MW-54-40	2/1/07 1320	ND		ND		ND	
Q2250	671	MW-54-40	2/8/07 1510	ND		ND		ND	
Q2274	671	MW-54-40	2/9/07 1125	ND		ND		ND	
Q2311	671	MW-54-40	2/10/07 1457	ND		ND		ND	
Q2311R	671	MW-54-40	2/10/07 1457	ND		ND		ND	
Q2330	671	MW-54-40	2/11/07 1345	ND		ND		ND	

**Results**  
**Water Samples**

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2359	671	MW-54-40	2/12/07 1330	ND		ND		ND	
Q2688	671	MW-54-40	2/13/07 1345	ND		ND		ND	
Q2715	671	MW-54-40	2/14/07 1245	ND		ND		ND	
Q3001	671	MW-54-40	2/16/07 1120	ND		ND		ND	
Q3019	671	MW-54-40	2/17/07 1159	ND		ND		ND	
Q3038	671	MW-54-40	2/18/07 1126	ND		ND		ND	
Q3087	671	MW-54-40	2/19/07 1313	ND		ND		ND	
Q3116	671	MW-54-40	2/20/07 1244	ND		ND		ND	
Q3139	671	MW-54-40	2/21/07 1420	ND		ND		ND	
Q3657	671	MW-54-40	2/22/07 1135	505.2 **	0.038	ND		ND	
Q3634	671	MW-54-40	2/23/07 0835	505.4 **	0.114	ND		ND	
Q3547	671	MW-54-40	2/26/07 1259	506.4 **	0.335	ND		ND	
Q3678	671	MW-54-40	2/27/07 0946	507.2 **	0.377	ND		ND	
Q3890	671	MW-54-40	2/28/07 0948	506.9 **	0.526	ND		ND	
Q4016	671	MW-54-40	3/1/07 0827	507.1 **	0.526	ND		ND	
Q4045	671	MW-54-40	3/2/07 1045	507.4 **	0.859	ND		ND	
Q4072	671	MW-54-40	3/5/07 1530	507.7 **	0.953	ND		ND	
Q4281	671	MW-54-40	3/6/07 0831	507.8 **	0.837	ND		ND	
Q4669	671	MW-54-40	3/9/07 1435	507.7 **	0.755	ND		ND	
Q4915	671	MW-54-40	3/12/07 1317	507.4 **	0.438	ND		ND	
Q4948	671	MW-54-40	3/13/07 1252	507.8 **	0.379	ND		ND	
Q4968	671	MW-54-40	3/14/07 1139	508.0	0.306	ND		ND	
Q5257	671	MW-54-40	3/15/07 1110	507.6 **	0.276	ND		ND	
Q5281	671	MW-54-40	3/16/07 0910	507.8 **	0.219	ND		ND	
Q5313	671	MW-54-40	3/19/07 1325	508.9	0.021	ND		ND	
Q5573	671	MW-54-40	3/21/07 0815	ND		ND		ND	
Q5638	671	MW-54-40	3/23/07 1310	ND		ND		ND	
Q5739	671	MW-54-40	3/26/07 0945	506.0 **	0.289	ND		ND	
Q5739R	671	MW-54-40	3/26/07 0945	506.6 **	0.268	ND		ND	
Q5956	671	MW-54-40	3/28/07 0806	ND		ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6092	671	MW-54-40	3/29/07 1523	ND		ND		ND	
Q6242	671	MW-54-40	4/2/07 0820	ND		ND		ND	
Q6372	671	MW-54-40	4/4/07 1248	ND		ND		ND	
<b>Q7035</b>	<b>672</b>	<b>MW-54-38</b>	<b>4/18/07 1403</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7185	672	MW-54-38	4/23/07 1129	ND		ND		ND	
Q7629	672	MW-54-38	5/2/07 1331	ND		ND		ND	
Q7635	672	MW-54-38	5/3/07 1220	ND		ND		ND	
Q7642	672	MW-54-38	5/3/07 1618	ND		ND		ND	
Q8186	672	MW-54-38	5/11/07 0904	ND		ND		ND	
Q8346	672	MW-54-38	5/16/07 1219	ND		ND		ND	
Q8696	672	MW-54-38	5/25/07 0812	ND		ND		ND	
Q9097	672	MW-54-37	6/1/07 1246	ND		ND		ND	
R0031	672	MW-54-37	6/13/07 1428	ND		ND		ND	
R1944	672	MW-54-37	7/31/07 1030	ND		ND		ND	
<b>Q2129</b>	<b>681</b>	<b>MW-54-66</b>	<b>2/1/07 1335</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2251	681	MW-54-66	2/8/07 1511	ND		ND		ND	
Q2275	681	MW-54-66	2/9/07 1128	ND		ND		ND	
Q2312	681	MW-54-66	2/10/07 1501	ND		ND		ND	
Q2331	681	MW-54-66	2/11/07 1348	ND		ND		ND	
Q2331R	681	MW-54-66	2/11/07 1348	ND		ND		ND	
Q2361	681	MW-54-66	2/12/07 1332	ND		ND		ND	
Q2689	681	MW-54-66	2/13/07 1346	ND		ND		ND	
Q2716	681	MW-54-66	2/14/07 1246	ND		ND		ND	
Q3002	681	MW-54-66	2/16/07 1125	ND		ND		ND	
Q3021	681	MW-54-66	2/17/07 1203	ND		ND		ND	
Q3039	681	MW-54-66	2/18/07 1128	ND		ND		ND	
Q3088	681	MW-54-66	2/19/07 1313	ND		ND		ND	
Q3117	681	MW-54-66	2/20/07 1245	ND		ND		ND	
Q3141	681	MW-54-66	2/21/07 1421	ND		ND		ND	
Q3658	681	MW-54-66	2/22/07 1140	505.2 **	0.068	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3635	681	MW-54-66	2/23/07 0840	505.2 **	0.074	ND		ND	
Q3548	681	MW-54-66	2/26/07 1300	506.8 **	0.212	ND		ND	
Q3679	681	MW-54-66	2/27/07 0942	507.0 **	0.250	ND		ND	
Q3679R	681	MW-54-66	2/27/07 0942	507.1 **	0.251	ND		ND	
Q3891	681	MW-54-66	2/28/07 0949	507.1 **	0.341	ND		ND	
Q4017	681	MW-54-66	3/1/07 0828	507.0 **	0.345	ND		ND	
Q4046	681	MW-54-66	3/2/07 1046	507.3 **	0.525	ND		ND	
Q4073	681	MW-54-66	3/5/07 1533	507.8 **	0.645	ND		ND	
Q4282	681	MW-54-66	3/6/07 0832	507.7 **	0.526	ND		ND	
Q4670	681	MW-54-66	3/9/07 1436	507.6 **	0.534	ND		ND	
Q4916	681	MW-54-66	3/12/07 1319	506.8 **	0.212	ND		ND	
Q4949	681	MW-54-66	3/13/07 1248	507.2 **	0.178	ND		ND	
Q4969	681	MW-54-66	3/14/07 1137	508.1	0.170	ND		ND	
Q5258	681	MW-54-66	3/15/07 1111	507.0 **	0.113	ND		ND	
Q5282	681	MW-54-66	3/16/07 0912	507.8 **	0.071	ND		ND	
Q5314	681	MW-54-66	3/19/07 1327	507.2 **	0.016	ND		ND	
Q5574	681	MW-54-66	3/21/07 0816	ND		ND		ND	
Q5639	681	MW-54-66	3/23/07 1312	ND		ND		ND	
Q5741	681	MW-54-66	3/26/07 0948	506.4 **	0.207	ND		ND	
Q5957	681	MW-54-66	3/28/07 0807	ND		ND		ND	
Q6093	681	MW-54-66	3/29/07 1523	ND		ND		ND	
Q6243	681	MW-54-66	4/2/07 0822	ND		ND		ND	
Q6373	681	MW-54-66	4/4/07 1250	ND		ND		ND	
<b>Q7036</b>	<b>682</b>	<b>MW-54-59</b>	<b>4/18/07 1359</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7186	682	MW-54-59	4/23/07 1132	ND		ND		ND	
Q7630	682	MW-54-59	5/2/07 1322	ND		ND		ND	
Q7636	682	MW-54-59	5/3/07 1138	ND		ND		ND	
Q7643	682	MW-54-59	5/3/07 1643	ND		ND		ND	
Q8187	682	MW-54-59	5/11/07 0907	ND		ND		ND	
Q8347	682	MW-54-59	5/16/07 1221	ND		ND		ND	

**Results**  
**Water Samples**

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8697	682	MW-54-59	5/25/07 0814	ND		ND		ND	
Q9098	682	MW-54-58	6/1/07 1247	ND		ND		ND	
R0032	682	MW-54-58	6/13/07 1429	ND		ND		ND	
R1945	682	MW-54-59	7/31/07 0955	ND		ND		ND	
<b>Q2130</b>	<b>691</b>	<b>MW-54-132</b>	<b>2/1/07 1337</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2130R	691	MW-54-132	2/1/07 1337	ND		ND		ND	
Q2252	691	MW-54-132	2/8/07 1519	ND		ND		ND	
Q2276	691	MW-54-132	2/9/07 1135	ND		ND		ND	
Q2313	691	MW-54-132	2/10/07 1503	ND		ND		ND	
Q2332	691	MW-54-132	2/11/07 1352	ND		ND		ND	
Q2362	691	MW-54-132	2/12/07 1337	ND		ND		ND	
Q2690	691	MW-54-132	2/13/07 1350	ND		ND		ND	
Q2717	691	MW-54-132	2/14/07 1248	ND		ND		ND	
Q3003	691	MW-54-132	2/16/07 1128	ND		ND		ND	
Q3022	691	MW-54-132	2/17/07 1210	ND		ND		ND	
Q3041	691	MW-54-132	2/18/07 1133	ND		ND		ND	
Q3089	691	MW-54-132	2/19/07 1317	ND		ND		ND	
Q3118	691	MW-54-132	2/20/07 1249	ND		ND		ND	
Q3118R	691	MW-54-132	2/20/07 1249	ND		ND		ND	
Q3142	691	MW-54-132	2/21/07 1426	ND		ND		ND	
Q3142R	691	MW-54-132	2/21/07 1426	ND		ND		ND	
Q3659	691	MW-54-132	2/22/07 1145	504.4 **	0.030	ND		ND	
Q3659R	691	MW-54-132	2/22/07 1145	505.6 **	0.037	ND		ND	
Q3636	691	MW-54-132	2/23/07 0845	506.2 **	0.063	ND		ND	
Q3549	691	MW-54-132	2/26/07 1305	506.6 **	0.190	ND		ND	
Q3681	691	MW-54-132	2/27/07 0949	506.6 **	0.173	ND		ND	
Q3892	691	MW-54-132	2/28/07 0954	506.9 **	0.309	ND		ND	
Q4018	691	MW-54-132	3/1/07 0833	507.0 **	0.317	ND		ND	
Q4047	691	MW-54-132	3/2/07 1052	507.3 **	0.440	ND		ND	
Q4074	691	MW-54-132	3/5/07 1535	507.8 **	0.631	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4283	691	MW-54-132	3/6/07 0837	508.2	0.509	ND		ND	
Q4671	691	MW-54-132	3/9/07 1440	507.6 **	0.479	ND		573.8	6.94
Q4917	691	MW-54-132	3/12/07 1323	507.5 **	0.479	ND		ND	
Q4950	691	MW-54-132	3/13/07 1253	507.5 **	0.498	ND		ND	
Q4970	691	MW-54-132	3/14/07 1144	508.0	0.191	ND		ND	
Q5259	691	MW-54-132	3/15/07 1115	507.2 **	0.466	ND		ND	
Q5259R	691	MW-54-132	3/15/07 1115	507.8 **	0.458	ND		ND	
Q5283	691	MW-54-132	3/16/07 0915	507.6 **	0.316	ND		ND	
Q5315	691	MW-54-132	3/19/07 1330	506.9 **	0.019	ND		ND	
Q5575	691	MW-54-132	3/21/07 0822	ND		ND		ND	
Q5641	691	MW-54-132	3/23/07 1315	ND		ND		ND	
Q5742	691	MW-54-132	3/26/07 0950	506.6 **	0.183	ND		ND	
Q5958	691	MW-54-132	3/28/07 0812	ND		ND		ND	
Q6094	691	MW-54-132	3/29/07 1527	ND		ND		ND	
Q6244	691	MW-54-132	4/2/07 0825	ND		ND		ND	
Q6374	691	MW-54-132	4/4/07 1253	ND		ND		ND	
<b>Q7037</b>	<b>692</b>	<b>MW-54-125</b>	<b>4/18/07 1408</b>	<b>506.4 **</b>	<b>0.089</b>	<b>ND</b>		<b>ND</b>	
Q7037R	692	MW-54-125	4/18/07 1408	506.6 **	0.074	ND		ND	
Q7187	692	MW-54-125	4/23/07 1134	506.8 **	0.074	ND		ND	
Q7631	692	MW-54-125	5/2/07 1348	506.0 **	0.084	ND		ND	
Q7637	692	MW-54-125	5/3/07 1059	506.0 **	0.040	ND		ND	
Q7637R	692	MW-54-125	5/3/07 1059	506.6 **	0.049	ND		ND	
Q7644	692	MW-54-125	5/3/07 1651	508.2	0.050	ND		ND	
Q8188	692	MW-54-125	5/11/07 0915	508.3	0.047	ND		ND	
Q8348	692	MW-54-125	5/16/07 1224	508.0	0.043	ND		ND	
Q8698	692	MW-54-125	5/25/07 0818	509.4 (3)	0.031	ND		ND	
Q9099	692	MW-54-123	6/1/07 1252	509.4 **	0.050	ND		ND	
Q9099R	692	MW-54-123	6/1/07 1252	510.2 **	0.042	ND		ND	
R0033	692	MW-54-123	6/13/07 1431	510.0 (3)	0.033	ND		ND	
R1946	692	MW-54-125	7/31/07 1110	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
				Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm
<b>Q7038</b>	<b>693</b>	<b>MW-54-146</b>	<b>4/18/07 1412</b>	<b>507.2 **</b>	<b>0.066</b>	ND		ND	
Q7188	693	MW-54-146	4/23/07 1138	508.8	0.049	ND		ND	
Q7632	693	MW-54-146	5/2/07 1348	509.6 **	0.030	ND		ND	
Q7638	693	MW-54-146	5/3/07 1030	ND		ND		ND	
Q7645	693	MW-54-146	5/3/07 1653	ND		ND		ND	
Q8189	693	MW-54-146	5/11/07 0917	ND		ND		ND	
Q8349	693	MW-54-146	5/16/07 1226	ND		ND		ND	
Q8701	693	MW-54-146	5/25/07 0820	ND		ND		ND	
Q8701R	693	MW-54-146	5/25/07 0820	ND		ND		ND	
Q9101	693	MW-54-144	6/1/07 1253	ND		ND		ND	
R0034	693	MW-54-144	6/13/07 1432	ND		ND		ND	
R1947	693	MW-54-146	7/31/07 1333	ND		ND		ND	
<b>Q7039</b>	<b>694</b>	<b>MW-54-174</b>	<b>4/18/07 1414</b>	<b>506.7 **</b>	<b>0.098</b>	ND		ND	
Q7189	694	MW-54-174	4/23/07 1140	507.4 **	0.075	ND		ND	
Q7633	694	MW-54-174	5/2/07 1349	507.8 **	0.074	ND		ND	
Q7639	694	MW-54-174	5/3/07 1102	508.3	0.045	ND		ND	
Q7646	694	MW-54-174	5/3/07 1655	507.4 **	0.049	ND		ND	
Q8156	694	MW-54-174	5/11/07 0919	508.4	0.042	ND		ND	
Q8350	694	MW-54-174	5/16/07 1227	507.2 **	0.029	ND		ND	
Q9102	694	MW-54-173	6/1/07 1254	508.8	0.040	ND		ND	
R0035	694	MW-54-173	6/13/07 1433	ND		ND		ND	
R1948	694	MW-54-174	7/31/07 1340	ND		ND		ND	
<b>Q7041</b>	<b>695</b>	<b>MW-54-192</b>	<b>4/18/07 1415</b>	<b>506.4 **</b>	<b>0.082</b>	ND		ND	
Q7190	695	MW-54-192	4/23/07 1144	507.2 **	0.080	ND		ND	
Q7634	695	MW-54-192	5/2/07 1402	506.0 **	0.087	ND		ND	
Q7641	695	MW-54-192	5/3/07 1042	508.2	0.072	ND		ND	
Q7647	695	MW-54-192	5/3/07 1655	508.2	0.073	ND		ND	
Q8157	695	MW-54-192	5/11/07 0922	509.4	0.060	ND		ND	
Q8351	695	MW-54-192	5/16/07 1229	508.8	0.062	ND		ND	
Q8702	695	MW-54-192	5/25/07 0821	507.4 **	0.032	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q9103	695	MW-54-190	6/1/07 1255	510.2 **	0.039	ND		ND	
R0036	695	MW-54-190	6/13/07 1434	509.4 (3)	0.034	ND		ND	
R1949	695	MW-54-192	7/31/07 1345	ND		ND		ND	
<b>Q2131</b>	<b>701</b>	<b>MW-54-163</b>	<b>2/1/07 1339</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2253	701	MW-54-163	2/8/07 1520	ND		ND		ND	
Q2277	701	MW-54-163	2/9/07 1137	ND		ND		ND	
Q2314	701	MW-54-163	2/10/07 1504	ND		ND		ND	
Q2333	701	MW-54-163	2/11/07 1354	ND		ND		ND	
Q2363	701	MW-54-163	2/12/07 1341	ND		ND		ND	
Q2691	701	MW-54-163	2/13/07 1352	ND		ND		ND	
Q2718	701	MW-54-163	2/14/07 1249	ND		ND		ND	
Q3004	701	MW-54-163	2/16/07 1130	ND		ND		ND	
Q3023	701	MW-54-163	2/17/07 1211	ND		ND		ND	
Q3042	701	MW-54-163	2/18/07 1134	ND		ND		ND	
Q3090	701	MW-54-163	2/19/07 1318	ND		ND		ND	
Q3119	701	MW-54-163	2/20/07 1251	ND		ND		ND	
Q3143	701	MW-54-163	2/21/07 1426	ND		ND		ND	
Q3661	701	MW-54-163	2/22/07 1150	504.2 **	0.031	ND		ND	
Q3637	701	MW-54-163	2/23/07 0848	506.6 **	0.060	ND		ND	
Q3550	701	MW-54-163	2/26/07 1306	506.6 **	0.185	ND		ND	
Q3682	701	MW-54-163	2/27/07 0951	507.5 **	0.123	ND		ND	
Q3893	701	MW-54-163	2/28/07 0955	507.0 **	0.289	ND		ND	
Q4019	701	MW-54-163	3/1/07 0834	507.3 **	0.313	ND		ND	
Q4019R	701	MW-54-163	3/1/07 0834	507.3 **	0.308	ND		ND	
Q4048	701	MW-54-163	3/2/07 1053	507.3 **	0.425	ND		ND	
Q4075	701	MW-54-163	3/5/07 1540	507.7 **	0.634	ND		ND	
Q4284	701	MW-54-163	3/6/07 0838	507.8 **	0.553	ND		ND	
Q4672	701	MW-54-163	3/9/07 1441	507.7 **	0.478	ND		ND	
Q4918	701	MW-54-163	3/12/07 1324	507.5 **	0.281	ND		ND	
Q4951	701	MW-54-163	3/13/07 1259	507.4 **	0.271	ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4971	701	MW-54-163	3/14/07 1143	508.1	0.405	ND		ND	
Q5261	701	MW-54-163	3/15/07 1116	507.6 **	0.185	ND		ND	
Q5284	701	MW-54-163	3/16/07 0916	507.2 **	0.161	ND		ND	
Q5316	701	MW-54-163	3/19/07 1332	508.1	0.048	ND		ND	
Q5576	701	MW-54-163	3/21/07 0822	ND		ND		ND	
Q5642	701	MW-54-163	3/23/07 1318	ND		ND		ND	
Q5743	701	MW-54-163	3/26/07 0953	506.4 **	0.186	ND		ND	
Q5959	701	MW-54-163	3/28/07 0813	506.6 **	0.062	ND		ND	
Q5959R	701	MW-54-163	3/28/07 0813	506.8 **	0.057	ND		ND	
Q6095	701	MW-54-163	3/29/07 1528	ND		ND		ND	
Q6245	701	MW-54-163	4/2/07 0827	ND		ND		ND	
Q6375	701	MW-54-163	4/4/07 1255	ND		ND		ND	
<b>Q2132</b>	<b>702</b>	<b>MW-54-200</b>	<b>2/1/07 1340</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2254	702	MW-54-200	2/8/07 1530	ND		ND		ND	
Q2278	702	MW-54-200	2/9/07 1142	ND		ND		ND	
Q2315	702	MW-54-200	2/10/07 1505	ND		ND		ND	
Q2334	702	MW-54-200	2/11/07 1345	ND		ND		ND	
Q2364	702	MW-54-200	2/12/07 1337	ND		ND		ND	
Q2692	702	MW-54-200	2/13/07 1353	ND		ND		ND	
Q2719	702	MW-54-200	2/14/07 1250	ND		ND		ND	
Q3005	702	MW-54-200	2/16/07 1133	ND		ND		ND	
Q3024	702	MW-54-200	2/17/07 1212	ND		ND		ND	
Q3043	702	MW-54-200	2/18/07 1135	ND		ND		ND	
Q3043R	702	MW-54-200	2/18/07 1135	ND		ND		ND	
Q3091	702	MW-54-200	2/19/07 1320	ND		ND		ND	
Q3121	702	MW-54-200	2/20/07 1253	ND		ND		ND	
Q3144	702	MW-54-200	2/21/07 1427	ND		ND		ND	
Q3662	702	MW-54-200	2/22/07 1155	505.4 **	0.024	ND		ND	
Q3638	702	MW-54-200	2/23/07 0850	504.8 **	0.026	ND		ND	
Q3638R	702	MW-54-200	2/23/07 0850	504.3 **	0.024	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3551	702	MW-54-200	2/26/07 1306	506.2 **	0.148	ND		ND	
Q3683	702	MW-54-200	2/27/07 0952	506.2 **	0.104	ND		ND	
Q3894	702	MW-54-200	2/28/07 0956	506.7 **	0.238	ND		ND	
Q4021	702	MW-54-200	3/1/07 0835	507.0 **	0.252	ND		ND	
Q4049	702	MW-54-200	3/2/07 1054	507.2 **	0.353	ND		ND	
Q4076	702	MW-54-200	3/5/07 1545	508.0	0.704	ND		ND	
Q4285	702	MW-54-200	3/6/07 0839	508.1	0.647	ND		ND	
Q4673	702	MW-54-200	3/9/07 1443	507.8 **	0.490	ND		ND	
Q4673R	702	MW-54-200	3/9/07 1443	508.1	0.478	ND		ND	
Q4919	702	MW-54-200	3/12/07 1325	507.0 **	0.478	ND		ND	
Q4919R	702	MW-54-200	3/12/07 1325	507.5 **	0.478	ND		ND	
Q4952	702	MW-54-200	3/13/07 1300	507.9 **	0.451	ND		ND	
Q4972	702	MW-54-200	3/14/07 1147	508.1	0.431	ND		ND	
Q5262	702	MW-54-200	3/15/07 1117	507.6 **	0.450	ND		ND	
Q5285	702	MW-54-200	3/16/07 0919	507.8 **	0.418	ND		ND	
Q5317	702	MW-54-200	3/19/07 1334	507.4 **	0.214	ND		ND	
Q5577	702	MW-54-200	3/21/07 0823	507.6 **	0.061	ND		ND	
Q5643	702	MW-54-200	3/23/07 1320	ND		ND		ND	
Q5744	702	MW-54-200	3/26/07 0955	507.3 **	0.206	ND		ND	
Q5961	702	MW-54-200	3/28/07 0814	506.8 **	0.089	ND		ND	
Q6096	702	MW-54-200	3/29/07 1530	508.6	0.055	ND		ND	
Q6246	702	MW-54-200	4/2/07 0829	ND		ND		ND	
Q6376	702	MW-54-200	4/4/07 1256	ND		ND		ND	
<b>Q6059</b>	<b>710</b>	<b>MW-55-24</b>	<b>12/5/06 1000</b>	<b>509.6 *</b>	<b>0.021</b>	<b>ND</b>		<b>ND</b>	
Q6059R	710	MW-55-24	12/5/06 1000	510.2 *	0.022	ND		ND	
Q6061	710	MW-55-24	1/24/07 1022	508.0 *	0.024	ND		ND	
Q6062	710	MW-55-24	2/13/07 1035	ND		ND		ND	
Q4619	710	MW-55-24	3/1/07 0855	507.6 **	0.048	ND		ND	
Q4619R	710	MW-55-24	3/1/07 0855	508.1	0.042	ND		ND	
Q6063	710	MW-55-24	3/15/07 0858	507.0 **	0.084	ND		ND	



Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q6221	710	MW-55-24	3/28/07 0759	507.8 **	0.130	ND		ND	
Q7022	710	MW-55-24	4/11/07 1026	508.0	0.104	ND		ND	
Q7538	710	MW-55-24	4/25/07 1034	507.8 **	0.044	ND		ND	
<b>Q6064</b>	<b>720</b>	<b>MW-55-34</b>	<b>12/5/06 0956</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6065	720	MW-55-34	1/24/07 1010	ND		ND		ND	
Q6066	720	MW-55-34	2/13/07 1030	ND		ND		ND	
Q4621	720	MW-55-34	3/1/07 0851	506.6 **	0.022	ND		ND	
Q6067	720	MW-55-34	3/15/07 0901	507.4 **	0.042	ND		ND	
Q6222	720	MW-55-34	3/28/07 0805	507.7 **	0.178	ND		ND	
Q7023	720	MW-55-34	4/11/07 1031	508.2	0.091	ND		ND	
Q7539	720	MW-55-34	4/25/07 1030	507.2 **	0.061	ND		ND	
<b>Q6068</b>	<b>730</b>	<b>MW-55-54</b>	<b>12/5/06 0958</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q6069	730	MW-55-54	1/24/07 1019	ND		ND		ND	
Q5528	730	MW-55-54	2/13/07 1025	ND		ND		ND	
Q4622	730	MW-55-54	3/1/07 0847	508.3	0.281	ND		ND	
Q6070	730	MW-55-54	3/15/07 0905	508.2	1.11	ND		ND	
Q6223	730	MW-55-54	3/28/07 0812	508.5	0.698	ND		ND	
Q7024	730	MW-55-54	4/11/07 1036	508.8	0.237	ND		ND	
Q7541	730	MW-55-54	4/25/07 1025	509.2	0.148	ND		ND	
<b>Q4876</b>	<b>780</b>	<b>MW-57-20</b>	<b>3/7/07 1411</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q4932	780	MW-57-20	3/12/07 1032	ND		ND		ND	
Q4932R	780	MW-57-20	3/12/07 1032	ND		ND		ND	
Q5239	780	MW-57-20	3/14/07 0957	ND		ND		ND	
Q5239R	780	MW-57-20	3/14/07 0957	ND		ND		ND	
Q6822	780	MW-57-20	4/6/07 1124	ND		ND		ND	
<b>Q2292</b>	<b>800</b>	<b>MW-58-26</b>	<b>2/10/07 1053</b>	<b>508.4 *</b>	<b>0.023</b>	<b>ND</b>		<b>ND</b>	
Q2115	849	MW-60 (20')	2/1/07 1037	ND		ND		ND	
Q2257	849	MW-60 (20')	2/8/07 0850	ND		ND		ND	
Q2230	849	MW-60 (20')	2/9/07 1000	ND		ND		ND	
Q2293	849	MW-60 (20')	2/10/07 0800	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2338	849	MW-60 (20')	2/11/07 0735	ND		ND		ND	
Q2339	849	MW-60 (20')	2/12/07 0833	ND		ND		ND	
Q2693	849	MW-60 (20')	2/13/07 0820	ND		ND		ND	
Q2697	849	MW-60 (20')	2/14/07 0950	ND		ND		ND	
Q3201	849	MW-60 (20')	2/16/07 1007	ND		ND		ND	
Q3196	849	MW-60 (20')	2/19/07 0840	ND		ND		ND	
Q3147	849	MW-60 (20')	2/21/07 1058	ND		ND		ND	
Q3615	849	MW-60 (20')	2/23/07 1018	ND		ND		ND	
Q3552	849	MW-60 (20')	2/26/07 0923	ND		ND		ND	
Q3897	849	MW-60 (20')	2/28/07 1108	ND		ND		ND	
Q4052	849	MW-60 (20')	3/2/07 1358	ND		ND		ND	
Q4083	849	MW-60 (20')	3/5/07 0933	ND		ND		ND	
Q4541	849	MW-60 (20')	3/7/07 1120	ND		ND		ND	
Q4676	849	MW-60 (20')	3/9/07 0836	ND		ND		ND	
Q4676R	849	MW-60 (20')	3/9/07 0836	ND		ND		ND	
Q4904	849	MW-60 (20')	3/12/07 0930	ND		ND		ND	
Q4975	849	MW-60 (20')	3/14/07 0907	ND		ND		ND	
Q5293	849	MW-60 (20')	3/16/07 0826	ND		ND		ND	
Q5293R	849	MW-60 (20')	3/16/07 0826	ND		ND		ND	
Q5324	849	MW-60 (20')	3/19/07 1200	ND		ND		ND	
Q5649	849	MW-60 (20')	3/23/07 1120	ND		ND		ND	
Q5649R	849	MW-60 (20')	3/23/07 1120	ND		ND		ND	
Q5750	849	MW-60 (20')	3/26/07 1152	ND		ND		ND	
Q5750R	849	MW-60 (20')	3/26/07 1152	ND		ND		ND	
Q6099	849	MW-60 (20')	3/29/07 1414	ND		ND		ND	
Q6249	849	MW-60 (20')	4/2/07 1042	ND		ND		ND	
Q6827	849	MW-60 (20')	4/6/07 0800	ND		ND		ND	
Q7017	849	MW-60 (20')	4/9/07 0845	ND		ND		ND	
Q7112	849	MW-60 (20')	4/17/07 0750	ND		ND		ND	
Q7275	850	MW-60-37	4/25/07 1139	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7374	850	MW-60-37	4/27/07 1138	ND		ND		ND	
Q7443	850	MW-60-37	4/30/07 0823	ND		ND		ND	
Q7992	850	MW-60-37	5/7/07 0928	ND		ND		ND	
Q7998	850	MW-60-37	5/7/07 1720	ND		ND		ND	
Q8005	850	MW-60-37	5/8/07 1325	ND		ND		ND	
Q8352	850	MW-60-37	5/16/07 1310	507.8 (3)	0.065	ND		ND	
Q8703	850	MW-60-37	5/25/07 1132	ND		ND		ND	
Q9104	850	MW-60-35	6/1/07 1137	ND		ND		ND	
R0037	850	MW-60-35	6/14/07 1230	ND		ND		ND	
R1683	850	MW-60-35	7/27/07 1307	ND		ND		ND	
R1683	850	MW-60-35	7/27/07 1307	ND		ND		ND	
<b>Q7191</b>	<b>860</b>	<b>MW-60-54</b>	<b>4/23/07 1345</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7276	860	MW-60-54	4/25/07 1140	ND		ND		ND	
Q7375	860	MW-60-54	4/27/07 1135	ND		ND		ND	
Q7444	860	MW-60-54	4/30/07 0837	ND		ND		ND	
Q7993	860	MW-60-54	5/7/07 0930	ND		ND		ND	
Q7999	860	MW-60-54	5/7/07 1721	ND		ND		ND	
Q8006	860	MW-60-54	5/8/07 1152	ND		ND		ND	
Q8353	860	MW-60-54	5/16/07 1311	ND		ND		ND	
Q8704	860	MW-60-54	5/25/07 1133	ND		ND		ND	
Q9105	860	MW-60-55	6/1/07 1139	ND		ND		ND	
R0038	860	MW-60-55	6/14/07 1233	ND		ND		ND	
R1684	860	MW-60-55	7/27/07 1250	ND		ND		ND	
R1684	860	MW-60-55	7/27/07 1250	ND		ND		ND	
<b>Q7192</b>	<b>870</b>	<b>MW-60-74</b>	<b>4/23/07 1340</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7277	870	MW-60-74	4/25/07 1141	ND		ND		ND	
Q7376	870	MW-60-74	4/27/07 1138	ND		ND		ND	
Q7445	870	MW-60-74	4/30/07 0824	ND		ND		ND	
Q7994	870	MW-60-74	5/7/07 1128	ND		ND		ND	
Q8001	870	MW-60-74	5/7/07 1722	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8007	870	MW-60-74	5/8/07 1216	ND		ND		ND	
Q8354	870	MW-60-74	5/16/07 1312	ND		ND		ND	
Q8705	870	MW-60-74	5/25/07 1134	ND		ND		ND	
Q9106	870	MW-60-72	6/1/07 1140	ND		ND		ND	
R0039	870	MW-60-72	6/14/07 1236	ND		ND		ND	
R0039R	870	MW-60-72	6/14/07 1236	ND		ND		ND	
R1685	870	MW-60-72	7/27/07 1322	ND		ND		ND	
R1685	870	MW-60-72	7/27/07 1322	ND		ND		ND	
<b>Q7193</b>	<b>880</b>	<b>MW-60-137</b>	<b>4/23/07 1337</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7278	880	MW-60-137	4/25/07 1144	ND		ND		ND	
Q7377	880	MW-60-137	4/27/07 1142	ND		ND		ND	
Q7446	880	MW-60-137	4/30/07 0848	ND		ND		ND	
Q7995	880	MW-60-137	5/7/07 1400	ND		ND		ND	
Q8002	880	MW-60-137	5/7/07 1723	ND		ND		ND	
Q8008	880	MW-60-137	5/8/07 1202	ND		ND		ND	
Q8355	880	MW-60-137	5/16/07 1317	ND		ND		ND	
Q8706	880	MW-60-137	5/25/07 1139	ND		ND		ND	
Q9107	880	MW-60-135	6/1/07 1141	ND		ND		ND	
R0041	880	MW-60-135	6/14/07 1247	ND		ND		ND	
R1686	880	MW-60-135	7/27/07 1600	ND		ND		ND	
R1686	880	MW-60-135	7/27/07 1600	ND		ND		ND	
<b>Q7194</b>	<b>885</b>	<b>MW-60-156</b>	<b>4/23/07 1330</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7279	885	MW-60-156	4/25/07 1145	ND		ND		ND	
Q7378	885	MW-60-156	4/27/07 1144	ND		ND		ND	
Q7447	885	MW-60-156	4/30/07 0829	ND		ND		ND	
Q7996	885	MW-60-156	5/7/07 1403	ND		ND		ND	
Q8003	885	MW-60-156	5/7/07 1724	ND		ND		ND	
Q8009	885	MW-60-156	5/8/07 1232	ND		ND		ND	
Q8356	885	MW-60-156	5/16/07 1319	ND		ND		ND	
Q8707	885	MW-60-156	5/25/07 1141	ND		ND		ND	

Results  
Water Samples

OUL	Station	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
#	#		Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q9108	885	MW-60-154	6/1/07 1144	ND		ND		ND	
R0042	885	MW-60-154	6/14/07 1251	ND		ND		ND	
R1687	885	MW-60-154	7/27/07 1618	ND		ND		ND	
R1687	885	MW-60-154	7/27/07 1618	ND		ND		ND	
<b>Q7195</b>	<b>890</b>	<b>MW-60-178</b>	<b>4/23/07 1341</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7281	890	MW-60-178	4/25/07 1147	ND		ND		ND	
Q7379	890	MW-60-178	4/27/07 1150	ND		ND		ND	
Q7379R	890	MW-60-178	4/27/07 1150	ND		ND		ND	
Q7448	890	MW-60-178	4/30/07 0843	ND		ND		ND	
Q7997	890	MW-60-178	5/7/07 1430	ND		ND		ND	
Q8004	890	MW-60-178	5/7/07 1741	ND		ND		ND	
Q8010	890	MW-60-178	5/8/07 1515	ND		ND		ND	
Q8357	890	MW-60-178	5/16/07 1323	ND		ND		ND	
Q8708	890	MW-60-178	5/25/07 1159	ND		ND		ND	
Q9109	890	MW-60-176	6/1/07 1153	ND		ND		ND	
R0043	890	MW-60-176	6/14/07 1305	ND		ND		ND	
R1688	890	MW-60-176	7/27/07 1735	ND		ND		ND	
R1688	890	MW-60-176	7/27/07 1735	ND		ND		ND	
<b>R1704</b>	<b>907</b>	<b>MW-66-21</b>	<b>7/30/07 1313</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
R1704	907	MW-66-21	7/30/07 1313	ND		ND		ND	
<b>R1705</b>	<b>908</b>	<b>MW-66-36</b>	<b>7/30/07 1245</b>	<b>507.4 *</b>	<b>0.045</b>	<b>ND</b>		<b>ND</b>	
R1705	908	MW-66-36	7/30/07 1245	507.4 *	0.045	ND		ND	
<b>Q2134</b>	<b>909</b>	<b>MW-66 (48')</b>	<b>2/1/07 0946</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2256	909	MW-66 (48')	2/8/07 1300	ND		ND		ND	
Q2281	909	MW-66 (48')	2/9/07 0954	ND		ND		ND	
Q2337	909	MW-66 (48')	2/10/07 0755	ND		ND		ND	
Q2296	909	MW-66 (48')	2/11/07 0801	ND		ND		ND	
Q2343	909	MW-66 (48')	2/12/07 0936	ND		ND		ND	
Q2696	909	MW-66 (48')	2/13/07 0943	ND		ND		ND	
Q2701	909	MW-66 (48')	2/14/07 0946	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3204	909	MW-66 (48')	2/16/07 1310	ND		ND		ND	
Q3199	909	MW-66 (48')	2/19/07 0841	ND		ND		ND	
Q3150	909	MW-66 (48')	2/21/07 0759	ND		ND		ND	
Q3690	909	MW-66 (48')	2/23/07 0915	ND		ND		ND	
Q3555	909	MW-66 (48')	2/26/07 1018	ND		ND		ND	
Q3901	909	MW-66 (48')	2/28/07 1040	509.2 *	0.025	ND		ND	
Q4055	909	MW-66 (48')	3/2/07 1023	510.0 *	0.055	ND		ND	
Q4082	909	MW-66 (48')	3/5/07 0825	ND		ND		ND	
Q4539	909	MW-66 (48')	3/7/07 0956	ND		ND		ND	
Q4539R	909	MW-66 (48')	3/7/07 0956	ND		ND		ND	
Q4678	909	MW-66 (48')	3/9/07 0740	ND		ND		ND	
Q4903	909	MW-66 (48')	3/12/07 0800	ND		ND		ND	
Q4978	909	MW-66 (48')	3/14/07 1010	ND		ND		ND	
Q5296	909	MW-66 (48')	3/16/07 0850	ND		ND		ND	
Q5323	909	MW-66 (48')	3/19/07 1005	ND		ND		ND	
Q5648	909	MW-66 (48')	3/23/07 0915	ND		ND		ND	
Q5749	909	MW-66 (48')	3/26/07 0817	ND		ND		ND	
Q6103	909	MW-66 (48')	3/29/07 0940	ND		ND		ND	
Q6252	909	MW-66 (48')	4/2/07 0936	ND		ND		ND	
Q6826	909	MW-66 (48')	4/6/07 0923	ND		ND		ND	
Q7018	909	MW-66 (48')	4/10/07 0823	ND		ND		ND	
Q7119	909	MW-66 (48')	4/17/07 0805	ND		ND		ND	
Q7119R	909	MW-66 (48')	4/17/07 0805	ND		ND		ND	
Q7274	909	MW-66 (48')	4/24/07 0843	ND		ND		ND	
Q7821	909	MW-66 (48')	5/1/07 1036	ND		ND		ND	
Q8391	909	MW-66 (48')	5/10/07 1058	ND		ND		ND	
<b>Q2133</b>	<b>969</b>	<b>MW-62 (50')</b>	<b>2/1/07 1016</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2255	969	MW-62 (50')	2/8/07 1355	ND		ND		ND	
Q2279	969	MW-62 (50')	2/9/07 1017	ND		ND		ND	
Q2336	969	MW-62 (50')	2/10/07 0818	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q2295	969	MW-62 (50')	2/11/07 0820	ND		ND		ND	
Q2342	969	MW-62 (50')	2/12/07 1003	ND		ND		ND	
Q2695	969	MW-62 (50')	2/13/07 0959	ND		ND		ND	
Q2699	969	MW-62 (50')	2/14/07 1008	ND		ND		ND	
Q3203	969	MW-62 (50')	2/16/07 1156	ND		ND		ND	
Q3198	969	MW-62 (50')	2/19/07 0815	ND		ND		ND	
Q3149	969	MW-62 (50')	2/21/07 0828	ND		ND		ND	
Q3617	969	MW-62 (50')	2/23/07 0938	ND		ND		ND	
Q3554	969	MW-62 (50')	2/26/07 1056	ND		ND		ND	
Q3899	969	MW-62 (50')	2/28/07 1110	ND		ND		ND	
Q3899R	969	MW-62 (50')	2/28/07 1110	ND		ND		ND	
Q4054	969	MW-62 (50')	3/2/07 1005	ND		ND		ND	
Q4081	969	MW-62 (50')	3/5/07 1022	ND		ND		ND	
Q4538	969	MW-62 (50')	3/7/07 1158	ND		ND		ND	
Q4677	969	MW-62 (50')	3/9/07 0919	ND		ND		ND	
Q4902	969	MW-62 (50')	3/12/07 1002	ND		ND		ND	
Q4977	969	MW-62 (50')	3/14/07 1047	ND		ND		ND	
Q5295	969	MW-62 (50')	3/16/07 0925	ND		ND		ND	
Q5322	969	MW-62 (50')	3/19/07 1035	ND		ND		ND	
Q5647	969	MW-62 (50')	3/23/07 0947	ND		ND		ND	
Q5647R	969	MW-62 (50')	3/23/07 0947	ND		ND		ND	
Q5748	969	MW-62 (50')	3/26/07 0842	ND		ND		ND	
Q6102	969	MW-62 (50')	3/29/07 1018	ND		ND		ND	
Q6251	969	MW-62 (50')	4/2/07 1005	ND		ND		ND	
Q6825	969	MW-62 (50')	4/6/07 0948	ND		ND		ND	
Q7019	969	MW-62 (50')	4/10/07 0806	ND		ND		ND	
Q7019R	969	MW-62 (50')	4/10/07 0806	ND		ND		ND	
<b>Q7105</b>	<b>971</b>	<b>MW-62-55</b>	<b>4/16/07 1035</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7044	971	MW-62-55	4/18/07 1603	ND		ND		ND	
Q7167	971	MW-62-55	4/20/07 1154	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7167R	971	MW-62-55	4/20/07 1154	ND		ND		ND	
Q7196	971	MW-62-55	4/23/07 1413	ND		ND		ND	
Q7282	971	MW-62-55	4/25/07 1332	ND		ND		ND	
Q7381	971	MW-62-55	4/27/07 1050	ND		ND		ND	
Q7449	971	MW-62-55	4/30/07 1028	ND		ND		ND	
Q8011	971	MW-62-55	5/8/07 1005	ND		ND		ND	
Q8016	971	MW-62-55	5/8/07 1330	ND		ND		ND	
Q8190	971	MW-62-55	5/10/07 1459	ND		ND		ND	
Q8358	971	MW-62-55	5/16/07 1432	ND		ND		ND	
Q8709	971	MW-62-55	5/25/07 1011	ND		ND		ND	
Q9110	971	MW-62-53	6/1/07 1027	ND		ND		ND	
R0044	971	MW-62-53	6/14/07 1125	ND		ND		ND	
R1689	971	MW-62-53	7/26/07 1534	ND		ND		ND	
R1689	971	MW-62-53	7/26/07 1534	ND		ND		ND	
<b>Q7106</b>	<b>981</b>	<b>MW-62-73</b>	<b>4/16/07 1037</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7045	981	MW-62-73	4/18/07 1554	ND		ND		ND	
Q7168	981	MW-62-73	4/20/07 1150	ND		ND		ND	
Q7197	981	MW-62-73	4/23/07 1414	ND		ND		ND	
Q7283	981	MW-62-73	4/25/07 1335	ND		ND		ND	
Q7382	981	MW-62-73	4/27/07 1052	ND		ND		ND	
Q7450	981	MW-62-73	4/30/07 1034	ND		ND		ND	
Q8012	981	MW-62-73	5/8/07 1057	ND		ND		ND	
Q8017	981	MW-62-73	5/8/07 1410	ND		ND		ND	
Q8191	981	MW-62-73	5/10/07 1134	ND		ND		ND	
Q8359	981	MW-62-73	5/16/07 1433	ND		ND		ND	
Q8359R	981	MW-62-73	5/16/07 1433	ND		ND		ND	
Q8710	981	MW-62-73	5/25/07 1013	ND		ND		ND	
Q9111	981	MW-62-73	6/1/07 1028	ND		ND		ND	
R0045	981	MW-62-71	6/14/07 1113	ND		ND		ND	
R1690	981	MW-62-73	7/26/07 1220	ND		ND		ND	



**Results**  
**Water Samples**

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
R1690	981	MW-62-73	7/26/07 1220	ND		ND		ND	
<b>Q8333</b>	<b>990</b>	<b>MW-62-18</b>	<b>5/16/07 1402</b>	<b>508.2 (3)</b>	<b>0.107</b>	<b>ND</b>		<b>ND</b>	
Q8334	990	MW-62-18	5/16/07 1416	ND		ND		ND	
Q8338	990	MW-62-18	5/17/07 1110	ND		ND		ND	
R1701	990	MW-62-18	7/26/07 1739	ND		ND		ND	
R1701	990	MW-62-18	7/26/07 1739	ND		ND		ND	
<b>Q7107</b>	<b>991</b>	<b>MW-62-94</b>	<b>4/16/07 1039</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7046	991	MW-62-94	4/18/07 1555	ND		ND		ND	
Q7169	991	MW-62-94	4/20/07 1148	ND		ND		ND	
Q7198	991	MW-62-94	4/23/07 1415	ND		ND		ND	
Q7198R	991	MW-62-94	4/23/07 1415	ND		ND		ND	
Q7284	991	MW-62-94	4/25/07 1337	ND		ND		ND	
Q7383	991	MW-62-94	4/27/07 1053	ND		ND		ND	
Q7451	991	MW-62-94	4/30/07 1028	ND		ND		ND	
Q8013	991	MW-62-94	5/8/07 1024	ND		ND		ND	
Q8018	991	MW-62-94	5/8/07 1320	ND		ND		ND	
Q8192	991	MW-62-94	5/10/07 1117	ND		ND		ND	
Q8361	991	MW-62-94	5/16/07 1434	ND		ND		ND	
Q8711	991	MW-62-94	5/25/07 1014	ND		ND		ND	
Q9112	991	MW-62-92	6/1/07 1029	ND		ND		ND	
R0046	991	MW-62-92	6/14/07 1115	ND		ND		ND	
R1691	991	MW-62-92	7/26/07 1235	ND		ND		ND	
R1691	991	MW-62-92	7/26/07 1235	ND		ND		ND	
<b>Q8336</b>	<b>1000</b>	<b>MW-62-35</b>	<b>5/16/07 1454</b>	<b>512.2 (3)</b>	<b>0.059</b>	<b>ND</b>		<b>ND</b>	
Q8337	1000	MW-62-35	5/16/07 1522	509.9 (3)	0.042	ND		ND	
Q8335	1000	MW-62-35	5/17/07 1310	ND		ND		ND	
R1702	1000	MW-62-37	7/26/07 1737	ND		ND		ND	
R1702	1000	MW-62-37	7/26/07 1737	ND		ND		ND	
<b>Q7108</b>	<b>1011</b>	<b>MW-62-140</b>	<b>4/16/07 1043</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7047	1011	MW-62-140	4/18/07 1440	ND		ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7170	1011	MW-62-140	4/20/07 1141	ND		ND		ND	
Q7199	1011	MW-62-140	4/23/07 1420	ND		ND		ND	
Q7285	1011	MW-62-140	4/25/07 1341	ND		ND		ND	
Q7384	1011	MW-62-140	4/27/07 1059	ND		ND		ND	
Q7452	1011	MW-62-140	4/30/07 1036	ND		ND		ND	
Q8014	1011	MW-62-140	5/8/07 1015	ND		ND		ND	
Q8019	1011	MW-62-140	5/8/07 1220	ND		ND		ND	
Q8193	1011	MW-62-140	5/10/07 1021	ND		ND		ND	
Q8362	1011	MW-62-140	5/16/07 1439	ND		ND		ND	
Q8712	1011	MW-62-140	5/25/07 1021	ND		ND		ND	
Q9113	1011	MW-62-138	6/1/07 1044	ND		ND		ND	
R0047	1011	MW-62-138	6/14/07 1135	ND		ND		ND	
R1692	1011	MW-62-138	7/26/07 1555	ND		ND		ND	
R1692	1011	MW-62-138	7/26/07 1555	ND		ND		ND	
<b>Q7109</b>	<b>1021</b>	<b>MW-62-184</b>	<b>4/16/07 1055</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7048	1021	MW-62-184	4/18/07 1545	ND		ND		ND	
Q7171	1021	MW-62-184	4/20/07 1145	ND		ND		ND	
Q7201	1021	MW-62-184	4/23/07 1422	ND		ND		ND	
Q7286	1021	MW-62-184	4/25/07 1342	ND		ND		ND	
Q7385	1021	MW-62-184	4/27/07 1100	ND		ND		ND	
Q7453	1021	MW-62-184	4/30/07 1043	ND		ND		ND	
Q8015	1021	MW-62-184	5/8/07 1018	ND		ND		ND	
Q8021	1021	MW-62-184	5/8/07 1303	ND		ND		ND	
Q8021R	1021	MW-62-184	5/8/07 1303	ND		ND		ND	
Q8194	1021	MW-62-184	5/10/07 1042	ND		ND		ND	
Q8345	1021	MW-62-184	5/16/07 1441	ND		ND		ND	
Q8713	1021	MW-62-184	5/25/07 1026	ND		ND		ND	
Q9114	1021	MW-62-184	6/1/07 1048	ND		ND		ND	
R0048	1021	MW-62-184	6/14/07 1143	ND		ND		ND	

Results  
Water Samples

OUL	Station	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
#	#		Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
R1693	1021	MW-62-182	7/26/07 1620	ND		ND		ND	
R1693	1021	MW-62-182	7/26/07 1620	ND		ND		ND	
<b>Q2116</b>	<b>1029</b>	<b>MW-63 (35')</b>	<b>2/1/07 1225</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2285	1029	MW-63 (35')	2/8/07 1218	ND		ND		ND	
Q2231	1029	MW-63 (35')	2/9/07 1104	ND		ND		ND	
Q2335	1029	MW-63 (35')	2/10/07 1007	ND		ND		ND	
Q2294	1029	MW-63 (35')	2/11/07 0737	ND		ND		ND	
<b>Q7202</b>	<b>1030</b>	<b>MW-63-52</b>	<b>4/23/07 1442</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7287	1030	MW-63-52	4/25/07 1518	ND		ND		ND	
Q7386	1030	MW-63-52	4/27/07 0951	ND		ND		ND	
Q7454	1030	MW-63-52	4/30/07 1141	ND		ND		ND	
Q8365	1030	MW-63-52	5/14/07 0934	ND		ND		ND	
Q8371	1030	MW-63-52	5/14/07 1207	ND		ND		ND	
Q8377	1030	MW-63-52	5/15/07 1148	ND		ND		ND	
Q8714	1030	MW-63-52	5/25/07 0905	ND		ND		ND	
Q9115	1030	MW-63-50	6/1/07 0951	ND		ND		ND	
R0049	1030	MW-63-50	6/14/07 0956	ND		ND		ND	
R1694	1030	MW-63-50	7/25/07 1313	ND		ND		ND	
R1694	1030	MW-63-50	7/25/07 1313	ND		ND		ND	
<b>Q2341</b>	<b>1031</b>	<b>MW-63 (53')</b>	<b>2/12/07 1138</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q2694	1031	MW-63 (53')	2/13/07 0851	ND		ND		ND	
Q2694R	1031	MW-63 (53')	2/13/07 0851	ND		ND		ND	
Q2698	1031	MW-63 (53')	2/14/07 0910	ND		ND		ND	
Q3202	1031	MW-63 (53')	2/16/07 1255	ND		ND		ND	
Q3197	1031	MW-63 (53')	2/19/07 1005	ND		ND		ND	
Q3148	1031	MW-63 (53')	2/21/07 1049	ND		ND		ND	
Q3616	1031	MW-63 (53')	2/23/07 1025	ND		ND		ND	
Q3553	1031	MW-63 (53')	2/26/07 1125	ND		ND		ND	
Q3898	1031	MW-63 (53')	2/28/07 1146	ND		ND		ND	
Q4053	1031	MW-63 (53')	3/2/07 1054	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q4079	1031	MW-63 (53')	3/5/07 1050	ND		ND		ND	
Q4079R	1031	MW-63 (53')	3/5/07 1050	ND		ND		ND	
Q4537	1031	MW-63 (53')	3/7/07 1345	ND		ND		ND	
Q4976	1031	MW-63 (53')	3/14/07 1118	ND		ND		ND	
Q5294	1031	MW-63 (53')	3/16/07 0954	ND		ND		ND	
Q5321	1031	MW-63 (53')	3/19/07 1105	ND		ND		ND	
Q5646	1031	MW-63 (53')	3/23/07 1022	ND		ND		ND	
Q5747	1031	MW-63 (53')	3/26/07 1043	ND		ND		ND	
Q6101	1031	MW-63 (53')	3/29/07 1100	ND		ND		ND	
Q6250	1031	MW-63 (53')	4/2/07 1028	ND		ND		ND	
Q6824	1031	MW-63 (53')	4/6/07 1017	ND		ND		ND	
Q7021	1031	MW-63 (53')	4/10/07 0954	ND		ND		ND	
Q7118	1031	MW-63 (53')	4/17/07 0920	ND		ND		ND	
<b>Q7203</b>	<b>1040</b>	<b>MW-63-93</b>	<b>4/23/07 1446</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7288	1040	MW-63-93	4/25/07 1515	ND		ND		ND	
Q7387	1040	MW-63-93	4/27/07 0956	ND		ND		ND	
Q7455	1040	MW-63-93	4/30/07 1142	ND		ND		ND	
Q8366	1040	MW-63-93	5/14/07 0935	ND		ND		ND	
Q8372	1040	MW-63-93	5/14/07 1312	ND		ND		ND	
Q8378	1040	MW-63-93	5/15/07 1245	ND		ND		ND	
Q8715	1040	MW-63-93	5/25/07 0907	ND		ND		ND	
Q9116	1040	MW-63-93	6/1/07 0952	ND		ND		ND	
R0050	1040	MW-63-93	6/14/07 1010	ND		ND		ND	
R1695	1040	MW-63-93	7/25/07 1340	ND		ND		ND	
R1695	1040	MW-63-93	7/25/07 1340	ND		ND		ND	
<b>Q7204</b>	<b>1041</b>	<b>MW-63-114</b>	<b>4/23/07 1451</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7289	1041	MW-63-114	4/25/07 1520	ND		ND		ND	
Q7388	1041	MW-63-114	4/27/07 0958	ND		ND		ND	
Q7456	1041	MW-63-114	4/30/07 1126	ND		ND		ND	
Q8367	1041	MW-63-114	5/14/07 0938	ND		ND		ND	

Results  
Water Samples

OUL	Station	Station Name	Date/Time	Fluorescein Results		Eosine Results		RWT Results	
#	#		Recovered	Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q8373	1041	MW-63-114	5/14/07 1102	ND		ND		ND	
Q8379	1041	MW-63-114	5/15/07 1310	ND		ND		ND	
Q8379R	1041	MW-63-114	5/15/07 1310	ND		ND		ND	
Q8716	1041	MW-63-114	5/25/07 0911	ND		ND		ND	
Q9117	1041	MW-63-112	6/1/07 0956	ND		ND		ND	
R0051	1041	MW-63-112	6/14/07 1000	ND		ND		ND	
R1696	1041	MW-63-112	7/25/07 1348	ND		ND		ND	
R1696	1041	MW-63-112	7/25/07 1348	ND		ND		ND	
<b>Q8339</b>	<b>1050</b>	<b>MW-63-18</b>	<b>5/16/07 1115</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8344	1050	MW-63-18	5/18/07 1035	ND		ND		ND	
R1703	1050	MW-63-18	7/30/07 1310	ND		ND		ND	
R1703	1050	MW-63-18	7/30/07 1310	ND		ND		ND	
<b>Q8342</b>	<b>1060</b>	<b>MW-63-35</b>	<b>5/16/07 1131</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q8341	1060	MW-63-35	5/16/07 1206	ND		ND		ND	
Q8343	1060	MW-63-35	5/18/07 1303	ND		ND		ND	
R1706	1060	MW63-34	7/31/07 0912	ND		ND		ND	
R1706	1060	MW63-34	7/31/07 0912	ND		ND		ND	
<b>Q7205</b>	<b>1070</b>	<b>MW-63-124</b>	<b>4/23/07 1455</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7290	1070	MW-63-124	4/25/07 1523	ND		ND		ND	
Q7389	1070	MW-63-124	4/27/07 1000	ND		ND		ND	
Q7457	1070	MW-63-124	4/30/07 1134	ND		ND		ND	
Q8368	1070	MW-63-124	5/14/07 0944	ND		ND		ND	
Q8374	1070	MW-63-124	5/14/07 1254	ND		ND		ND	
Q8381	1070	MW-63-124	5/15/07 1342	ND		ND		ND	
Q8717	1070	MW-63-124	5/25/07 0913	ND		ND		ND	
Q9118	1070	MW-63-121	6/1/07 0950	ND		ND		ND	
R0052	1070	MW-63-121	6/14/07 1015	ND		ND		ND	
R1697	1070	MW-63-121	7/25/07 1038	ND		ND		ND	
R1697	1070	MW-63-121	7/25/07 1038	ND		ND		ND	
<b>Q7206</b>	<b>1075</b>	<b>MW-63-164</b>	<b>4/23/07 1457</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q7291	1075	MW-63-164	4/25/07 1525	ND		ND		ND	
Q7390	1075	MW-63-164	4/27/07 1002	ND		ND		ND	
Q7458	1075	MW-63-164	4/30/07 1136	ND		ND		ND	
Q8369	1075	MW-63-164	5/14/07 0936	ND		ND		ND	
Q8375	1075	MW-63-164	5/14/07 1146	ND		ND		ND	
Q8363	1075	MW-63-164	5/15/07 1224	ND		ND		ND	
Q8718	1075	MW-63-164	5/25/07 0919	ND		ND		ND	
Q9119	1075	MW-63-163	6/1/07 0949	ND		ND		ND	
Q9119R	1075	MW-63-163	6/1/07 0949	ND		ND		ND	
R0053	1075	MW-63-163	6/14/07 1020	ND		ND		ND	
R1698	1075	MW-63-163	7/25/07 1039	ND		ND		ND	
R1698	1075	MW-63-163	7/25/07 1039	ND		ND		ND	
<b>Q7207</b>	<b>1080</b>	<b>MW-63-176</b>	<b>4/23/07 1458</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q7207R	1080	MW-63-176	4/23/07 1458	ND		ND		ND	
Q7292	1080	MW-63-176	4/25/07 1526	ND		ND		ND	
Q7292R	1080	MW-63-176	4/25/07 1526	ND		ND		ND	
Q7391	1080	MW-63-176	4/27/07 1003	ND		ND		ND	
Q7459	1080	MW-63-176	4/30/07 1137	ND		ND		ND	
Q7459R	1080	MW-63-176	4/30/07 1137	ND		ND		ND	
Q8370	1080	MW-63-176	5/14/07 0937	ND		ND		ND	
Q8376	1080	MW-63-176	5/14/07 1227	ND		ND		ND	
Q8364	1080	MW-63-176	5/15/07 1154	ND		ND		ND	
Q8719	1080	MW-63-176	5/25/07 0917	ND		ND		ND	
Q8719R	1080	MW-63-176	5/25/07 0917	ND		ND		ND	
Q9121	1080	MW-174	6/1/07 0945	ND		ND		ND	
R0054	1080	MW-63-174	6/14/07 1012	ND		ND		ND	
R1699	1080	MW-63-174	7/25/07 1040	ND		ND		ND	
R1699	1080	MW-63-174	7/25/07 1040	ND		ND		ND	
<b>Q5529</b>	<b>1123</b>	<b>MW-111</b>	<b>2/23/07 0815</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
Q5530	1123	MW-111	2/26/07 0945	ND		ND		ND	

Results  
Water Samples

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q5531	1123	MW-111	2/28/07 0948	ND		ND		ND	
Q5532	1123	MW-111	3/2/07 0000	ND		ND		ND	
Q5533	1123	MW-111	3/5/07 0856	508.9	0.124	ND		ND	
Q4877	1123	MW-111	3/7/07 1035	508.3	0.869	ND		ND	
Q4885	1123	MW-111	3/9/07 0810	508.6	1.05	ND		ND	
Q4933	1123	MW-111	3/12/07 0859	508.3	1.03	ND		ND	
Q5241	1123	MW-111	3/14/07 0845	508.3	1.09	ND		ND	
Q6071	1123	MW-111	3/16/07 0749	508.2	0.945	ND		ND	
Q6072	1123	MW-111	3/20/07 0745	508.3	0.935	ND		ND	
Q6073	1123	MW-111	3/23/07 0811	508.6	0.053	ND		ND	
Q6074	1123	MW-111	3/26/07 0910	508.0	0.703	ND		ND	
Q6074R	1123	MW-111	3/26/07 0910	508.3	0.709	ND		ND	
Q6415	1123	MW-111	3/29/07 1129	508.5	1.57	ND		ND	
Q6595	1123	MW-111	4/2/07 0839	508.3	1.60	ND		ND	
Q6823	1123	MW-111	4/6/07 0825	508.3	1.01	ND		ND	
Q7011	1123	MW-111	4/9/07 0915	508.3	1.68	ND		ND	
Q7428	1123	MW-111	4/23/07 0859	508.5	0.492	ND		ND	
Q7795	1123	MW-111	4/30/07 0810	508.7	1.87	ND		ND	
Q8113	1123	MW-111	5/8/07 1505	508.3	2.90	ND		ND	
<b>Q6075</b>	<b>1127</b>	<b>Sphere Foundation Sump-U1</b>	<b>12/6/06 0858</b>	<b>ND</b>		<b>ND</b>		<b>ND</b>	
<b>Q2282</b>	<b>1240</b>	<b>RW-1 (110')</b>	<b>2/9/07 1605</b>	<b>508.2</b>	<b>5.39</b>	<b>ND</b>		<b>ND</b>	
Q2282R	1240	RW-1 (110')	2/9/07 1605	508.3	5.35	ND		ND	
Q2367	1240	RW-1 (110')	2/10/07 0907	508.4	198	ND		ND	
Q2371	1240	RW-1 (110')	2/11/07 1100	508.3	985	ND		ND	
Q2365	1240	RW-1 (110')	2/12/07 0852	508.4	661	ND		ND	
Q3069	1240	RW-1 (110')	2/13/07 0810	508.5	659	ND		ND	
Q3066	1240	RW-1 (110')	2/14/07 0901	508.3	379	ND		ND	
Q3046	1240	RW-1 (110')	2/15/07 0840	508.8	172	ND		ND	
Q3050	1240	RW-1 (110')	2/16/07 0835	508.6	565	ND		ND	
Q3054	1240	RW-1 (110')	2/17/07 1013	508.5	370	ND		ND	

OUL #	Station #	Station Name	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
				Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q3058	1240	RW-1 (110')	2/18/07 1004	508.2	405	ND		ND	
Q3063	1240	RW-1 (110')	2/19/07 1042	508.3	262	ND		ND	
Q3122	1240	RW-1 (110')	2/20/07 0850	508.8	222	ND		ND	
Q3145	1240	RW-1 (110')	2/21/07 0922	508.7	186	ND		ND	
<b>Q3639</b>	<b>1242</b>	<b>RW-1 (97')</b>	<b>2/23/07 0848</b>	<b>508.6</b>	<b>255</b>	<b>ND</b>		<b>ND</b>	
Q3688	1242	RW-1 (97')	2/26/07 0900	508.3	193	ND		ND	
Q3684	1242	RW-1 (97')	2/27/07 1037	508.5	166	ND		ND	
Q3895	1242	RW-1 (97')	2/28/07 1115	508.7	152	ND		ND	
Q4022	1242	RW-1 (97')	3/1/07 1200	508.3	168	ND		ND	
Q4050	1242	RW-1 (97')	3/2/07 0909	508.3	142	ND		ND	
Q4077	1242	RW-1 (97')	3/5/07 1135	508.2	109	ND		ND	
Q4533	1242	RW-1 (97')	3/6/07 0946	508.5	139	ND		ND	
Q4531	1242	RW-1 (97')	3/7/07 1156	508.3	102	ND		ND	



**Table 3. Quality control results for field equipment analyzed for the presence of fluorescein, eosine and rhodamine WT (RWT) dyes.**  
Peak wavelengths are reported in nanometers (nm); dye concentrations are reported in parts per billion (ppb).

OUL #	Station #	Station Name	Date/Time Placed	Date/Time Recovered	Fluorescein Results		Eosine Results		RWT Results	
					Peak nm	Conc. ppb	Peak nm	Conc. ppb	Peak nm	Conc. ppb
Q1064	ET	Electrical Tape		11/28/06 1354	ND		ND		ND	
Q1063	SC	Indian Point Sampler Cord		11/28/06 0909	ND		ND		ND	

**Footnotes:**

ND = No dye detected

\* = A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it were the tracer dye for background purposes.

\*\* = A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as a positive dye result.

NDT = No date or time given

(1) = Two water samples were collected on this date at different times.

(2) = A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it were the tracer dye because dye was found in the corresponding charcoal sample.

(3) = A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it were the tracer dye.

**APPENDIX O**

**SURFACE GEOPHYSICAL SURVEY REPORTS**



3 Mystic Lane  
Malvern, PA19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

March 21, 2006  
Ref. No.: 05-426-2

Dr. David Winslow  
GZA GeoEnvironmental of New York, Inc  
Two Pennsylvania Plaza, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Geophysical Investigation Results  
Indian Point Nuclear Power Plant Site  
Transformer Yard Unit 3  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this letter report to GZA GeoEnvironmental (GZA) of New York, New York detailing the methods and results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site in Buchanan, New York. The area of investigation centered in the transformer yard of unit 3. The objective of the survey was to map the depth to bedrock for the transformer yard. The field activities for this investigation were completed by AGS from January 25 and 26, 2006.

### **Methods**

To meet the objectives of the investigation, AGS utilized the ground penetrating radar (GPR) method. GPR profiles were collected in a grid pattern with a spacing of ten feet throughout the survey area, except for areas with significant surficial obstructions. Special attention was given to the area around monitoring well MW46 so correlations between MW46 and successive parallel GPR profiles could be interpolated throughout the survey area.

The depth to bedrock, as defined by the onsite GZA representative, at MW46 was approximately 7 feet. The GPR profiles near the monitoring well MW46 were closely analyzed to correlate the known depth to bedrock with a specific reflector or group of reflectors. Then the reflector was extrapolated on every GPR profile throughout the entire survey area. Using a standard velocity function the approximate depths to bedrock, measured from the ground surface, were transferred and contoured (Figure 1).

## **Ground Penetrating Radar (GPR) Method**

The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 200 megahertz (MHz) antenna were used with a recording window of 185 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

## **Results**

A site map, containing the approximate depth to bedrock and the locations of representative GPR profiles, is shown on Figure 1.

The approximate depth to bedrock ranged between 7.5 and 10.5 feet (Figure 1). Generally the northern and southern ends of the survey area had the deepest and shallowest depths to bedrock respectively.

Although GPR data was collected across the entire survey area, there are not data points for every area. This problem partly arose because of obstacles that impeded data collection and other areas did not have a bedrock reflector or group of reflectors that could be traced across the entire profile.

## **Closing**

Dr. David Winslow  
GZA, Inc.  
March 21, 2006  
Page 3

All geophysical data and field notes collected as a part of this investigation will be archived at the AGS office. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

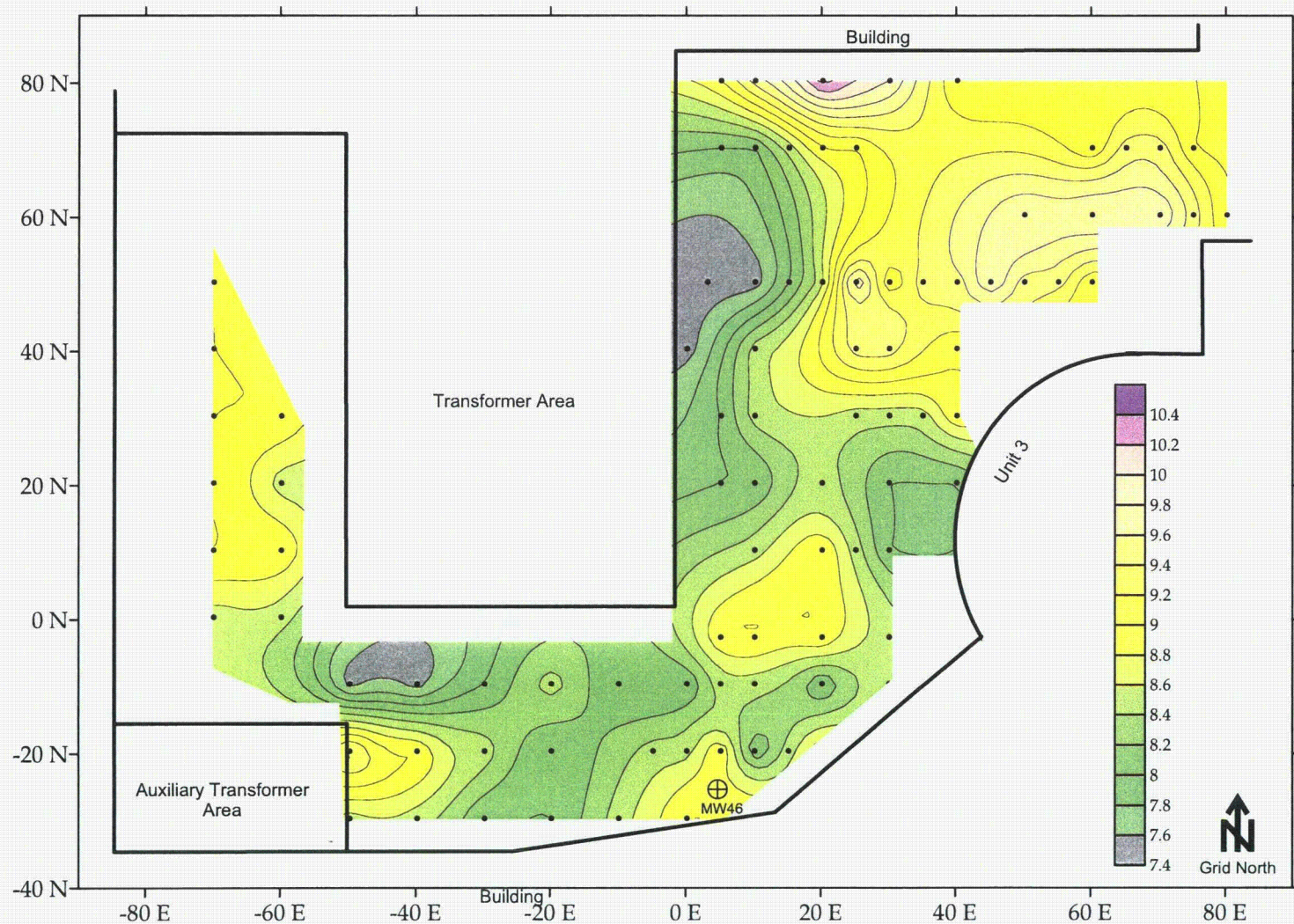
If you have any questions regarding the results of this field investigation, please contact me at 610-722-5500. It was a pleasure working with you on this project and we look forward to being able to provide you with sub-surface imaging services in the future.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Call', written in a cursive style.

Christopher Call M.S.  
Project Geophysicist, AGS

Encl.: Figure 1 – Depth to Bedrock Contour Map



**Notes**

- (1) A SIR2 GPR System by GSSI was used for this survey. One monitoring well was located in the survey area, which provided a depth point with was extrapolated throughout the GPR profiles. MW 46 had a recorded depth to bedrock at approximately 7 feet.
- (2) GPR profiles were collected in a grid pattern with a ten foot spacing. Depths taken from these GPR profiles are shown on this figure.
- (3) The black dots in this figure are the actual data points used to contour this figure.
- (4) The depth of investigation for the GPR unit was approximately 20 feet. The depths included in this document should be considered approximate.
- (5) The field positions were not surveyed by a licensed surveyor and should be considered approximate.

Date: March 21, 2006  
 AGS Reference: 05-426-2 cc

**Figure 1**  
**Depth to Bedrock Contour Map**

GZA GeoEnvironmental of New York, Inc.  
 Indian Point Nuclear Power Plant  
 Transformer Yard of Unit 3  
 Buchanan, New York





3 Mystic Lane  
Malvern, PA 19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

July 21, 2006  
Ref. No.: 05-426-9

Mr. David Winslow  
GZA GeoEnvironmental of New York, Inc  
Two Pennsylvania Plaza, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Geophysical Investigation Results  
Indian Point Nuclear Power Plant Site  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this letter report to GZA GeoEnvironmental (GZA) of New York, New York detailing the methods and results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site in Buchanan, New York. The area of investigation included the gravel section, just south of the Unit 2 transformers. The objective of the survey was to map the depth to bedrock for this section of the transformer yard of unit 2 and correlate its results with the data collected in previous surveys located in several areas of the transformer yard.

### **Methods**

To meet the objectives of the investigation, data from previous surveys (05-426-1, 05-426-3, 05-426-6 and 05-426-8) were combined and correlated with data collected south of the transformer pads to provide a comprehensive depth to bedrock map that includes most of the accessible regions of the Unit 2 transformer yard. The methods and procedures for these surveys, including the area south of the transformer pads are summarized below.

AGS utilized the ground penetrating radar (GPR) method. In this survey GPR profiles were collected in a grid pattern with a spacing ranging between approximately five and ten feet throughout the survey area, except for areas with significant surficial obstructions. The spacing was largely dependent on the accessibility of each specific area.

Special attention was given to the areas around the five monitoring wells, so correlations between them could be made and interpolated throughout the various



surveys across the transformer yard. The depth to bedrock, as defined by the onsite GZA representative, at MW35, MW34, MW33, MW111 and MW 52 was 7, 3.5, 6.5, 18 and 12 feet, respectively. The GPR profiles near the monitoring wells were closely analyzed to correlate the known depth to bedrock at these locations with a specific reflector or group of reflectors. The reflectors, associated with bedrock, were extrapolated on every GPR profile throughout the entire survey area. Using a soil velocity function the approximate depths to bedrock, measured from the ground surface, were transferred and contoured on figure 1.

### **Ground Penetrating Radar (GPR) Method**

The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using soil velocity functions. The soil velocity function used in this survey was calculated using the time it takes the GPR signal to travel a known distance, depth to the storm sewer near MW 52.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 200 megahertz (MHz) antenna were used with a recording window up to 200 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

### **Results**

An approximate depth to bedrock contour map, which combines all previous depth to bedrock surveys completed by AGS, and site features are shown on Figure 1.

The approximate depth to bedrock ranged between 3.5 and 16 feet (Figure 1). The greatest depth to bedrock is centered in the immediate vicinity of MW 111 and the shallowest depth to bedrock appears to be in the eastern most portion of the transformer yard. The greatest depth to bedrock gradient change occurs along a 35 foot interval where the depth to bedrock drops from 6 feet (5 N, 130 E) to 16 feet (5 N, 95 E). However, this steep gradient appears to be consistent across the entire eastern portion of the transformer yard, with the steepest section along the 5 N transect.

The depth, below ground surface, to bedrock is very shallow in the condenser pit. However the depths in the condenser pit, shown in figure 1, have been adjusted to account for the significantly lower mean elevation.

Based on the GPR profiles close to MW 111 and MW 33, the depth to bedrock at MW 111 only appears to be approximately 16 feet deep. The reflectors associated with a depth of seven feet near MW 33 could not be traced to a depth greater than 16 feet at MW 111. This interpretation is strengthened because there was good correlation between MW 34, MW 35 and MW 33.

There was an area of low reflectivity centered at -25 E and 200 N. It is possible that there could be a different type of fill in the area that quickly attenuates the GPR signal. This section is a relatively small area of the transformer yard and data from both sides of this section of low reflectivity correlate well with each other, indicating that it is unlikely that there is a large change in the depth to bedrock in this section.

It is possible that the depths obtained from the profiles collected over the transformer pads and condenser pit could be slightly different. A constant soil velocity function was assumed for the entire survey area, but the velocity function for reinforced concrete might vary slightly from the velocity function applied to the entire survey area.

### **Closing**

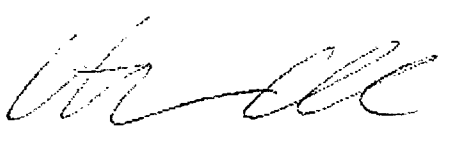
The vicinity near MW 111 had the greatest depth to bedrock for the entire transformer yard. The different geophysical surveys in the transformer yard of Unit 2 correlate well with each other. Overall the data quality was good and the depth of GPR signal penetration was deep enough to image bedrock.

Dr. David Winslow  
GZA  
July 21, 2006  
Page 4

All geophysical data and field notes collected as a part of this investigation will be archived at the AGS office. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

If you have any questions regarding the results of this field investigation, please contact me at 610-722-5500. It was a pleasure working with you on this project and we look forward to being able to provide you with sub-surface imaging services in the future.

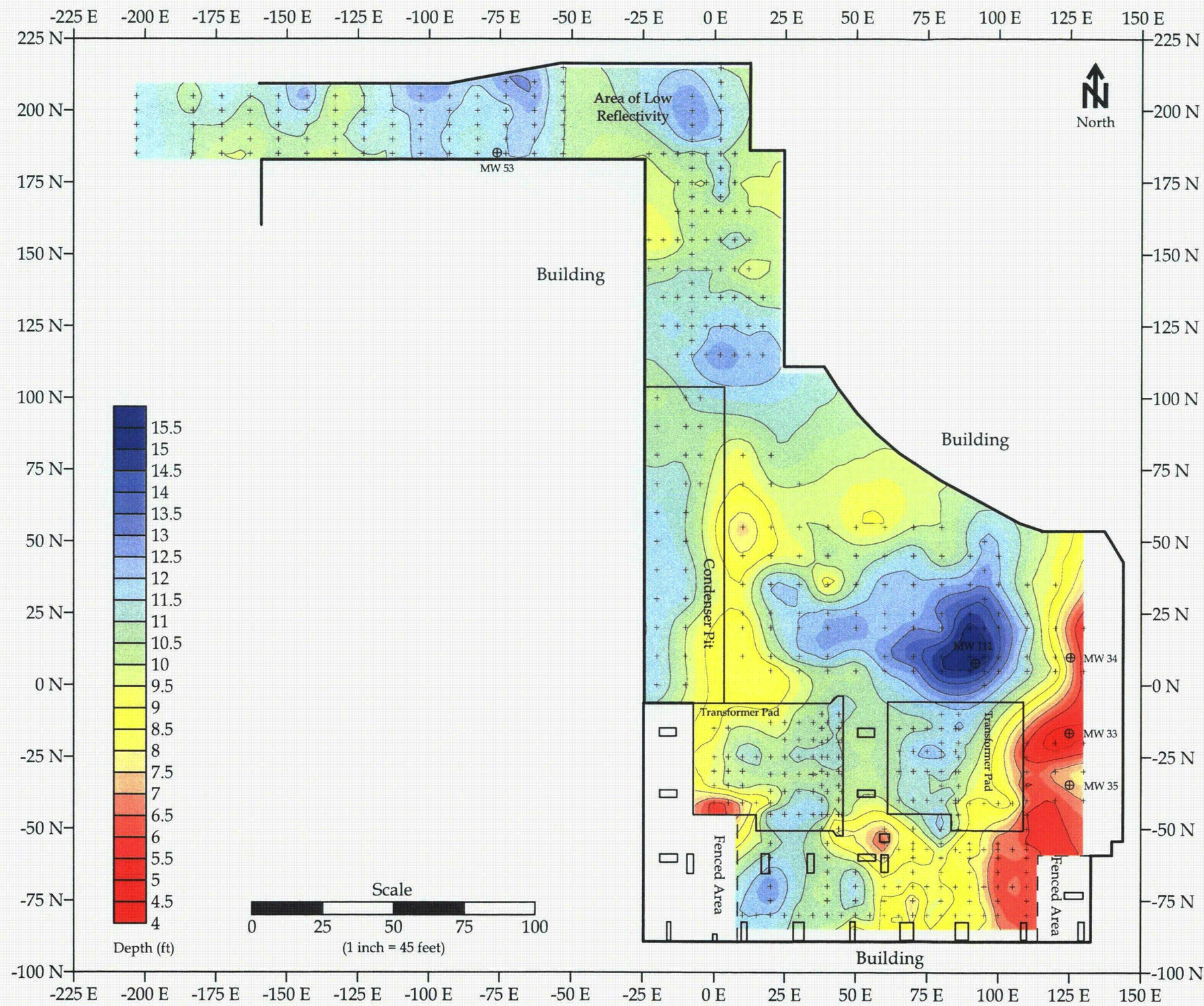
Sincerely,

A handwritten signature in black ink, appearing to read "Chris Call", is written over a vertical line that serves as a separator between the signature and the typed name below.

Christopher Call M.S.  
Project Geophysicist, AGS

Encl.: Figure 1 – Depth to Bedrock Contour Map





**Notes**

- (1) A SIR2 GPR System by GSSI was used for this survey. There are five monitoring wells located in the survey area: MW 33, MW 34, MW 35, MW 52 and MW 111. GPR data was synthesized and correlated with the depths to bedrock based on the boring logs associated with these monitoring wells to identify the depth and location to bedrock throughout the surveyed area.
- (2) GPR profiles were collected in a grid pattern with maximum spacing of ten feet, however, several sections have a higher data density. GPR profiles could not be obtained in all areas due to restricted access and other large objects in the transformer yard. The GPR profiles used to create this figure were combined from several separate surveys, conducted over several days between December 5, 2005 and June, 26, 2006.
- (3) The maximum depth of penetration for the GPR profiles was approximately 20 feet, however some areas had a high amount of signal attenuation, which limited the depth of signal penetration. Two-way travel time values were converted to depth using a soil velocity function calculated by using the time it takes the signal to travel to the storm sewer, which is at a known depth.
- (4) Depths shown in this figure are the depth below ground surface. However, the depths in the condenser pit were calibrated to account for the substantial drop below the median elevation for the survey area.
- (5) The field positions were not survey by a licensed surveyor and should be considered approximate. Site features were based on a site map, drawing 9321-F-1002-7, provided by Entergy.

**Figure 1**  
**Depth To Bedrock Contour Map,**  
**and Site Features**

GZA GeoEnvironmental  
 Transformer Yard of Unit 2  
 Indian Point Nuclear Power Plant Site  
 Buchanan, New York

Date: July 19, 2006

AGS Reference: 05-426-9 cc







3 Mystic Lane  
Malvern, PA19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

June 22, 2006  
Ref. No.: 05-426-7

Mr. David Winslow  
GZA GeoEnvironmental of New York, Inc  
Two Pennsylvania Plaza, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Geophysical Investigation Results  
Indian Point Nuclear Power Plant Site  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this letter report to GZA GeoEnvironmental (GZA) of New York, New York detailing the methods and results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site in Buchanan, New York. The area of investigation was the asphalt road starting at the delta security gate ending at the beginning of the parking lot in front of the portable buildings at the fifteen foot elevation at the bottom of the hill. The objective of this survey was to identify the depth to bedrock along the road.

### **Methods**

AGS used the ground penetrating radar (GPR) method. GPR profiles were collected in a grid pattern with a spacing not exceeding ten feet throughout the survey area. A standard rectangular data collection grid could not be utilized during this survey due to the curve in the road, security fence to the north and steep topography to the south. The sidewalk and grass region to the south of the road could not be surveyed due to the presence of significant snow drifts. The field activities for this survey occurred on February 16, 2006.

### **Ground Penetrating Radar (GPR) Method**

The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as

well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 200 megahertz (MHz) antenna were used with a recording window of 170 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

## Results

A site map, containing the approximate depth to bedrock and a representative GPR profile, is shown on Figure 1.

The approximate depth to bedrock ranged between 8 and 16 feet below ground surface (bgs). Bedrock depths should be considered approximate. GPR signal penetration was approximately 18 feet or less. Bedrock reflectors appear to be less defined in this survey area compared to other areas at the Indian Point. Many potential utilities were observed in the survey area, however none appeared to have trenches that cut through bedrock.

Starting at approximately 410 E there appears to be a steep drop in the depth to bedrock (Figure 1). In this area the depth to bedrock transitions from approximately 8 feet bgs to 16 feet bgs. This transition is illustrated in GPR profile 661 (Figure 1).

## Closing

All geophysical data and field notes collected as a part of this investigation will be archived at the AGS office. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface

Dr. David Winslow  
GZA, Inc.  
June 22, 2006  
Page 3

features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

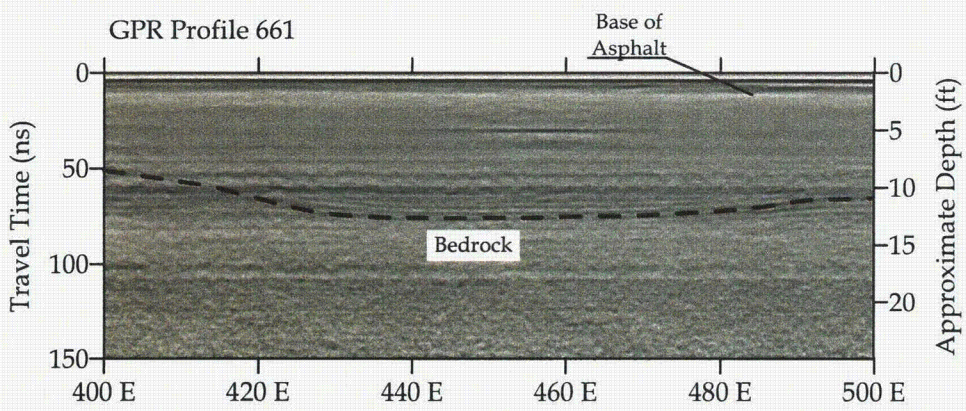
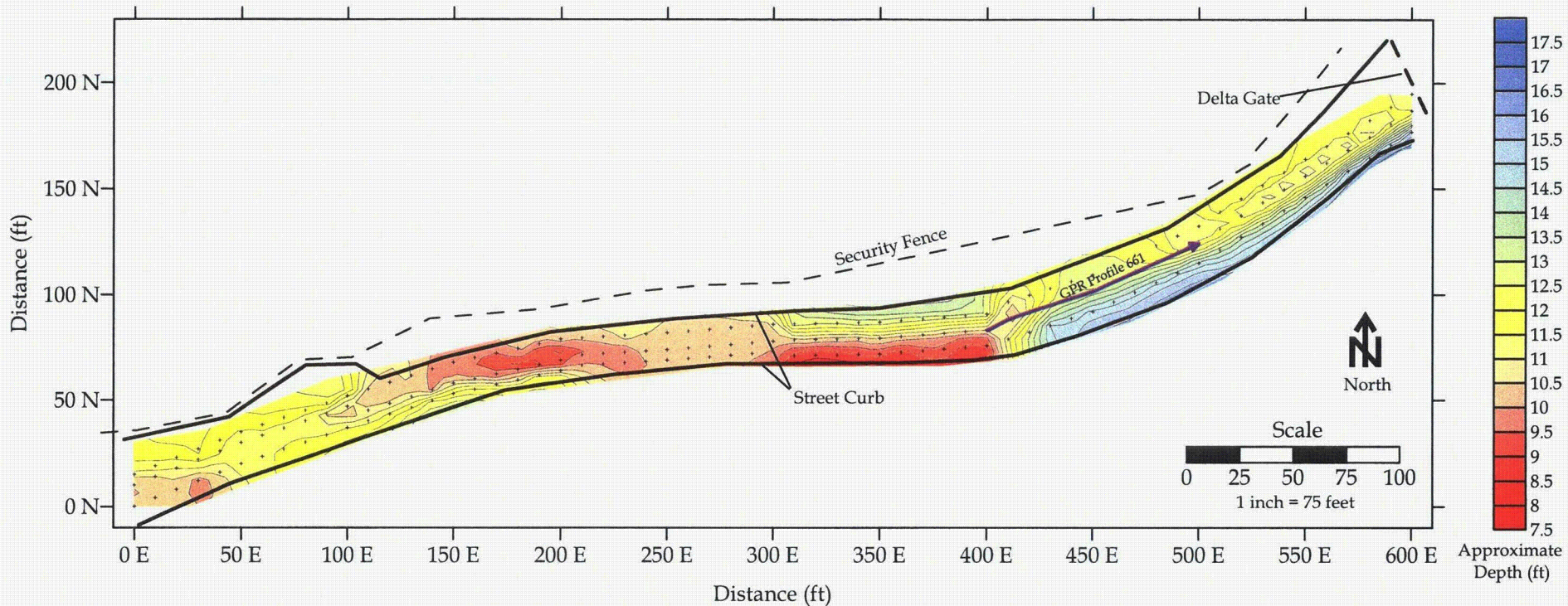
If you have any questions regarding the results of this field investigation, please contact me at 610-722-5500. It was a pleasure working with you on this project and we look forward to being able to provide you with sub-surface imaging services in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Call", written in a cursive style.

Christopher Call M.S.  
Project Geophysicist, AGS

Encl.: Figure 1 – Depth to Bedrock Contour Map



**Notes**

- (1) A SIR2 GPR System by GSSI was used for this survey. GPR data was synthesized and correlated with the depths associated with previous GPR surveys at the Indian Point Nuclear Power Plant site to identify the depth and location to bedrock.
- (2) GPR profiles were collected in a grid pattern with a minimum spacing of ten feet. Depths taken from these GPR profiles are contoured on this figure. A representative GPR profile is also shown.
- (3) The maximum depth of the GPR signal penetration was approximately 16 feet. The values listed in this survey are depths to bedrock below ground surface and should be considered approximate.
- (4) The field positions were not surveyed by a licensed surveyor and should be considered approximate.

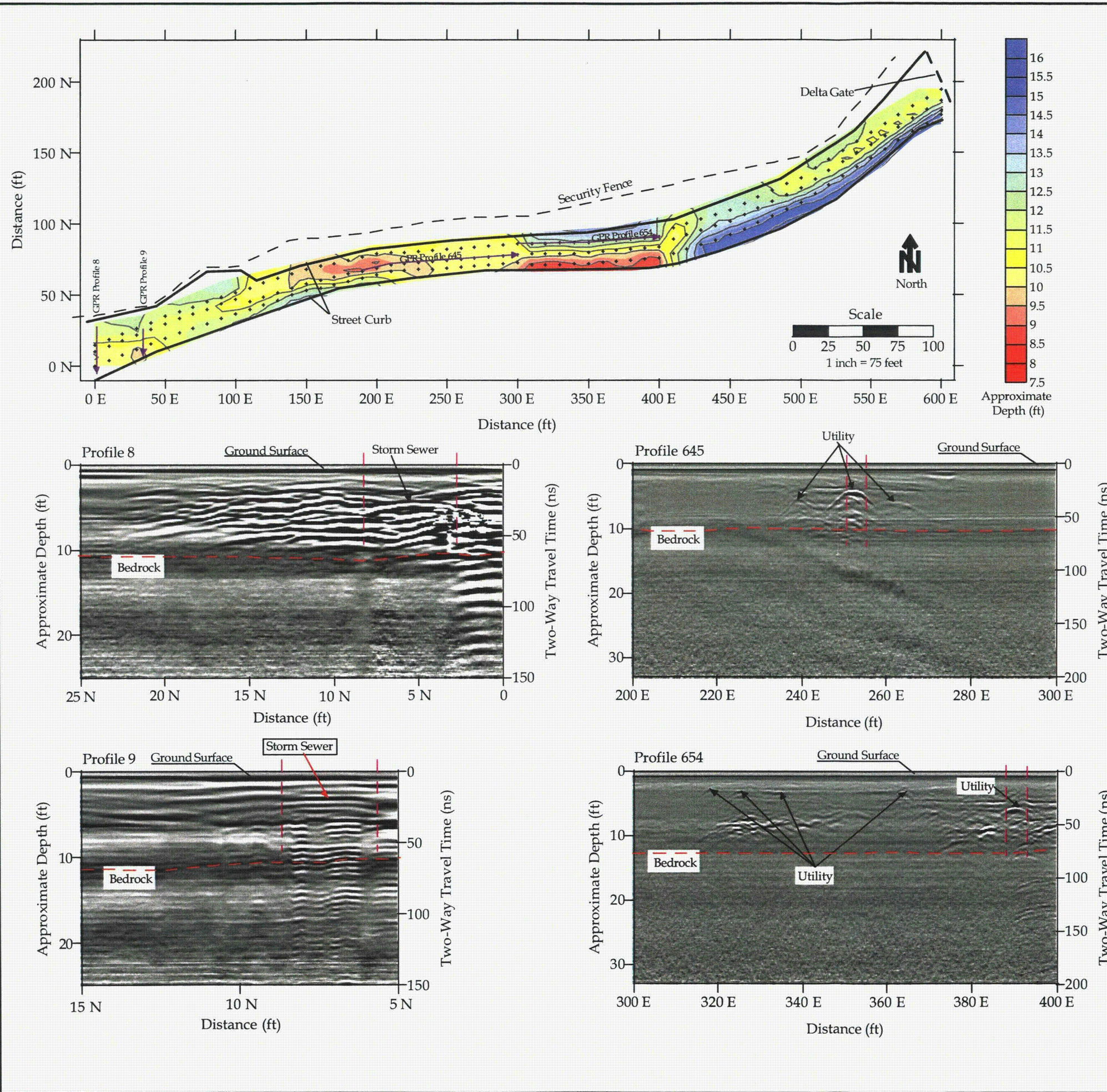
Date: June 19, 2005  
 AGS Reference: 05-426-7 cc

**Figure 1**  
**Depth to Bedrock Contour Map**  
**Site Features, and GPR Profile**

GZA GeoEnvironmental of New York, Inc.  
 Indian Point Nuclear Power Plant  
 OCA Road  
 Buchanan, New York







**Notes**

Based on the GPR profiles collected for the geophysical survey 05-426-7, no utility trenches were observed to penetrate bedrock. GPR profiles 8 and 9 were collected over the storm sewer and the boundaries of its utility trench are marked. Other GPR profiles were not collected directly over the storm sewer, because of large snow drifts were piled to the side of the road. GPR profiles 645 and 654 contain multiple non storm sewer utilities. The sidewalls of the observed utility trenches are identified by the dashed magenta lines on the shown GPR profiles.

A Geophysical Survey System SIR System 2 with a 200 megahertz (MHz) antenna was used with a recording window of 200 to 150 nanoseconds (ns) to provide the required depth penetration and subsurface detail, for this survey.

The depth to bedrock contour map is included as a reference and it was compiled based on the GPR profiles associated with the previous geophysical survey (05-426-7) and any further details regarding it should be obtained in its accompanying report.

The geophysical investigation (05-426-7) was not intended to locate all utilities in the area and utility locations illustrated in this figure should be considered approximate. Utility trench sidewalls could not be identified for all utilities. The field positions were not surveyed by a licensed surveyor and should be considered approximate. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

**Legend**

- - - Excavation Wall Boundary
- - - Bedrock
- GPR Profile Location

**Figure 1**  
**Depth to Bedrock Contour Map &**  
**GPR Profiles with Utilities &**  
**Utility Trenches**

GZA GeoEnvironmental of New York, Inc.  
 Indian Point Nuclear Power Plant  
 OCA Road  
 Buchanan, New York

Date: July 24, 2006  
 AGS Reference: 05-426-7b cc







3 Mystic Lane  
Malvern, PA 19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

February 28, 2006  
Ref. No.: 06-133-1

Mr. David Winslow  
GZA GeoEnvironmental of New York, Inc  
Two Pennsylvania Plaza, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Preliminary Geophysical Investigation Results  
Indian Point Nuclear Power Plant Site  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this preliminary letter report to GZA GeoEnvironmental (GZA) of New York, New York detailing the methods and preliminary results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site in Buchanan, New York. The area of investigation included the transformer yard of Unit 2, ally way of Unit 2 and a portion of the road leading to the river. The objective of the survey was to identify utilities in this area and alert GZA of potential voids in this area. AGS understands that a large, heavy transformer will be transported through this survey area and it is important to know the locations of potential voids and utilities to avoid potential problems. The field activities for this investigation were completed by AGS on February 13th, 14th, 27th and 28th, 2006.

### **Methods**

To meet the objectives of the investigation, AGS used a combination of the radiofrequency (RF), electromagnetic (EM) and ground penetrating radar (GPR) methods. All identified subsurface features were marked on the ground surface with spay paint. GPR profiles were collected in a grid pattern with a spacing of 10 feet throughout the survey area, except for areas with significant surficial obstructions. GPR profiles were also collected over the utilities. EM data was collected in a grid pattern with a spacing of 2.5 by 5 feet.

### **Ground Penetrating Radar (GPR) Method**

The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-

going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2, a 200 megahertz (MHz) antenna and a 400 MHz antenna were used with a recording window of 185 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

### **Radio Frequency (RF) Utility Locating Method**

A Radiodetection RD400/PDL2 multi-frequency RF utility locating system was used for this project. This instrument consists of a receiver/tracer and a remote transmitter, which operates at frequencies ranging between 8 kHz and 65 kHz. In addition, the receiver can be used in 60 Hz passive mode to identify active buried electrical lines. This utility tracing instrument provides audible and visual feedback to the operator when a utility that is coupled with the transmitted signal is crossed. The transmitter produces a radio-frequency signal in the utility to be traced by either induction coupling or direct hook-up. The receiver output provides measured field strength of the received signal and varies an audible pitch depending upon how far the utility is from the receiver. By carefully adjusting the gain of the receiver it is possible to determine the location of the utility and to separate it from adjacent utilities. The direct hook-up, and passive tracing methods were used during this investigation.

### **Terrain Conductivity Electromagnetic (EM) Method**

The terrain conductivity electromagnetic (EM) method uses the principle of electromagnetic induction to measure the variability of terrain conductivity of

subsurface materials. When significant contrasts in the electrical properties between non-indigenous materials and surrounding soil are present, it is commonly possible to accurately delineate fill and buried metals. Although historically frequency domain EM instruments were designed for mineral exploration and delineation of geologic features, more recent instruments, such as that used in this study, were designed for shallow exploration of man-made targets. The large EM response to metal makes this technique particularly well suited to identifying buried metal objects such as USTs or buried utilities, although it is equally sensitive to metal objects on the ground surface, as well as some naturally occurring geologic features.

A Geonics EM31 terrain conductivity EM instrument was used to collect frequency domain EM data. The EM31 operates in accordance with the theory of operation at low induction numbers. An alternating current is passed through the transmitter coil to induce eddy currents into the ground. These eddy currents generate a secondary magnetic field. A component of the induced magnetic field is detected by a receiver coil and measured by the instrument. The receiver measures the field strength of both the quadrature and the in-phase components. The quadrature response is displayed as the terrain conductivity response in units of milliSeimens per meter (mS/m). The in-phase response is displayed in units of parts per thousand (ppt) of the transmitted signal. Both measurements are recorded on the internal data logger along with location information. The EM31 instrument has a maximum depth of investigation of approximately 18 feet below the ground surface.

## Results

A site map, containing the EM31 quadrature data, located utilities, potential voids, and existing site features is presented in Figure 1. We have designated grid-north to the bottom on the figure for reference purposes. AGS was informed that any utility lines that are less than 3 feet bgs may be adversely impacted by the movement of the transformer over these lines. We have provided both the utility line positions and the estimated depths to the utilities.

All potential areas of concern are located on Figure 1. Anomaly 1 is located above the storm sewer and the corner of the service water lines. It has GPR characteristics that suggest the presence of small openings or voids. The voids, however, do not appear to be significant and occur over a small area only. The void is probably related to the placement of bulk fill materials, and the subsequent washout of some of the fine-grained portion. AGS has included other potential areas of concern on the map, but

again, these locations indicate only very small, insignificant voids.

The electric lines indicated on Figure 1 were located utilizing the RF and were not directly observed using the GPR method, so depth below ground surface is not known. Electric lines were marked in the field with red spray paint, and are presented on the figure as dashed red lines.

A water line (W1) was detected near the southeastern corner of the survey area. It runs in an east-to-west orientation and appears to be less than 3 feet below the ground surface (bgs). Several unknown lines were detected and are presented on the figure. Unknown lines U1, U2, U3, and U4 are located in the northeastern part of the survey area and all appear to be less than 3 feet below the ground surface.

The fire suppression water line (W2) was located using the RF, and was traced as far as possible until the signal was lost, so the exact location and trend of the W2 water line is unknown. Line W3 appears to be associated with the fire hydrant located at (17E, -4N), however it could be associated with the main service water lines.


## Closing

All geophysical data and field notes collected as a part of this investigation will be archived at the AGS office. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

If you have any questions regarding the results of this field investigation, please contact me at 610-722-5500. It was a pleasure working with you on this project and we look forward to being able to provide you with sub-surface imaging services in the future.

Mr. David Winslow  
GZA, Inc.  
February 28, 2005  
Page 5

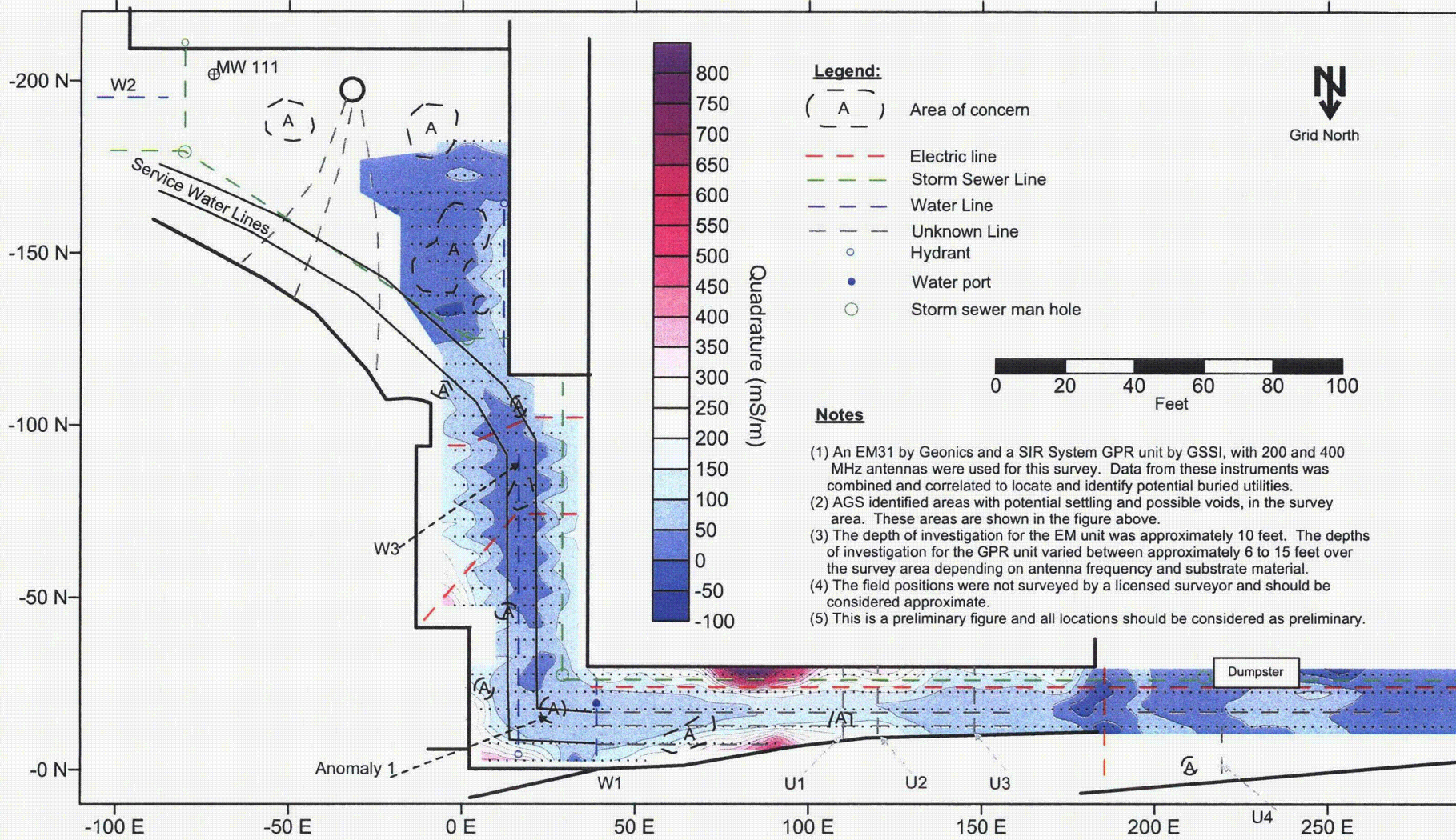
Sincerely,

A handwritten signature in black ink, appearing to read "C. Call", written in a cursive style.

Christopher Call M.S.  
Project Geophysicist, AGS

Peter Miller PhD  
Senior Geophysicist, AGS

Encl.: Figure 1 - EM31 Contour Map with Site Features



Date: February 28, 2006  
 AGS Reference: 06-133-1 cc

**Figure 1**  
**EM31 Contour Map**  
**Site Features**  
**Potential void Survey**

GZA GeoEnvironmental of New York, Inc.  
 Indian Point Nuclear Power Plant  
 Transformer Yard and ally way of Unit 2  
 Buchanan, New York







3 Mystic Lane  
Malvern, PA19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

June 22, 2006  
Ref. No.: 05-426-7

Mr. David Winslow  
GZA GeoEnvironmental of New York, Inc  
Two Pennsylvania Plaza, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Geophysical Investigation Results  
Indian Point Nuclear Power Plant Site  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this letter report to GZA GeoEnvironmental (GZA) of New York, New York detailing the methods and results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site in Buchanan, New York. The area of investigation was the concrete mounting pads for the transformers in the Unit 2 transformer yard. The objective of this survey was to identify the depth to bedrock underneath these concrete pads. During the Indian Point spring 2006 outage the previous transformers in the Unit 2 transformer yard were removed and replaced. During this installation process GPR data was collected on top of these concrete pads.

## **Methods**

AGS used the ground penetrating radar (GPR) method. GPR profiles were collected in a grid pattern with a spacing not exceeding approximately eight feet throughout the survey area. Data was collected as access to the survey area was allowed by the transformer installation foreman. Due to the limited access, the amount time required to complete the survey was increased. There were significant obstructions in the area that hindered the collection of long continuous GPR profiles in an evenly spaced rectangular grid. In two areas, the north eastern section of the survey area and in between the concrete pads, obstructions prevented the collection of any GPR profiles altogether. The field activities for this survey occurred on April 22, April 24 and April 26, 2006.

## **Ground Penetrating Radar (GPR) Method**



The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 200 megahertz (MHz) antenna were used with a recording window of 170 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

## **Results**

A site map, containing the approximate depth to bedrock and site features, is shown on Figure 1.

The approximate depth to bedrock ranged between 5 and 13 feet below ground surface (bgs). Bedrock depths should be considered approximate. Although the GPR data was collected over reinforced concrete slabs, the maximum GPR signal penetration was approximately 20 feet bgs.

Bedrock in the south western corner appears to be the shallowest in the survey area, while bedrock in eastern section of the survey area appears to be deeper (Figure 1). Observations in this survey appear to correlate well with previous surveys in Unit 2's transformer yard.

## **Closing**

Dr. David Winslow  
GZA, Inc.  
June 22, 2006  
Page 3

All geophysical data and field notes collected as a part of this investigation will be archived at the AGS office. The data collection and interpretation methods used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site. Due to the nature of geophysical data, no guarantees can be made or implied regarding the presence or absence of additional objects or targets beyond those identified.

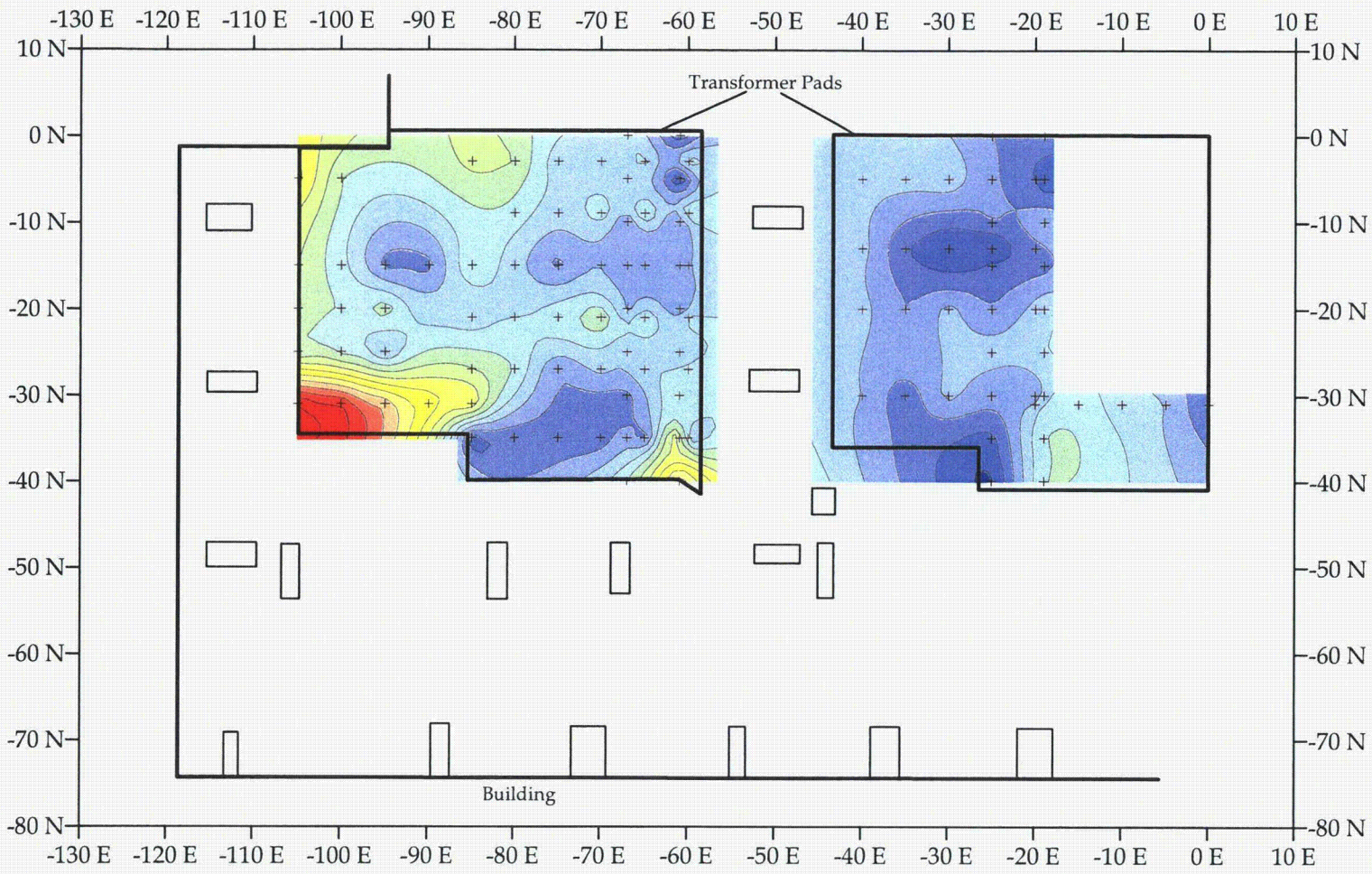
If you have any questions regarding the results of this field investigation, please contact me at 610-722-5500. It was a pleasure working with you on this project and we look forward to being able to provide you with sub-surface imaging services in the future.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Call', written in a cursive style.

Christopher Call M.S.  
Project Geophysicist, AGS

Encl.: Figure 1 – Depth to Bedrock Contour Map



**Notes**

- (1) A SIR2 GPR System by GSSI was used for this survey. GPR data was synthesized and correlated with the depths associated with previous GPR surveys located in the Unit 2 transformer yard at the Indian Point Nuclear Power Plant site to identify the depth and location to Bedrock underneath the current transformer mounts.
- (2) GPR profiles were collected in a grid like pattern with a spacing ranging from five to ten feet, depending on obstructions present at the time of data collection. Depths taken from these GPR profiles are contoured on this figure.
- (3) The maximum depth of the GPR signal penetration was approximately 20 feet. A time to depth conversion factor, obtained in a previous GPR survey in the transformer yard was used to obtain the approximate depths used in this report. The values listed in this survey are depths to bedrock below ground surface and should be considered approximate.
- (4) The field positions were not surveyed by a licensed surveyor and should be considered approximate.

Date: June 21, 2006  
 AGS Reference: 05-426-1 cc

**Figure 1**  
**Depth to Bedrock Contour Map**  
**Site Features, and GPR Profile**

GZA GeoEnvironmental of New York, Inc.  
 Indian Point Nuclear Power Plant  
 Underneath Unit 2 Transformer Mounts  
 Buchanan, New York





3 Mystic Lane  
Malvern, PA 19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

September 29, 2006  
Ref. No.: 06-245-1

Mr. Dave Winslow  
GZA Geoenvironmental, Inc.  
440 9<sup>th</sup> Avenue, 18<sup>th</sup> Floor  
New York, New York 10121

**Subject:** Geophysical Investigation Results  
Indian Point Power Plant Site  
Buchanan, New York

Dear Mr. Winslow:

Advanced Geological Services (AGS) presents this letter report to GZA Geoenvironmental, Inc. (GZA), of New York, New York detailing the methods and results of a geophysical investigation conducted at the Indian Point Nuclear Power Plant Site. The facility is located in Buchanan, New York, along the Hudson River. Currently, GZA is completing an environmental assessment of the warehouse area near the Delta gate, and additional subsurface information was required to help understand the geometry of potential fluid pathways in the subsurface. The bedrock surface was a primary target since it is the most resistant layer in this area. AGS was informed that bedrock was partially excavated during construction of the warehouse and utility trenches. There were only two well descriptions available at the time of our survey that indicated the depth-to-bedrock. Values of 40 feet below ground surface (bgs) were observed in the northern part of the survey area, and values of 26 feet bgs were observed to the south of the warehouse. A second potential fluid pathway included buried utility line trenches below the warehouse area.

### **Site Description**

The survey area included the asphalt access ways and parking lots next to the warehouse and trailers, as shown in Figure 1. The topography was essentially flat and several man-made objects were present that affected our ability to collect meaningful geophysical data. Large metal dumpsters, parked vehicles, metal racks, and miscellaneous debris were present at various locations. There was no traffic in the warehouse area during our investigation, which helped the data collection effort. The total survey area covered in this investigation was approximately 200 feet by 450 feet. Geophysical data was acquired in the accessible areas of the site. The field activities for this investigation were completed on July 18-19, 2006.



## **Objectives**

The objectives of the geophysical survey were to determine the depth to bedrock and to locate major buried utility lines, which may act as pathways for the movement of subsurface fluids. The geophysical data was analyzed closely for these targets in accessible portions of the warehouse area. To meet the objectives of the investigation, AGS used the seismic refraction, electromagnetic conductivity (EM), and ground penetrating radar (GPR) methods.

## **Survey Grids**

AGS collected seven, in-line seismic refraction lines around the northern, western, and southern sides of the warehouse. The lines were 115 feet to 210 feet long and covered the full length of the accessible property on each side. Depending on the available space, AGS collected either one or two seismic spreads per line, as shown in Figure 1, and used the designation "Line x, Spread y" for each spread. GPR profiles were collected near the bedrock outcrop located along the eastern edge of the survey area, and in several additional areas. AGS collected EM31 data to the north of the warehouse, at 5-foot line and station intervals. All geophysical data was stored in the system hard drives in the field, and was downloaded and analyzed in the office.

## **Seismic Methods**

The seismic refraction geophysical method was used to provide the interface topography and velocity information along each profile line. The seismic refraction method is based upon the generation and propagation of an elastic wave into the subsurface. The progress of this wave is monitored by a series of co-linear, vibration-sensitive devices called geophones that are placed at the ground surface. The resulting seismic waveforms are recorded, measured and analyzed to determine the depth and velocities of geologic interfaces below the ground surface.

All seismic refraction data was acquired using a Geometrics R-24 engineering seismograph and 24 Sensor SM-15 14-Hz high output geophones. The seismic energy source was a sledge hammer and an iron strike plate. Geophones were spaced at 5-foot intervals to provide a seismic spread length of 115 feet. Five shot-points were recorded for each seismic spread. Two far offset shots were recorded at a distance of 10-30 feet from geophones 1 and 24, two shots were collected at geophones 1 and 24, and a center shot was collected between geophones 12 and 13.

AGS used a Generalized Simulated-Annealing Optimization method for the inversion of first arrival refraction times to generate the cross-sectional velocity contour maps of each seismic line. This method allows the estimation of the depth to interfaces and compressional wave velocity below the line. The resulting seismic profiles provide a continuous, high-resolution, cross-sectional view of the interface surface, and the corresponding velocity profile along the interface surface. The velocity information can be used to infer various physical characteristics of the subsurface materials, such as lithology, relative density, presence of the water table, rippability,

and others. Typically, media such as unconsolidated sediments exhibit a low seismic velocity (1,000 to 2,500 feet per second, fps), and consolidated media such as bedrock exhibit very high seismic velocities (7,000 to 20,000 fps). Intermediate velocities often exist in weathered zones or where mixed lithologies exist.

In addition, AGS collected REMI shear wave data at each location. Using this method, a series of 10-second recording windows are collected and all ambient noise is received and stored in the computer system. The processed data provides a single, shear-wave velocity profile for each seismic spread, as shown in the figures. This data is important in correlating depth-to-bedrock values, and may be helpful in approximating Poisson's Ratio or other elastic constants.

### **Ground Penetrating Radar (GPR) Method**

The ground-penetrating radar (GPR) method was used to provide subsurface imaging information throughout the area of investigation. The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using known soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 200 megahertz (MHz) antenna were used with a recording window of 60 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

### **Electromagnetic Methods**

The electromagnetic (EM) method uses the principle of electromagnetic induction to measure the variability of electrical conductivity of subsurface materials and the presence of buried metal objects. Significant contrasts in the electrical properties between non-indigenous materials and surrounding soil enable the delineation of buried waste materials, fill, bedrock features, and air spaces. The large EM response to metal makes this technique particularly well suited to identifying buried metal objects such as metallic wastes, USTs, buried drums, pipelines, reinforced building foundations, or other metal components of buried structures. It is, however, equally sensitive to metal objects on the ground surface, and it is important to take careful field notes that indicate the position of surface metal to avoid mis-interpretation.

The EM-31 ground conductivity meter by Geonics was used to measure the presence of buried metal objects such as USTs, and to determine the electrical conductivity of the underlying soils. The EM-31 is a one-man, portable system that induces a sinusoidal, 9.8 kilohertz (kHz) signal into the ground. The transmitted signal induces eddy currents into the subsurface materials, which, in turn, generate a secondary magnetic field that is measured by the receiver coil. Two measurements are recorded at each station point; the in-phase response, which is measured in parts per thousand (ppt), and the quadrature response, which is measured in milliSeimens per meter (mS/m). For the interpretation of high-conductivity targets such as USTs, the in-phase response is more discriminative. Lower contrast targets such as clay layers, contaminant plumes, and waste disposal areas are better indicated with the quadrature response. The EM data can be viewed in contour or profile format, or the data can be acquired in a scan mode.

## **Results**

AGS has included 23 figures with this report, including Figures 1 through 10 and several additional figures denoted as "Figure 4A" and "Figure 4B", etc.. Figure 1 is a map view of the survey area showing the seismic line locations with respect to permanent structures, Figure 10 shows the results of the EM31 survey, and the remaining figures show the seismic refraction results.

### *Seismic Data*

The seismic data collected at the warehouse site provided good subsurface information to a depth of approximately 50 feet bgs. Within the sediment units, the seismic velocities increased somewhat uniformly with depth, as shown by the consistent spacing between contour lines. At the interpreted bedrock interface, the seismic velocities increased more abruptly, and the contour lines are more closely spaced. AGS observed that shallow (0-10 feet bgs) velocities within the sediments typically exhibited values within the 1500-2,400 feet per second (fps) range, sediments in the mid-depth range exhibited velocities of 2,400-4,000 fps, and the deeper sediments exhibited velocities of 4,000-6,500 fps.

AGS defined the bedrock interface by observing seismic velocities next to MW-48, which indicated that bedrock was located at 25 feet bgs, and on known seismic values typically used for bedrock materials. We used 7,000 fps to depict the bedrock interface at the warehouse site based on our seismic results. This velocity value represents a weathered bedrock material, rather than a solid, dense, indurated bedrock unit. It is apparent that at a depth of 25-feet, drilling refusal occurred, and/or an excessive number of blow counts were recorded, which stopped the drilling process. AGS has observed the phenomenon where bedrock depths from drilling are somewhat less (a few feet) than the seismic-derived depths because the seismic method tends to recognize the interface where the greatest change in density and velocity occur. This seismic depth may be a little different than the drilling refusal depth.

AGS noticed several characteristics of the bedrock beneath the site. First, the topography of the

bedrock interface ranged from flat to highly variable over relatively short distances. There were a few locations where the bedrock interface disappeared and was located greater than 40-45 feet bgs. This occurred on Line 1 from stations -10 to 40, and on Line 5 from stations 12 to 30. AGS noted a pinnacled area where bedrock topography increased over a relatively short horizontal distance. This is observed on Line 1 near station 110, and to a lesser extent on Line 7 at station 165, where a higher velocity region was detected. Over most areas, the bedrock interface was more gradual and slightly undulating along the lines.

The data quality from Line 3 was not as good as the other lines due to noisy conditions at the time the data was collected. There is a very flat bedrock interface from stations 34 to 120 that is somewhat suspect due to the poor recording conditions.

The REMI seismic data, which provided a gross vertical profile of shear wave velocities below each seismic spread, agreed well with the refraction information. As expected, the velocity values are significantly lower than the compressional wave velocities obtained during the refraction survey. As stated, this data provided a check for the refraction data, and the information may be used in the future for estimating various elastic moduli.

#### *Electromagnetic Data*

Several buried pipelines were detected in the EM31 survey. Figure 10 shows the locations of these lines. Typically, the utility lines exhibited a linear geometry on the contour map, and an EM response (positive or negative) that was a function of the traverse direction and orientation of the utility. An EM traverse that is run perpendicular to a pipeline will exhibit a slight positive before the line, a strong negative directly over the line, and a slight positive off the other end of the pipe. These responses were found at several locations. If the pipeline runs parallel to the traverse direction, a moderate-to-strong positive responses is observed. The major pipelines appear as bold, dashed lines on the EM contour map. A few small electric lines were marked in the field, as well.

#### **Data Quality**

The data quality for this project was good. Typically, the seismic, EM, and GPR responses correlated well with one another and the confidence level was good. It is important to note that some sites can be complicated in terms of past construction practices and miscellaneous activities. The interpretations presented in this report are based on observed geophysical responses, visual observations, and historical information.



Mr. Dave Winslow  
GZA Geoenvironmental, Inc.  
Page 6

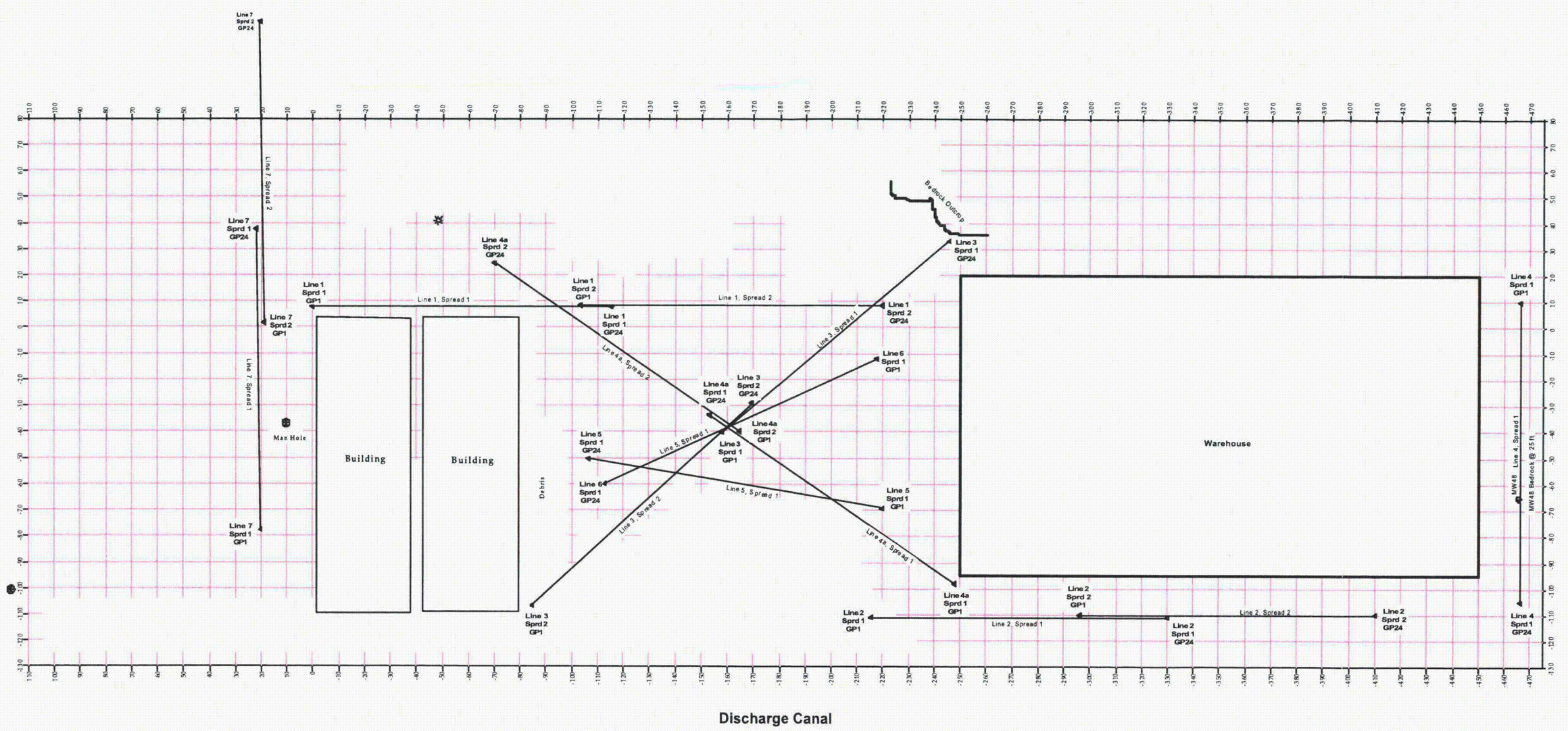
If you have any questions, please contact me 610-722-5500. It was a pleasure working with you on this project, and look forward to conducting geophysical investigations for you in the future.

Sincerely,

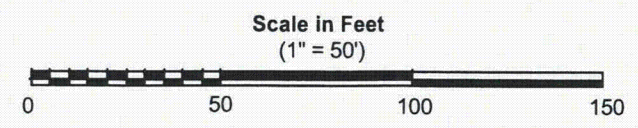
Peter T. Miller Ph.D., P.G.  
Senior Geophysicist, AGS

Encl.: Figures 1: Site Map and Seismic Line Locations  
Figures 2 – 9: Seismic Profiles and Shear Wave Velocity Profiles  
Figure 10 – EM31 In Phase Map





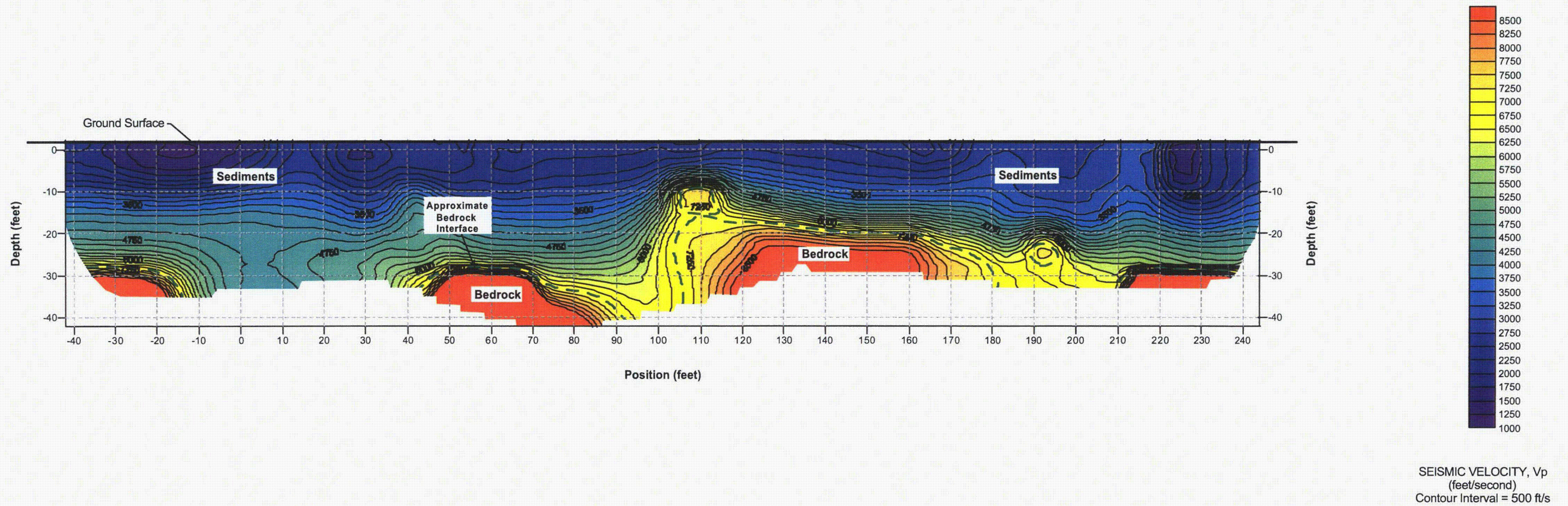
- NOTES:
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
  - 2) Surface elevations are approximate.
  - 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.



	<b>SEISMIC LINE LOCATIONS</b>		<b>FIGURE</b> <b>1</b>
	<b>WAREHOUSE AREA</b>		
LOCATION: BUCHANAN, NEW YORK			
CLIENT: GZA GEOENVIRONMENTAL, INC.			
PROJECT #:	06-245-1	ADVANCED GEOLOGICAL SERVICES, INC.	
DATE:	SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER

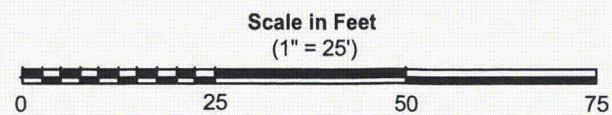


## SEISMIC REFRACTION PROFILE - LINE 1



**NOTES:**

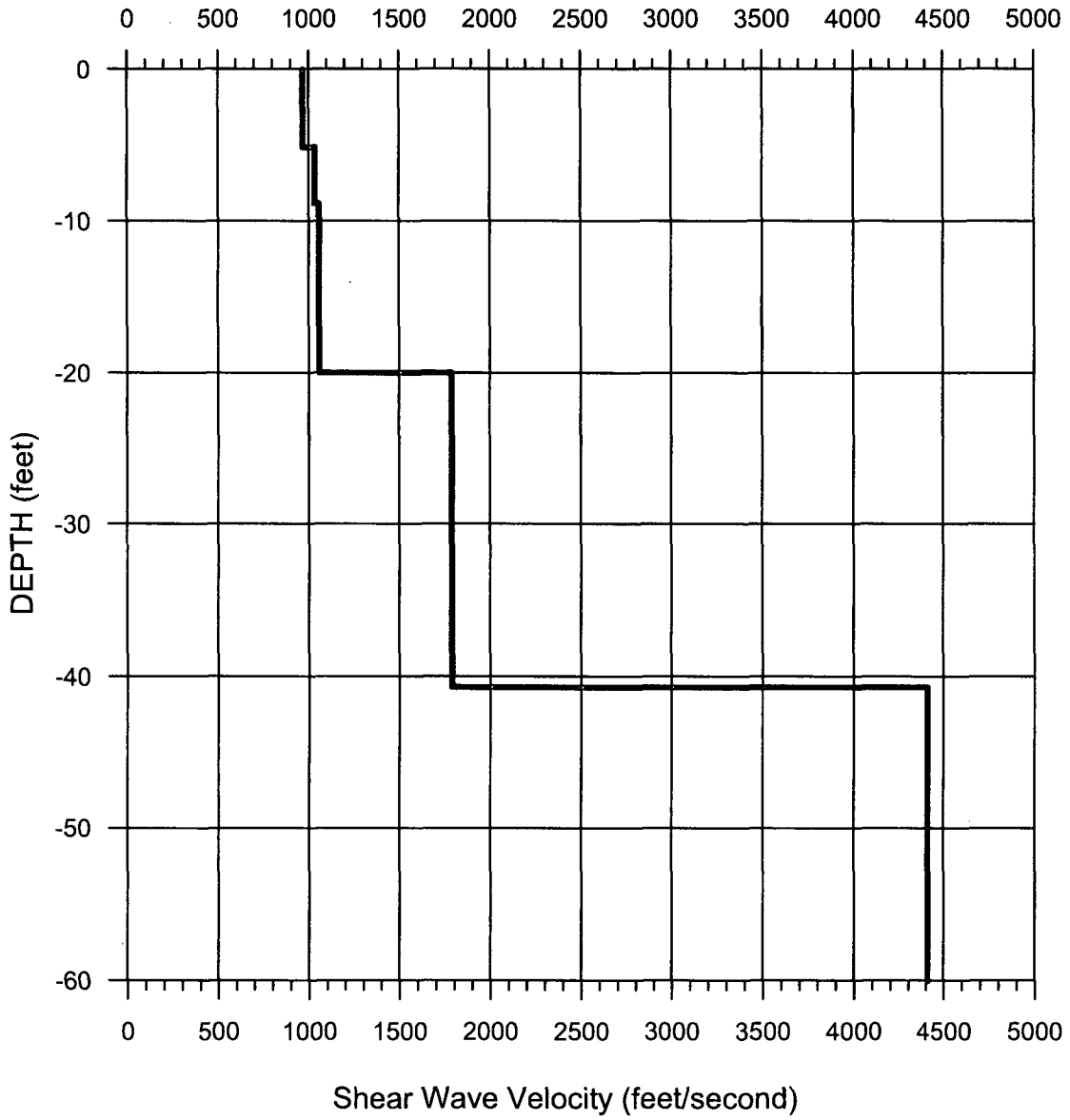
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 1</b>	
	<b>WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
	CLIENT: GZA GEOENVIRONMENTAL, INC.	
PROJECT #:	06-245-1	ADVANCED GEOLOGICAL SERVICES, INC.
DATE:	SEPTEMBER 20, 2006	DRAWN BY: P. MILLER    APPROVED BY: P. MILLER
		<b>FIGURE 2</b>

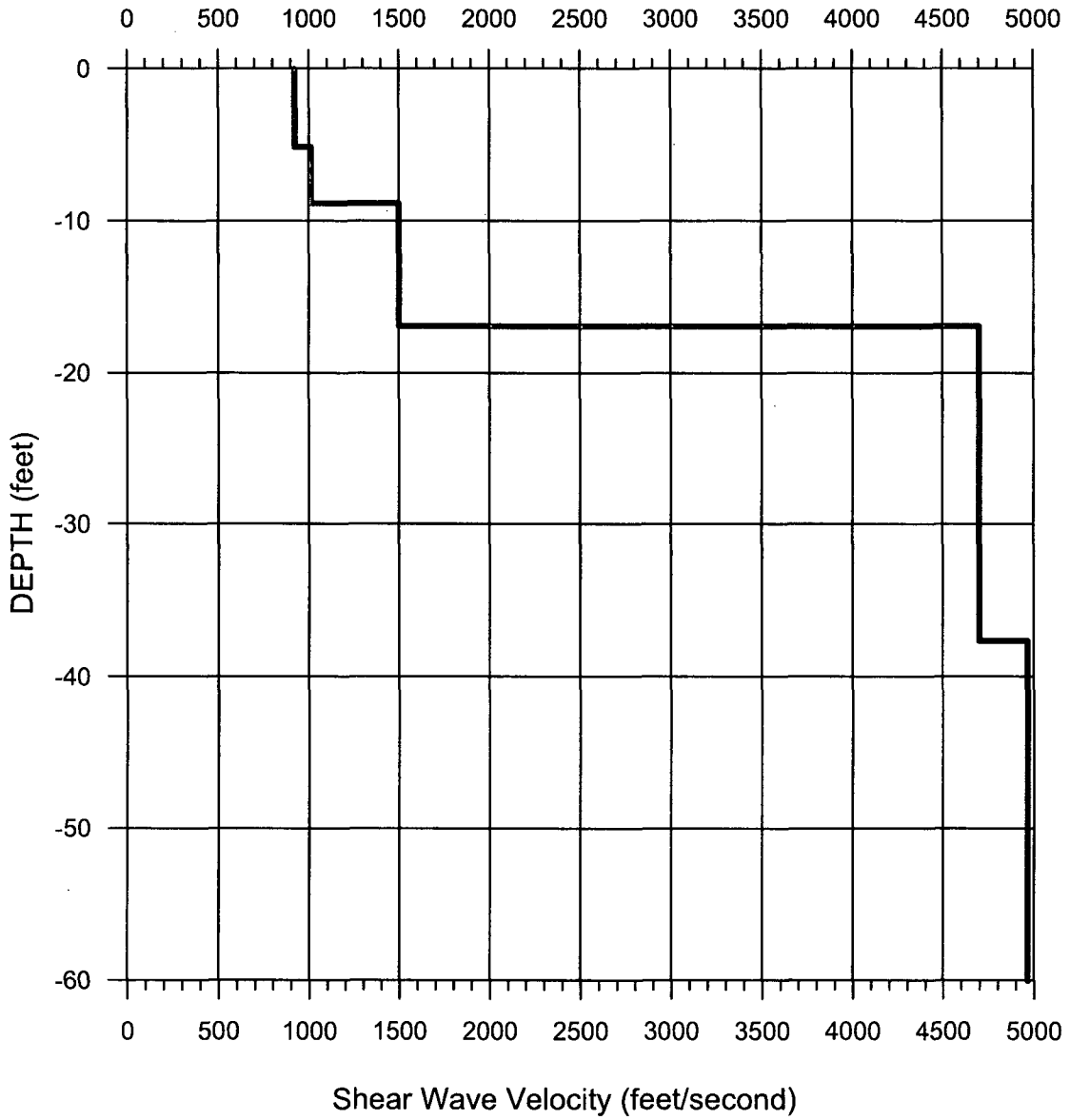



# LINE 1 SPREAD 1



	<b>S1 - SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	<b>FIGURE</b> <b>2A</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER   DRAWN BY: P. MILLER	

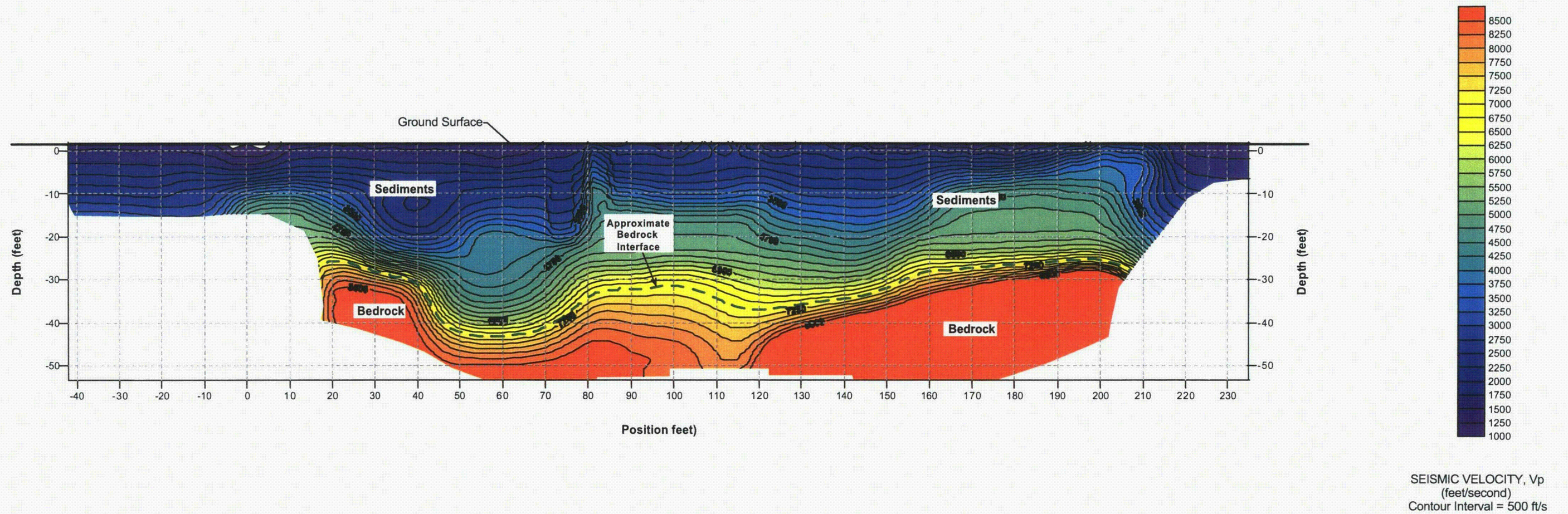
# LINE 1 SPREAD 2



	<b>S1 - SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
CLIENT: GZA GEOENVIRONMENTAL		<b>FIGURE</b> <b>2B</b>
PROJECT #: 06-245-1	ADVANCED GEOLOGICAL SERVICES, INC.	
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER	DRAWN BY: P. MILLER

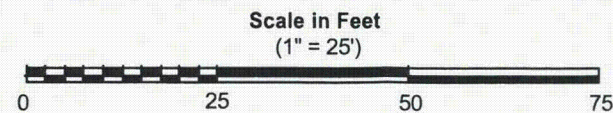


## SEISMIC REFRACTION PROFILE - LINE 2



**NOTES:**

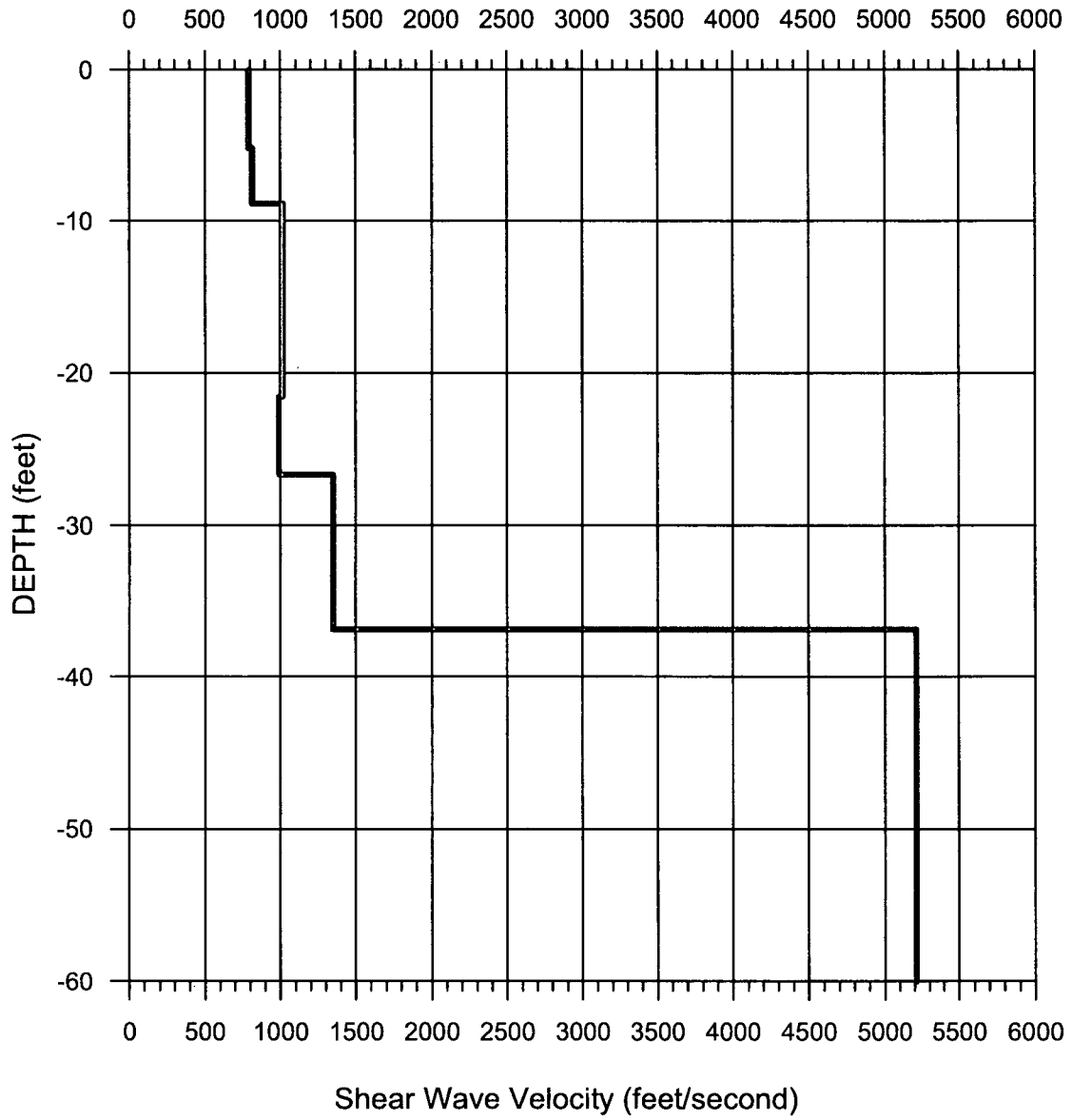
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 2</b>	
	<b>WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
	CLIENT: GZA GEOENVIRONMENTAL, INC.	
PROJECT #:	06-245-1	ADVANCED GEOLOGICAL SERVICES, INC.
DATE:	SEPTEMBER 20, 2006	DRAWN BY: P. MILLER    APPROVED BY: P. MILLER

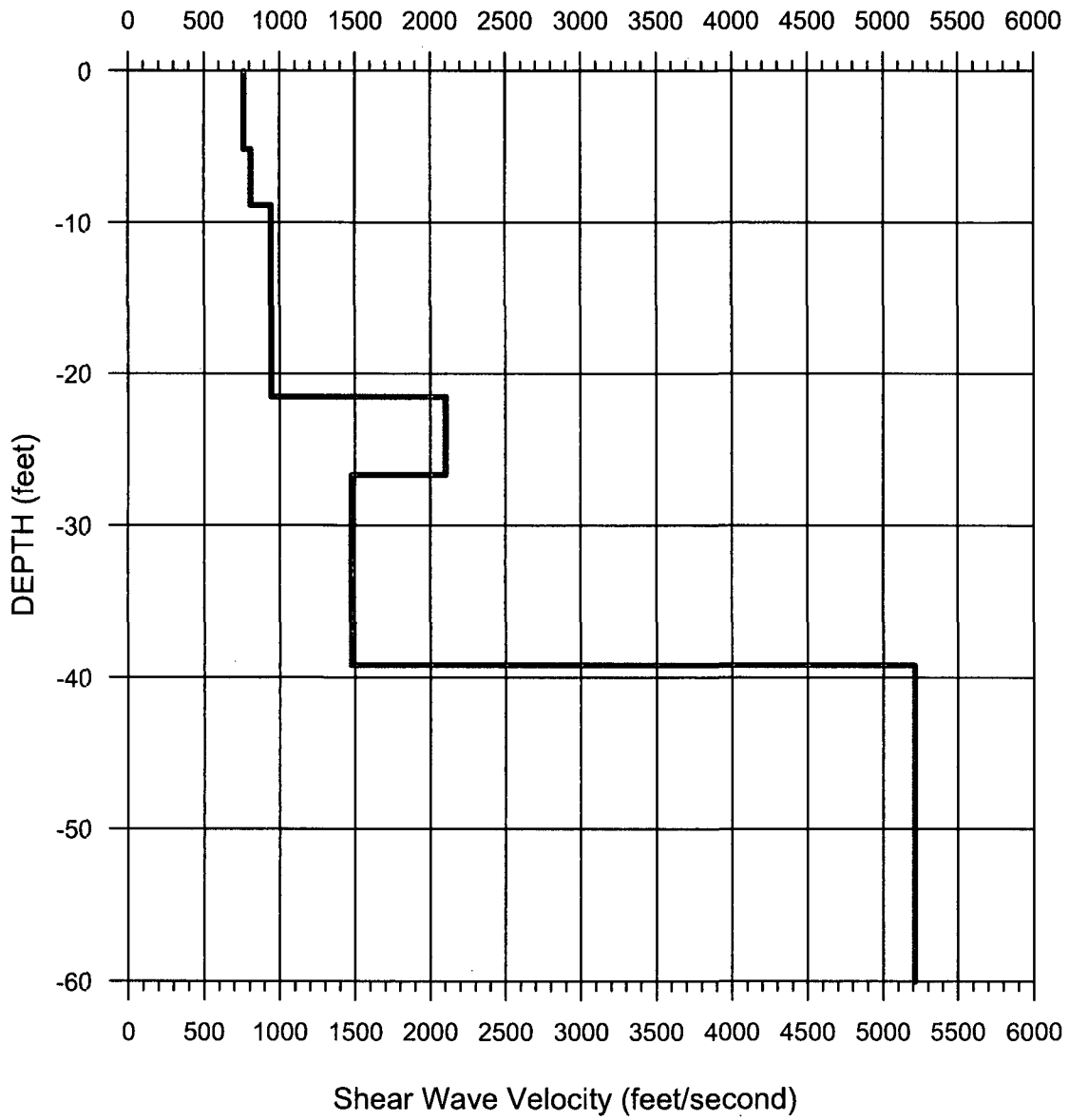



# LINE 2 SPREAD 1



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	<b>FIGURE</b>  <b>3A</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER      DRAWN BY: P. MILLER	

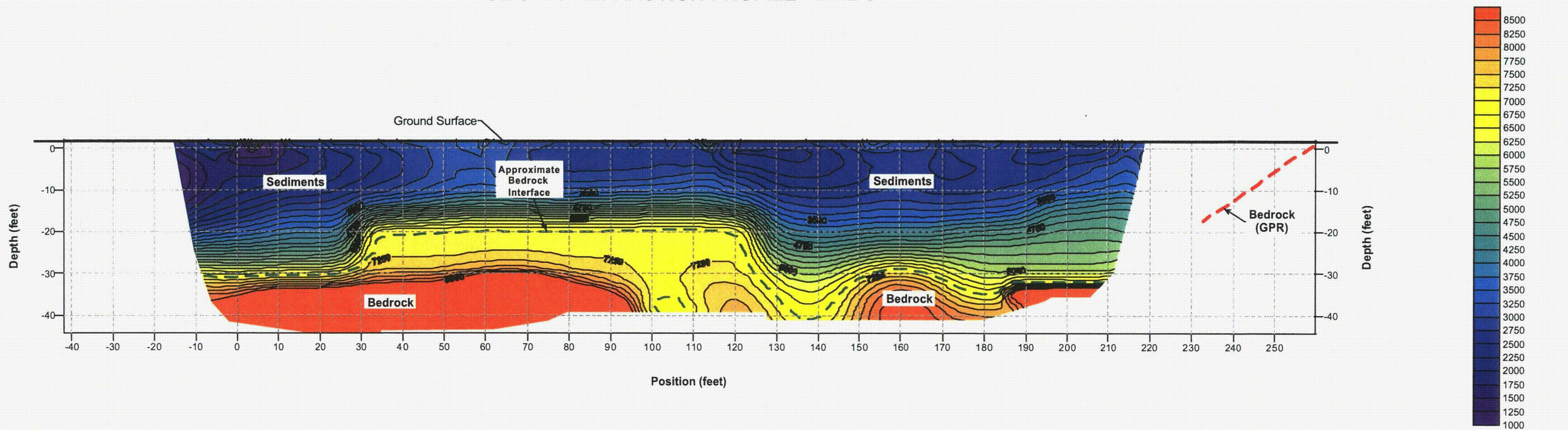
## LINE 2 SPREAD 2



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1		CLIENT: GZA GEOENVIRONMENTAL
DATE: SEPTEMBER 20, 2006		DATE: P. MILLER
		DRAWN BY: P. MILLER
		FIGURE 3B



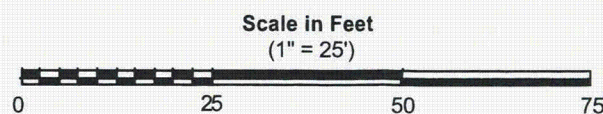
### SEISMIC REFRACTION PROFILE - LINE 3




SEISMIC VELOCITY,  $V_p$   
(feet/second)  
Contour Interval = 500 ft/s

**NOTES:**

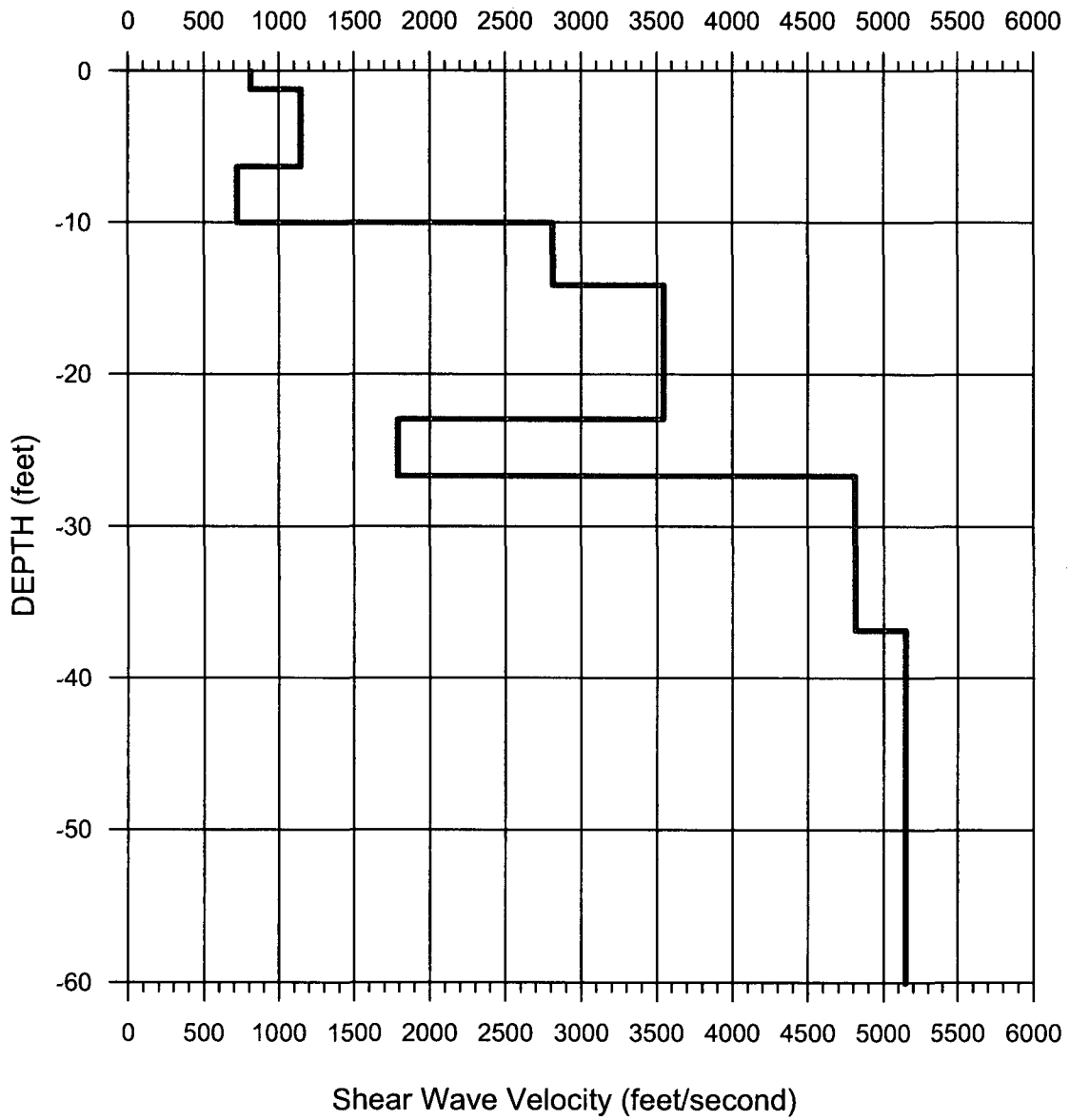
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 3</b> <b>WAREHOUSE AREA</b>		<b>FIGURE</b>  <b>4</b>
	LOCATION: BUCHANAN, NEW YORK		
CLIENT: GZA GEOENVIRONMENTAL, INC.			
ADVANCED GEOLOGICAL SERVICES, INC.			
PROJECT #: 06-245-1	DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER

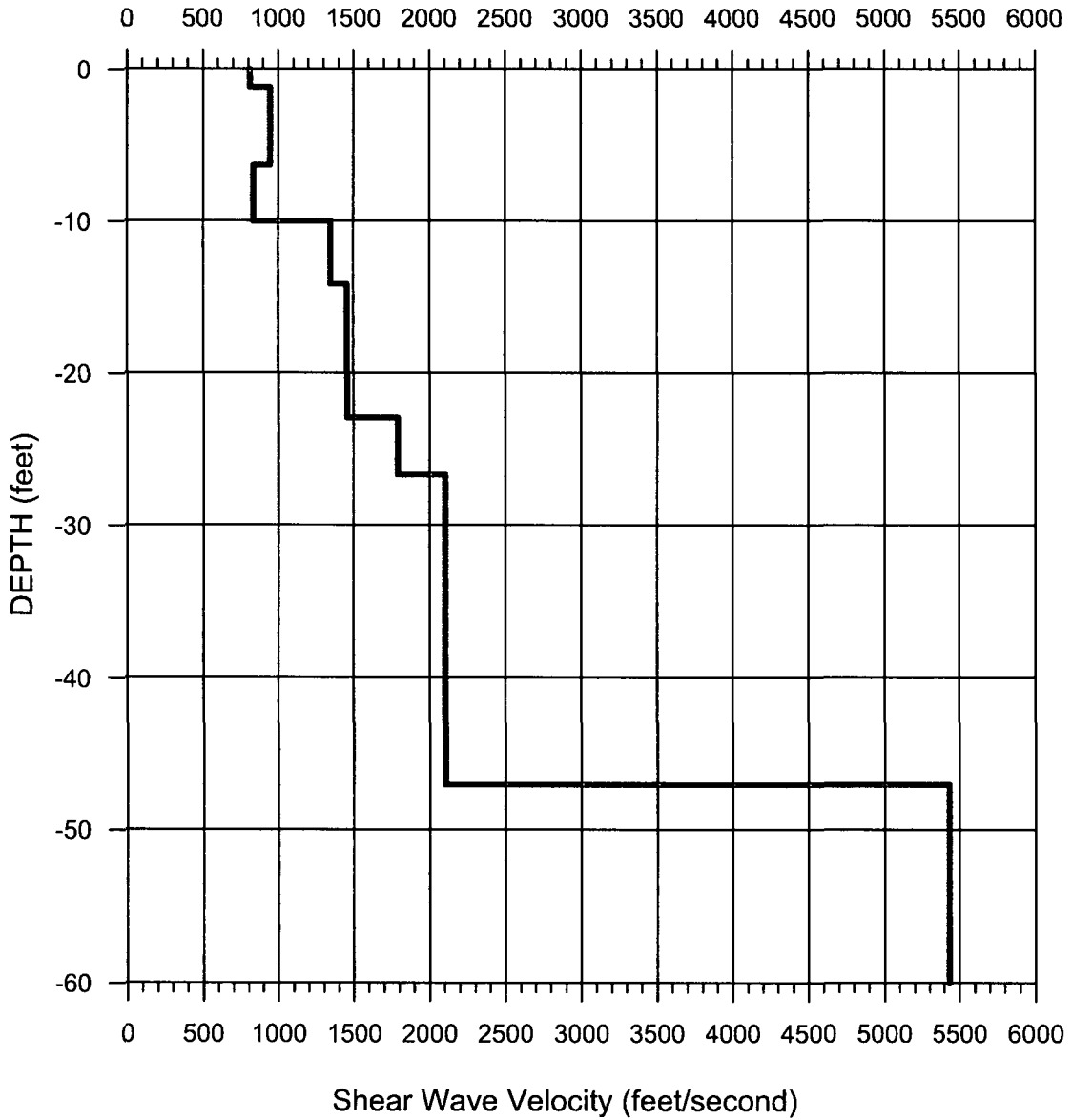



# LINE 3 SPREAD 1



 <b>ADVANCED GEOLOGICAL SERVICES</b>	<b>SHEAR WAVE VELOCITY PROFILE ReMi RESULTS INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	FIGURE
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER	<b>4A</b>
	DRAWN BY: P. MILLER	

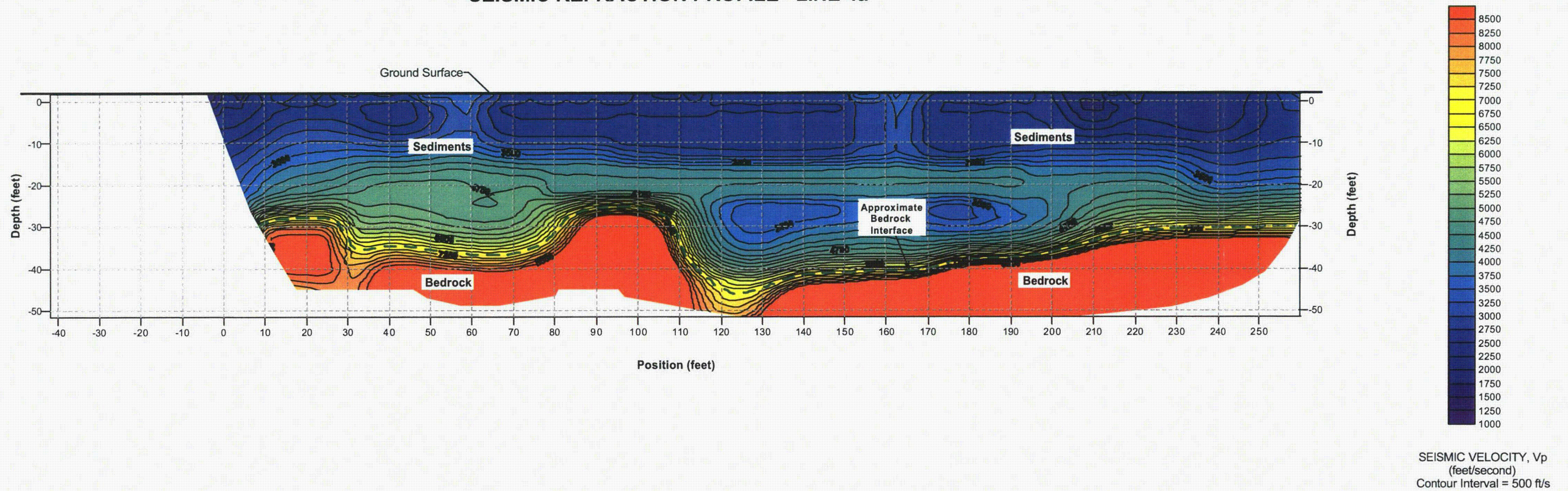
# LINE 3 SPREAD 2



	<b>SHEAR WAVE VELOCITY PROFILE</b> ReMi RESULTS INDIAN POINT POWER PLANT	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL ADVANCED GEOLOGICAL SERVICES, INC.	FIGURE <b>4B</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER      DRAWN BY: P. MILLER	

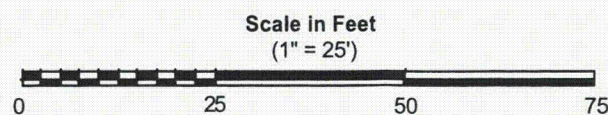



### SEISMIC REFRACTION PROFILE - LINE 4a



**NOTES:**

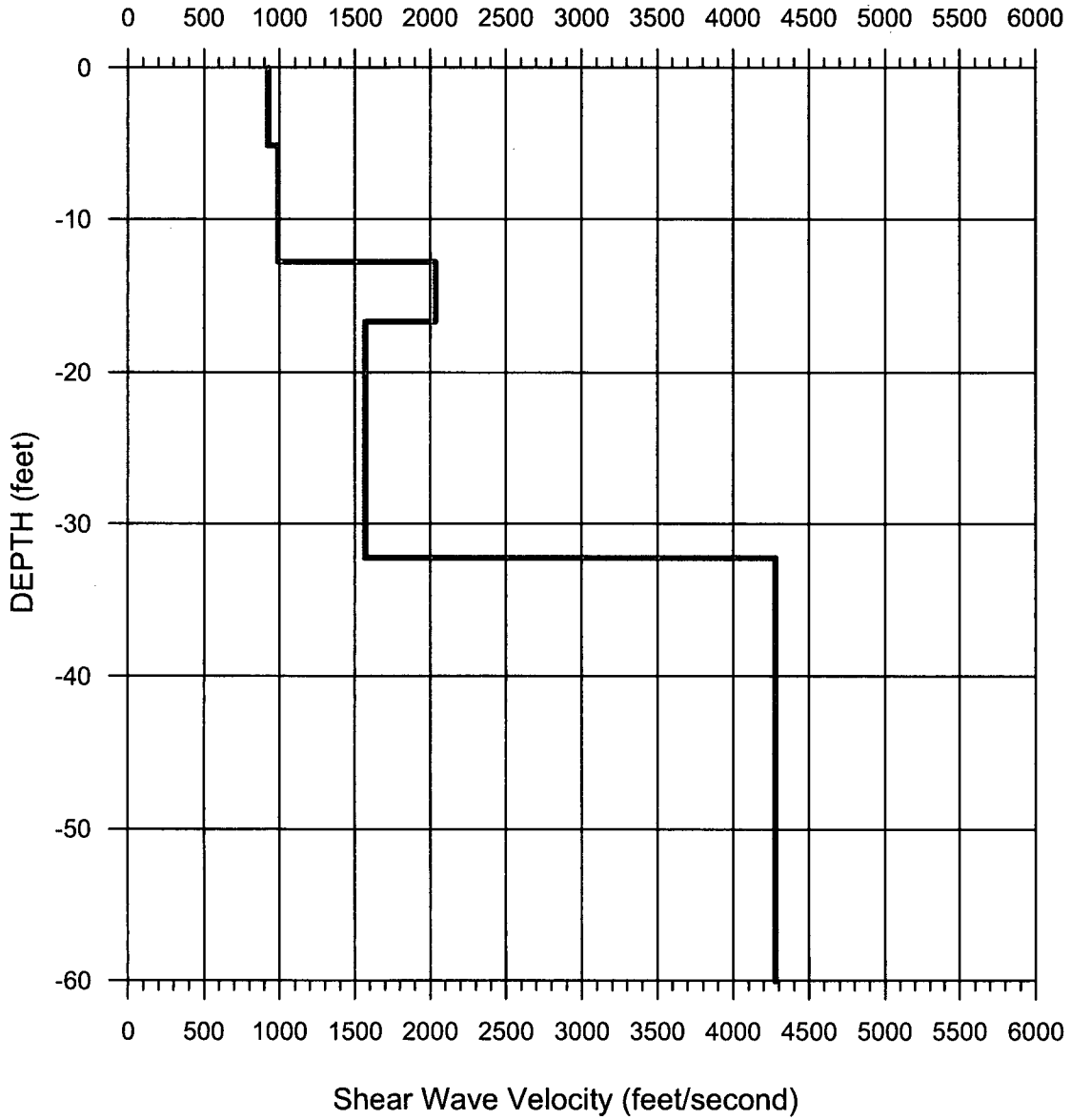
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 4a</b> <b>WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.	<b>FIGURE</b>  <b>5</b>
DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER    APPROVED BY: P. MILLER	

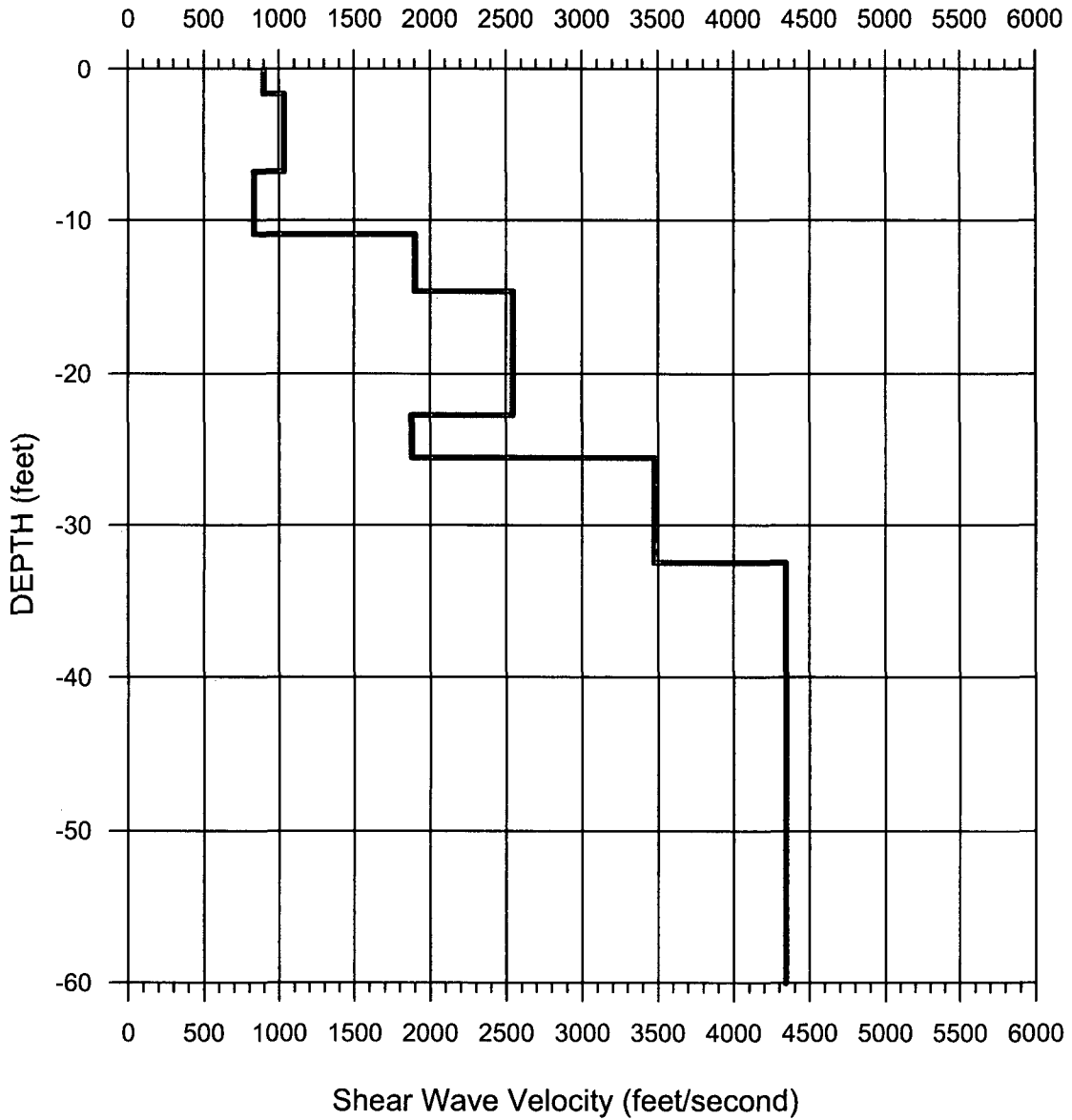



# LINE 4a SPREAD 1



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
	CLIENT: GZA GEOENVIRONMENTAL	<b>FIGURE</b>  <b>5A</b>
PROJECT #: 06-245-1	ADVANCED GEOLOGICAL SERVICES, INC.	
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER	DRAWN BY: P. MILLER

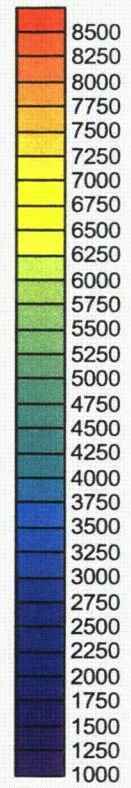
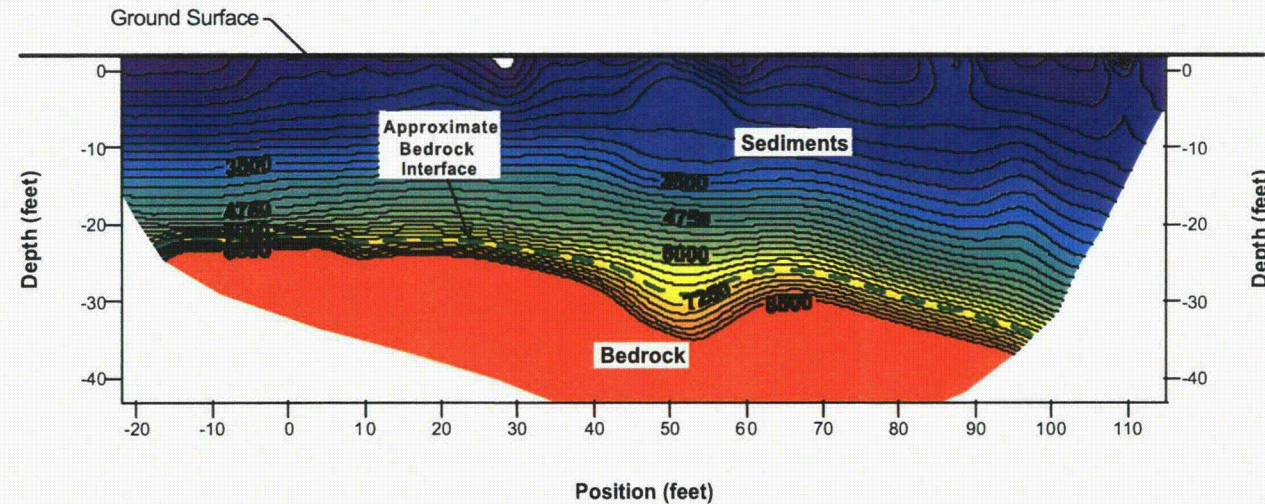
# LINE 4a SPREAD 2



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL ADVANCED GEOLOGICAL SERVICES, INC.	<b>FIGURE</b>  <b>5B</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER      DRAWN BY: P. MILLER	



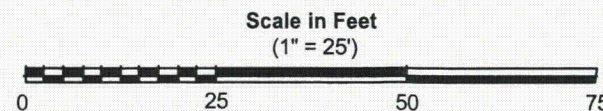
### SEISMIC REFRACTION PROFILE - LINE 4




SEISMIC VELOCITY,  $V_p$   
(feet/second)  
Contour Interval = 500 ft/s

**NOTES:**

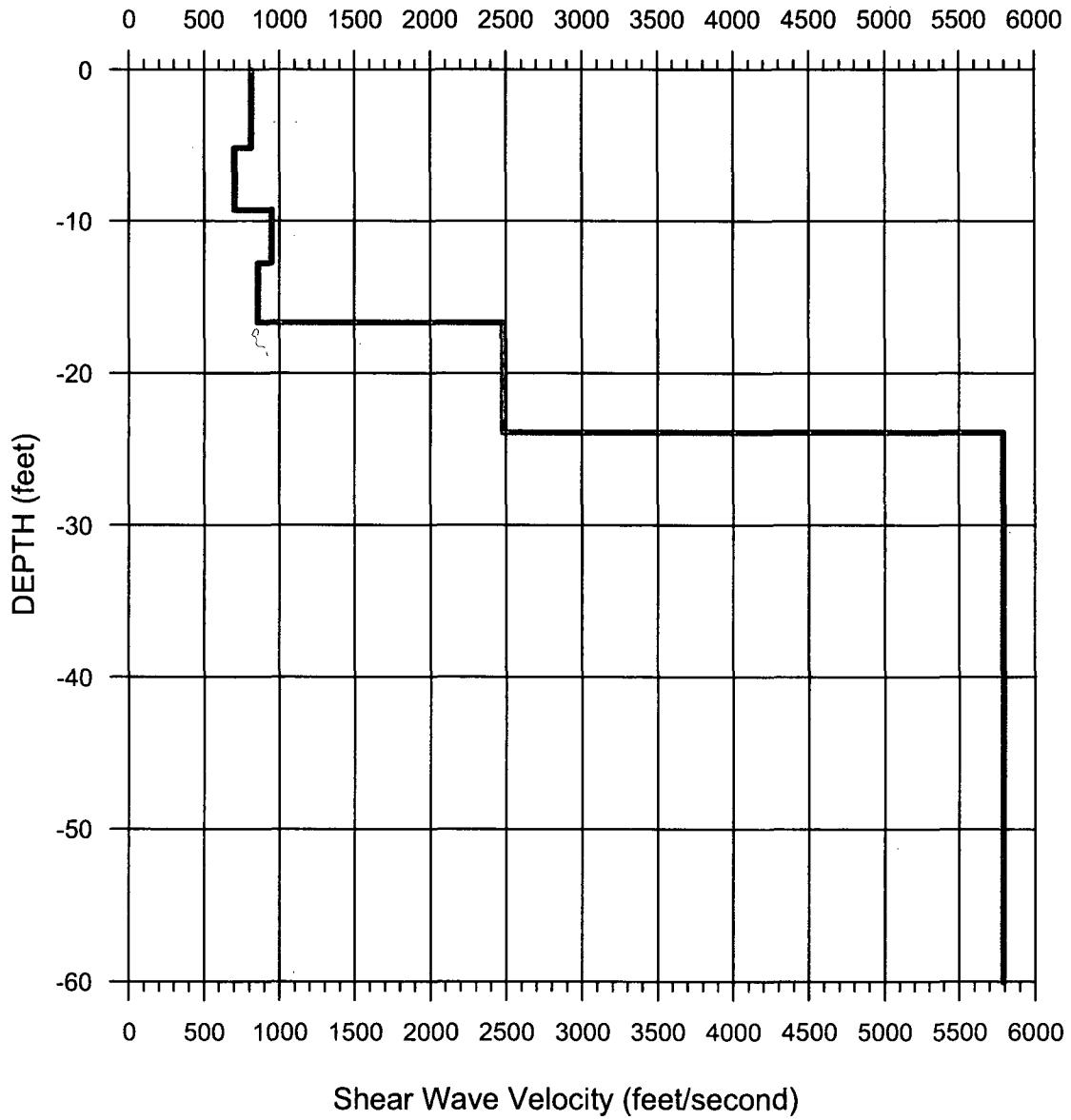
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 4</b> <b>WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.	
DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER



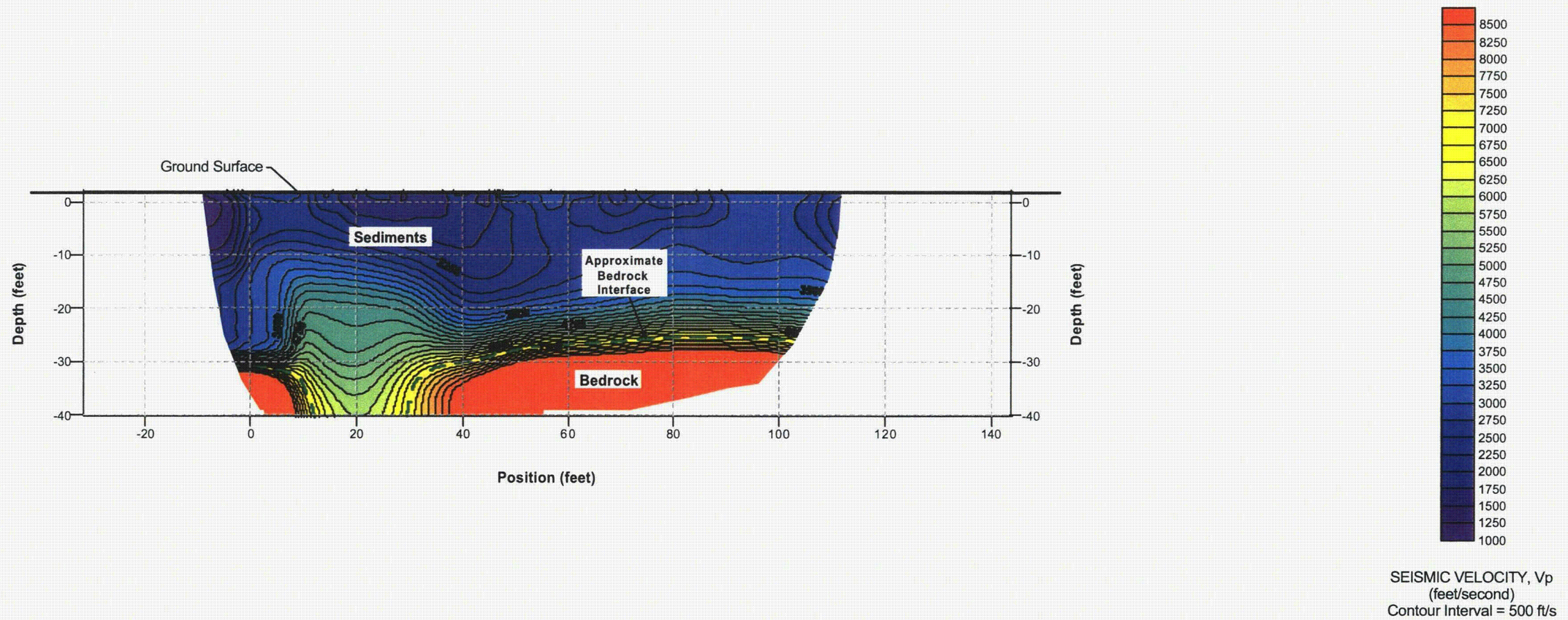
# LINE 4 SPREAD 1



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	FIGURE <b>6A</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER      DRAWN BY: P. MILLER	

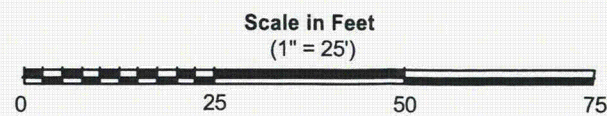


### SEISMIC REFRACTION PROFILE - LINE 5



**NOTES:**

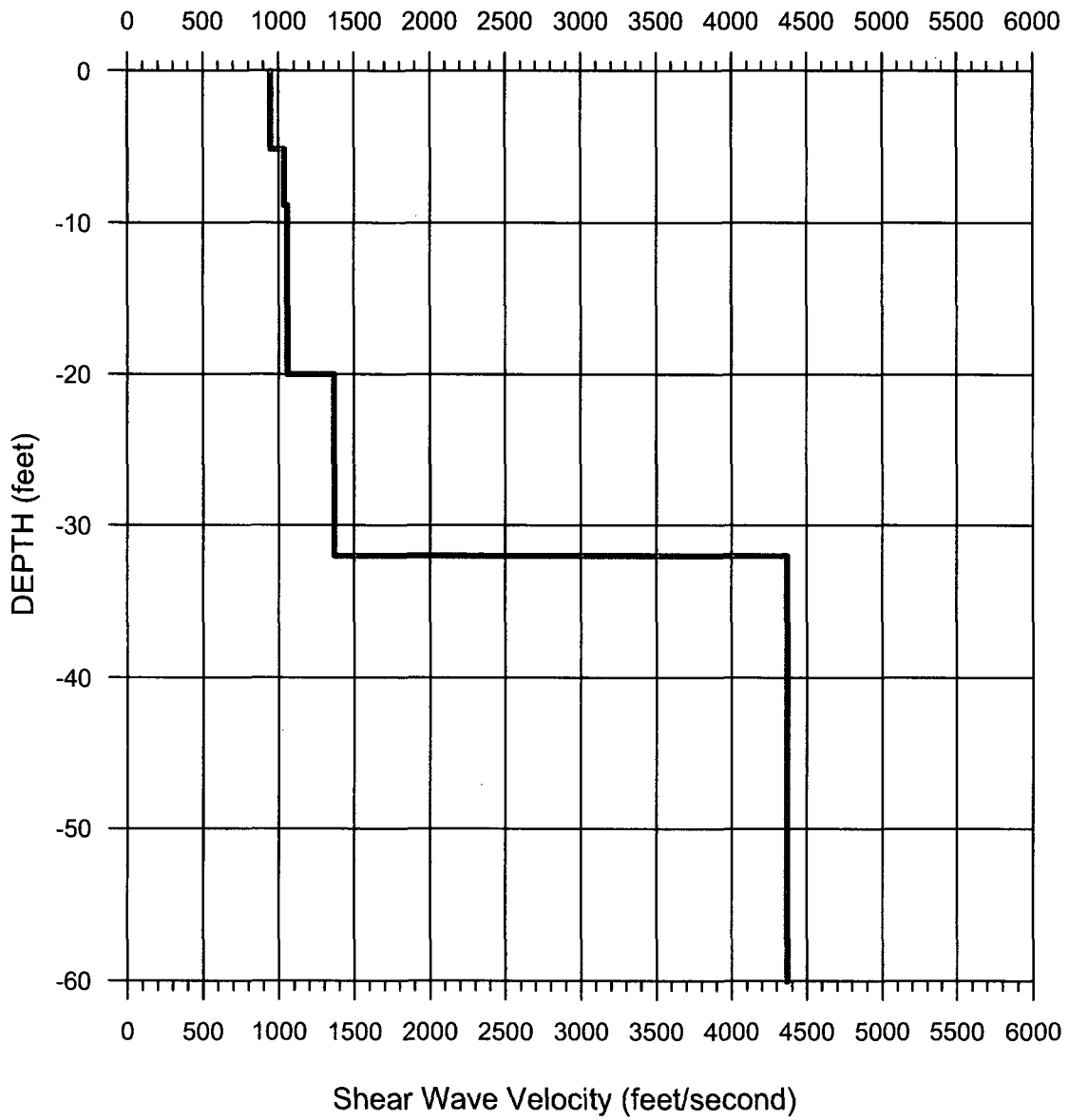
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 5</b> <b>WAREHOUSE AREA</b>		<b>FIGURE</b>  <b>7</b>
	LOCATION: BUCHANAN, NEW YORK		
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.		
DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER	



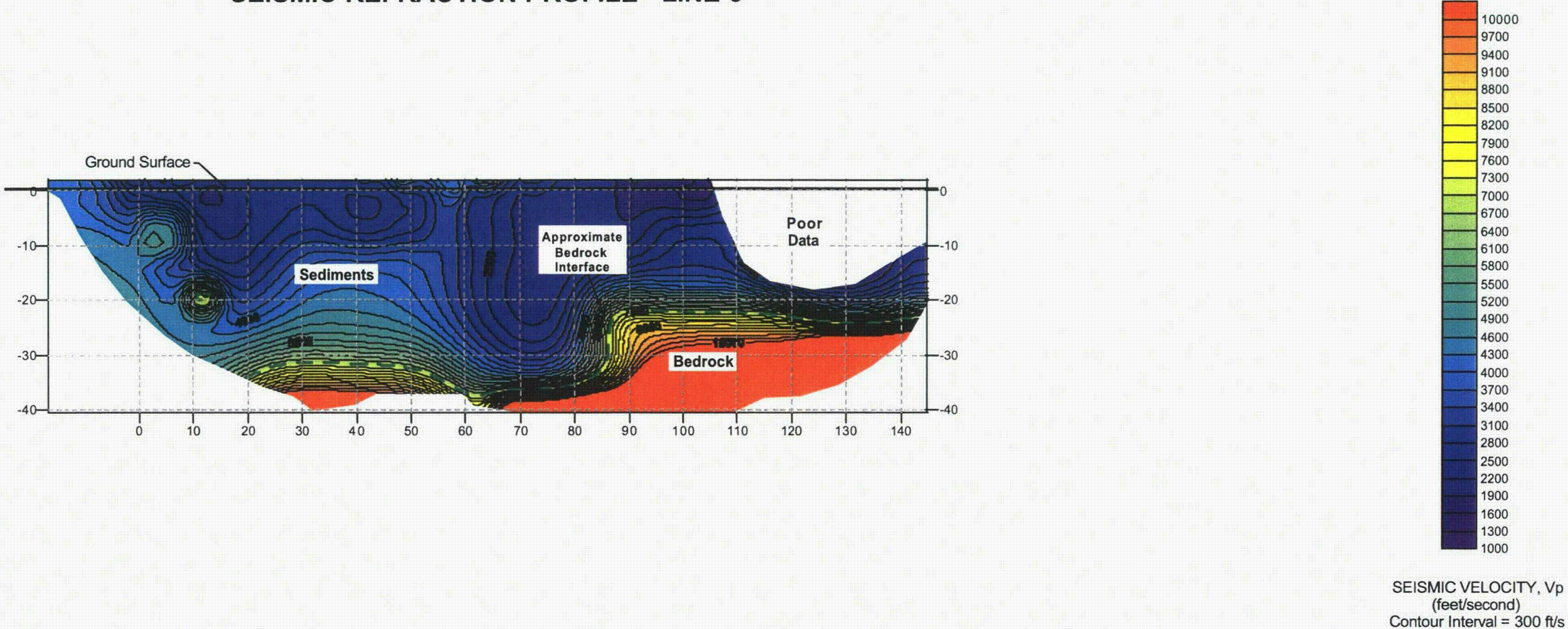
# LINE 5 SPREAD 1



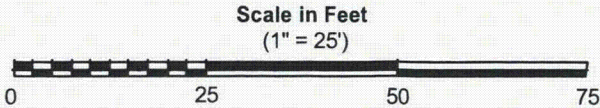
	<b>SHEAR WAVE VELOCITY PROFILE</b> ReMi RESULTS INDIAN POINT POWER PLANT	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL ADVANCED GEOLOGICAL SERVICES, INC.	FIGURE <b>7A</b>
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER      DRAWN BY: P. MILLER	



### SEISMIC REFRACTION PROFILE - LINE 6



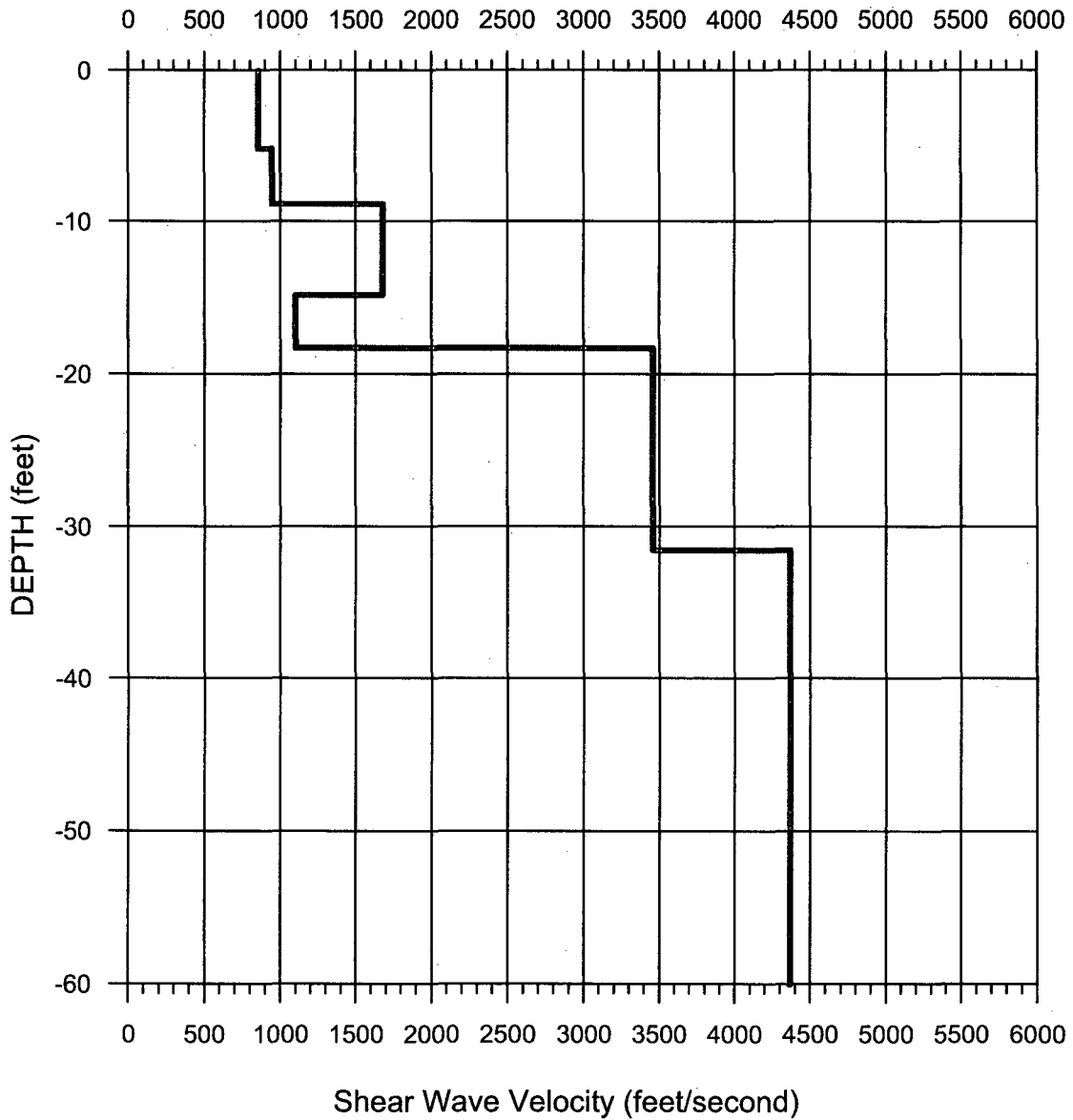
- NOTES:
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
  - 2) Surface elevations are approximate.
  - 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 6</b> <b>WAREHOUSE AREA</b>		<b>FIGURE</b>  <b>8</b>
	LOCATION: BUCHANAN, NEW YORK		
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.		
DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER	



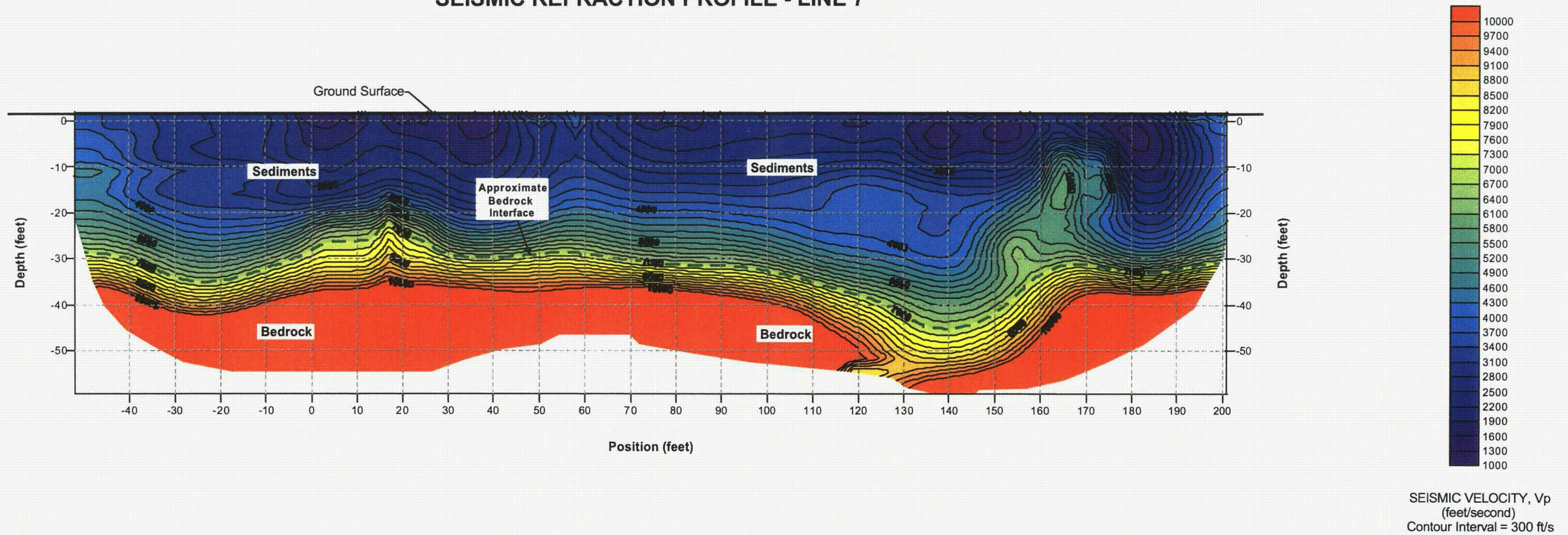
# LINE 6 SPREAD 1



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1		CLIENT: GZA GEOENVIRONMENTAL
DATE: SEPTEMBER 20, 2006		DATE: P. MILLER
ADVANCED GEOLOGICAL SERVICES, INC.		DRAWN BY: P. MILLER
		<b>FIGURE</b> <b>8A</b>

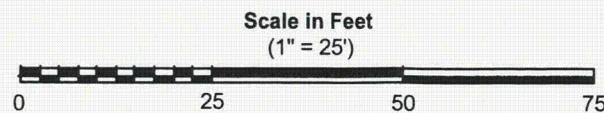



### SEISMIC REFRACTION PROFILE - LINE 7



**NOTES:**

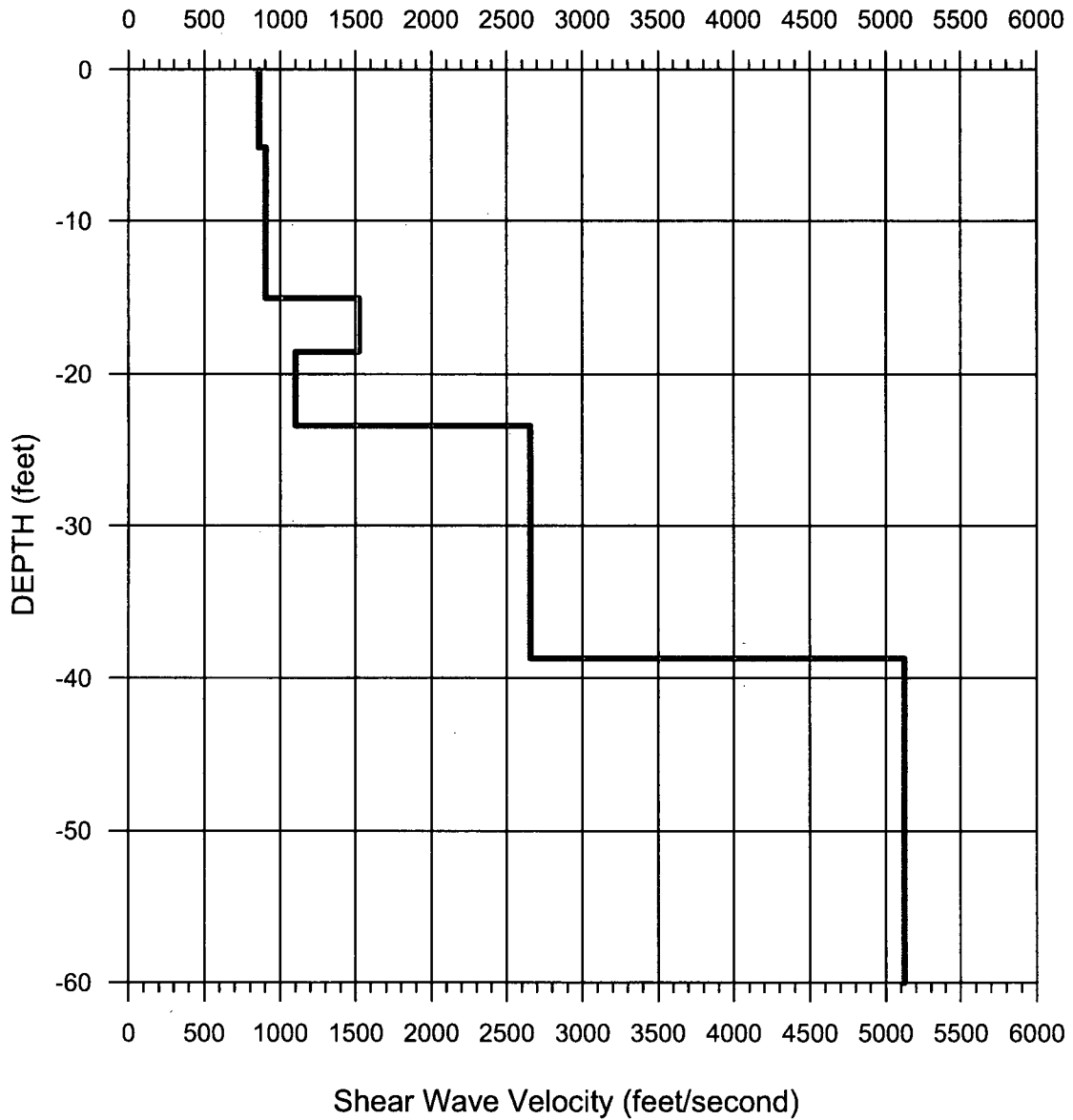
- 1) Data were acquired with a 24 Channel DAQ Link II Seismograph coupled with 10 Hz geophones at 5 feet intervals. Data collection involved performing five shotpoints per line.
- 2) Surface elevations are approximate.
- 3) Data were processed with SeisOpt@2D refraction interpretation software by Optim, Inc. Due to the limitations inherent to the seismic refraction method the velocity cross-section, although very detailed, should be considered an approximation of subsurface conditions.




	<b>SEISMIC PROFILE - LINE 7</b> <b>WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.	
DATE: SEPTEMBER 20, 2006	DRAWN BY: P. MILLER	APPROVED BY: P. MILLER

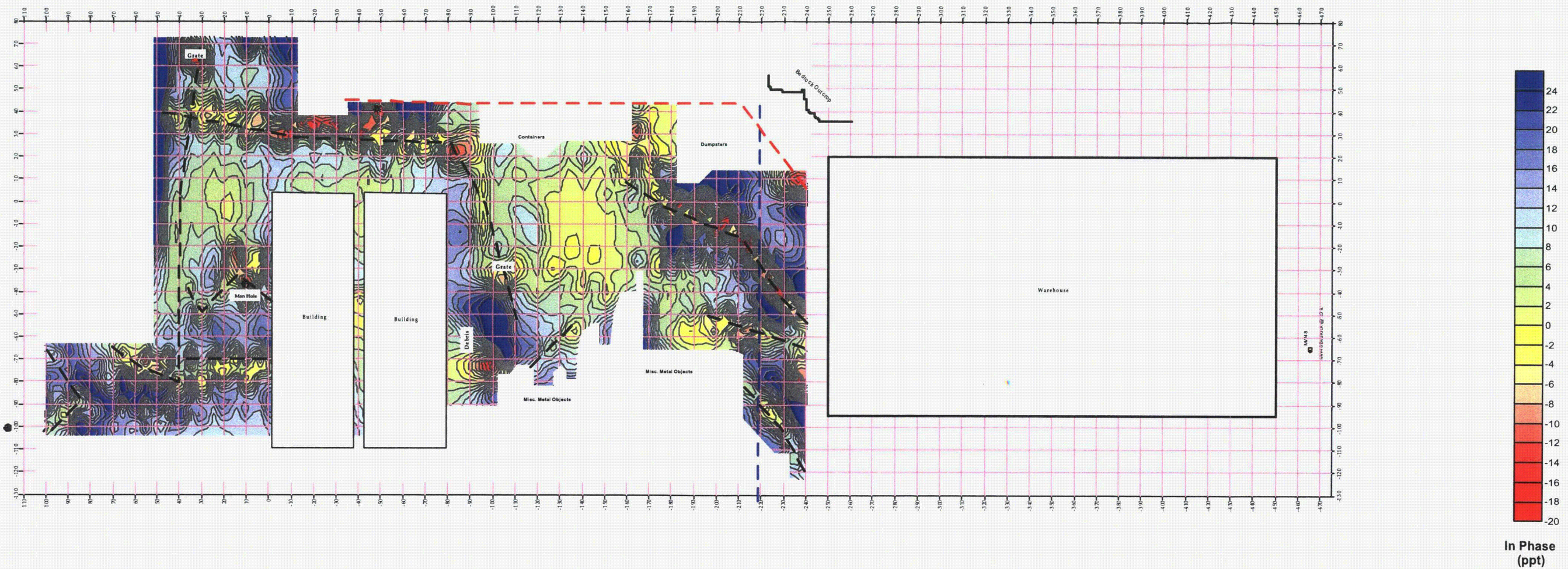


# LINE 7 SPREAD 1



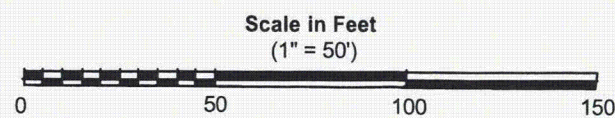
	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER	DRAWN BY: P. MILLER
		<b>FIGURE</b> <span style="font-size: 2em;"><b>9A</b></span>





**NOTES:**

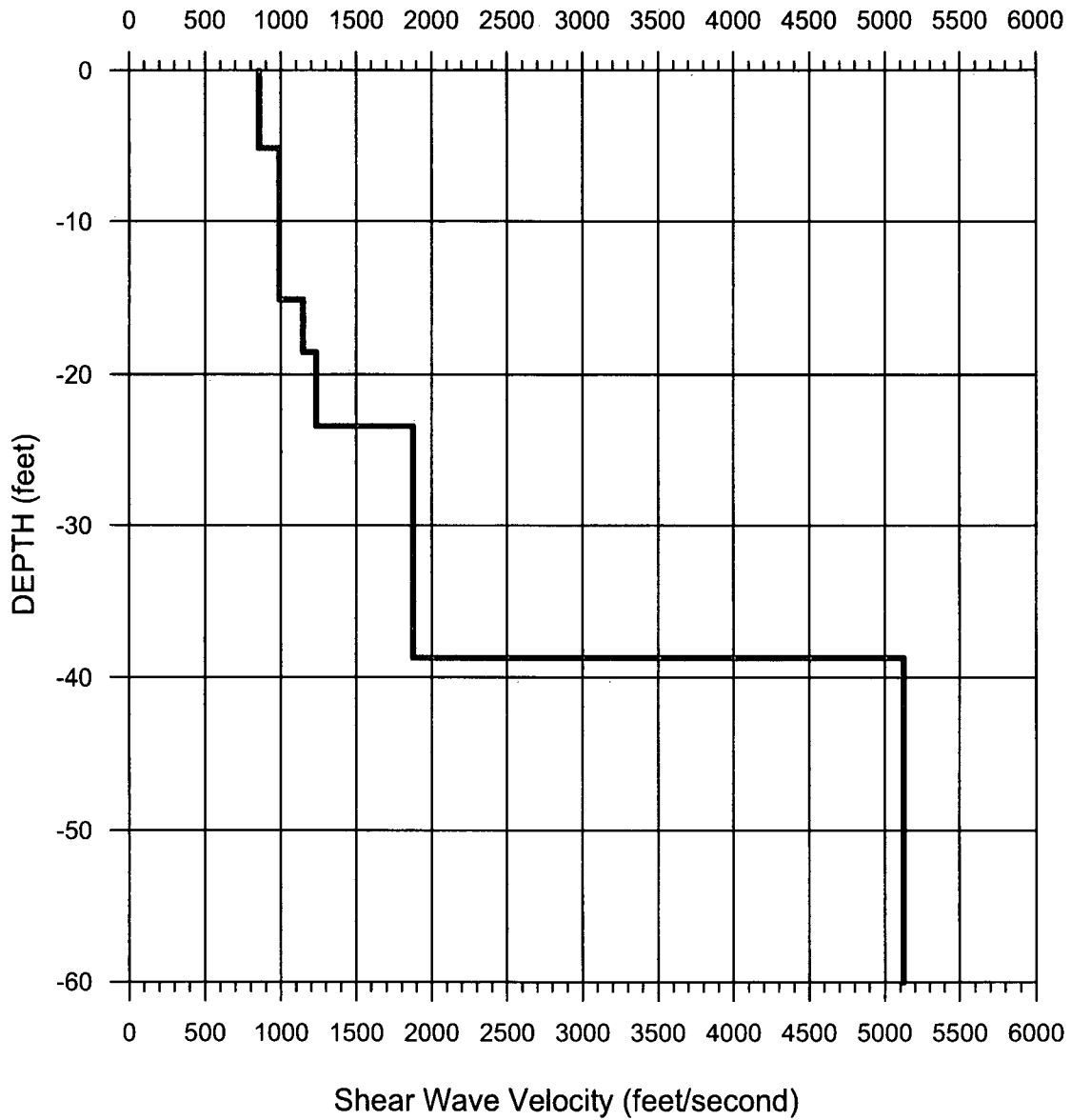
- 1) Data were acquired with an EM31 electromagnetic instrument by Geonics, Inc. The in phase (metals) responses are presented in this figure. Data was collected in a 5-foot by 5-foot grid.
- 2) Several buried pipelines were detected in the survey area. They are shown as bold, dashed lines on the map. AGS marked out some of these lines in the field, as well as a few additional electrical lines.
- 3) The survey grid was not established using a licenced surveyor and the exact positions should be considered approximate.
- 4) Data were processed with the Surfer data contouring software package. The krigging contour procedure was used to generate the map.




	<b>EM31 IN PHASE MAP WAREHOUSE AREA</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #:	06-245-1	CLIENT: GZA GEOENVIRONMENTAL, INC.
DATE:	SEPTEMBER 20, 2006	DRAWN BY: P. MILLER    APPROVED BY: P. MILLER
		FIGURE 10



# LINE 7 SPREAD 2



	<b>SHEAR WAVE VELOCITY PROFILE</b> <b>ReMi RESULTS</b> <b>INDIAN POINT POWER PLANT</b>	
	LOCATION: BUCHANAN, NEW YORK	
PROJECT #: 06-245-1	CLIENT: GZA GEOENVIRONMENTAL	
DATE: SEPTEMBER 20, 2006	DATE: P. MILLER	DRAWN BY: P. MILLER
		<b>FIGURE</b> <b>10A</b>

**APPENDIX P**

**OUL PROCEDURES AND CRITERIA**



**Ozark  
UNDERGROUND  
LABORATORY**

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Proten, MO 65733

(417) 785-4289

fax (417) 785-4290

oul@tri-lakes.net

**PROCEDURES AND CRITERIA  
ANALYSIS OF FLUORESCIN, EOSINE, RHODAMINE WT,  
SULFORHODAMINE B, AND PYRANINE  
DYES IN WATER AND CHARCOAL SAMPLERS**

**March 21, 2005**

**Thomas Aley, PHG 179  
President  
Ozark Underground Laboratory, Inc.**

## PROCEDURES

### Introduction

This document describes standard procedures and criteria currently in use at the Ozark Underground Laboratory as of the date shown on the title page. Some samples may be subjected to different procedures and criteria because of unique conditions; such non-standard procedures and criteria are identified in reports for those samples. Standard procedures and criteria change as knowledge and experience increases and as equipment is improved or upgraded. The Ozark Underground Laboratory maintains a summary of changes in standard procedures and criteria.

### Dye Nomenclature

Fluorescein is C.I. Acid yellow 73, Color Index Number 45350. Rhodamine WT is Acid Red 388; there is no assigned Color Index Number for this dye. Eosine (sometimes called eosin) is Acid Red 87, Color Index Number 45380. Sulforhodamine B is C.I. Acid Red 52, Color Index Number 45100. Pyranine is Solvent Green 7 (also called D&C Green 8), Color Index Number 59040.

### Description of the Samplers

The charcoal samplers are packets of fiberglass screening partially filled with approximately 4.25 grams of activated coconut charcoal. The charcoal used by the Ozark Underground Laboratory is Barnebey and Sutcliffe coconut shell carbon, 6 to 12 mesh, catalog type AC.

The most commonly used samplers are about 4 inches long by two inches wide. A cigar-shaped sampler is made for use in very small diameter wells (such as 1 inch diameter wells); this is a special order item and should be specifically requested when it is needed. All of the samplers are closed by heat sealing.

### Placement of Samplers

Samplers (also called charcoal packets) are placed so as to be exposed to as much water as possible. In springs and streams they are typically attached to a rock or other anchor in a riffle area. Attachment of the packets often uses plastic tie wires. In swifter water galvanized wire (such as electric fence wire) is often used. Other types of anchoring wire can be used. Electrical wire with plastic insulation is also good. Packets are attached so that they extend outward from the anchor rather than being flat against it. Two or more separately anchored packets are typically used for sampling springs and streams. The use of fewer packets is discouraged except when the spring or stream is so small that there is not appropriate space for placing multiple packets.

When pumping wells are being sampled, the samplers are placed in sample holders made of PVC pipe fittings. Brass hose fittings are installed at the end of the sample holders so that the sample holders can be installed on outside hose bibs and water which has run through the



samplers can be directed to waste through a connected garden hose. The samplers can be unscrewed in the middle so that charcoal packets can be changed. The middle portions of the samplers consists of 1.5 inch diameter pipe and pipe fittings.

Charcoal packets can also be lowered into monitoring wells for sampling purposes. In general, if the well is screened, samplers should be placed approximately in the middle of the screened interval. Some sort of weight should be added near the charcoal packet to insure that it will not float. The weight should be of such a nature that it will not affect water quality. One common approach is to anchor the packets with a plastic cable tie to the top of a dedicated weighted disposable bailer. We typically run nylon cord from the top of the well to the charcoal packet and its weight. Nylon fishing line should not be used since it can be readily cut by a sharp projection in the well.

In some cases, especially with narrow wells and appreciable well depths, the weighted disposable bailers sink very slowly or may even fail to sink because of friction and floating of the anchoring cord. In such cases a stainless steel weight may be added to the top of the disposable bailer. We have had good success with two to three ounce segments of stainless steel pipe which have an outside diameter of 1.315 inches and an inside diameter of 1.049 inches; such pipe weighs about 1.7 pounds per linear foot. The weight of the stainless steel is approximately 497 pounds per cubic foot. The pipe segments can be attached over the anchoring cord at the top of the bailer. All weights should be cleaned prior to use; the cleaning approach should comply with decontamination procedures in use at the project site.

Placement of samplers requires adjustment to field conditions. The above placement comments are intended as guidance, not firm requirements.

### **Rinsing of Charcoal Packets Prior to Sampling**

Charcoal packets routinely contain some fine powder that washes off rapidly when they are placed in water. Since such material could remain in monitoring wells, charcoal packets to be placed in such wells are triple rinsed with distilled, demineralized, or reagent water known to be free of tracer dyes. This rinsing is typically done by soaking. With this approach, approximately 25 packets are placed in one gallon of water and soaked for at least 10 minutes. The packets are then removed from the water and excess water is shaken off the packets. The packets are then placed in a second gallon of water and again soaked for at least 10 minutes. After this soaking they are removed from the water and excess water is shaken off the packets. The packets are then placed in a third gallon of water and the procedure is again repeated. Rinsed packets are placed in plastic bags and are placed at sampling stations within three days. Packets can also be rinsed in jets of water for about one minute; this requires more water and is typically difficult to do in the field with water known to be free of tracer dyes.

### **Collection and Replacement of Samplers**

Samplers are routinely collected and replaced from each of the sampling stations. The frequency of sampler collection and replacement is determined by the nature of the study. Collections at one week intervals are common, but shorter or longer collection frequencies are acceptable and sometimes more appropriate. Shorter sampling frequencies are often used in

the early phases of a study to better characterize time of travel. As an illustration, we often collect and change charcoal packets 1, 2, 4, and 7 days after dye injection. Subsequent sampling is then weekly.

Where convenient, the collected samplers should be briefly rinsed in the water being sampled. This is typically not necessary with well samples. The packets are shaken to remove excess water. Next, the packet (or packets) are placed in a plastic bag (Whirl-Pak bags are ideal). The bag is labeled on the outside with a permanent type felt marker pen. Use only pens that have black ink; colored inks may contain fluorescent dyes. The notations include station name or number and the date and time of collection. Labels are not inserted inside the sample bags.

For most projects the Ozark Underground Laboratory supplies the Whirl-Pak bags. Prior to use, 1% of the new bags are randomly selected. Each bag is soaked in the standard eluting solution and then analyzed for the presence of any of the tracer dyes being used.

Collected samplers are kept in the dark to minimize algal growth on the charcoal prior to analysis work. We prefer (and in some studies require) that samples be placed on "blue ice" or ice upon collection and that they be shipped refrigerated with "blue ice" by overnight express. Do not ship samplers packed in ice since this can create a potential for cross contamination when the ice melts. Our experience indicates that it is not essential for samplers to be maintained under refrigeration, yet maintaining them under refrigeration clearly minimizes some potential problems. A product known as "green ice" should not be used for maintaining the samples in a refrigerated condition since this product contains a dye which could contaminate samples if the "green ice" container were to break or leak.

New charcoal samplers are routinely placed when used charcoal packets are collected. The last set of samplers placed at a stream or spring is commonly not collected.

Water samples are often collected. They should be collected in either glass or plastic; the Ozark Underground Laboratory routinely uses 50 ml research grade polypropylene copolymer Perfector Scientific vials (Catalog Number 2650) for such water samples. The vials should be placed in the dark and refrigerated immediately after collection. They should be refrigerated until shipment. For most projects the Ozark Underground Laboratory supplies the vials. Prior to use, 1% of the new vials are randomly selected. Each vial is soaked in the standard eluting solution and then analyzed for the presence of any of the tracer dyes being used.

When water or charcoal samplers are collected for shipment to the Ozark Underground Laboratory they should be shipped promptly. We receive good overnight and second day air service from both UPS and Fed Ex; Airborne Service is excessively slow, and the Postal Service does not provide next day service to us.

Each shipment of charcoal samplers or water samples must be accompanied by a sample tracking sheet. These sheets (which bear the title "Samples for Fluorescence Analysis") are provided by the Ozark Underground Laboratory and summarize placement and collection data. These sheets can be augmented by a client's chain of custody forms or any other relevant documentation. Figure 1 is one of our blank sample forms.

### **Receipt of Samplers**

Samplers shipped to the Ozark Underground Laboratory are refrigerated upon receipt. Prior to cleaning and analysis, samplers are assigned a laboratory identification number. All samples are logged in upon receipt.

It sometimes occurs that there are discrepancies between the chain-of-custody sheets and the actual samples received. When this occurs, a "Discrepancy Sheet" form is completed and sent to the shipper of the sample for resolution. A copy of this form is enclosed as Figure 2. The purpose of the form is to help resolve discrepancies, even when they may be minor.

### **Cleaning of Samplers**

Samplers are cleaned by spraying them with jets of clean water. At the Laboratory we use unchlorinated water for the cleansing to minimize dye deterioration. Effective cleansing cannot generally be accomplished simply by washing in a conventional laboratory sink even if the sink is equipped with a spray unit.

The duration of packet washing depends upon the condition of the sampler. Very clean samplers may require less than a minute of washing; dirtier samplers may require several minutes of washing.

After washing, the packets are shaken to remove excess water. Next, the packets are cut open and the charcoal is emptied into a new disposable plastic beaker. The beaker has been pre-labeled with the laboratory identification number. The charcoal is now ready for elution. The emptied fiberglass screen packet is discarded. At stations where two or more charcoal packets are collected, one is selected for analysis and the other is frozen and retained until the end of the study. In some studies the analysis protocol stipulates that a fixed percentage (often 5%) of the samples should be duplicates; in these cases the second charcoal packet is separately analyzed. Note that these are duplicate samples, not replicate samples since each packet is, of necessity, placed in a somewhat different location and is therefore exposed to somewhat different conditions.

### **Cleaning of Glassware**

Most of our work uses disposable plastic containers. A small amount of glassware is occasionally used for preparation of standards. It is dedicated to this use. In the event that any glassware does come in contact with tracer dyes it will be carefully cleaned before re-use. To do this cleaning, containers are rinsed several times in clean water. Glassware that may be contaminated with dyes is washed with detergent, and then again rinsed. Next, the glassware is soaked for one hour or more in a bleach and water solution. Upon removal from this soaking, the glassware is rinsed again and allowed to air dry.





### **Elution of the Charcoal**

There are various eluting solutions that can be used for the recovery of tracer dyes. The solutions typically include an alcohol, some water, and a strong basic solution such as aqueous ammonia.

The standard elution solution now used at the Ozark Underground Laboratory is a mixture of 5% aqua ammonia and 95% isopropyl alcohol solution and sufficient potassium hydroxide flakes to saturate the solution. The isopropyl alcohol is 70% alcohol and 30% water. The aqua ammonia solution is 29% ammonia. The potassium hydroxide is added until a super-saturated layer is visible in the bottom of the container. This super-saturated layer is not used for elution. Preparation of eluting solutions uses dedicated glassware which is never used in contact with dyes or dye solutions.

The eluting solution we use will elute fluorescein, eosine, rhodamine WT, sulforhodamine B, and pyranine dyes. It is also suitable for separating fluorescein peaks from peaks of some naturally present materials found in some samplers.

Fifteen ml of the eluting solution is poured over the washed charcoal in a disposable sample beaker. The sample beaker is capped. The sample is allowed to stand for 60 minutes. After this time, the liquid is carefully poured off the charcoal into a new disposable beaker which has been appropriately labeled with the laboratory identification number. A few grains of charcoal may inadvertently pass into the second beaker; no attempt is made to remove these from the second sample beaker. After the pouring, a small amount of the elutant will remain in the initial sample beaker. After the transfer of the elutant to the second sample beaker, the contents of the first sample beaker (the eluted charcoal) are discarded.

### **Analysis on the Shimadzu RF-5000U or RF-5301**

The Laboratory uses two Shimadzu spectrofluorophotometers. One is a model RF-5000U, and the other is a model RF-5301. Both of these instruments are capable of synchronous scanning. The RF-5301 is the primary instrument used; the RF-5000U is primarily used as a back-up instrument except for tracing studies which were begun using this instrument. The OUL also owns a Shimadzu RF-540 spectrofluorometer which is occasionally used for special purposes.

A sample of the elutant is withdrawn from the sample container using a disposable polyethylene pipette. Approximately 3 ml of the elutant is then placed in disposable rectangular polystyrene cuvette. The cuvette has a maximum capacity of 3.5 ml. The cuvette is designed for fluorometric analysis; all four sides and the bottom are clear. The spectral range of the cuvettes is 340 to 800 nm. The pipettes and cuvettes are discarded after one use.

The cuvette is then placed in the RF-5000U or the RF-5301. Both instruments are controlled by a programmable computer. Each instrument is capable of conducting substantial data analysis.



Our instruments are operated and maintained in accordance with the manufacturer's recommendations. On-site installation of the instruments and a training session on the use of spectrofluorophotometers was provided by Delta Instrument Company.

Our typical analysis of an elutant sample where fluorescein, eosine, rhodamine WT, or sulforhodamine B dyes may be present includes synchronous scanning of excitation and emission spectra with a 17 nm separation between excitation and emission wavelengths. For these dyes, the excitation scan is from 443 to 613 nm; the emission scan is from 460 to 630 nm. The emission fluorescence from the scan is plotted on a graph. The typical scan speed setting is "very fast" on the RF-5000U; it is "fast" on the RF-5301. The typical sensitivity setting used on both instruments is "high."

Our typical analysis of an elutant sample where pyranine dye may be present includes a synchronous scanning of excitation and emission spectra with a 35 nm separation between excitation and emission wavelengths. For this dye, the excitation scan is from 360 to 600 nm; the emission scan is from 395 to 635 nm. The emission fluorescence from the scan is plotted on a graph. The typical scan speed setting is "very fast" on the RF-5000U; it is "fast" on the RF-5301. The typical sensitivity setting on both instruments is "high."

Excitation and emission slit width settings vary between the two instruments. The widths vary with the dyes for which we are sampling and for the matrix in which the dyes may be present. Excitation and emission slit width settings are summarized in Table 1.

**Table 1. Excitation and emission slit width settings routinely used for dye analysis.**  
Units are nanometers (nm)

Parameter	RF5000U	RF5301
Excitation slit for Eos, Fl, RWT, and SRB in elutant	5	3
Emission slit for Eos, Fl, RWT, and SRB in elutant	3	1.5
Excitation slit for Eos, Fl, RWT, and SRB in water	5	5
Emission slit for Eos, Fl, RWT, and SRB in water	10	3
Excitation slit for Pyranine in elutant	5	5
Emission slit for Pyranine in elutant	3	3
Excitation slit for Pyranine in pH adjusted water	5	5
Emission slit for Pyranine in pH adjusted water	3	3

Eos = Eosine. Fl = Fluorescein. RWT = Rhodamine WT. SRB = Sulforhodamine B.

The instrument produces a plot of the synchronous scan for each sample; the plot shows emission fluorescence only. The synchronous scans are subjected to computer peak picks; peaks are picked to the nearest 0.1 nm. All samples run on the RF-5000U and RF-5301 are

stored on disk and printed on normal typing paper with a laser printer; sample information is printed on the chart.

All samples analyzed are recorded in a bound journal.

### **Quantification**

We calculate the magnitude of fluorescence peaks for fluorescein, eosine, rhodamine WT, sulforhodamine B, and pyranine dyes. Dye quantities are expressed in microgram per liter (parts per billion; ppb). On the RF-5000U and RF-5301 the dye concentrations are calculated by separating fluorescence peaks due to dyes from background fluorescence on the charts, and then calculating the area within the fluorescence peak. This area is proportional to areas obtained from standard solutions.

Where there are multiple fluorescence peaks it is sometimes necessary to calculate dye concentrations based upon the height of the fluorescence peak rather than the area. The heights of the peaks are also proportional to dye concentrations.

We run dye concentration standards each day the machine is used. Ten separate standards are used; the standard or standards appropriate for the analysis work being conducted are selected. All standards are based upon the as-sold weights of the dyes. The standards are as follows:

- 1) 10 ppb fluorescein and 100 ppb rhodamine WT in well water from the Jefferson City-Cotter Formation
- 2) 10 ppb eosine in well water from the Jefferson City-Cotter Formation
- 3) 100 ppb sulforhodamine B in well water from the Jefferson City-Cotter Formation.
- 4) 10 ppb pyranine in well water from the Jefferson City-Cotter Formation. A sample of the standard is placed for at least two hours in a high ammonia atmosphere to adjust the pH to a value of 9.5 or greater.
- 5) 10 ppb fluorescein and 100 ppb rhodamine WT in elutant.
- 6) 10 ppb eosine in elutant.
- 7) 100 ppb sulforhodamine B in elutant.
- 8) 10 ppb pyranine in elutant.

### **Preparation of Standards**

Dye standards are prepared as follows:

Step 1. A small sample of the as-sold dye is placed in a pre-weighed sample vial and the vial is again weighed to determine the weight of the dye. We attempt to use a sample weighing between 1 and 5 grams. This sample is then diluted with well water to make a 1% dye solution by weight (based upon the as-sold weight of the dye). The resulting dye solution is allowed to sit for at least four hours to insure that all dye is fully dissolved.

Step 2. One part of each dye solution from Step 1 is placed in a mixing container with 99 parts of well water. Separate mixtures are made for fluorescein, rhodamine WT, eosine, sulforhodamine B, and pyranine. The resulting solutions contain 100 mg/l dye (100 parts per million dye). The typical prepared volume of this mixture is appropriate for the sample bottles being used; we commonly prepare about 50 ml. of the Step 2 solutions. The dye solution from Step 1 that is used in making the Step 2 solution is withdrawn with a digital Finnpiptette which is capable of measuring volumes between 0.200 and 1.000 ml at intervals of 0.005 ml. The calibration certificate with this instrument indicates that the accuracy (in percent) is as follows:

At 0.200 ml, 0.90%

At 0.300 ml, 0.28%

At 1.000 ml, 0.30%

The Step 2 solution is called the long term standard. Ozark Underground Laboratory experience indicates that Step 2 solutions, if kept refrigerated, will not deteriorate appreciably over periods of less than a year. Furthermore, these Step 2 solutions may last substantially longer than one year.

Step 3. A series of intermediate-term dye solutions are made. Approximately 45 ml. of each intermediate-term dye solution is made. All volume measurements of less than 5 ml are made with a digital Finnpiptette. (see description in Step 2). All other volume measurements are made with Rheinland Kohn Geprüfte Sicherheit 50 ml. capacity pump dispenser which will pump within plus or minus 1% of the set value. The following solutions are made; all concentrations are based on the as-sold weight of the dyes:

- 1) A solution containing 1 ppm fluorescein dye and 10 ppm rhodamine WT dye.
- 2) A solution containing 1 ppm eosine.
- 3) A solution containing 10 ppm sulforhodamine B dye.
- 4) A solution containing 1 ppm pyranine.

Step 4. A series of eight short-term dye standards are made from solutions in Step 3. These standards were identified earlier in this section. In the experience of the Ozark Underground Laboratory these standards have a useful shelf life in excess of one week. However, in practice, they are kept under refrigeration and new standards are made weekly.

#### **Dilution of Samples**

Samples with peaks that have arbitrary fluorescence unit values of 500 or more are diluted a hundred fold to ensure accurate quantification.

Some water samples have high turbidity or color which interferes with accurate detection and measurement of dye concentrations. It is often possible to dilute these samples and then measure the dye concentration in the diluted sample.

The typical dilution is 100 fold. One part of the test sample is combined with 99 parts of water (if the test sample is water) or with 99 parts of the standard elutant (if the test sample is elutant). Typically, 0.300 ml of the test solution is combined with 29.700 ml of water (or elutant as appropriate) to yield a new test solution. All volume measurements of less than 5 ml are made with a digital Finnpiette, which is capable of measuring volumes between 0.200 and 1.000 ml at intervals of 0.005 ml. The calibration certificate with this instrument indicates that the accuracy (in percent) is as follows:

At 0.200 ml, 0.90%

At 0.300 ml, 0.28%

At 1.000 ml, 0.30%

All other volume measurements are made with Rheinland Kohn Geprüfte Sicherheit 50 ml. capacity pump dispenser which will pump within plus or minus 1% of the set value.

### **Quality Control**

Laboratory blanks are run for every sample where the last two digits of the laboratory numbers are 00, 20, 40, 60, or 80. A charcoal packet is placed in a pumping well sampler and at least 25 gallons of unchlorinated water is passed through the sampler at a rate of about 2.5 gallons per minute. The sampler is then subjected to the same analytical protocol as all other samplers.

System functioning tests of the analytical instruments are conducted in accordance with the manufacturer's recommendations.

All materials used in sampling and analysis work are routinely analyzed for the presence of any compounds that might create fluorescence peaks in or near the acceptable wavelength ranges for any of the tracer dyes. This testing typically includes approximately 1% of materials used.

### **Reports**

Reports are provided in accordance with the needs of the client. At a minimum we provide copies of the analysis graphs and a listing of stations and samples where dye was detected. The reports indicate dye concentrations.

Work at the Ozark Underground Laboratory is directed by Mr. Thomas Aley. Mr. Aley has 40 years of professional experience in hydrology and hydrogeology. He is certified as a Professional Hydrogeologist (Certificate #179) by the American Institute of Hydrology. Mr. Aley has 35 years of professional experience in groundwater tracing with fluorescent tracing agents.

## CRITERIA FOR DETERMINATION OF POSITIVE DYE RECOVERIES

### Normal Emission Ranges and Detection Limits

The OUL has established normal emission fluorescence wavelength ranges for each of the five dyes. The normal acceptable range equals mean values plus and minus two standard deviations. These values are derived from actual groundwater tracing studies conducted by the OUL.

The detection limits are based upon concentrations of dye necessary to produce emission fluorescence peaks where the signal to noise ratio is 3. The detection limits are realistic for most field studies since they are based upon results from actual field samples rather than being based upon values from spiked samples in a matrix of reagent water or the elutants from unused activated carbon samplers. In some cases detection limits may be smaller than reported if the water being sampled has very little fluorescent material in it. In some cases detection limits may be greater than reported; this most commonly occurs if the sample is turbid due to suspended material or a coloring agent such as tannic compounds. Turbid samples are typically centrifuged or, if this is not effective, diluted prior to analysis.

Table 2 provides normal emission wavelength ranges and detection limits for the five dyes when analyzed on the OUL's RF-5000U spectrofluorophotometer. Table 3 provides similar data for the OUL's RF-5301. As indicated earlier in Table 1, the analytical protocols used on the two instruments are somewhat different, especially in regard to the widths of excitation and emission slit settings.

**Table 2. RF-5000U Spectrofluorophotometer. Normal emission wavelength ranges and detection limits for fluorescein, eosine, rhodamine WT, sulforhodamine B, and pyranine dyes in water and elutant samples.** Detection limits are based upon the as-sold weight of the dye mixtures normally used by the OUL.

Dye and Matrix	Normal Acceptable Emission Wavelength Range (nm)	Detection Limit (ppb)
Eosine in Elutant	533.0 to 539.6	0.035
Eosine in Water	529.6 to 538.4	0.008
Fluorescein in Elutant	510.7 to 515.0	0.010
Fluorescein in Water	505.6 to 510.5	0.0005
Pyranine in Elutant	500.4 to 504.6	0.055
Pyranine in Water*	501.2 to 505.2	0.030
Rhodamine WT in Elutant	561.7 to 568.9	0.275
Rhodamine WT in Water	569.4 to 574.8	0.050
Sulforhodamine B in Elutant	567.5 to 577.5	0.150
Sulforhodamine B in Water	576.2 to 579.7	0.040

\* pH adjusted water with pH of 9.5 or greater.

Note: The protocols for the analysis of pyranine dye are substantially different than those for the other dyes. As a result, there is less potential interference between pyranine and fluorescein than might otherwise be indicated by the emission wavelength values shown in the table.



**Table 3. RF-5301 Spectrofluorophotometer. Normal emission wavelength ranges and detection limits for fluorescein, eosine, rhodamine WT, sulforhodamine B, and pyranine dyes in water and elutant samples. Detection limits are based upon the as-sold weight of the dye mixtures normally used by the OUL.**

Dye and Matrix	Normal Acceptable Emission Wavelength Range (nm)	Detection Limit (ppb)
Eosine in Elutant	538.1 to 543.9	0.050
Eosine in Water	533.4 to 537.9	0.015
Fluorescein in Elutant	514.0 to 518.1	0.025
Fluorescein in Water	508.0 to 511.7	0.002
Pyranine in Elutant	502.1 to 508.1	0.015
Pyranine in Water*	504.1 to 510.1	0.010
Rhodamine WT in Elutant	565.4 to 572.0	0.170
Rhodamine WT in Water	572.7 to 578.0	0.015
Sulforhodamine B in Elutant	572.8 to 579.6	0.080
Sulforhodamine B in Water	580.1 to 583.7	0.008

\* pH adjusted water with pH of 9.5 or greater.

Note: The protocols for the analysis of pyranine dye are substantially different than those for the other dyes. As a result, there is less potential interference between pyranine and fluorescein than might otherwise be indicated by the emission wavelength values shown in the table.

### **Criteria for Determining Positive Dye Recoveries**

The following sections identify normal criteria used by the OUL for determining positive dye recoveries. Beginning January 1, 2001, the primary analytical instrument in use at the OUL was the RF-5301; the RF-5000U was the principal backup instrument. Studies which were in progress prior to January 1, 2001 continued to have samples analyzed on the RF-5000U.

Except for pyranine dye, the analytical protocol used for the RF-5301 provides for the use of narrower excitation and/or emission slit settings than the RF-5000U protocol. This enhances our ability to discriminate between dyes and other fluorescent compounds. The protocol which is possible with the RF-5301 (as contrasted with the RF-5000U) also provides for a better balance in the sizes of the fluorescence peaks associated with an equal concentration of all of the dyes.

### **Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Eosine Dye Recoveries in Elutants from Charcoal Samplers.**

There is generally little or no detectable fluorescence background in the general range of eosine dye encountered in most groundwater tracing studies. The following four criteria are used to identify fluorescence peaks which are deemed to be eosine dye.

**Criterion 1.** There must be at least one fluorescence peak at the station in question in the range of 538.1 to 543.9 nm for samples analyzed by the RF-5301. The range must be 533.0 to 539.6 nm for samples analyzed by the RF-5000U.

**Criterion 2.** The dye concentration associated with the fluorescence peak must be at least 3 times the detection limit. For the RF-5301, the eosine detection limit in elutant samples is 0.050 ppb, thus this dye concentration limit equals 0.150 ppb. For the RF-5000U the eosine detection limit in elutant samples is 0.035 ppb, thus this dye concentration limit equals 0.105 ppb.

**Criterion 3.** The dye concentration must be at least 10 times greater than any other concentration reflective of background at the sampling station in question.

**Criterion 4.** The shape of the fluorescence peak must be typical of eosine. Much background fluorescence yields low, broad, and asymmetrical fluorescence peaks rather than the more narrow and symmetrical fluorescence peaks typical of eosine. In addition, there must be no other factors which suggest that the fluorescence peak may not be eosine dye from our groundwater tracing work.

### **Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Eosine Dye Recoveries in Water Samples.**

There is generally little or no detectable fluorescence background in the general range of eosine dye encountered in most groundwater tracing studies. The following three criteria are used to identify fluorescence peaks which are deemed to be eosine dye.

**Criterion 1.** The associated charcoal samplers for the station should also contain eosine dye in accordance with the criteria listed above. These criteria may be waived if no charcoal sampler exists.

**Criterion 2.** There must be no factors which suggest that the fluorescence peak may not be eosine dye from our groundwater tracing work. For samples analyzed on the RF-5301, the fluorescence peak should generally be in the range of 533.4 to 537.9 nm. For samples analyzed on the RF-5000U, the fluorescence peak should generally be in the range of 529.6 to 538.4 nm.

**Criterion 3.** The dye concentration associated with the fluorescence peak must be at least three times the detection limit. Our eosine detection limit in water samples analyzed on the RF-5301 is 0.015 ppb, thus this dye concentration limit equals 0.045 ppb. For samples analyzed on the 5000U the detection limit is 0.008 ppb, thus this dye concentration limit equals 0.024 ppb.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Fluorescein Dye Recoveries in Elutants from Charcoal Samplers.**

There is often some fluorescence background in the range of fluorescein dye present at some of the stations used in groundwater tracing studies. We routinely conduct background sampling prior to the introduction of any tracer dyes to characterize this background fluorescence and to identify the existence of any tracer dyes which may be present in the area. The fact that a fluorescence peak is identified in our analytical results is not proof that it is fluorescein dye or that it is fluorescein dye from the trace of concern. The following 4 criteria are used to identify fluorescence peaks which are deemed to be fluorescein dye recoveries from our tracing work.

**Criterion 1.** There must be at least one fluorescence peak at the station in question in the range of 514.0 to 518.1 nm for samples analyzed by the RF-5301. The range must be 510.7 to 515.0 for samples analyzed by the RF-5000U.

**Criterion 2.** The dye concentration associated with the fluorescence peak must be at least 3 times the detection limit. For the RF-5301, the fluorescein detection limit in elutant samples is 0.025 ppb, thus this dye concentration limit equals 0.075 ppb. For the RF-5000U, the fluorescein detection limit in elutant samples is 0.010 ppb, thus this dye concentration limit equals 0.030 ppb.

**Criterion 3.** The dye concentration must be at least 10 times greater than any other concentration reflective of background at the sampling station in question.

**Criterion 4.** The shape of the fluorescence peak must be typical of fluorescein. Much background fluorescence yields low, broad, and asymmetrical fluorescence peaks rather than the more narrow and symmetrical fluorescence peaks typical of fluorescein. In addition, there must be no other factors which suggest that the fluorescence peak may not be fluorescein dye from our groundwater tracing work.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Fluorescein Dye Recoveries in Water Samples.**

There is commonly some fluorescence background in the general range of fluorescein dye at some sampling stations used in groundwater tracing studies. The following criteria are used to identify fluorescence peaks which are deemed to be fluorescein dye in water.

**Criterion 1.** The associated charcoal samplers for the station should also contain fluorescein dye in accordance with the criteria listed above. These criteria may be waived if no charcoal sampler exists.

**Criterion 2.** There must be no factors which suggest that the fluorescence peak may not be fluorescein dye from our groundwater tracing work. For samples analyzed on the RF-5301, the fluorescence peak should generally be in the range of 508.0 to 511.7 nm. For samples analyzed on the RF-5000U, the fluorescence peak should generally be in the range of 505.6 to 510.5 nm.

**Criterion 3.** The dye concentration associated with the fluorescence peak must be at least three times the detection limit. Our fluorescein detection limit in water samples analyzed on the RF-5301 is 0.002 ppb, thus this dye concentration limit equals 0.006 ppb. For the RF-5000U the detection limit is 0.0005 ppb, thus this dye concentration limit equals 0.0015 ppb.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Rhodamine WT Dye Recoveries in Elutants from Charcoal Samplers.**

There is generally little or no detectable fluorescence background in the general range of Rhodamine WT dye encountered in most groundwater tracing studies. The following four criteria are used to identify fluorescence peaks which are deemed to be Rhodamine WT.

**Criterion 1.** For samples analyzed on the RF-5301, there must be at least one fluorescence peak at the station in question in the range of 565.4 to 572.0 nm. For samples analyzed on the RF-5000U, there must be at least one fluorescence peak at the station in question in the range of 561.7 to 568.9 nm.

**Criterion 2.** The dye concentration associated with the Rhodamine WT peak must be at least 3 times the detection limit. For the RF-5301, the detection limit in elutant samples is 0.170 ppb, thus this dye concentration limit equals 0.510 ppb. For the RF-5000U, the detection limit in elutant samples is 0.275 ppb, thus this dye concentration limit equals 0.825 ppb.

**Criterion 3.** The dye concentration must be at least 10 times greater than any other concentration reflective of background at the sampling station in question.

**Criterion 4.** The shape of the fluorescence peak must be typical of Rhodamine WT. In addition, there must be no other factors which suggest that the fluorescence peak may not be dye from the groundwater tracing work under investigation.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Rhodamine WT Dye Recoveries in Water Samples.**

The following criteria are used to identify fluorescence peaks which are deemed to be Rhodamine WT dye in water.

**Criterion 1.** The associated charcoal samplers for the station should also contain Rhodamine WT dye in accordance with the criteria listed above. These criteria may be waived if no charcoal sampler exists.

**Criterion 2.** There must be no factors which suggest that the fluorescence peak may not be Rhodamine WT dye from the tracing work under investigation. For samples analyzed with the RF-5301, the fluorescence peak should generally be in the range of 572.7 to 578.0 nm. For samples analyzed with the RF-5000U, the fluorescence peak should generally be in the range of 569.4 to 574.8 nm.

**Criterion 3.** The dye concentration associated with the fluorescence peak must be at least three times the detection limit. Our Rhodamine WT detection limit in water samples analyzed on the RF-5301 is 0.015 ppb, thus this dye concentration limit is 0.045 ppb. For samples analyzed on the RF-5000U the detection limit is 0.050 ppb, thus this dye concentration limit equals 0.150 ppb.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Sulforhodamine B Dye Recoveries in Elutants from Charcoal Samplers.**

There is generally little or no detectable fluorescence background in the general range of sulforhodamine B dye encountered in most groundwater tracing studies. The following four criteria are used to identify fluorescence peaks which are deemed to be sulforhodamine B.

**Criterion 1.** For samples analyzed on the RF-5000U, there must be at least one fluorescence peak at the station in question in the range of 567.5 to 577.5 nm. The acceptable range for samples analyzed on the RF-5301 is 572.8 to 579.6 nm.

**Criterion 2.** The dye concentration associated with the sulforhodamine B peak must be at least 3 times the detection limit. For the RF-5000U, the detection limit in elutant samples is 0.150 ppb, thus this dye concentration limit equals 0.450 ppb. For the RF-5301, the detection limit in elutant samples is 0.080 ppb, thus this dye concentration limit equals 0.240 ppb.

**Criterion 3.** The dye concentration must be at least 10 times greater than any other concentration reflective of background at the sampling station in question.

**Criterion 4.** The shape of the fluorescence peak must be typical of sulforhodamine B. In addition, there must be no other factors which suggest that the fluorescence peak may not be dye from the groundwater tracing work under investigation.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Sulforhodamine B dye Recoveries in Water Samples.**

The following criteria are used to identify fluorescence peaks which are deemed to be sulforhodamine B dye in water.

**Criterion 1.** The associated charcoal samplers for the station should also contain sulforhodamine B dye in accordance with the criteria listed earlier. These criteria may be waived if no charcoal sampler exists.

**Criterion 2.** There must be no factors which suggest that the fluorescence peak may not be sulforhodamine B dye from the tracing work under investigation. For samples analyzed with the RF-5000U, the fluorescence peak should generally be in the range of 576.2 to 579.7 nm. For samples analyzed with the RF-5301, the fluorescence peak should generally be in the range of 580.1 to 583.7 nm.

**Criterion 3.** The dye concentration associated with the fluorescence peak must be at least three times the detection limit. For samples analyzed on the RF-5301 the detection limit in water is 0.008 ppb, thus this dye concentration limit equals 0.024 ppb. For samples analyzed on the RF-5000U the detection limit in water samples is 0.040 ppb, thus this dye concentration limit equals 0.120 ppb.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Pyranine Dye Recoveries in Elutants from Charcoal Samplers.**

It must be remembered that the analysis protocol for pyranine dye is different than the protocol for the other four dyes discussed in this document. If the other dyes are present in a sample analyzed for pyranine dye their emission fluorescence peaks (if any) will be appreciably different than the values presented above. Because of this, there is very little analytical interference between fluorescein and pyranine dyes when both are present in a sample.

There is often some detectable fluorescence background encountered in the general range of pyranine dye in groundwater tracing studies. The following four criteria are used to identify fluorescence peaks which are deemed to be pyranine.

**Criterion 1.** For samples analyzed on the RF-5000U, there must be at least one fluorescence peak at the station in question in the range of 500.4 to 504.6 nm. The acceptable range for samples analyzed on the RF-5301 is 502.1 to 508.1 nm.

**Criterion 2.** The dye concentration associated with the pyranine dye peak must be at least 3 times the detection limit. For the RF-5000U, the detection limit in elutant samples is 0.055 ppb, thus this dye concentration limit equals 0.165 ppb. For the RF-5301, the detection limit in elutant samples is 0.015 ppb, thus this dye concentration limit equals 0.045 ppb.

**Criterion 3.** The dye concentration must be at least 10 times greater than any other concentration reflective of background at the sampling station in question.



**Criterion 4.** The shape of the fluorescence peak must be typical of pyranine dye. In addition, there must be no other factors which suggest that the fluorescence peak may not be dye from the groundwater tracing work under investigation.

**Normal Criteria Used by the Ozark Underground Laboratory for Determining Positive Pyranine Dye Recoveries in Water Samples.**

It must be remembered that the analysis protocol for pyranine dye is different than the protocol for the other four dyes discussed in this document. If the other dyes are present in a sample analyzed for pyranine dye their emission fluorescence peaks (if any) will be appreciably different than the values presented above. Because of this, there is very little analytical interference between fluorescein and pyranine dyes when both are present in a sample.

The fluorescence of pyranine decreases below a pH of about 9.5. Prior to analysis water samples are placed in a high ammonia atmosphere for at least two hours. A pyranine dye in water standard is placed in the same atmosphere as the samples. Prior to analysis samples are tested to insure that their pH is 9.5 or greater. If pyranine dye concentrations in a sample are so great as to require dilution for quantification of the dye concentration the diluting water used is OUL reagent water which has been pH adjusted in a high ammonia atmosphere.

The following criteria are used to identify fluorescence peaks which are deemed to be pyranine dye in water.

**Criterion 1.** The associated charcoal samplers for the station should also contain pyranine dye in accordance with the criteria listed earlier. These criteria may be waived if no charcoal sampler exists.

**Criterion 2.** There must be no factors which suggest that the fluorescence peak may not be pyranine dye from the tracing work under investigation. For samples analyzed with the RF-5000U, the fluorescence peak should generally be in the range of 501.2 to 505.2 nm. For samples analyzed with the RF-5301, the fluorescence peak should generally be in the range of 504.1 to 510.1 nm.

**Criterion 3.** The dye concentration associated with the fluorescence peak must be at least three times the detection limit. For samples analyzed on the RF-5301 the detection limit in water is 0.010 ppb, thus this dye concentration limit equals 0.030 ppb. For samples analyzed on the RF-5000U the detection limit in water samples is 0.030 ppb, thus this dye concentration limit equals 0.090 ppb.

**APPENDIX Q**

**FRACTURE SET DATABASE**

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-30	1	26.3	46.4	less-open	6	105	92	2	NSR <sup>10</sup>	NSR	NSR	NSR	TNP <sup>11</sup>	TNP	NA	--	--	--	--	--	--
MW-30	2	26.6	46.1	less-open	67	312	299	209	2	NW	291-335	44	TNP	TNP	0.3	--	5.6	--	--	--	--
MW-30	3	28.1	44.6	less-open	18	99	86	356	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-30	4	28.5	44.2	less-open	32	1	348	258	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-30	5	29.1	43.6	less-open	67	310	297	207	2	NW	291-335	44	TNP	TNP	0.6	--	2.5	--	--	--	--
MW-30	6	29.3	43.4	less-open	39	190	177	87	5	S	166-200	34	TNP	TNP	0.2	--	--	--	--	8.3	--
MW-30	7	29.6	43.1	less-open	45	166	153	63	1	SE	116-165	49	TNP	TNP	0.3	8.6	--	--	--	--	--
MW-30	8	30.2	42.5	less-open	37	123	110	20	3	E	70-115	45	TNP	TNP	0.6	--	--	9.2	--	--	--
MW-30	9	31.2	41.5	less-open	68	210	197	107	5	S	166-200	34	TNP	TNP	1.0	--	--	--	--	1.9	--
MW-30	10	32.1	40.6	less-open	61	104	91	1	3	E	70-115	45	TNP	TNP	0.9	--	--	1.9	--	--	--
MW-30	11	32.7	40.0	less-open	62	115	102	12	3	E	70-115	45	TNP	TNP	0.7	--	--	0.7	--	--	--
MW-30	12	33.1	39.6	less-open	52	165	152	62	1	SE	116-165	49	TNP	TNP	0.4	3.5	--	--	--	--	--
MW-30	13	33.8	38.9	less-open	51	131	118	28	1	SE	116-165	49	TNP	TNP	0.8	0.8	--	--	--	--	--
MW-30	14	33.9	38.8	less-open	67	319	306	216	2	NW	291-335	44	TNP	TNP	0.1	--	4.9	--	--	--	--
MW-30	15	34.1	38.6	less-open	51	122	109	19	3	E	70-115	45	TNP	TNP	0.2	--	--	1.4	--	--	--
MW-30	16	34.7	38.0	less-open	58	150	137	47	1	SE	116-165	49	TNP	TNP	0.5	0.8	--	--	--	--	--
MW-30	17	35.0	37.7	less-open	45	131	118	28	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-30	18	35.9	36.8	less-open	58	156	143	53	1	SE	116-165	49	TNP	TNP	0.9	0.9	--	--	--	--	--
MW-30	19	36.3	36.4	less-open	59	301	288	198	4	W	245-290	45	TNP	TNP	0.4	--	--	--	15.3	--	--
MW-30	20	36.6	36.1	less-open	67	313	300	210	2	NW	291-335	44	TNP	TNP	0.4	--	2.7	--	--	--	--
MW-30	21	36.9	35.8	less-open	61	159	146	56	1	SE	116-165	49	TNP	TNP	0.3	1.0	--	--	--	--	--
MW-30	22	37.8	34.9	less-open	57	330	317	227	2	NW	291-335	44	TNP	TNP	0.8	--	1.1	--	--	--	--
MW-30	23	38.4	34.3	less-open	42	175	162	72	1	SE	116-165	49	TNP	TNP	0.6	1.5	--	--	--	--	--
MW-30	24	38.6	34.1	less-open	60	335	322	232	2	NW	291-335	44	TNP	TNP	0.2	--	0.8	--	--	--	--
MW-30	25	39.8	32.9	less-open	45	110	97	7	3	E	70-115	45	TNP	TNP	1.2	--	--	5.6	--	--	--
MW-30	26	40.4	32.3	less-open	40	121	108	18	3	E	70-115	45	TNP	TNP	0.6	--	--	0.6	--	--	--
MW-30	27	40.4	32.3	less-open	32	137	124	34	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-30	28	40.7	32.0	less-open	57	340	327	237	2	NW	291-335	44	TNP	TNP	0.3	--	2.1	--	--	--	--
MW-30	29	40.9	31.8	less-open	38	103	90	360	3	E	70-115	45	TNP	TNP	0.2	--	--	0.5	--	--	--
MW-30	30	41.6	31.1	less-open	13	241	228	138	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--
MW-30	31	42.5	30.2	less-open	32	223	210	120	NSR	NSR	NSR	NSR	TNP	TNP	0.9	--	--	--	--	--	--
MW-30	32	43.2	29.5	less-open	57	167	154	64	1	SE	116-165	49	TNP	TNP	0.7	4.8	--	--	--	--	--
MW-30	33	43.7	29.0	less-open	71	31	18	288	6	N	336-21	45	TNP	TNP	0.6	--	--	--	--	--	22.7
MW-30	34	45.0	27.7	less-open	61	125	112	22	3	E	70-115	45	TNP	TNP	1.3	--	--	4.2	--	--	--
MW-30	35	46.2	26.5	less-open	54	163	150	60	1	SE	116-165	49	TNP	TNP	1.2	3.1	--	--	--	--	--
MW-30	36	46.6	26.1	less-open	50	10	357	267	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	2.8
MW-30	37	46.9	25.8	less-open	52	278	265	175	4	W	245-290	45	TNP	TNP	0.3	--	--	--	10.6	--	--
MW-30	38	47.1	25.6	less-open	57	147	134	44	1	SE	116-165	49	TNP	TNP	0.2	0.9	--	--	--	--	--
MW-30	39	48.1	24.6	less-open	41	24	11	281	6	N	336-21	45	TNP	TNP	1.0	--	--	--	--	--	1.6
MW-30	40	49.5	23.2	less-open	45	180	167	77	5	S	166-200	34	TNP	TNP	1.4	--	--	--	--	18.3	--
MW-30	41	49.9	22.8	less-open	48	196	183	93	5	S	166-200	34	TNP	TNP	0.4	--	--	--	--	0.4	--
MW-30	42	50.1	22.6	less-open	73	85	72	342	3	E	70-115	45	TNP	TNP	0.2	--	--	5.1	--	--	--
MW-30	43	50.2	22.5	less-open	41	9	356	266	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	2.0
MW-30	44	50.2	22.5	less-open	49	163	150	60	1	SE	116-165	49	TNP	TNP	0.0	3.0	--	--	--	--	--
MW-30	45	50.4	22.3	less-open	46	152	139	49	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-30	46	50.5	22.2	less-open	44	170	157	67	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-30	47	50.6	22.1	less-open	34	346	333	243	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-30	48	51.6	21.1	less-open	50	127	114	24	3	E	70-115	45	TNP	TNP	1.1	--	--	1.5	--	--	--
MW-30	49	53.4	19.3	less-open	51	158	145	55	1	SE	116-165	49	TNP	TNP	1.7	2.8	--	--	--	--	--
MW-30	50	54.4	18.3	less-open	38	293	280	190	4	W	245-290	45	TNP	TNP	1.1	--	--	--	7.5	--	--
MW-30	51	56.0	16.7	less-open	43	197	184	94	5	S	166-200	34	TNP	TNP	1.6	--	--	--	--	6.1	--
MW-30	52	56.3	16.4	less-open	40	142	129	39	1	SE	116-165	49	TNP	TNP	0.3	2.9	--	--	--	--	--
MW-30	53	56.7	16.0	less-open	35	316	303	213	2	NW	291-335	44	TNP	TNP	0.5	--	16.1	--	--	--	--
MW-30	54	57.0	15.7	less-open	39	134	121	31	1	SE	116-165	49	TNP	TNP	0.3	0.8	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)								
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6			
MW-30	55	57.6	15.1	less-open	51	146	133	43	1	SE	116-165	49	TNP		TNP	0.6	0.6	--	--	--	--	--	--	
MW-30	56	57.7	15.0	less-open	25	38	25	295	NSR	NSR	NSR	NSR	TNP		TNP	0.1	--	--	--	--	--	--	--	
MW-30	57	58.1	14.6	less-open	44	166	153	63	1	SE	116-165	49	TNP		TNP	0.4	0.4	--	--	--	--	--	--	
MW-30	58	58.5	14.2	less-open	44	301	288	198	4	W	245-290	45	TNP		TNP	0.4	--	--	--	4.1	--	--	--	
MW-30	59	58.6	14.1	less-open	47	148	135	45	1	SE	116-165	49	TNP		TNP	0.1	0.5	--	--	--	--	--	--	
MW-30	60	58.6	14.1	less-open	49	151	138	48	1	SE	116-165	49	TNP		TNP	0.0	0.0	--	--	--	--	--	--	
MW-30	61	58.8	13.9	less-open	42	315	302	212	2	NW	291-335	44	TNP		TNP	0.2	--	2.1	--	--	--	--	--	
MW-30	62	58.9	13.8	less-open	47	289	278	186	4	W	245-290	45	TNP		TNP	0.1	--	--	--	0.4	--	--	--	
MW-30	63	59.5	13.2	less-open	40	128	115	25	3	E	70-115	45	TNP		TNP	0.6	1.1	--	7.9	--	--	--	--	
MW-30	64	59.7	13.0	less-open	40	144	131	41	1	SE	116-165	49	TNP		TNP	0.2	0.2	--	--	--	--	--	--	
MW-30	65	60.0	12.7	less-open	35	129	116	26	1	SE	116-165	49	TNP		TNP	0.3	0.3	--	--	--	--	--	--	
MW-30	66	60.3	12.4	less-open	59	130	117	27	1	SE	116-165	49	TNP		TNP	0.3	0.3	--	--	--	--	--	--	
MW-30	67	60.4	12.3	less-open	39	280	267	177	4	W	245-290	45	TNP		TNP	0.0	--	--	--	1.4	--	--	--	
MW-30	68	60.7	12.0	less-open	36	134	121	31	1	SE	116-165	49	TNP		TNP	0.4	0.4	--	--	--	--	--	--	
MW-30	69	61.0	11.7	less-open	56	148	135	45	1	SE	116-165	49	TNP		TNP	0.3	0.3	--	--	--	--	--	--	
MW-30	70	61.3	11.4	less-open	49	184	171	81	5	S	166-200	34	TNP		TNP	0.3	--	--	--	--	5.3	--	--	
MW-30	71	61.5	11.2	less-open	25	197	184	94	NSR	NSR	NSR	NSR	TNP		TNP	0.1	--	--	--	--	--	--	--	
MW-30	72	61.9	10.8	less-open	48	166	153	63	1	SE	116-165	49	TNP		TNP	0.4	0.8	--	--	--	--	--	--	
MW-30	73	62.7	10.0	less-open	53	216	203	113	NSR	NSR	NSR	NSR	2.1E-04		6.0E-01	0.8	--	--	--	--	--	--	--	
MW-30	74	64.9	7.8	less-open	54	321	308	218	2	NW	291-335	44	2.1E-04		6.0E-01	2.3	--	6.1	--	--	--	--	--	
MW-30	75	65.8	6.9	less-open	49	317	304	214	2	NW	291-335	44	2.1E-04	2.1E-04	6.0E-01	6.0E-01	0.9	--	0.9	--	--	--	--	--
MW-30	76	66.0	6.7	less-open	52	320	307	217	2	NW	291-335	44	2.1E-04	2.1E-04	6.0E-01	6.0E-01	0.3	--	0.3	--	--	--	--	--
MW-30	77	66.2	6.5	less-open	53	127	114	24	3	E	70-115	45	2.1E-04	2.1E-04	6.0E-01	6.0E-01	0.2	--	--	6.7	--	--	--	--
MW-30	78	66.9	5.8	less-open	52	151	138	48	1	SE	116-165	49	2.1E-04	2.1E-04	6.0E-01	6.0E-01	0.6	5.0	--	--	--	--	--	--
MW-30	79	67.9	4.8	less-open	41	136	123	33	1	SE	116-165	49			6.0E-01	6.0E-01	1.0	1.0	--	--	--	--	--	--
MW-30	80	68.0	4.7	less-open	59	311	298	208	2	NW	291-335	44			6.0E-01	6.0E-01	0.1	--	2.0	--	--	--	--	--
MW-30	81	68.4	4.3	less-open	36	313	300	210	2	NW	291-335	44			6.0E-01	6.0E-01	0.4	--	0.4	--	--	--	--	--
MW-30	82	68.9	3.8	less-open	47	147	134	44	1	SE	116-165	49	7.1E-07		2.0E-03	6.0E-01	0.5	1.0	--	--	--	--	--	--
MW-30	83	68.9	3.8	less-open	55	126	113	23	3	E	70-115	45	7.1E-07	2.1E-04	2.0E-03	6.0E-01	0.0	--	--	2.7	--	--	--	--
MW-30	84	71.1	1.6	less-open	52	141	128	38	1	SE	116-165	49	7.1E-07		2.0E-03		2.2	2.2	--	--	--	--	--	--
MW-30	85	71.9	0.8	less-open	61	339	326	236	2	NW	291-335	44	7.1E-07		2.0E-03		0.8	--	3.5	--	--	--	--	--
MW-30	86	73.9	-1.2	less-open	57	132	119	29	1	SE	116-165	49	3.5E-07		1.0E-03		2.0	2.8	--	--	--	--	--	--
MW-30	87	74.2	-1.5	less-open	53	113	100	10	3	E	70-115	45	3.5E-07		1.0E-03		0.3	--	--	5.3	--	--	--	--
MW-30	88	74.2	-1.5	less-open	32	291	278	188	NSR	NSR	NSR	NSR	3.5E-07		1.0E-03		0.0	--	--	--	--	--	--	--
MW-30	89	75.2	-2.6	less-open	65	302	289	199	4	W	245-290	45	3.5E-07		1.0E-03		1.0	--	--	--	14.9	--	--	--
MW-30	90	75.3	-2.7	less-open	52	152	139	49	1	SE	116-165	49	3.5E-07		1.0E-03		0.1	1.4	--	--	--	--	--	--
MW-30	91	78.5	-5.8	less-open	60	137	124	34	1	SE	116-165	49	3.5E-07		1.0E-03		3.1	3.1	--	--	--	--	--	--
MW-30	92	79.6	-6.9	less-open	45	137	124	34	1	SE	116-165	49	3.5E-07		1.0E-03		1.1	1.1	--	--	--	--	--	--
MW-30	93	80.2	-7.5	less-open	36	166	153	63	1	SE	116-165	49	3.5E-07		1.0E-03		0.6	0.6	--	--	--	--	--	--
MW-31	1	6.7	73.1	less-open	13	310	297	207	NSR	NSR	NSR	NSR	TNP		TNP	NA	--	--	--	--	--	--	--	--
MW-31	2	8.0	71.7	less-open	39	253	240	150	NSR	NSR	NSR	NSR	TNP		TNP	1.4	--	--	--	--	--	--	--	--
MW-31	3	9.4	70.4	less-open	15	111	98	8	NSR	NSR	NSR	NSR	TNP		TNP	1.4	--	--	--	--	--	--	--	--
MW-31	4	11.1	68.7	less-open	9	3	350	260	NSR	NSR	NSR	NSR	TNP		TNP	1.7	--	--	--	--	--	--	--	--
MW-31	5	11.3	68.4	open	28	337	324	234	NSR	NSR	NSR	NSR	TNP		TNP	0.2	--	--	--	--	--	--	--	--
MW-31	6	13.4	66.3	open	43	330	317	227	2	NW	291-335	44	TNP		TNP	2.1	--	13.4	--	--	--	--	--	--
MW-31	7	16.2	63.6	open	17	153	140	50	NSR	NSR	NSR	NSR	TNP		TNP	2.8	--	--	--	--	--	--	--	--
MW-31	8	16.4	63.4	open	53	303	290	200	4	W	245-290	45	TNP		TNP	0.2	--	--	--	16.4	--	--	--	--
MW-31	9	20.7	59.0	less-open	27	330	317	227	NSR	NSR	NSR	NSR	TNP		TNP	4.4	--	--	--	--	--	--	--	--
MW-31	10	22.3	57.4	less-open	20	308	295	205	NSR	NSR	NSR	NSR	TNP		TNP	1.6	--	--	--	--	--	--	--	--
MW-31	11	27.0	52.8	less-open	18	91	78	348	NSR	NSR	NSR	NSR	TNP		TNP	4.6	--	--	--	--	--	--	--	--
MW-31	12	28.6	51.1	less-open	54	321	308	218	2	NW	291-335	44	TNP		TNP	1.7	--	15.2	--	--	--	--	--	--
MW-31	13	32.0	47.8	open	41	312	299	209	2	NW	291-335	44	TNP		TNP	3.3	--	3.3	--	--	--	--	--	--
MW-31	14	32.1	47.7	less-open	54	322	309	219	2	NW	291-335	44	TNP		TNP	0.1	--	0.1	--	--	--	--	--	--
MW-31	15	32.1	47.6	less-open	53	151	138	48	1	SE	116-165	49	TNP		TNP	0.0	32.1	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-31	16	32.2	47.5	less-open	52	154	141	51	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--	--	
MW-31	17	33.2	46.5	less-open	69	321	308	218	2	NW	291-335	44	TNP	TNP	1.0	--	1.2	--	--	--	--	--	
MW-31	18	33.2	46.5	less-open	75	233	220	130	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--	--	
MW-31	19	33.5	46.2	less-open	51	301	288	198	4	W	245-290	45	TNP	TNP	0.3	--	--	--	17.1	--	--	--	
MW-31	20	35.1	44.7	less-open	80	174	161	71	1	SE	116-165	49	7.1E-05	2.0E-01	1.6	2.9	--	--	--	--	--	--	
MW-31	21	35.8	43.9	less-open	13	17	4	274	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.8	--	--	--	--	--	--	--	
MW-31	22	37.0	42.7	less-open	43	322	309	219	2	NW	291-335	44	7.1E-05	2.0E-01	1.2	--	3.8	--	--	--	--	--	
MW-31	23	37.8	41.9	less-open	53	109	96	6	3	E	70-115	45	7.1E-05	2.0E-01	0.8	--	--	37.8	--	--	--	--	
MW-31	24	38.3	41.4	less-open	44	103	90	0	3	E	70-115	45	7.1E-05	2.0E-01	0.5	--	--	0.5	--	--	--	--	
MW-31	25	38.6	41.2	less-open	58	108	95	5	3	E	70-115	45	7.1E-05	2.0E-01	0.2	--	--	0.2	--	--	--	--	
MW-31	26	39.2	40.6	less-open	50	314	301	211	2	NW	291-335	44	7.1E-05	2.0E-01	0.6	--	2.2	--	--	--	--	--	
MW-31	27	39.2	40.5	less-open	47	310	297	207	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	0.1	--	--	--	--	--	
MW-31	28	39.8	39.9	less-open	51	278	265	175	4	W	245-290	45	7.1E-05	2.0E-01	0.6	--	--	--	6.3	--	--	--	
MW-31	29	40.8	39.0	less-open	46	296	283	193	4	W	245-290	45	7.1E-05	2.0E-01	0.9	--	--	--	0.9	--	--	--	
MW-31	30	45.1	34.6	less-open	40	298	285	195	4	W	245-290	45	3.2E-03	9.1E+00	4.4	--	--	--	4.4	--	--	--	
MW-31	31	45.3	34.5	less-open	53	59	46	316	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.1	--	--	--	--	--	--	--	
MW-31	32	45.8	34.0	less-open	65	96	83	353	3	E	70-115	45	3.2E-03	9.1E+00	0.5	--	--	7.2	--	--	--	--	
MW-31	33	46.1	33.7	less-open	51	307	294	204	2	NW	291-335	44	3.2E-03	9.1E+00	0.3	--	6.8	--	--	--	--	--	
MW-31	34	46.4	33.3	less-open	54	308	295	205	2	NW	291-335	44	3.2E-03	9.1E+00	0.4	--	0.4	--	--	--	--	--	
MW-31	35	46.8	33.0	less-open	42	291	278	188	4	W	245-290	45	3.2E-03	9.1E+00	0.3	--	--	--	1.6	--	--	--	
MW-31	36	46.9	32.8	open	25	292	279	189	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.2	--	--	--	--	--	--	--	
MW-31	37	47.3	32.5	less-open	42	294	281	191	4	W	245-290	45	3.2E-03	9.1E+00	0.4	--	--	--	0.5	--	--	--	
MW-31	38	48.4	31.3	less-open	49	297	284	194	4	W	245-290	45	3.2E-03	9.1E+00	1.1	--	--	--	1.1	--	--	--	
MW-31	39	48.7	31.1	less-open	55	85	72	342	3	E	70-115	45	3.2E-03	9.1E+00	0.3	--	--	2.9	--	--	--	--	
MW-31	40	48.8	31.0	less-open	30	89	76	346	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.1	--	--	--	--	--	--	--	
MW-31	41	49.7	30.0	less-open	48	152	139	49	1	SE	116-165	49	3.2E-03	9.1E+00	1.0	14.7	--	--	--	--	--	--	
MW-31	42	50.3	29.5	less-open	59	290	277	187	4	W	245-290	45	3.2E-03	9.1E+00	0.6	--	--	--	1.9	--	--	--	
MW-31	43	50.3	29.4	less-open	57	314	301	211	2	NW	291-335	44	3.2E-03	9.1E+00	0.1	--	3.9	--	--	--	--	--	
MW-31	44	50.4	29.3	less-open	45	294	281	191	4	W	245-290	45	3.2E-03	9.1E+00	0.1	--	--	--	0.1	--	--	--	
MW-31	45	50.5	29.2	less-open	57	274	261	171	4	W	245-290	45	3.2E-03	9.1E+00	0.1	--	--	--	0.1	--	--	--	
MW-31	46	51.0	28.7	less-open	45	291	278	188	4	W	245-290	45	3.2E-03	6.0E-04	9.1E+00	1.7E+00	0.5	--	--	--	0.5	--	--
MW-31	47	51.3	28.5	less-open	48	295	282	192	4	W	245-290	45	3.2E-03	6.0E-04	9.1E+00	1.7E+00	0.2	--	--	--	0.2	--	--
MW-31	48	51.6	28.1	less-open	59	176	163	73	1	SE	116-165	49	3.2E-03	6.0E-04	9.1E+00	1.7E+00	0.4	1.9	--	--	--	--	--
MW-31	49	51.8	27.9	less-open	45	295	282	192	4	W	245-290	45	3.2E-03	6.0E-04	9.1E+00	1.7E+00	0.2	--	--	--	0.6	--	--
MW-31	50	52.0	27.8	less-open	67	319	306	216	2	NW	291-335	44	6.0E-04	1.7E+00	0.1	--	1.6	--	--	--	--	--	
MW-31	51	52.1	27.6	less-open	55	153	140	50	1	SE	116-165	49	6.0E-04	1.7E+00	0.2	0.5	--	--	--	--	--	--	
MW-31	52	52.5	27.2	less-open	51	154	141	51	1	SE	116-165	49	6.0E-04	1.7E+00	0.4	0.4	--	--	--	--	--	--	
MW-31	53	54.5	25.3	less-open	44	275	262	172	4	W	245-290	45	6.0E-04	1.7E+00	2.0	--	--	--	2.7	--	--	--	
MW-31	54	55.1	24.6	less-open	48	298	285	195	4	W	245-290	45	6.0E-04	1.7E+00	0.6	--	--	--	0.6	--	--	--	
MW-31	55	55.4	24.4	less-open	51	102	89	359	3	E	70-115	45	6.0E-04	1.7E+00	0.3	--	--	6.7	--	--	--	--	
MW-31	56	56.3	23.5	less-open	43	177	164	74	1	SE	116-165	49	6.0E-04	1.7E+00	0.9	3.7	--	--	--	--	--	--	
MW-31	57	56.4	23.3	less-open	58	244	231	141	NSR	NSR	NSR	NSR	6.0E-04	1.7E+00	0.1	--	--	--	--	--	--	--	
MW-31	58	57.2	22.5	less-open	55	157	144	54	1	SE	116-165	49	6.0E-04	1.7E+00	0.8	1.0	--	--	--	--	--	--	
MW-31	59	57.4	22.3	less-open	54	303	290	200	4	W	245-290	45	6.0E-04	1.7E+00	0.2	--	--	--	2.3	--	--	--	
MW-31	60	57.6	22.1	less-open	50	299	286	196	4	W	245-290	45	6.0E-04	1.7E+00	0.2	--	--	--	0.2	--	--	--	
MW-31	61	57.9	21.8	less-open	58	148	135	45	1	SE	116-165	49	6.0E-04	1.7E+00	0.3	0.7	--	--	--	--	--	--	
MW-31	62	58.2	21.6	less-open	57	158	145	55	1	SE	116-165	49	6.0E-04	1.7E+00	0.2	0.2	--	--	--	--	--	--	
MW-31	63	58.6	21.1	less-open	55	147	134	44	1	SE	116-165	49	6.0E-04	1.7E+00	0.5	0.5	--	--	--	--	--	--	
MW-31	64	58.9	20.9	less-open	58	143	130	40	1	SE	116-165	49	1.8E-04	6.0E-04	5.0E-01	1.7E+00	0.3	0.3	--	--	--	--	--
MW-31	65	59.1	20.6	less-open	27	151	138	48	NSR	NSR	NSR	NSR	1.8E-04	6.0E-04	5.0E-01	1.7E+00	0.3	--	--	--	--	--	--
MW-31	66	59.3	20.5	less-open	25	121	108	18	NSR	NSR	NSR	NSR	1.8E-04	6.0E-04	5.0E-01	1.7E+00	0.1	--	--	--	--	--	--
MW-31	67	60.4	19.4	less-open	58	136	123	33	1	SE	116-165	49	1.8E-04	5.0E-01	1.1	1.5	--	--	--	--	--	--	
MW-31	68	60.6	19.2	less-open	72	271	258	168	4	W	245-290	45	1.8E-04	5.0E-01	0.2	--	--	--	2.9	--	--	--	
MW-31	69	60.7	19.0	less-open	51	106	93	3	3	E	70-115	45	1.8E-04	5.0E-01	0.2	--	--	5.3	--	--	--	--	

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-31	70	61.2	18.5	less-open	45	318	305	215	2	NW	291-335	44	1.8E-04	5.0E-01	0.5	--	9.2	--	--	--	--	--	
MW-31	71	61.5	18.3	less-open	49	320	307	217	2	NW	291-335	44	1.8E-04	5.0E-01	0.3	--	0.3	--	--	--	--	--	
MW-31	72	61.9	17.9	less-open	61	167	154	64	1	SE	116-165	49	1.8E-04	5.0E-01	0.4	1.5	--	--	--	--	--	--	
MW-31	73	62.3	17.5	less-open	47	289	276	186	4	W	245-290	45	1.8E-04	5.0E-01	0.4	--	--	--	1.7	--	--	--	
MW-31	74	63.3	16.4	less-open	64	136	123	33	1	SE	116-165	49	1.8E-04	5.0E-01	1.0	1.4	--	--	--	--	--	--	
MW-31	75	63.8	16.0	less-open	42	296	283	193	4	W	245-290	45	1.8E-04	5.0E-01	0.4	--	--	--	1.5	--	--	--	
MW-31	76	64.4	15.4	less-open	51	285	272	182	4	W	245-290	45	1.8E-04	5.0E-01	0.6	--	--	--	0.6	--	--	--	
MW-31	77	65.5	14.2	less-open	37	335	322	232	2	NW	291-335	44	1.8E-04	5.0E-01	1.2	--	4.1	--	--	--	--	--	
MW-31	78	65.7	14.1	less-open	78	190	177	87	5	S	166-200	34	1.8E-04	5.0E-01	0.1	--	--	--	--	65.7	--	--	
MW-31	79	66.1	13.7	less-open	40	179	166	76	5	S	166-200	34	1.8E-04	1.1E-04	5.0E-01	3.0E-01	0.4	--	--	--	--	0.4	--
MW-31	80	68.1	11.7	less-open	65	141	128	38	1	SE	116-165	49	1.1E-04	1.1E-04	3.0E-01	2.0	4.7	--	--	--	--	--	
MW-31	81	70.5	9.3	less-open	66	140	127	37	1	SE	116-165	49	1.1E-04	1.1E-04	3.0E-01	2.4	2.4	--	--	--	--	--	
MW-31	82	74.0	5.8	less-open	52	117	104	14	3	E	70-115	45	1.1E-04	3.0E-01	3.5	--	--	13.3	--	--	--	--	
MW-31	83	74.1	5.6	less-open	57	130	117	27	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	3.7	--	--	--	--	--	--	
MW-31	84	74.3	5.4	less-open	28	312	299	209	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.2	--	--	--	--	--	--	--	
MW-31	85	74.5	5.3	less-open	23	336	323	233	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.2	--	--	--	--	--	--	--	
MW-31	86	76.1	3.7	less-open	35	329	316	226	2	NW	291-335	44	1.1E-04	3.0E-01	1.6	--	--	10.6	--	--	--	--	
MW-31	87	76.6	3.2	open	54	150	137	47	1	SE	116-165	49	1.1E-04	3.0E-01	0.5	2.4	--	--	--	--	--	--	
MW-31	88	76.9	2.9	less-open	55	151	138	48	1	SE	116-165	49	1.1E-04	3.0E-01	0.3	0.3	--	--	--	--	--	--	
MW-31	89	79.0	0.7	less-open	53	147	134	44	1	SE	116-165	49	1.1E-04	3.0E-01	2.1	2.1	--	--	--	--	--	--	
MW-31	90	79.8	0.0	less-open	32	350	337	247	NSR	NSR	NSR	NSR	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.7	--	--	--	--	--	
MW-31	91	80.2	-0.4	less-open	52	139	126	36	1	SE	116-165	49	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.4	1.2	--	--	--	--	
MW-31	92	80.4	-0.6	less-open	47	139	126	36	1	SE	116-165	49	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.2	0.2	--	--	--	--	
MW-31	93	81.2	-1.5	less-open	63	339	326	236	2	NW	291-335	44	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.8	--	5.1	--	--	--	
MW-31	94	81.4	-1.6	less-open	58	69	56	326	NSR	NSR	NSR	NSR	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.2	--	--	--	--	--	
MW-31	95	81.6	-1.9	less-open	48	142	129	39	1	SE	116-165	49	1.1E-04	7.1E-05	3.0E-01	2.0E-01	0.2	1.2	--	--	--	--	
MW-31	96	82.6	-2.8	less-open	44	160	147	57	1	SE	116-165	49	7.1E-05	2.0E-01	1.0	1.0	--	--	--	--	--	--	
MW-31	97	83.3	-3.6	less-open	44	316	303	213	2	NW	291-335	44	7.1E-05	2.0E-01	0.8	--	2.1	--	--	--	--	--	
MW-31	98	83.7	-3.9	less-open	51	131	118	28	1	SE	116-165	49	7.1E-05	2.0E-01	0.3	1.1	--	--	--	--	--	--	
MW-31	99	84.4	-4.7	less-open	47	144	131	41	1	SE	116-165	49	7.1E-05	2.0E-01	0.8	0.8	--	--	--	--	--	--	
MW-31	100	85.6	-5.8	less-open	80	187	174	84	5	S	166-200	34	7.1E-05	2.0E-01	1.1	--	--	--	--	19.5	--	--	
MW-31	101	86.2	-6.4	less-open	48	136	123	33	1	SE	116-165	49	7.1E-05	2.0E-01	0.6	1.7	--	--	--	--	--	--	
MW-31	102	86.7	-6.9	less-open	44	285	272	182	4	W	245-290	45	7.1E-05	2.0E-01	0.5	--	--	--	22.3	--	--	--	
MW-31	103	87.1	-7.3	less-open	59	75	62	332	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.4	--	--	--	--	--	--	--	
MW-31	104	87.5	-7.8	less-open	53	116	103	13	3	E	70-115	45	7.1E-05	2.0E-01	0.5	--	--	13.6	--	--	--	--	
MW-31	105	88.8	-9.1	less-open	3	46	33	303	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	1.3	--	--	--	--	--	--	--	
MW-31	106	89.4	-9.7	less-open	5	315	302	212	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.6	--	--	--	--	--	--	--	
MW-32	1	36.7	41.6	less-open	58	161	148	58	1	SE	116-165	49	TNP	TNP	NA	36.7	--	--	--	--	--	--	
MW-32	2	37.4	41.0	less-open	49	156	143	53	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--	--	
MW-32	3	38.1	40.3	less-open	48	156	143	53	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--	--	
MW-32	4	38.5	39.8	less-open	40	152	139	49	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--	--	
MW-32	5	38.8	39.6	less-open	52	190	177	87	5	S	166-200	34	TNP	TNP	0.2	--	--	--	--	38.8	--	--	
MW-32	6	39.0	39.3	less-open	56	145	132	42	1	SE	116-165	49	TNP	TNP	0.3	0.5	--	--	--	--	--	--	
MW-32	7	39.5	38.9	less-open	44	315	302	212	2	NW	291-335	44	TNP	TNP	0.4	--	39.5	--	--	--	--	--	
MW-32	8	39.7	38.6	less-open	61	153	140	50	1	SE	116-165	49	TNP	TNP	0.3	0.7	--	--	--	--	--	--	
MW-32	9	40.1	38.3	less-open	18	29	16	286	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--	
MW-32	10	40.4	37.9	less-open	45	313	300	210	2	NW	291-335	44	TNP	TNP	0.3	--	0.9	--	--	--	--	--	
MW-32	11	40.6	37.7	less-open	55	154	141	51	1	SE	116-165	49	TNP	TNP	0.3	0.9	--	--	--	--	--	--	
MW-32	12	41.6	36.7	less-open	61	138	125	35	1	SE	116-165	49	TNP	TNP	1.0	1.0	--	--	--	--	--	--	
MW-32	13	41.9	36.4	less-open	65	135	122	32	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--	
MW-32	14	41.9	36.4	less-open	65	155	142	52	1	SE	116-165	49	TNP	TNP	0.0	0.0	--	--	--	--	--	--	
MW-32	15	42.4	36.0	less-open	48	200	187	97	5	S	166-200	34	TNP	TNP	0.5	--	--	--	--	3.6	--	--	
MW-32	16	42.6	35.7	less-open	56	171	158	68	1	SE	116-165	49	TNP	TNP	0.3	0.7	--	--	--	--	--	--	
MW-32	17	42.7	35.7	less-open	44	117	104	14	3	E	70-115	45	TNP	TNP	0.1	--	--	42.7	--	--	--	--	



APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-32	18	43.1	35.3	less-open	55	128	115	25	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-32	19	43.2	35.2	less-open	52	143	130	40	1	SE	116-165	49	TNP	TNP	0.1	0.5	--	--	--	--	--
MW-32	20	43.8	34.5	less-open	49	152	139	49	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--
MW-32	21	45.1	33.2	less-open	19	305	292	202	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--
MW-32	22	45.4	32.9	less-open	54	156	143	53	1	SE	116-165	49	TNP	TNP	0.3	1.6	--	--	--	--	--
MW-32	23	45.7	32.6	less-open	54	171	158	68	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-32	24	45.8	32.5	less-open	51	153	140	50	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	25	46.5	31.8	less-open	38	174	161	71	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--
MW-32	26	47.1	31.3	less-open	41	173	160	70	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--
MW-32	27	47.4	30.9	less-open	47	153	140	50	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-32	28	47.5	30.8	less-open	47	173	160	70	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	29	48.0	30.3	less-open	64	169	156	66	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--
MW-32	30	48.4	30.0	less-open	67	180	167	77	5	S	166-200	34	TNP	TNP	0.4	--	--	--	--	6.0	--
MW-32	31	48.8	29.5	less-open	64	119	106	16	3	E	70-115	45	TNP	TNP	0.4	--	--	5.7	--	--	--
MW-32	32	48.9	29.4	less-open	44	157	144	54	1	SE	116-165	49	TNP	TNP	0.1	0.9	--	--	--	--	--
MW-32	33	49.0	29.3	less-open	58	190	177	87	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	0.6	--
MW-32	34	49.3	29.1	less-open	38	147	134	44	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-32	35	49.5	28.9	open	60	163	150	60	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	36	49.6	28.8	open	62	169	156	66	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	37	49.8	28.6	open	52	170	157	67	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	38	50.2	28.1	open	32	173	160	70	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-32	39	50.8	27.5	open	45	155	142	52	1	SE	116-165	49	TNP	TNP	0.6	1.0	--	--	--	--	--
MW-32	40	51.1	27.2	open	40	131	118	28	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-32	41	52.0	26.3	less-open	51	160	147	57	1	SE	116-165	49	TNP	TNP	0.9	0.9	--	--	--	--	--
MW-32	42	52.1	26.2	less-open	53	131	118	28	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	43	52.4	25.9	less-open	54	137	124	34	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-32	44	53.3	25.1	less-open	64	269	256	166	4	W	245-290	45	TNP	TNP	0.9	--	--	--	53.3	--	--
MW-32	45	53.3	25.0	less-open	50	118	105	15	3	E	70-115	45	TNP	TNP	0.0	--	--	4.5	--	--	--
MW-32	46	53.4	24.9	less-open	64	264	251	161	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.1	--	--
MW-32	47	53.9	24.4	less-open	62	109	96	6	3	E	70-115	45	TNP	TNP	0.5	--	--	0.6	--	--	--
MW-32	48	54.1	24.3	less-open	62	113	100	10	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-32	49	54.3	24.0	less-open	66	314	301	211	2	NW	291-335	44	TNP	TNP	0.3	--	13.9	--	--	--	--
MW-32	50	54.5	23.9	less-open	50	115	102	12	3	E	70-115	45	TNP	TNP	0.1	--	--	0.4	--	--	--
MW-32	51	54.5	23.9	open	76	81	68	338	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-32	52	54.8	23.5	less-open	41	121	108	18	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-32	53	55.3	23.1	less-open	54	100	87	357	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-32	54	55.7	22.7	open	58	115	102	12	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-32	55	55.9	22.4	open	55	134	121	31	1	SE	116-165	49	TNP	TNP	0.3	3.5	--	--	--	--	--
MW-32	56	56.3	22.0	open	40	119	106	16	3	E	70-115	45	TNP	TNP	0.4	--	--	0.6	--	--	--
MW-32	57	56.7	21.6	less-open	52	144	131	41	1	SE	116-165	49	TNP	TNP	0.4	0.8	--	--	--	--	--
MW-32	58	57.2	21.1	less-open	46	147	134	44	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--
MW-32	59	58.2	20.1	less-open	77	153	140	50	1	SE	116-165	49	TNP	TNP	1.0	1.0	--	--	--	--	--
MW-32	60	58.2	20.1	less-open	35	121	108	18	3	E	70-115	45	TNP	TNP	0.0	--	--	1.9	--	--	--
MW-32	61	58.6	19.8	less-open	43	153	140	50	1	SE	116-165	49	TNP	TNP	0.3	0.4	--	--	--	--	--
MW-32	62	58.7	19.6	less-open	54	333	320	230	2	NW	291-335	44	TNP	TNP	0.2	--	4.4	--	--	--	--
MW-32	63	59.2	19.2	less-open	45	137	124	34	1	SE	116-165	49	TNP	TNP	0.4	0.6	--	--	--	--	--
MW-32	64	59.2	19.1	less-open	55	272	259	169	4	W	245-290	45	TNP	TNP	0.1	--	--	--	5.8	--	--
MW-32	65	59.6	18.7	less-open	37	155	142	52	1	SE	116-165	49	TNP	TNP	0.4	0.5	--	--	--	--	--
MW-32	66	59.8	18.5	less-open	42	168	155	65	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	67	59.9	18.4	less-open	57	292	279	189	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.7	--	--
MW-32	68	60.0	18.3	less-open	45	147	134	44	1	SE	116-165	49	TNP	TNP	0.1	0.2	--	--	--	--	--
MW-32	69	60.2	18.2	less-open	63	312	299	209	2	NW	291-335	44	TNP	TNP	0.2	--	1.4	--	--	--	--
MW-32	70	60.4	17.9	less-open	46	132	119	29	1	SE	116-165	49	TNP	TNP	0.3	0.4	--	--	--	--	--
MW-32	71	60.7	17.7	less-open	44	151	138	48	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-32	72	60.9	17.5	less-open	50	134	121	31	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	73	61.1	17.3	less-open	57	255	242	152	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-32	74	61.2	17.1	less-open	47	137	124	34	1	SE	116-165	49	TNP	TNP	0.2	0.4	--	--	--	--	--
MW-32	75	61.3	17.1	less-open	61	264	251	161	4	W	245-290	45	TNP	TNP	0.0	--	--	--	1.3	--	--
MW-32	76	61.5	16.8	less-open	47	133	120	30	1	SE	116-165	49	TNP	TNP	0.2	0.3	--	--	--	--	--
MW-32	77	61.6	16.7	less-open	45	166	153	63	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	78	61.8	16.5	less-open	48	125	112	22	3	E	70-115	45	TNP	TNP	0.2	--	--	3.6	--	--	--
MW-32	79	61.9	16.4	less-open	49	142	129	39	1	SE	116-165	49	TNP	TNP	0.1	0.3	--	--	--	--	--
MW-32	80	62.0	16.3	less-open	44	152	139	49	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	81	62.3	16.0	less-open	66	262	249	159	4	W	245-290	45	TNP	TNP	0.3	--	--	--	1.0	--	--
MW-32	82	62.5	15.9	less-open	42	15	2	272	6	N	336-21	45	TNP	TNP	0.2	--	--	--	--	--	62.5
MW-32	83	62.8	15.5	less-open	41	126	113	23	3	E	70-115	45	TNP	TNP	0.4	--	--	1.0	--	--	--
MW-32	84	63.0	15.4	less-open	55	263	250	160	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.7	--	--
MW-32	85	63.0	15.3	less-open	52	142	129	39	1	SE	116-165	49	TNP	TNP	0.0	1.0	--	--	--	--	--
MW-32	86	63.2	15.1	less-open	43	138	125	35	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	87	63.7	14.7	less-open	52	151	138	48	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--
MW-32	88	64.1	14.2	less-open	43	137	124	34	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--
MW-32	89	64.3	14.0	less-open	40	146	133	43	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-32	90	64.9	13.5	less-open	43	151	138	48	1	SE	116-165	49	TNP	TNP	0.6	0.6	--	--	--	--	--
MW-32	91	65.0	13.4	less-open	53	130	117	27	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	92	65.4	12.9	less-open	46	144	131	41	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--
MW-32	93	65.6	12.7	less-open	47	104	91	1	3	E	70-115	45	TNP	TNP	0.2	--	--	2.8	--	--	--
MW-32	94	65.8	12.5	less-open	69	272	259	169	4	W	245-290	45	TNP	TNP	0.2	--	--	--	2.8	--	--
MW-32	95	67.9	10.4	less-open	49	134	121	31	1	SE	116-165	49	TNP	TNP	2.1	2.5	--	--	--	--	--
MW-32	96	68.3	10.0	less-open	50	127	114	24	3	E	70-115	45	TNP	TNP	0.5	--	--	2.7	--	--	--
MW-32	97	68.8	9.6	less-open	51	137	124	34	1	SE	116-165	49	TNP	TNP	0.4	0.9	--	--	--	--	--
MW-32	98	68.9	9.5	less-open	60	327	314	224	2	NW	291-335	44	TNP	TNP	0.1	--	8.7	--	--	--	--
MW-32	99	69.2	9.2	less-open	54	134	121	31	1	SE	116-165	49	TNP	TNP	0.3	0.4	--	--	--	--	--
MW-32	100	70.0	8.3	less-open	40	333	320	230	2	NW	291-335	44	TNP	TNP	0.8	--	1.1	--	--	--	--
MW-32	101	70.3	8.1	less-open	54	133	120	30	1	SE	116-165	49	TNP	TNP	0.3	1.1	--	--	--	--	--
MW-32	102	70.4	7.9	less-open	55	129	116	26	1	SE	116-165	49	7.1E-06	2.0E-02	0.2	0.2	--	--	--	--	--
MW-32	103	70.9	7.5	less-open	51	133	120	30	1	SE	116-165	49	7.1E-06	2.0E-02	0.4	0.4	--	--	--	--	--
MW-32	104	71.1	7.3	less-open	60	124	111	21	3	E	70-115	45	7.1E-06	2.0E-02	0.2	--	--	2.7	--	--	--
MW-32	105	71.6	6.7	less-open	45	131	118	28	1	SE	116-165	49	7.1E-06	2.0E-02	0.5	0.8	--	--	--	--	--
MW-32	106	71.9	6.5	less-open	53	116	103	13	3	E	70-115	45	7.1E-06	2.0E-02	0.3	--	--	0.8	--	--	--
MW-32	107	72.4	5.9	less-open	50	139	126	36	1	SE	116-165	49	7.1E-06	2.0E-02	0.6	0.8	--	--	--	--	--
MW-32	108	72.6	5.7	less-open	45	129	116	26	1	SE	116-165	49	7.1E-06	2.0E-02	0.2	0.2	--	--	--	--	--
MW-32	109	72.8	5.5	less-open	42	134	121	31	1	SE	116-165	49	7.1E-06	2.0E-02	0.2	0.2	--	--	--	--	--
MW-32	110	72.9	5.4	less-open	45	131	118	28	1	SE	116-165	49	7.1E-06	2.0E-02	0.1	0.1	--	--	--	--	--
MW-32	111	73.1	5.2	less-open	59	312	299	209	2	NW	291-335	44	7.1E-06	2.0E-02	0.2	--	3.1	--	--	--	--
MW-32	112	73.4	4.9	less-open	40	133	120	30	1	SE	116-165	49	7.1E-06	2.0E-02	0.3	0.5	--	--	--	--	--
MW-32	113	74.3	4.0	less-open	50	137	124	34	1	SE	116-165	49	7.1E-06	2.0E-02	0.9	0.9	--	--	--	--	--
MW-32	114	74.6	3.8	less-open	48	309	296	206	2	NW	291-335	44	7.1E-06	2.0E-02	0.3	--	1.5	--	--	--	--
MW-32	115	74.9	3.4	less-open	42	130	117	27	1	SE	116-165	49	7.1E-06	2.0E-02	0.3	0.6	--	--	--	--	--
MW-32	116	76.0	2.4	less-open	44	139	126	36	1	SE	116-165	49	7.1E-06	2.0E-02	1.1	1.1	--	--	--	--	--
MW-32	117	76.0	2.3	less-open	50	337	324	234	2	NW	291-335	44	7.1E-06	2.0E-02	0.0	--	1.5	--	--	--	--
MW-32	118	76.9	1.5	less-open	49	320	307	217	2	NW	291-335	44	7.1E-06	2.0E-02	0.8	--	0.8	--	--	--	--
MW-32	119	77.0	1.4	less-open	37	149	136	46	1	SE	116-165	49	7.1E-06	2.0E-02	0.1	1.0	--	--	--	--	--
MW-32	120	77.5	0.9	less-open	27	189	176	86	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.5	--	--	--	--	--	--
MW-32	121	77.8	0.6	less-open	54	117	104	14	3	E	70-115	45	7.1E-06	2.0E-02	0.3	--	--	5.9	--	--	--
MW-32	122	78.0	0.4	less-open	44	143	130	40	1	SE	116-165	49	7.1E-06	2.0E-02	0.2	1.0	--	--	--	--	--
MW-32	123	78.2	0.1	less-open	47	5	352	262	6	N	336-21	45	7.1E-06	2.0E-02	0.2	--	--	--	--	--	15.7
MW-32	124	78.2	0.1	less-open	40	136	123	33	1	SE	116-165	49	7.1E-06	2.0E-02	0.0	0.3	--	--	--	--	--
MW-32	125	78.6	-0.3	less-open	37	144	131	41	1	SE	116-165	49	7.1E-06	2.0E-02	0.4	0.4	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-32	126	79.7	-1.3	less-open	37	152	139	49	1	SE	116-165	49	7.1E-06	2.0E-02	1.1	1.1	--	--	--	--	--	--
MW-32	127	80.1	-1.7	less-open	55	141	128	38	1	SE	116-165	49	7.1E-06	2.0E-02	0.4	0.4	--	--	--	--	--	--
MW-32	128	80.5	-2.1	less-open	77	300	287	197	4	W	245-290	45	1.1E-04	3.0E-01	0.4	--	--	--	--	14.7	--	--
MW-32	129	81.1	-2.8	less-open	76	291	278	188	4	W	245-290	45	1.1E-04	3.0E-01	0.6	--	--	--	--	0.6	--	--
MW-32	130	81.4	-3.0	less-open	26	191	178	88	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.2	--	--	--	--	--	--	--
MW-32	131	81.9	-3.6	less-open	34	270	257	167	4	W	245-290	45	1.1E-04	3.0E-01	0.6	--	--	--	--	0.8	--	--
MW-32	132	82.2	-3.8	less-open	40	159	146	56	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	2.1	--	--	--	--	--	--
MW-32	133	82.4	-4.1	less-open	65	280	267	177	4	W	245-290	45	1.1E-04	3.0E-01	0.3	--	--	--	--	0.5	--	--
MW-32	134	83.4	-5.1	less-open	39	262	249	159	4	W	245-290	45	1.1E-04	3.0E-01	1.0	--	--	--	--	1.0	--	--
MW-32	135	83.9	-5.6	less-open	71	280	267	177	4	W	245-290	45	1.1E-04	3.0E-01	0.5	--	--	--	--	0.5	--	--
MW-32	136	84.0	-5.6	less-open	70	273	260	170	4	W	245-290	45	1.1E-04	3.0E-01	0.1	--	--	--	--	0.1	--	--
MW-32	137	84.6	-6.2	less-open	63	303	290	200	4	W	245-290	45	1.1E-04	3.0E-01	0.6	--	--	--	--	0.6	--	--
MW-32	138	84.7	-6.4	less-open	65	266	253	163	4	W	245-290	45	1.1E-04	3.0E-01	0.1	--	--	--	--	0.1	--	--
MW-32	139	85.6	-7.2	less-open	64	293	280	190	4	W	245-290	45	1.1E-04	3.0E-01	0.9	--	--	--	--	0.9	--	--
MW-32	140	85.8	-7.5	less-open	61	289	276	186	4	W	245-290	45	1.1E-04	3.0E-01	0.2	--	--	--	--	0.2	--	--
MW-32	141	86.1	-7.8	less-open	53	310	297	207	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	9.3	--	--	--	--	--
MW-32	142	86.3	-7.9	less-open	54	281	268	178	4	W	245-290	45	1.1E-04	3.0E-01	0.1	--	--	--	--	0.5	--	--
MW-32	143	86.7	-8.4	less-open	58	290	277	187	4	W	245-290	45	1.1E-04	3.0E-01	0.5	--	--	--	--	0.5	--	--
MW-32	144	87.0	-8.7	less-open	43	329	316	226	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	0.9	--	--	--	--	--
MW-32	145	87.0	-8.7	less-open	47	141	128	38	1	SE	116-165	49	1.1E-04	3.0E-01	0.0	4.8	--	--	--	--	--	--
MW-32	146	87.3	-8.9	less-open	42	166	153	63	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	0.2	--	--	--	--	--	--
MW-32	147	87.8	-9.4	less-open	50	310	297	207	2	NW	291-335	44	1.1E-04	3.0E-01	0.5	--	0.8	--	--	--	--	--
MW-32	148	87.8	-9.5	less-open	61	278	265	175	4	W	245-290	45	1.1E-04	3.0E-01	0.0	--	--	--	--	1.1	--	--
MW-32	149	88.6	-10.3	less-open	55	274	261	171	4	W	245-290	45	1.1E-04	3.0E-01	0.8	--	--	--	--	0.8	--	--
MW-32	150	88.8	-10.5	less-open	62	170	157	67	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	1.5	--	--	--	--	--	--
MW-32	151	88.9	-10.5	less-open	59	271	258	168	4	W	245-290	45	1.1E-04	3.0E-01	0.0	--	--	--	--	0.3	--	--
MW-32	152	89.6	-11.3	less-open	47	171	158	68	1	SE	116-165	49	1.1E-04	3.0E-01	0.8	0.8	--	--	--	--	--	--
MW-32	153	89.9	-11.6	less-open	58	304	291	201	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	2.1	--	--	--	--	--
MW-32	154	90.4	-12.1	less-open	57	296	283	193	4	W	245-290	45	TNP	TNP	0.5	--	--	--	--	1.5	--	--
MW-32	155	90.7	-12.4	less-open	57	44	31	301	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--
MW-32	156	91.2	-12.8	less-open	53	288	275	185	4	W	245-290	45	TNP	TNP	0.5	--	--	--	--	0.8	--	--
MW-32	157	91.7	-13.4	less-open	55	292	279	189	4	W	245-290	45	TNP	TNP	0.6	--	--	--	--	0.6	--	--
MW-32	158	92.4	-14.0	less-open	47	274	261	171	4	W	245-290	45	TNP	TNP	0.6	--	--	--	--	0.6	--	--
MW-32	159	92.8	-14.5	less-open	45	6	353	263	6	N	336-21	45	TNP	TNP	0.5	--	--	--	--	--	--	14.6
MW-32	160	93.0	-14.6	less-open	52	294	281	191	4	W	245-290	45	TNP	TNP	0.1	--	--	--	--	0.6	--	--
MW-32	161	93.9	-15.6	less-open	67	130	117	27	1	SE	116-165	49	TNP	TNP	0.9	4.3	--	--	--	--	--	--
MW-32	162	94.7	-16.3	less-open	44	188	175	85	5	S	166-200	34	TNP	TNP	0.8	--	--	--	--	--	--	45.7
MW-32	163	94.8	-16.5	less-open	42	163	150	60	1	SE	116-165	49	TNP	TNP	0.1	0.9	--	--	--	--	--	--
MW-32	164	95.6	-17.3	less-open	24	356	343	253	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--	--
MW-32	165	95.8	-17.5	less-open	37	107	94	4	3	E	70-115	45	TNP	TNP	0.2	--	--	--	--	18.0	--	--
MW-32	166	96.3	-18.0	less-open	39	174	161	71	1	SE	116-165	49	TNP	TNP	0.5	1.5	--	--	--	--	--	--
MW-32	167	96.5	-18.2	less-open	32	356	343	253	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-32	168	96.8	-18.5	less-open	64	122	109	19	3	E	70-115	45	TNP	TNP	0.3	--	--	--	--	1.0	--	--
MW-32	169	97.6	-19.2	less-open	49	166	153	63	1	SE	116-165	49	TNP	TNP	0.8	1.3	--	--	--	--	--	--
MW-32	170	98.2	-19.9	less-open	60	327	314	224	2	NW	291-335	44	TNP	TNP	0.6	--	8.3	--	--	--	--	--
MW-32	171	98.4	-20.0	less-open	56	330	317	227	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--	--
MW-32	172	98.5	-20.1	less-open	39	156	143	53	1	SE	116-165	49	TNP	TNP	0.1	0.9	--	--	--	--	--	--
MW-32	173	98.8	-20.5	less-open	36	196	183	93	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	--	--	4.1
MW-32	174	98.9	-20.6	less-open	52	338	325	235	2	NW	291-335	44	TNP	TNP	0.1	--	0.5	--	--	--	--	--
MW-32	175	99.8	-21.5	less-open	36	360	347	257	6	N	336-21	45	TNP	TNP	0.9	--	--	--	--	--	--	7.0
MW-32	176	100.0	-21.7	less-open	37	152	139	49	1	SE	116-165	49	TNP	TNP	0.2	1.5	--	--	--	--	--	--
MW-32	177	100.1	-21.7	less-open	42	156	143	53	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--	--
MW-32	178	100.5	-22.2	less-open	54	151	138	48	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-32	179	100.9	-22.6	less-open	45	149	136	46	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-32	180	101.8	-23.5	less-open	49	169	156	66	1	SE	116-165	49	TNP	TNP	0.9	0.9	--	--	--	--	--	--
MW-32	181	102.0	-23.7	less-open	50	162	149	59	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--	--
MW-32	182	102.7	-24.3	less-open	82	117	104	14	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--	--
MW-32	183	102.8	-24.5	less-open	42	124	111	21	3	E	70-115	45	TNP	TNP	0.1	--	--	6.0	--	--	--	--
MW-32	184	103.8	-25.4	less-open	45	156	143	53	1	SE	116-165	49	TNP	TNP	1.0	1.8	--	--	--	--	--	--
MW-32	185	104.0	-25.7	less-open	48	159	146	56	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--
MW-32	186	104.7	-26.3	less-open	66	348	335	245	2	NW	291-335	44	TNP	TNP	0.6	--	5.8	--	--	--	--	--
MW-32	187	105.1	-26.8	less-open	51	325	312	222	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--	--
MW-32	188	105.3	-27.0	less-open	39	141	128	38	1	SE	116-165	49	TNP	TNP	0.2	1.3	--	--	--	--	--	--
MW-32	189	106.0	-27.6	less-open	80	183	170	80	5	S	166-200	34	TNP	TNP	0.7	--	--	--	--	--	7.2	--
MW-32	190	106.1	-27.7	less-open	79	180	167	77	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	--	0.1	--
MW-32	191	106.6	-28.3	less-open	40	155	142	52	1	SE	116-165	49	TNP	TNP	0.5	1.3	--	--	--	--	--	--
MW-32	192	106.8	-28.5	less-open	61	346	333	243	2	NW	291-335	44	TNP	TNP	0.2	--	1.7	--	--	--	--	--
MW-32	193	107.4	-29.0	less-open	36	138	125	35	1	SE	116-165	49	TNP	TNP	0.6	0.8	--	--	--	--	--	--
MW-32	194	107.4	-29.0	less-open	64	321	308	218	2	NW	291-335	44	TNP	TNP	0.0	--	0.6	--	--	--	--	--
MW-32	195	107.9	-29.6	less-open	40	150	137	47	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--	--
MW-32	196	108.3	-30.0	less-open	42	161	148	58	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-32	197	108.6	-30.3	less-open	36	148	135	45	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--
MW-32	198	109.1	-30.7	less-open	39	130	117	27	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-32	199	109.5	-31.2	less-open	52	131	118	28	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-32	200	109.8	-31.4	less-open	57	343	330	240	2	NW	291-335	44	TNP	TNP	0.3	--	2.4	--	--	--	--	--
MW-32	201	110.1	-31.7	less-open	36	165	152	62	1	SE	116-165	49	TNP	TNP	0.3	0.6	--	--	--	--	--	--
MW-32	202	110.1	-31.7	less-open	66	118	105	15	3	E	70-115	45	TNP	TNP	0.0	--	--	7.3	--	--	--	--
MW-32	203	110.2	-31.8	less-open	47	127	114	24	3	E	70-115	45	TNP	TNP	0.1	--	--	0.1	--	--	--	--
MW-32	204	110.9	-32.6	less-open	64	134	121	31	1	SE	116-165	49	TNP	TNP	0.8	0.9	--	--	--	--	--	--
MW-32	205	111.1	-32.8	less-open	78	118	105	15	3	E	70-115	45	TNP	TNP	0.2	--	--	0.9	--	--	--	--
MW-32	206	111.8	-33.4	less-open	45	304	291	201	2	NW	291-335	44	TNP	TNP	0.7	--	2.0	--	--	--	--	--
MW-32	207	112.1	-33.7	less-open	61	118	105	15	3	E	70-115	45	TNP	TNP	0.3	--	--	1.0	--	--	--	--
MW-32	208	112.3	-34.0	less-open	61	128	115	25	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--	--
MW-32	209	112.5	-34.1	less-open	45	143	130	40	1	SE	116-165	49	TNP	TNP	0.2	1.5	--	--	--	--	--	--
MW-32	210	112.5	-34.2	less-open	63	269	256	166	4	W	245-290	45	TNP	TNP	0.0	--	--	--	19.6	--	--	--
MW-32	211	113.2	-34.8	less-open	70	254	241	151	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--	--
MW-32	212	113.2	-34.9	less-open	39	161	148	58	1	SE	116-165	49	TNP	TNP	0.1	0.7	--	--	--	--	--	--
MW-32	213	113.2	-34.9	less-open	68	278	265	175	4	W	245-290	45	TNP	TNP	0.0	--	--	--	0.7	--	--	--
MW-32	214	113.7	-35.3	less-open	67	275	262	172	4	W	245-290	45	TNP	TNP	0.5	--	--	--	0.5	--	--	--
MW-32	215	114.1	-35.8	less-open	47	130	117	27	1	SE	116-165	49	TNP	TNP	0.5	0.9	--	--	--	--	--	--
MW-32	216	114.5	-36.2	less-open	46	144	131	41	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-32	217	114.9	-36.5	less-open	56	262	249	159	4	W	245-290	45	TNP	TNP	0.3	--	--	--	1.2	--	--	--
MW-32	218	115.2	-36.9	less-open	65	260	247	157	4	W	245-290	45	TNP	TNP	0.4	--	--	--	0.4	--	--	--
MW-32	219	115.6	-37.2	less-open	46	153	140	50	1	SE	116-165	49	TNP	TNP	0.4	1.0	--	--	--	--	--	--
MW-32	220	116.8	-38.4	less-open	45	161	148	58	1	SE	116-165	49	TNP	TNP	1.2	1.2	--	--	--	--	--	--
MW-32	221	117.6	-39.2	less-open	48	108	95	5	3	E	70-115	45	1.1E-04	3.0E-01	0.8	--	--	5.2	--	--	--	--
MW-32	222	118.2	-39.8	less-open	62	109	96	6	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	0.6	--	--	--	--
MW-32	223	119.2	-40.9	less-open	48	134	121	31	1	SE	116-165	49	1.1E-04	3.0E-01	1.1	2.5	--	--	--	--	--	--
MW-32	224	119.4	-41.1	less-open	59	339	326	236	2	NW	291-335	44	1.1E-04	3.0E-01	0.2	--	7.6	--	--	--	--	--
MW-32	225	119.6	-41.3	less-open	39	152	139	49	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	0.4	--	--	--	--	--	--
MW-32	226	119.9	-41.5	less-open	41	134	121	31	1	SE	116-165	49	1.1E-04	3.0E-01	0.3	0.3	--	--	--	--	--	--
MW-32	227	120.1	-41.8	less-open	36	136	123	33	1	SE	116-165	49	1.1E-04	3.0E-01	0.3	0.3	--	--	--	--	--	--
MW-32	228	120.2	-41.8	less-open	74	278	265	175	4	W	245-290	45	1.1E-04	3.0E-01	0.1	--	--	--	5.0	--	--	--
MW-32	229	120.6	-42.3	less-open	35	158	145	55	1	SE	116-165	49	1.1E-04	3.0E-01	0.4	0.5	--	--	--	--	--	--
MW-32	230	121.3	-42.9	less-open	70	101	88	358	3	E	70-115	45	1.1E-04	3.0E-01	0.7	--	--	3.1	--	--	--	--
MW-32	231	121.7	-43.4	less-open	55	293	280	190	4	W	245-290	45	1.1E-04	3.0E-01	0.4	--	--	--	1.5	--	--	--
MW-32	232	122.0	-43.7	less-open	61	113	100	10	3	E	70-115	45	1.1E-04	3.0E-01	0.3	--	--	0.8	--	--	--	--
MW-32	233	122.1	-43.8	less-open	58	334	321	231	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	2.7	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-32	234	122.2	-43.8	less-open	60	119	106	16	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	--	0.2	--	--	--
MW-32	235	122.4	-44.1	less-open	60	112	99	9	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-32	236	123.1	-44.7	less-open	40	128	115	25	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	0.6	--	--	--
MW-32	237	123.3	-44.9	less-open	59	110	97	7	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-32	238	123.4	-45.1	less-open	65	296	283	193	4	W	245-290	45	1.1E-04	3.0E-01	0.1	--	--	--	1.7	--	--
MW-32	239	123.5	-45.2	less-open	44	134	121	31	1	SE	116-165	49	1.1E-04	3.0E-01	0.1	2.9	--	--	--	--	--
MW-32	240	124.0	-45.7	less-open	66	286	273	183	4	W	245-290	45	1.1E-04	3.0E-01	0.5	--	--	--	0.6	--	--
MW-32	241	124.2	-45.8	less-open	47	131	118	28	1	SE	116-165	49	1.1E-04	3.0E-01	0.1	0.6	--	--	--	--	--
MW-32	242	124.6	-46.3	less-open	49	124	111	21	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	1.3	--	--	--
MW-32	243	125.3	-47.0	less-open	39	166	153	63	1	SE	116-165	49	1.1E-04	3.0E-01	0.7	1.2	--	--	--	--	--
MW-32	244	125.7	-47.4	less-open	55	143	130	40	1	SE	116-165	49	1.1E-04	3.0E-01	0.4	0.4	--	--	--	--	--
MW-32	245	125.8	-47.4	less-open	53	351	338	248	6	N	336-21	45	1.1E-04	3.0E-01	0.1	--	--	--	--	--	26.0
MW-32	246	126.4	-48.1	less-open	55	5	352	262	6	N	336-21	45	1.1E-04	3.0E-01	0.6	--	--	--	--	--	0.6
MW-32	247	126.5	-48.1	less-open	55	118	105	15	3	E	70-115	45	1.1E-04	3.0E-01	0.0	--	--	1.9	--	--	--
MW-32	248	126.9	-48.5	less-open	57	128	115	25	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	0.4	--	--	--
MW-32	249	127.4	-49.1	less-open	62	338	325	235	2	NW	291-335	44	TNP	TNP	0.5	--	5.3	--	--	--	--
MW-32	250	127.5	-49.2	less-open	54	141	128	38	1	SE	116-165	49	TNP	TNP	0.1	1.8	--	--	--	--	--
MW-32	251	127.9	-49.6	less-open	59	123	110	20	3	E	70-115	45	TNP	TNP	0.4	--	--	1.1	--	--	--
MW-32	252	128.5	-50.1	less-open	60	137	124	34	1	SE	116-165	49	TNP	TNP	0.5	0.9	--	--	--	--	--
MW-32	253	129.0	-50.7	less-open	60	114	101	11	3	E	70-115	45	TNP	TNP	0.5	--	--	1.1	--	--	--
MW-32	254	129.1	-50.7	less-open	51	347	334	244	2	NW	291-335	44	TNP	TNP	0.1	--	1.7	--	--	--	--
MW-32	255	129.7	-51.4	less-open	58	109	96	6	3	E	70-115	45	TNP	TNP	0.7	--	--	0.7	--	--	--
MW-32	256	129.7	-51.4	less-open	52	322	309	219	2	NW	291-335	44	TNP	TNP	0.0	--	0.7	--	--	--	--
MW-32	257	130.2	-51.8	less-open	58	112	99	9	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-32	258	130.4	-52.1	less-open	54	116	103	13	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-32	259	130.5	-52.2	less-open	54	123	110	20	3	E	70-115	45	TNP	TNP	0.1	--	--	0.1	--	--	--
MW-32	260	130.8	-52.5	less-open	57	110	97	7	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-32	261	132.0	-53.6	less-open	57	119	106	16	3	E	70-115	45	3.5E-04	1.0E+00	1.1	--	--	1.1	--	--	--
MW-32	262	132.8	-54.4	less-open	55	120	107	17	3	E	70-115	45	3.5E-04	1.0E+00	0.8	--	--	0.8	--	--	--
MW-32	263	132.9	-54.5	less-open	56	232	219	129	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.1	--	--	--	--	--	--
MW-32	264	133.1	-54.8	less-open	52	132	119	29	1	SE	116-165	49	3.5E-04	1.0E+00	0.2	4.6	--	--	--	--	--
MW-32	265	133.2	-54.9	less-open	58	342	329	239	2	NW	291-335	44	3.5E-04	1.0E+00	0.1	--	3.5	--	--	--	--
MW-32	266	134.1	-55.7	less-open	40	305	292	202	2	NW	291-335	44	3.5E-04	1.0E+00	0.9	--	0.9	--	--	--	--
MW-32	267	134.2	-55.9	less-open	73	118	105	15	3	E	70-115	45	3.5E-04	1.0E+00	0.2	--	--	1.5	--	--	--
MW-32	268	134.6	-56.3	less-open	63	287	274	184	4	W	245-290	45	3.5E-04	1.0E+00	0.3	--	--	--	10.6	--	--
MW-32	269	134.8	-56.5	less-open	49	153	140	50	1	SE	116-165	49	3.5E-04	1.0E+00	0.2	1.7	--	--	--	--	--
MW-32	270	135.3	-56.9	less-open	49	140	127	37	1	SE	116-165	49	3.5E-04	1.0E+00	0.5	0.5	--	--	--	--	--
MW-32	271	135.5	-57.2	less-open	51	127	114	24	3	E	70-115	45	3.5E-04	1.0E+00	0.2	--	--	1.3	--	--	--
MW-32	272	135.6	-57.2	less-open	74	331	318	228	2	NW	291-335	44	3.5E-04	1.0E+00	0.0	--	1.5	--	--	--	--
MW-32	273	136.0	-57.7	less-open	51	284	271	181	4	W	245-290	45	3.5E-04	1.0E+00	0.5	--	--	--	1.4	--	--
MW-32	274	136.3	-57.9	less-open	47	297	284	194	4	W	245-290	45	3.5E-04	1.0E+00	0.2	--	--	--	0.2	--	--
MW-32	275	136.6	-58.3	less-open	36	154	141	51	1	SE	116-165	49	3.5E-04	1.0E+00	0.4	1.3	--	--	--	--	--
MW-32	276	136.8	-58.4	less-open	63	278	265	175	4	W	245-290	45	3.5E-04	1.0E+00	0.1	--	--	--	0.5	--	--
MW-32	277	136.8	-58.5	less-open	45	117	104	14	3	E	70-115	45	3.5E-04	1.0E+00	0.1	--	--	1.3	--	--	--
MW-32	278	137.1	-58.8	less-open	54	300	287	197	4	W	245-290	45	3.5E-04	1.0E+00	0.3	--	--	--	0.4	--	--
MW-32	279	137.5	-59.2	less-open	46	316	303	213	2	NW	291-335	44	3.5E-04	1.0E+00	0.4	--	1.9	--	--	--	--
MW-32	280	138.0	-59.7	less-open	60	101	88	358	3	E	70-115	45	3.5E-04	1.0E+00	0.5	--	--	1.2	--	--	--
MW-32	281	138.6	-60.3	less-open	53	126	113	23	3	E	70-115	45	3.5E-04	1.0E+00	0.6	--	--	0.6	--	--	--
MW-32	282	138.7	-60.3	less-open	73	113	100	10	3	E	70-115	45	3.5E-04	1.0E+00	0.0	--	--	0.0	--	--	--
MW-32	283	139.3	-60.9	less-open	64	320	307	217	2	NW	291-335	44	3.5E-04	1.0E+00	0.6	--	1.8	--	--	--	--
MW-32	284	139.5	-61.1	less-open	57	116	103	13	3	E	70-115	45	3.5E-04	1.0E+00	0.2	--	--	0.8	--	--	--
MW-32	285	139.7	-61.3	less-open	57	289	276	186	4	W	245-290	45	3.5E-04	1.0E+00	0.2	--	--	--	2.5	--	--
MW-32	286	140.0	-61.6	less-open	53	111	98	8	3	E	70-115	45	3.5E-04	1.0E+00	0.3	--	--	0.5	--	--	--
MW-32	287	140.4	-62.1	less-open	63	123	110	20	3	E	70-115	45	3.5E-04	1.0E+00	0.5	--	--	0.5	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-32	288	140.6	-62.3	less-open	81	293	280	190	4	W	245-290	45	3.5E-04	1.0E+00	0.2	--	--	--	0.9	--	--
MW-32	289	141.0	-62.6	less-open	52	119	106	16	3	E	70-115	45	3.5E-04	1.0E+00	0.4	--	--	0.5	--	--	--
MW-32	290	141.2	-62.9	less-open	46	104	91	1	3	E	70-115	45	3.5E-04	1.0E+00	0.2	--	--	0.2	--	--	--
MW-32	291	141.5	-63.1	less-open	53	87	74	344	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-32	292	141.6	-63.3	less-open	73	307	294	204	2	NW	291-335	44	TNP	TNP	0.1	--	2.3	--	--	--	--
MW-32	293	141.7	-63.3	less-open	58	94	81	351	3	E	70-115	45	TNP	TNP	0.1	--	--	0.2	--	--	--
MW-32	294	141.9	-63.6	less-open	31	94	81	351	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-32	295	142.1	-63.8	less-open	57	93	80	350	3	E	70-115	45	TNP	TNP	0.2	--	--	0.4	--	--	--
MW-32	296	142.5	-64.2	less-open	49	122	109	19	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-32	297	143.1	-64.8	less-open	63	123	110	20	3	E	70-115	45	TNP	TNP	0.6	--	--	0.6	--	--	--
MW-32	298	143.6	-65.3	less-open	73	119	106	16	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-32	299	144.2	-65.9	less-open	53	109	96	6	3	E	70-115	45	TNP	TNP	0.6	--	--	0.6	--	--	--
MW-32	300	144.8	-66.4	less-open	55	144	131	41	1	SE	116-165	49	TNP	TNP	0.5	8.1	--	--	--	--	--
MW-32	301	144.8	-66.5	less-open	55	128	115	25	3	E	70-115	45	TNP	TNP	0.1	--	--	0.6	--	--	--
MW-32	302	145.4	-67.1	less-open	50	131	118	28	1	SE	116-165	49	TNP	TNP	0.6	0.6	--	--	--	--	--
MW-32	303	145.4	-67.1	less-open	72	355	342	252	6	N	336-21	45	TNP	TNP	0.0	--	--	--	--	--	19.0
MW-32	304	146.1	-67.8	less-open	60	129	116	26	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--
MW-32	305	146.2	-67.9	less-open	44	148	135	45	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-32	306	147.4	-69.0	less-open	53	302	289	199	4	W	245-290	45	TNP	TNP	1.2	--	--	--	6.8	--	--
MW-32	307	147.7	-69.4	less-open	48	136	123	33	1	SE	116-165	49	TNP	TNP	0.3	1.5	--	--	--	--	--
MW-32	308	148.3	-69.9	less-open	50	123	110	20	3	E	70-115	45	TNP	TNP	0.5	--	--	3.4	--	--	--
MW-32	309	148.7	-70.4	less-open	45	167	154	64	1	SE	116-165	49	1.4E-04	4.0E-01	0.5	1.0	--	--	--	--	--
MW-32	310	149.0	-70.7	less-open	48	126	113	23	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.8	--	--	--
MW-32	311	149.2	-70.9	less-open	56	105	92	2	3	E	70-115	45	1.4E-04	4.0E-01	0.2	--	--	0.2	--	--	--
MW-32	312	149.5	-71.1	less-open	62	94	81	351	3	E	70-115	45	1.4E-04	4.0E-01	0.2	--	--	0.2	--	--	--
MW-32	313	150.0	-71.7	less-open	72	105	92	2	3	E	70-115	45	1.4E-04	4.0E-01	0.5	--	--	0.5	--	--	--
MW-32	314	150.0	-71.7	less-open	46	347	334	244	2	NW	291-335	44	1.4E-04	4.0E-01	0.0	--	8.4	--	--	--	--
MW-32	315	150.1	-71.8	less-open	37	101	88	358	3	E	70-115	45	1.4E-04	4.0E-01	0.1	--	--	0.1	--	--	--
MW-32	316	150.3	-72.0	less-open	30	73	60	330	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.2	--	--	--	--	--	--
MW-32	317	151.1	-72.8	less-open	29	163	150	60	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.8	--	--	--	--	--	--
MW-32	318	151.6	-73.2	less-open	44	119	106	16	3	E	70-115	45	1.4E-04	4.0E-01	0.4	--	--	1.5	--	--	--
MW-32	319	151.9	-73.5	less-open	58	128	115	25	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.3	--	--	--
MW-32	320	152.4	-74.1	less-open	11	64	51	321	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.5	--	--	--	--	--	--
MW-32	321	152.8	-74.5	less-open	48	119	106	16	3	E	70-115	45	1.4E-04	4.0E-01	0.4	--	--	0.9	--	--	--
MW-32	322	153.2	-74.9	less-open	52	114	101	11	3	E	70-115	45	1.4E-04	4.0E-01	0.4	--	--	0.4	--	--	--
MW-32	323	153.6	-75.2	less-open	43	124	111	21	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.3	--	--	--
MW-32	324	153.8	-75.5	less-open	77	100	87	357	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.3	--	--	--
MW-32	325	155.0	-76.7	less-open	32	351	338	248	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.2	--	--	--	--	--	--
MW-32	326	155.7	-77.4	less-open	25	17	4	274	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.7	--	--	--	--	--	--
MW-32	327	156.4	-78.1	less-open	39	347	334	244	2	NW	291-335	44	1.4E-04	4.0E-01	0.7	--	6.4	--	--	--	--
MW-32	328	156.8	-78.5	less-open	51	128	115	25	3	E	70-115	45	1.4E-04	4.0E-01	0.4	--	--	3.0	--	--	--
MW-32	329	157.4	-79.1	less-open	50	134	121	31	1	SE	116-165	49	1.4E-04	4.0E-01	0.6	8.7	--	--	--	--	--
MW-32	330	157.8	-79.5	less-open	16	338	325	235	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.4	--	--	--	--	--	--
MW-32	331	158.5	-80.2	less-open	47	118	105	15	3	E	70-115	45	TNP	TNP	0.7	--	--	1.7	--	--	--
MW-32	332	159.0	-80.7	less-open	58	101	88	358	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-32	333	160.2	-81.9	less-open	58	87	74	344	3	E	70-115	45	TNP	TNP	1.2	--	--	1.2	--	--	--
MW-32	334	161.7	-83.4	less-open	19	43	30	300	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-32	335	162.0	-83.7	less-open	26	350	337	247	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-32	336	163.2	-84.8	less-open	42	304	291	201	2	NW	291-335	44	TNP	TNP	1.2	--	6.8	--	--	--	--
MW-32	337	163.4	-85.0	less-open	47	318	305	215	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--
MW-32	338	164.4	-86.0	less-open	77	310	297	207	2	NW	291-335	44	TNP	TNP	1.0	--	1.0	--	--	--	--
MW-32	339	165.1	-86.8	less-open	47	342	329	239	2	NW	291-335	44	TNP	TNP	0.8	--	0.8	--	--	--	--
MW-32	340	165.7	-87.4	less-open	27	30	17	287	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--
MW-32	341	166.1	-87.7	less-open	44	128	115	25	3	E	70-115	45	TNP	TNP	0.4	--	--	5.8	--	--	--



**APPENDIX Q**  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-32	342	167.0	-88.7	less-open	68	94	81	351	3	E	70-115	45	TNP	TNP	0.9	--	--	0.9	--	--	--	
MW-32	343	167.1	-88.8	less-open	52	299	286	196	4	W	245-290	45	TNP	TNP	0.1	--	--	--	19.8	--	--	
MW-32	344	167.2	-88.9	less-open	51	104	91	1	3	E	70-115	45	TNP	TNP	0.1	--	--	0.2	--	--	--	
MW-32	345	168.0	-89.7	less-open	80	319	306	216	2	NW	291-335	44	TNP	TNP	0.8	--	2.9	--	--	--	--	
MW-32	346	168.6	-90.3	less-open	67	103	90	0	3	E	70-115	45	TNP	TNP	0.6	--	--	1.4	--	--	--	
MW-32	347	168.8	-90.5	less-open	70	290	277	187	4	W	245-290	45	TNP	TNP	0.2	--	--	--	1.7	--	--	
MW-32	348	168.9	-90.6	less-open	38	132	119	29	1	SE	116-165	49	TNP	TNP	0.1	11.5	--	--	--	--	--	
MW-32	349	169.3	-91.0	less-open	76	298	285	195	4	W	245-290	45	TNP	TNP	0.4	--	--	--	0.5	--	--	
MW-32	350	169.5	-91.1	less-open	32	3	350	260	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	
MW-32	351	169.8	-91.5	less-open	49	123	110	20	3	E	70-115	45	TNP	TNP	0.4	--	--	1.2	--	--	--	
MW-32	352	170.4	-92.0	less-open	51	117	104	14	3	E	70-115	45	3.9E-04	1.1E+00	0.5	--	--	0.5	--	--	--	
MW-32	353	170.5	-92.1	less-open	40	335	322	232	2	NW	291-335	44	3.9E-04	1.1E+00	0.1	--	2.5	--	--	--	--	
MW-32	354	170.6	-92.3	less-open	33	325	312	222	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.2	--	--	--	--	--	--	
MW-32	355	170.9	-92.5	less-open	37	338	325	235	2	NW	291-335	44	3.9E-04	1.1E+00	0.2	--	0.4	--	--	--	--	
MW-32	356	171.5	-93.1	less-open	41	134	121	31	1	SE	116-165	49	3.9E-04	1.1E+00	0.6	2.6	--	--	--	--	--	
MW-32	357	172.0	-93.7	less-open	48	103	90	0	3	E	70-115	45	3.9E-04	1.1E+00	0.5	--	--	1.6	--	--	--	
MW-32	358	172.0	-93.7	less-open	36	342	329	239	2	NW	291-335	44	3.9E-04	1.1E+00	0.0	--	1.2	--	--	--	--	
MW-32	359	172.2	-93.9	less-open	49	357	344	254	6	N	336-21	45	3.9E-04	1.1E+00	0.2	--	--	--	--	--	26.8	
MW-32	360	172.3	-93.9	less-open	54	108	95	5	3	E	70-115	45	3.9E-04	1.1E+00	0.1	--	--	0.3	--	--	--	
MW-32	361	173.8	-95.4	less-open	63	312	299	209	2	NW	291-335	44	3.9E-04	1.1E+00	1.5	--	1.7	--	--	--	--	
MW-32	362	174.2	-95.9	less-open	39	126	113	23	3	E	70-115	45	3.9E-04	1.1E+00	0.4	--	--	1.9	--	--	--	
MW-32	363	174.6	-96.2	less-open	50	129	116	26	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	3.1	--	--	--	--	--	
MW-32	364	174.6	-96.3	less-open	50	321	308	218	2	NW	291-335	44	3.9E-04	1.1E+00	0.1	--	0.9	--	--	--	--	
MW-32	365	174.8	-96.5	less-open	55	110	97	7	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	0.6	--	--	--	
MW-32	366	174.8	-96.5	less-open	21	6	353	263	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.0	--	--	--	--	--	--	
MW-32	367	175.0	-96.7	less-open	57	124	111	21	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	0.2	--	--	--	
MW-32	368	175.2	-96.8	less-open	50	116	103	13	3	E	70-115	45	3.9E-04	1.1E+00	0.1	--	--	0.1	--	--	--	
MW-32	369	175.3	-97.0	less-open	48	119	106	16	3	E	70-115	45	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.1	--	--	0.1	--	--
MW-32	370	176.0	-97.6	less-open	61	110	97	7	3	E	70-115	45	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.7	--	--	0.7	--	--
MW-32	371	177.2	-98.9	less-open	58	110	97	7	3	E	70-115	45	3.9E-04	3.5E-05	1.1E+00	1.0E-01	1.2	--	--	1.2	--	--
MW-32	372	178.1	-99.8	less-open	63	109	96	6	3	E	70-115	45	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.9	--	--	0.9	--	--
MW-32	373	178.8	-100.5	less-open	35	45	32	302	NSR	NSR	NSR	NSR	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.7	--	--	--	--	--
MW-32	374	179.7	-101.4	less-open	24	23	10	280	NSR	NSR	NSR	NSR	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.9	--	--	--	--	--
MW-32	375	180.2	-101.9	less-open	68	12	359	269	6	N	336-21	45	3.9E-04	3.5E-05	1.1E+00	1.0E-01	0.5	--	--	--	--	8.0
MW-32	376	180.5	-102.2	less-open	47	169	156	66	1	SE	116-165	49	3.5E-05	1.0E-01	0.3	6.0	--	--	--	--	--	--
MW-32	377	181.3	-102.9	less-open	39	40	27	297	NSR	NSR	NSR	NSR	3.5E-05	1.0E-01	0.7	--	--	--	--	--	--	--
MW-32	378	181.6	-103.3	less-open	63	107	94	4	3	E	70-115	45	3.5E-05	1.0E-01	0.3	--	--	3.5	--	--	--	--
MW-32	379	182.0	-103.6	less-open	36	3	350	260	6	N	336-21	45	3.5E-05	1.0E-01	0.4	--	--	--	--	--	--	1.8
MW-32	380	182.0	-103.7	less-open	28	53	40	310	NSR	NSR	NSR	NSR	3.5E-05	1.0E-01	0.1	--	--	--	--	--	--	--
MW-32	381	182.4	-104.1	less-open	39	103	90	0	3	E	70-115	45	3.5E-05	1.0E-01	0.4	--	--	0.8	--	--	--	--
MW-32	382	182.5	-104.2	less-open	39	100	87	357	3	E	70-115	45	3.5E-05	1.0E-01	0.2	--	--	0.2	--	--	--	--
MW-32	383	182.7	-104.4	less-open	28	137	124	34	NSR	NSR	NSR	NSR	3.5E-05	1.0E-01	0.2	--	--	--	--	--	--	--
MW-32	384	182.9	-104.5	less-open	56	121	108	18	3	E	70-115	45	3.5E-05	1.0E-01	0.1	--	--	0.3	--	--	--	--
MW-32	385	183.5	-105.1	less-open	54	269	256	166	4	W	245-290	45	3.5E-05	1.0E-01	0.6	--	--	--	14.1	--	--	--
MW-32	386	183.5	-105.2	less-open	46	118	105	15	3	E	70-115	45	3.5E-05	1.0E-01	0.1	--	--	0.7	--	--	--	--
MW-32	387	183.8	-105.4	less-open	41	78	65	335	NSR	NSR	NSR	NSR	3.5E-05	1.0E-01	0.2	--	--	--	--	--	--	--
MW-32	388	184.1	-105.8	less-open	45	77	64	334	NSR	NSR	NSR	NSR	3.5E-05	1.0E-01	0.3	--	--	--	--	--	--	--
MW-32	389	184.3	-105.9	less-open	56	103	90	360	3	E	70-115	45	3.5E-05	1.0E-01	0.2	--	--	0.7	--	--	--	--
MW-32	390	184.4	-106.1	less-open	57	90	77	347	3	E	70-115	45	3.5E-05	1.0E-01	0.2	--	--	0.2	--	--	--	--
MW-32	391	184.5	-106.2	less-open	45	324	311	221	2	NW	291-335	44	3.5E-05	1.0E-01	0.1	--	9.9	--	--	--	--	--
MW-32	392	184.8	-106.5	less-open	59	113	100	10	3	E	70-115	45	3.5E-05	1.0E-01	0.3	--	--	0.4	--	--	--	--
MW-32	393	185.4	-107.0	less-open	60	87	74	344	3	E	70-115	45	1.4E-04	4.0E-01	0.6	--	--	0.6	--	--	--	--
MW-32	394	185.5	-107.2	less-open	60	87	74	344	3	E	70-115	45	1.4E-04	4.0E-01	0.2	--	--	0.2	--	--	--	--
MW-32	395	185.7	-107.4	less-open	46	93	80	350	3	E	70-115	45	1.4E-04	4.0E-01	0.2	--	--	0.2	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-32	396	185.8	-107.5	less-open	49	111	98	8	3	E	70-115	45	1.4E-04		4.0E-01	0.1	--	--	0.1	--	--	--
MW-32	397	185.9	-107.6	less-open	69	134	121	31	1	SE	116-165	49	1.4E-04		4.0E-01	0.1	5.4	--	--	--	--	--
MW-32	398	186.0	-107.6	less-open	59	302	289	199	4	W	245-290	45	1.4E-04		4.0E-01	0.0	--	--	--	2.5	--	--
MW-32	399	186.2	-107.9	less-open	43	95	82	352	3	E	70-115	45	1.4E-04		4.0E-01	0.3	--	--	0.4	--	--	--
MW-32	400	186.4	-108.1	less-open	42	115	102	12	3	E	70-115	45	1.4E-04		4.0E-01	0.2	--	--	0.2	--	--	--
MW-32	401	186.8	-108.4	less-open	53	326	313	223	2	NW	291-335	44	1.4E-04		4.0E-01	0.3	--	2.2	--	--	--	--
MW-32	402	186.8	-108.4	less-open	33	294	281	191	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.0	--	--	--	--	--	--
MW-32	403	186.9	-108.6	less-open	63	101	88	358	3	E	70-115	45	1.4E-04		4.0E-01	0.2	--	--	0.5	--	--	--
MW-32	404	187.4	-109.1	less-open	25	310	297	207	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.5	--	--	--	--	--	--
MW-32	405	187.8	-109.4	less-open	69	86	73	343	3	E	70-115	45	1.4E-04		4.0E-01	0.3	--	--	0.8	--	--	--
MW-32	406	188.0	-109.7	less-open	63	82	69	339	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.3	--	--	--	--	--	--
MW-32	407	188.8	-110.5	less-open	65	89	76	346	3	E	70-115	45	1.4E-04		4.0E-01	0.8	--	--	1.0	--	--	--
MW-32	408	189.1	-110.8	less-open	62	81	68	338	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.3	--	--	--	--	--	--
MW-32	409	190.2	-111.9	less-open	65	89	76	346	3	E	70-115	45	1.4E-04		4.0E-01	1.1	--	--	1.4	--	--	--
MW-32	410	190.7	-112.4	less-open	55	86	73	343	3	E	70-115	45	1.4E-04		4.0E-01	0.5	--	--	0.5	--	--	--
MW-32	411	191.3	-113.0	less-open	55	126	113	23	3	E	70-115	45	1.4E-04		4.0E-01	0.6	--	--	0.6	--	--	--
MW-32	412	191.8	-113.5	less-open	66	101	88	358	3	E	70-115	45	1.4E-04		4.0E-01	0.5	--	--	0.5	--	--	--
MW-32	413	191.9	-113.6	less-open	53	289	276	186	4	W	245-290	45	1.4E-04		4.0E-01	0.1	--	--	--	5.9	--	--
MW-32	414	192.1	-113.7	less-open	3	177	164	74	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.2	--	--	--	--	--	--
MW-32	415	192.3	-113.9	less-open	61	92	79	349	3	E	70-115	45	1.4E-04		4.0E-01	0.2	--	--	0.4	--	--	--
MW-32	416	192.6	-114.3	less-open	54	94	81	351	3	E	70-115	45	1.4E-04		4.0E-01	0.4	--	--	0.4	--	--	--
MW-32	417	193.4	-115.1	less-open	53	301	288	198	4	W	245-290	45	1.4E-04		4.0E-01	0.8	--	--	--	1.5	--	--
MW-32	418	193.4	-115.1	less-open	64	90	77	347	3	E	70-115	45	1.4E-04		4.0E-01	0.0	--	--	0.8	--	--	--
MW-32	419	193.6	-115.2	less-open	37	328	315	225	2	NW	291-335	44	1.4E-04		4.0E-01	0.1	--	6.8	--	--	--	--
MW-32	420	194.1	-115.8	less-open	51	80	67	337	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.6	--	--	--	--	--	--
MW-32	421	194.6	-116.2	less-open	60	317	304	214	2	NW	291-335	44	1.4E-04		4.0E-01	0.4	--	1.0	--	--	--	--
MW-32	422	194.8	-116.4	less-open	57	78	65	335	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.2	--	--	--	--	--	--
MW-32	423	195.1	-116.7	less-open	49	329	316	226	2	NW	291-335	44	1.4E-04		4.0E-01	0.3	--	0.5	--	--	--	--
MW-32	424	195.8	-117.4	less-open	43	355	342	252	6	N	336-21	45	TNP		TNP	0.7	--	--	--	--	--	13.8
MW-32	425	196.5	-118.2	less-open	54	117	104	14	3	E	70-115	45	TNP		TNP	0.8	--	--	3.1	--	--	--
MW-32	426	197.0	-118.6	less-open	5	123	110	20	NSR	NSR	NSR	NSR	TNP		TNP	0.4	--	--	--	--	--	--
MW-32	427	197.5	-119.1	less-open	6	137	124	34	NSR	NSR	NSR	NSR	TNP		TNP	0.5	--	--	--	--	--	--
MW-32	428	198.0	-119.6	less-open	3	166	153	63	NSR	NSR	NSR	NSR	TNP		TNP	0.5	--	--	--	--	--	--
MW-32	429	198.1	-119.7	less-open	8	82	69	339	NSR	NSR	NSR	NSR	TNP		TNP	0.1	--	--	--	--	--	--
MW-34	1	9.8	8.8	less-open	68	299	286	196	4	W	245-290	45	7.1E-05		2.0E-01	NA	--	--	--	9.8	--	--
MW-34	2	10.2	8.4	less-open	65	150	137	47	1	SE	116-165	49	7.1E-05		2.0E-01	0.4	10.2	--	--	--	--	--
MW-34	3	10.4	8.2	less-open	63	152	139	49	1	SE	116-165	49	7.1E-05		2.0E-01	0.2	0.2	--	--	--	--	--
MW-34	4	10.6	8.0	open	67	143	130	40	1	SE	116-165	49	7.1E-05		2.0E-01	0.2	0.2	--	--	--	--	--
MW-34	5	10.8	7.8	open	66	130	117	27	1	SE	116-165	49	7.1E-05		2.0E-01	0.3	0.3	--	--	--	--	--
MW-34	6	11.3	7.3	less-open	65	144	131	41	1	SE	116-165	49	7.1E-05		2.0E-01	0.5	0.5	--	--	--	--	--
MW-34	7	12.2	6.4	less-open	58	116	103	13	3	E	70-115	45	7.1E-05		2.0E-01	0.9	--	--	12.2	--	--	--
MW-34	8	12.5	6.1	less-open	74	332	319	229	2	NW	291-335	44	7.1E-05		2.0E-01	0.3	--	12.5	--	--	--	--
MW-34	9	13.2	5.4	less-open	64	147	134	44	1	SE	116-165	49	7.1E-05		2.0E-01	0.8	1.9	--	--	--	--	--
MW-34	10	13.2	5.4	less-open	77	321	308	218	2	NW	291-335	44	7.1E-05		2.0E-01	0.0	--	0.8	--	--	--	--
MW-34	11	13.5	5.1	less-open	58	106	93	3	3	E	70-115	45	7.1E-05		2.0E-01	0.3	--	--	1.4	--	--	--
MW-34	12	13.8	4.8	less-open	66	135	122	32	1	SE	116-165	49	7.1E-05		2.0E-01	0.3	0.6	--	--	--	--	--
MW-34	13	15.5	3.1	open	24	99	86	356	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	1.6	--	--	--	--	--	--
MW-34	14	15.6	3.0	open	17	341	328	238	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	0.1	--	--	--	--	--	--
MW-34	15	15.9	2.7	open	39	63	50	320	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	0.3	--	--	--	--	--	--
MW-34	16	16.0	2.6	open	29	48	35	305	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	0.2	--	--	--	--	--	--
MW-34	17	17.8	0.8	less-open	86	342	329	239	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	1.8	--	--	--	--	--	--
MW-34	18	18.3	0.3	less-open	72	228	215	125	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	0.5	--	--	--	--	--	--
MW-34	19	18.5	0.1	less-open	12	243	230	140	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	0.1	--	--	--	--	--	--
MW-34	20	19.5	-0.9	less-open	21	327	314	224	NSR	NSR	NSR	NSR	7.1E-05		2.0E-01	1.0	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-34	21	23.1	-4.5	less-open	25	130	117	27	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	3.6	--	--	--	--	--	--
MW-34	22	24.9	-6.3	less-open	63	307	294	204	2	NW	291-335	44	7.1E-05	2.0E-01	1.8	--	11.7	--	--	--	--
MW-34	23	25.2	-6.6	less-open	30	67	54	324	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.3	--	--	--	--	--	--
MW-34	24	26.1	-7.5	less-open	80	151	138	48	1	SE	116-165	49	7.1E-05	2.0E-01	0.9	12.3	--	--	--	--	--
MW-34	25	27.4	-8.8	less-open	81	168	155	65	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	1.3	--	--	--	--	--	--
MW-34	26	27.8	-9.2	less-open	2	65	52	322	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.3	--	--	--	--	--	--
MW-35	1	9.2	9.4	less-open	54	180	167	77	5	S	166-200	34	1.4E-04	4.0E-01	NA	--	--	--	--	9.2	--
MW-35	2	9.3	9.3	less-open	51	182	169	79	5	S	166-200	34	1.4E-04	4.0E-01	0.2	--	--	--	--	0.2	--
MW-35	3	9.5	9.1	less-open	50	162	149	59	1	SE	116-165	49	1.4E-04	4.0E-01	0.1	9.5	--	--	--	--	--
MW-35	4	9.7	8.9	less-open	48	185	172	82	5	S	166-200	34	1.4E-04	4.0E-01	0.2	--	--	--	--	0.3	--
MW-35	5	11.8	6.8	less-open	70	206	193	103	5	S	166-200	34	1.4E-04	4.0E-01	2.1	--	--	--	--	2.1	--
MW-35	6	12.8	5.8	less-open	64	187	174	84	5	S	166-200	34	1.4E-04	4.0E-01	1.0	--	--	--	--	1.0	--
MW-35	7	13.7	4.9	less-open	10	71	58	328	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.9	--	--	--	--	--	--
MW-35	8	14.7	4.0	open	15	78	65	335	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.9	--	--	--	--	--	--
MW-35	9	15.8	2.8	less-open	48	209	196	106	5	S	166-200	34	1.4E-04	4.0E-01	1.1	--	--	--	--	3.0	--
MW-35	10	16.7	2.0	less-open	57	171	158	68	1	SE	116-165	49	1.4E-04	4.0E-01	0.9	7.2	--	--	--	--	--
MW-35	11	16.8	1.9	less-open	60	178	165	75	1	SE	116-165	49	1.4E-04	4.0E-01	0.1	0.1	--	--	--	--	--
MW-35	12	17.4	1.2	less-open	65	148	135	45	1	SE	116-165	49	1.4E-04	4.0E-01	0.6	0.6	--	--	--	--	--
MW-35	13	18.9	-0.3	less-open	59	78	65	335	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.5	--	--	--	--	--	--
MW-35	14	19.4	-0.7	less-open	56	133	120	30	1	SE	116-165	49	1.4E-04	4.0E-01	0.5	2.0	--	--	--	--	--
MW-35	15	20.8	-2.2	less-open	41	201	188	98	5	S	166-200	34	1.4E-04	4.0E-01	1.4	--	--	--	--	5.0	--
MW-35	16	20.9	-2.3	less-open	46	193	180	90	5	S	166-200	34	1.4E-04	4.0E-01	0.1	--	--	--	--	0.1	--
MW-35	17	21.0	-2.3	less-open	47	195	182	92	5	S	166-200	34	1.4E-04	4.0E-01	0.1	--	--	--	--	0.1	--
MW-35	18	21.2	-2.6	less-open	53	206	193	103	5	S	166-200	34	1.4E-04	4.0E-01	0.2	--	--	--	--	0.2	--
MW-35	19	21.6	-3.0	less-open	54	209	196	106	5	S	166-200	34	1.4E-04	4.0E-01	0.4	--	--	--	--	0.4	--
MW-35	20	24.5	-5.8	less-open	57	138	125	35	1	SE	116-165	49	1.4E-04	4.0E-01	2.9	5.1	--	--	--	--	--
MW-35	21	25.2	-6.6	less-open	48	201	188	98	5	S	166-200	34	1.4E-04	4.0E-01	0.7	--	--	--	--	3.6	--
MW-35	22	26.4	-7.8	less-open	29	107	94	4	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.3	--	--	--	--	--	--
MW-35	23	26.5	-7.9	less-open	75	133	120	30	1	SE	116-165	49	1.4E-04	4.0E-01	0.0	2.0	--	--	--	--	--
MW-35	24	27.1	-8.5	less-open	78	119	106	16	3	E	70-115	45	1.4E-04	4.0E-01	0.7	--	--	27.1	--	--	--
MW-35	25	28.5	-9.9	less-open	5	120	107	17	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.4	--	--	--	--	--	--
MW-39	1	54.5	27.4	less-open	40	306	293	203	2	NW	291-335	44	TNP	TNP	NA	--	54.5	--	--	--	--
MW-39	2	55.5	26.3	less-open	20	333	320	230	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--
MW-39	3	55.9	25.9	less-open	64	123	110	20	3	E	70-115	45	TNP	TNP	0.4	--	--	55.9	--	--	--
MW-39	4	56.6	25.3	less-open	84	184	171	81	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--
MW-39	5	59.7	22.2	less-open	46	140	127	37	1	SE	116-165	49	7.8E-03	2.2E+01	3.2	59.7	--	--	--	--	--
MW-39	6	62.1	19.8	less-open	36	264	251	161	4	W	245-290	45	7.8E-03	2.2E+01	2.4	--	--	--	62.1	--	--
MW-39	7	62.3	19.6	less-open	74	63	50	320	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.2	--	--	--	--	--	--
MW-39	8	62.5	19.4	less-open	31	127	114	24	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.2	--	--	--	--	--	--
MW-39	9	63.3	18.5	less-open	62	86	73	343	3	E	70-115	45	7.8E-03	2.2E+01	0.8	--	--	7.4	--	--	--
MW-39	10	63.4	18.4	less-open	34	287	274	184	4	W	245-290	45	7.8E-03	2.2E+01	0.1	--	--	--	1.3	--	--
MW-39	11	63.7	18.2	less-open	72	71	58	328	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.3	--	--	--	--	--	--
MW-39	12	64.0	17.9	less-open	65	71	58	328	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.3	--	--	--	--	--	--
MW-39	13	67.0	14.9	open	23	56	43	313	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	3.0	--	--	--	--	--	--
MW-39	14	67.6	14.3	less-open	66	188	175	85	5	S	166-200	34	7.8E-03	2.2E+01	0.6	--	--	--	--	67.6	--
MW-39	15	68.0	13.9	less-open	73	201	188	98	5	S	166-200	34	7.8E-03	2.2E+01	0.5	--	--	--	--	0.5	--
MW-39	16	68.2	13.7	less-open	26	87	74	344	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.1	--	--	--	--	--	--
MW-39	17	68.2	13.7	less-open	23	72	59	329	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.0	--	--	--	--	--	--
MW-39	18	68.7	13.2	open	17	53	40	310	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.5	--	--	--	--	--	--
MW-39	19	68.8	13.1	open	21	42	29	299	NSR	NSR	NSR	NSR	7.8E-03	2.2E+01	0.1	--	--	--	--	--	--
MW-39	20	70.5	11.4	less-open	37	68	55	325	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	1.7	--	--	--	--	--	--
MW-39	21	71.4	10.5	less-open	72	124	111	21	3	E	70-115	45	2.1E-04	6.0E-01	0.9	--	--	8.0	--	--	--
MW-39	22	75.2	6.7	less-open	65	147	134	44	1	SE	116-165	49	2.1E-04	6.0E-01	3.8	15.4	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	1/day		1	2	3	4	5	6		
MW-39	23	75.2	6.7	less-open	78	120	107	17	3	E	70-115	45	2.1E-04		6.0E-01	0.0	--	--	3.8	--	--	--	
MW-39	24	75.5	6.4	less-open	31	335	322	232	NSR	NSR	NSR	NSR	2.1E-04		6.0E-01	0.3	--	--	--	--	--	--	
MW-39	25	77.8	4.0	less-open	32	231	218	128	NSR	NSR	NSR	NSR	2.1E-04		6.0E-01	2.4	--	--	--	--	--	--	
MW-39	26	78.6	3.2	less-open	64	348	335	245	2	NW	291-335	44	2.1E-04		6.0E-01	0.8	--	24.2	--	--	--	--	
MW-39	27	78.7	3.1	less-open	22	174	161	71	NSR	NSR	NSR	NSR	2.1E-04		6.0E-01	0.1	--	--	--	--	--	--	
MW-39	28	79.9	2.0	less-open	23	191	178	88	NSR	NSR	NSR	NSR	2.1E-04		6.0E-01	1.1	--	--	--	--	--	--	
MW-39	29	80.7	1.2	less-open	50	131	118	28	1	SE	116-165	49	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.8	5.5	--	--	--	--	--
MW-39	30	81.8	0.0	less-open	77	191	178	88	5	S	166-200	34	7.8E-04	1.0E-03	2.2E+00	2.9E+00	1.2	--	--	--	--	13.8	--
MW-39	31	82.5	-0.6	less-open	76	208	195	105	5	S	166-200	34	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.6	--	--	--	--	0.6	--
MW-39	32	83.0	-1.1	less-open	74	167	154	64	1	SE	116-165	49	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.5	2.3	--	--	--	--	--
MW-39	33	84.2	-2.3	less-open	51	139	126	36	1	SE	116-165	49	7.8E-04	1.0E-03	2.2E+00	2.9E+00	1.1	1.1	--	--	--	--	--
MW-39	34	84.3	-2.4	less-open	82	187	174	84	NSR	NSR	NSR	NSR	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.1	--	--	--	--	--	--
MW-39	35	85.5	-3.7	less-open	7	215	202	112	NSR	NSR	NSR	NSR	7.8E-04	1.0E-03	2.2E+00	2.9E+00	1.3	--	--	--	--	--	--
MW-39	36	85.6	-3.7	less-open	6	221	208	118	NSR	NSR	NSR	NSR	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.1	--	--	--	--	--	--
MW-39	37	85.8	-4.0	open	48	332	319	229	2	NW	291-335	44	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.2	--	7.2	--	--	--	--
MW-39	38	86.0	-4.1	less-open	71	113	100	10	3	E	70-115	45	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.1	--	--	10.8	--	--	--
MW-39	39	86.6	-4.7	less-open	58	121	108	18	3	E	70-115	45	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.6	--	--	0.6	--	--	--
MW-39	40	87.3	-5.4	less-open	35	135	122	32	1	SE	116-165	49	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.7	3.1	--	--	--	--	--
MW-39	41	87.6	-5.7	less-open	54	109	96	6	3	E	70-115	45	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.3	--	--	1.0	--	--	--
MW-39	42	87.8	-5.9	less-open	53	264	251	161	4	W	245-290	45	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.2	--	--	--	24.4	--	--
MW-39	43	87.9	-6.0	less-open	32	175	162	72	NSR	NSR	NSR	NSR	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.1	--	--	--	--	--	--
MW-39	44	87.9	-6.1	less-open	49	75	62	332	NSR	NSR	NSR	NSR	7.8E-04	1.0E-03	2.2E+00	2.9E+00	0.0	--	--	--	--	--	--
MW-39	45	90.5	-8.6	less-open	61	202	189	99	5	S	166-200	34	1.8E-04		5.0E-01		2.6	--	--	--	--	8.0	--
MW-39	46	90.7	-8.9	less-open	53	138	125	35	1	SE	116-165	49	1.8E-04		5.0E-01		0.2	3.5	--	--	--	--	--
MW-39	47	90.9	-9.0	less-open	52	140	127	37	1	SE	116-165	49	1.8E-04		5.0E-01		0.1	0.1	--	--	--	--	--
MW-39	48	91.7	-9.9	less-open	60	71	58	328	NSR	NSR	NSR	NSR	1.8E-04		5.0E-01		0.8	--	--	--	--	--	--
MW-39	49	92.2	-10.3	less-open	58	280	267	177	4	W	245-290	45	1.8E-04		5.0E-01		0.5	--	--	--	4.4	--	--
MW-39	50	93.7	-11.8	less-open	50	99	86	356	3	E	70-115	45	1.8E-04		5.0E-01		1.5	--	--	6.1	--	--	--
MW-39	51	94.2	-12.3	less-open	59	315	302	212	2	NW	291-335	44	1.8E-04		5.0E-01		0.5	--	8.4	--	--	--	--
MW-39	52	95.5	-13.6	less-open	59	187	174	84	5	S	166-200	34	1.8E-04		5.0E-01		1.3	--	--	--	--	5.0	--
MW-39	53	95.7	-13.8	less-open	61	253	240	150	NSR	NSR	NSR	NSR	1.8E-04		5.0E-01		0.2	--	--	--	--	--	--
MW-39	54	96.1	-14.3	less-open	62	242	229	139	NSR	NSR	NSR	NSR	1.8E-04		5.0E-01		0.4	--	--	--	--	--	--
MW-39	55	96.7	-14.8	less-open	57	55	42	312	NSR	NSR	NSR	NSR	1.8E-04		5.0E-01		0.6	--	--	--	--	--	--
MW-39	56	97.1	-15.2	less-open	56	227	214	124	NSR	NSR	NSR	NSR	1.8E-04		5.0E-01		0.4	--	--	--	--	--	--
MW-39	57	97.4	-15.5	less-open	68	199	186	96	5	S	166-200	34	1.8E-04		5.0E-01		0.3	--	--	--	--	1.9	--
MW-39	58	97.4	-15.5	less-open	73	101	88	358	3	E	70-115	45	1.8E-04		5.0E-01		0.0	--	--	3.7	--	--	--
MW-39	59	97.5	-15.6	less-open	49	299	286	196	4	W	245-290	45	1.8E-04		5.0E-01		0.1	--	--	--	5.3	--	--
MW-39	60	98.2	-16.3	less-open	78	140	127	37	1	SE	116-165	49	1.8E-04		5.0E-01		0.7	7.3	--	--	--	--	--
MW-39	61	98.2	-16.3	open	75	95	82	352	3	E	70-115	45	1.8E-04		5.0E-01		0.0	--	--	0.8	--	--	--
MW-39	62	100.5	-18.6	open	16	334	321	231	NSR	NSR	NSR	NSR	5.3E-03		1.5E+01		2.3	--	--	--	--	--	--
MW-39	63	101.3	-19.5	less-open	65	125	112	22	3	E	70-115	45	5.3E-03		1.5E+01		0.9	--	--	3.1	--	--	--
MW-39	64	103.2	-21.4	less-open	78	45	32	302	NSR	NSR	NSR	NSR	5.3E-03		1.5E+01		1.9	--	--	--	--	--	--
MW-39	65	103.4	-21.5	less-open	19	94	81	351	NSR	NSR	NSR	NSR	5.3E-03		1.5E+01		0.1	--	--	--	--	--	--
MW-39	66	103.4	-21.5	less-open	24	349	336	246	NSR	NSR	NSR	NSR	5.3E-03		1.5E+01		0.0	--	--	--	--	--	--
MW-39	67	103.8	-21.9	less-open	35	126	113	23	3	E	70-115	45	5.3E-03		1.5E+01		0.4	--	--	2.5	--	--	--
MW-39	68	104.0	-22.1	open	48	155	142	52	1	SE	116-165	49	5.3E-03		1.5E+01		0.2	5.8	--	--	--	--	--
MW-39	69	104.1	-22.2	less-open	55	154	141	51	1	SE	116-165	49	5.3E-03		1.5E+01		0.1	0.1	--	--	--	--	--
MW-39	70	104.6	-22.8	less-open	51	155	142	52	1	SE	116-165	49	5.3E-03		1.5E+01		0.6	0.6	--	--	--	--	--
MW-39	71	105.2	-23.3	less-open	56	121	108	18	3	E	70-115	45	5.3E-03		1.5E+01		0.5	--	--	1.4	--	--	--
MW-39	72	112.4	-30.5	less-open	62	115	102	12	3	E	70-115	45	TNP		TNP		7.2	--	--	7.2	--	--	--
MW-39	73	112.6	-30.8	less-open	59	114	101	11	3	E	70-115	45	TNP		TNP		0.3	--	--	0.3	--	--	--
MW-39	74	112.7	-30.9	less-open	53	141	128	38	1	SE	116-165	49	TNP		TNP		0.1	8.1	--	--	--	--	--
MW-39	75	113.3	-31.4	less-open	27	311	298	208	NSR	NSR	NSR	NSR	TNP		TNP		0.5	--	--	--	--	--	--
MW-39	76	113.3	-31.4	less-open	35	318	305	215	2	NW	291-335	44	TNP		TNP		0.1	--	19.1	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-39	77	115.5	-33.6	less-open	19	91	78	348	NSR	NSR	NSR	NSR	TNP	TNP	2.2	--	--	--	--	--	--
MW-39	78	117.9	-36.0	less-open	19	157	144	54	NSR	NSR	NSR	NSR	TNP	TNP	2.4	--	--	--	--	--	--
MW-39	79	118.6	-36.8	less-open	53	148	135	45	1	SE	116-165	49	TNP	TNP	0.8	5.9	--	--	--	--	--
MW-39	80	118.8	-36.9	less-open	53	130	117	27	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--
MW-39	81	121.2	-39.3	less-open	32	10	357	267	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	2.4	--	--	--	--	--	--
MW-39	82	121.3	-39.4	less-open	28	27	14	284	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	0.1	--	--	--	--	--	--
MW-39	83	121.4	-39.5	less-open	44	32	19	289	6	N	336-21	45	2.1E-04	6.0E-01	0.1	--	--	--	--	--	121.4
MW-39	84	122.4	-40.5	less-open	52	123	110	20	3	E	70-115	45	2.1E-04	6.0E-01	1.0	--	--	9.8	--	--	--
MW-39	85	122.6	-40.7	less-open	59	124	111	21	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.2	--	--	--
MW-39	86	123.6	-41.8	less-open	22	350	337	247	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	1.1	--	--	--	--	--	--
MW-39	87	123.7	-41.8	less-open	25	320	307	217	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	0.1	--	--	--	--	--	--
MW-39	88	124.0	-42.2	less-open	35	299	286	196	4	W	245-290	45	2.1E-04	6.0E-01	0.3	--	--	--	26.6	--	--
MW-39	89	125.4	-43.5	less-open	50	119	106	16	3	E	70-115	45	2.1E-04	6.0E-01	1.3	--	--	2.8	--	--	--
MW-39	90	126.0	-44.1	less-open	37	53	40	310	NSR	NSR	NSR	NSR	2.1E-04	6.0E-01	0.6	--	--	--	--	--	--
MW-39	91	126.1	-44.3	less-open	42	33	20	290	6	N	336-21	45	2.1E-04	6.0E-01	0.2	--	--	--	--	--	4.8
MW-39	92	126.3	-44.5	less-open	62	122	109	19	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	1.0	--	--	--
MW-39	93	127.3	-45.5	less-open	54	131	118	28	1	SE	116-165	49	2.1E-04	6.0E-01	1.0	8.5	--	--	--	--	--
MW-39	94	127.4	-45.5	less-open	56	126	113	23	3	E	70-115	45	2.1E-04	6.0E-01	0.1	--	--	1.0	--	--	--
MW-39	95	127.5	-45.7	less-open	54	127	114	24	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.2	--	--	--
MW-39	96	128.2	-46.3	less-open	64	117	104	14	3	E	70-115	45	2.1E-04	6.0E-01	0.6	--	--	0.6	--	--	--
MW-39	97	128.5	-46.6	less-open	65	106	93	3	3	E	70-115	45	2.1E-04	6.0E-01	0.3	--	--	0.3	--	--	--
MW-39	98	128.5	-46.7	less-open	64	109	96	6	3	E	70-115	45	2.1E-04	6.0E-01	0.0	--	--	0.0	--	--	--
MW-39	99	129.2	-47.3	less-open	16	119	106	16	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.6	--	--	--	--	--	--
MW-39	100	129.4	-47.5	less-open	50	117	104	14	3	E	70-115	45	7.1E-06	2.0E-02	0.2	--	--	0.8	--	--	--
MW-39	101	129.8	-48.0	less-open	62	108	95	5	3	E	70-115	45	7.1E-06	2.0E-02	0.5	--	--	0.5	--	--	--
MW-39	102	130.5	-48.7	less-open	66	115	102	12	3	E	70-115	45	7.1E-06	2.0E-02	0.7	--	--	0.7	--	--	--
MW-39	103	130.7	-48.8	less-open	46	123	110	20	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.1	--	--	--
MW-39	104	131.1	-49.2	less-open	44	130	117	27	1	SE	116-165	49	7.1E-06	2.0E-02	0.4	3.7	--	--	--	--	--
MW-39	105	131.5	-49.7	less-open	55	128	115	25	3	E	70-115	45	7.1E-06	2.0E-02	0.5	--	--	0.9	--	--	--
MW-39	106	131.6	-49.8	less-open	20	78	65	335	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.1	--	--	--	--	--	--
MW-39	107	132.0	-50.1	less-open	55	119	106	16	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.5	--	--	--
MW-39	108	132.4	-50.5	less-open	77	73	60	330	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.4	--	--	--	--	--	--
MW-39	109	132.5	-50.6	less-open	35	127	114	24	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.4	--	--	--
MW-39	110	133.1	-51.3	less-open	77	76	63	333	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.7	--	--	--	--	--	--
MW-39	111	134.1	-52.2	less-open	69	80	67	337	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.9	--	--	--	--	--	--
MW-39	112	134.1	-52.3	less-open	68	93	80	350	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	1.7	--	--	--
MW-39	113	134.9	-53.1	less-open	60	120	107	17	3	E	70-115	45	7.1E-06	2.0E-02	0.8	--	--	0.8	--	--	--
MW-39	114	135.0	-53.1	less-open	58	112	99	9	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.1	--	--	--
MW-39	115	135.5	-53.6	less-open	55	115	102	12	3	E	70-115	45	7.1E-06	2.0E-02	0.5	--	--	0.5	--	--	--
MW-39	116	135.9	-54.0	less-open	53	112	99	9	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.4	--	--	--
MW-39	117	136.0	-54.2	less-open	54	117	104	14	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.1	--	--	--
MW-39	118	136.4	-54.6	less-open	53	116	103	13	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.4	--	--	--
MW-39	119	136.9	-55.1	less-open	57	118	105	15	3	E	70-115	45	7.1E-06	2.0E-02	0.5	--	--	0.5	--	--	--
MW-39	120	137.8	-55.9	less-open	33	329	316	226	NSR	NSR	NSR	NSR	7.1E-06	2.0E-02	0.9	--	--	--	--	--	--
MW-39	121	138.4	-56.5	less-open	63	107	94	4	3	E	70-115	45	7.1E-06	2.0E-02	0.6	--	--	1.5	--	--	--
MW-39	122	139.4	-57.5	less-open	54	148	135	45	1	SE	116-165	49	2.5E-05	7.0E-02	1.0	8.4	--	--	--	--	--
MW-39	123	139.5	-57.6	less-open	56	147	134	44	1	SE	116-165	49	2.5E-05	7.0E-02	0.1	0.1	--	--	--	--	--
MW-39	124	139.7	-57.9	less-open	70	95	82	352	3	E	70-115	45	2.5E-05	7.0E-02	0.3	--	--	1.4	--	--	--
MW-39	125	140.5	-58.7	less-open	37	265	252	162	4	W	245-290	45	2.5E-05	7.0E-02	0.8	--	--	--	16.5	--	--
MW-39	126	140.6	-58.8	less-open	44	166	153	63	1	SE	116-165	49	2.5E-05	7.0E-02	0.1	1.1	--	--	--	--	--
MW-39	127	140.7	-58.8	less-open	27	298	285	195	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.0	--	--	--	--	--	--
MW-39	128	141.1	-59.3	less-open	36	264	251	161	4	W	245-290	45	2.5E-05	7.0E-02	0.5	--	--	--	0.6	--	--
MW-39	129	141.6	-59.8	less-open	51	139	126	36	1	SE	116-165	49	2.5E-05	7.0E-02	0.5	1.0	--	--	--	--	--
MW-39	130	142.0	-60.1	less-open	48	140	127	37	1	SE	116-165	49	2.5E-05	7.0E-02	0.3	0.3	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-39	131	142.8	-60.9	less-open	59	342	329	239	2	NW	291-335	44	2.5E-05	7.0E-02	0.8	--	29.5	--	--	--	--	--
MW-39	132	144.8	-62.9	less-open	80	99	86	356	3	E	70-115	45	2.5E-05	7.0E-02	2.0	--	--	5.0	--	--	--	--
MW-39	133	145.6	-63.7	less-open	79	305	292	202	2	NW	291-335	44	2.5E-05	7.0E-02	0.8	--	2.8	--	--	--	--	--
MW-39	134	146.8	-64.9	less-open	62	115	102	12	3	E	70-115	45	2.5E-05	7.0E-02	1.2	--	--	2.0	--	--	--	--
MW-39	135	147.8	-65.9	less-open	75	333	320	230	2	NW	291-335	44	2.5E-05	7.0E-02	1.0	--	2.2	--	--	--	--	--
MW-39	136	147.9	-66.0	less-open	73	125	112	22	3	E	70-115	45	2.5E-05	7.0E-02	0.1	--	--	1.1	--	--	--	--
MW-39	137	148.5	-66.6	less-open	75	194	181	91	5	S	166-200	34	2.5E-05	7.0E-02	0.6	--	--	--	--	51.1	--	--
MW-39	138	149.8	-67.9	less-open	64	184	171	81	5	S	166-200	34	TNP	TNP	1.3	--	--	--	--	1.3	--	--
MW-39	139	152.7	-70.8	less-open	56	124	111	21	3	E	70-115	45	7.1E-06	2.0E-02	2.9	--	--	4.8	--	--	--	--
MW-39	140	153.1	-71.3	less-open	56	130	117	27	1	SE	116-165	49	7.1E-06	2.0E-02	0.4	11.2	--	--	--	--	--	--
MW-39	141	153.5	-71.7	less-open	58	117	104	14	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.8	--	--	--	--
MW-39	142	154.0	-72.1	less-open	60	123	110	20	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.4	--	--	--	--
MW-39	143	154.2	-72.3	less-open	66	107	94	4	3	E	70-115	45	7.1E-06	2.0E-02	0.2	--	--	0.2	--	--	--	--
MW-39	144	154.3	-72.5	less-open	64	111	98	8	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.1	--	--	--	--
MW-39	145	155.0	-73.1	less-open	62	130	117	27	1	SE	116-165	49	7.1E-06	2.0E-02	0.7	1.9	--	--	--	--	--	--
MW-39	146	155.5	-73.6	less-open	74	97	84	354	3	E	70-115	45	7.1E-06	2.0E-02	0.5	--	--	1.2	--	--	--	--
MW-39	147	156.6	-74.7	less-open	56	121	108	18	3	E	70-115	45	7.1E-06	2.0E-02	1.1	--	--	1.1	--	--	--	--
MW-39	148	157.3	-75.4	less-open	72	89	76	346	3	E	70-115	45	7.1E-06	2.0E-02	0.7	--	--	0.7	--	--	--	--
MW-39	149	158.0	-76.1	less-open	67	85	72	342	3	E	70-115	45	7.1E-06	2.0E-02	0.7	--	--	0.7	--	--	--	--
MW-39	150	158.4	-76.5	less-open	61	116	103	13	3	E	70-115	45	7.1E-06	2.0E-02	0.4	--	--	0.4	--	--	--	--
MW-39	151	159.0	-77.2	less-open	49	85	72	342	3	E	70-115	45	7.1E-06	2.0E-02	0.7	--	--	0.7	--	--	--	--
MW-39	152	160.0	-78.1	less-open	61	107	94	4	3	E	70-115	45	7.1E-06	2.0E-02	0.9	--	--	0.9	--	--	--	--
MW-39	153	160.0	-78.2	less-open	62	103	90	360	3	E	70-115	45	7.1E-06	2.0E-02	0.1	--	--	0.1	--	--	--	--
MW-39	154	160.4	-78.5	less-open	66	105	92	2	3	E	70-115	45	7.1E-06	2.0E-02	0.3	--	--	0.3	--	--	--	--
MW-39	155	160.5	-78.6	less-open	70	97	84	354	3	E	70-115	45	7.1E-06	2.0E-02	0.2	--	--	0.2	--	--	--	--
MW-39	156	161.4	-79.6	less-open	70	107	94	4	3	E	70-115	45	7.1E-06	2.0E-02	0.9	--	--	0.9	--	--	--	--
MW-39	157	166.7	-84.8	less-open	57	99	86	356	3	E	70-115	45	1.8E-06	5.0E-03	5.2	--	--	5.2	--	--	--	--
MW-39	158	166.9	-85.0	less-open	52	124	111	21	3	E	70-115	45	1.8E-06	5.0E-03	0.2	--	--	0.2	--	--	--	--
MW-39	159	167.5	-85.7	less-open	45	136	123	33	1	SE	116-165	49	1.8E-06	5.0E-03	0.6	12.5	--	--	--	--	--	--
MW-39	160	168.3	-86.4	less-open	47	126	113	23	3	E	70-115	45	1.8E-06	5.0E-03	0.7	--	--	1.4	--	--	--	--
MW-39	161	169.5	-87.6	less-open	48	183	170	80	5	S	166-200	34	1.8E-06	5.0E-03	1.2	--	--	--	--	19.7	--	--
MW-39	162	170.8	-89.0	less-open	67	211	198	108	5	S	166-200	34	1.8E-06	5.0E-03	1.3	--	--	--	--	1.3	--	--
MW-39	163	172.2	-90.3	less-open	54	164	151	61	1	SE	116-165	49	1.8E-06	5.0E-03	1.4	4.7	--	--	--	--	--	--
MW-39	164	172.6	-90.7	less-open	52	157	144	54	1	SE	116-165	49	1.8E-06	5.0E-03	0.4	0.4	--	--	--	--	--	--
MW-39	165	172.9	-91.0	less-open	48	137	124	34	1	SE	116-165	49	1.8E-06	5.0E-03	0.3	0.3	--	--	--	--	--	--
MW-39	166	173.6	-91.7	less-open	56	161	148	58	1	SE	116-165	49	1.8E-06	5.0E-03	0.6	0.6	--	--	--	--	--	--
MW-39	167	174.4	-92.5	less-open	58	141	128	38	1	SE	116-165	49	1.8E-06	5.0E-03	0.8	0.8	--	--	--	--	--	--
MW-39	168	174.5	-92.7	less-open	56	120	107	17	3	E	70-115	45	1.8E-06	5.0E-03	0.2	--	--	6.3	--	--	--	--
MW-39	169	174.6	-92.7	less-open	56	127	114	24	3	E	70-115	45	1.8E-06	5.0E-03	0.1	--	--	0.1	--	--	--	--
MW-39	170	175.3	-93.4	less-open	55	129	116	26	1	SE	116-165	49	2.1E-04	6.0E-01	0.7	0.9	--	--	--	--	--	--
MW-39	171	175.5	-93.6	less-open	59	115	102	12	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.8	--	--	--	--
MW-39	172	175.7	-93.8	less-open	57	122	109	19	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.2	--	--	--	--
MW-39	173	176.2	-94.3	less-open	56	130	117	27	1	SE	116-165	49	2.1E-04	6.0E-01	0.5	0.9	--	--	--	--	--	--
MW-39	174	176.4	-94.6	less-open	55	126	113	23	3	E	70-115	45	2.1E-04	6.0E-01	0.3	--	--	0.8	--	--	--	--
MW-39	175	177.2	-95.3	less-open	75	161	148	58	1	SE	116-165	49	2.1E-04	6.0E-01	0.8	1.0	--	--	--	--	--	--
MW-39	176	178.4	-96.6	less-open	76	164	151	61	1	SE	116-165	49	2.1E-04	6.0E-01	1.2	1.2	--	--	--	--	--	--
MW-39	177	179.6	-97.7	less-open	57	129	116	26	1	SE	116-165	49	2.1E-04	6.0E-01	1.1	1.1	--	--	--	--	--	--
MW-39	178	179.7	-97.8	less-open	58	125	112	22	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	3.3	--	--	--	--
MW-39	179	179.9	-98.0	less-open	50	125	112	22	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.2	--	--	--	--
MW-39	180	180.1	-98.2	less-open	58	131	118	28	1	SE	116-165	49	2.1E-04	6.0E-01	0.2	0.5	--	--	--	--	--	--
MW-39	181	180.5	-98.7	less-open	61	130	117	27	1	SE	116-165	49	2.1E-04	6.0E-01	0.4	0.4	--	--	--	--	--	--
MW-39	182	181.1	-99.3	less-open	64	120	107	17	3	E	70-115	45	2.1E-04	6.0E-01	0.6	--	--	1.3	--	--	--	--
MW-39	183	181.3	-99.4	less-open	60	131	118	28	1	SE	116-165	49	2.1E-04	6.0E-01	0.2	0.8	--	--	--	--	--	--
MW-39	184	181.6	-99.8	less-open	61	131	118	28	1	SE	116-165	49	2.1E-04	6.0E-01	0.3	0.3	--	--	--	--	--	--



APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-39	185	181.9	-100.0	less-open	52	130	117	27	1	SE	116-165	49	2.1E-04	6.0E-01	0.3	0.3	--	--	--	--	--	--
MW-39	186	182.3	-100.4	less-open	61	122	109	19	3	E	70-115	45	2.1E-04	6.0E-01	0.4	--	--	1.1	--	--	--	--
MW-39	187	182.4	-100.5	less-open	46	307	294	204	2	NW	291-335	44	2.1E-04	6.0E-01	0.1	--	34.6	--	--	--	--	--
MW-39	188	183.0	-101.1	less-open	34	147	134	44	1	SE	116-165	49	2.1E-04	6.0E-01	0.6	1.1	--	--	--	--	--	--
MW-39	189	183.7	-101.8	less-open	64	156	143	53	1	SE	116-165	49	2.1E-04	6.0E-01	0.7	0.7	--	--	--	--	--	--
MW-39	190	184.0	-102.1	less-open	56	124	111	21	3	E	70-115	45	2.1E-04	6.0E-01	0.3	--	--	1.7	--	--	--	--
MW-39	191	184.1	-102.3	less-open	48	128	115	25	3	E	70-115	45	2.1E-04	6.0E-01	0.1	--	--	0.1	--	--	--	--
MW-39	192	184.2	-102.3	less-open	47	157	144	54	1	SE	116-165	49	2.1E-04	6.0E-01	0.1	0.5	--	--	--	--	--	--
MW-39	193	184.6	-102.7	less-open	53	193	180	90	5	S	166-200	34	2.1E-04	6.0E-01	0.4	--	--	--	--	13.8	--	--
MW-39	194	187.6	-105.7	less-open	73	168	155	65	1	SE	116-165	49	2.5E-04	7.0E-01	3.0	3.4	--	--	--	--	--	--
MW-39	195	189.1	-107.3	less-open	47	104	91	1	3	E	70-115	45	2.5E-04	7.0E-01	1.5	--	--	5.0	--	--	--	--
MW-39	196	190.7	-108.8	less-open	79	188	175	85	5	S	166-200	34	2.5E-04	7.0E-01	1.6	--	--	--	--	6.1	--	--
MW-39	197	193.8	-111.9	less-open	62	111	98	8	3	E	70-115	45	2.5E-04	7.0E-01	3.1	--	--	4.7	--	--	--	--
MW-39	198	194.3	-112.4	less-open	61	149	136	46	1	SE	116-165	49	2.5E-04	7.0E-01	0.4	6.6	--	--	--	--	--	--
MW-39	199	195.3	-113.4	less-open	60	139	126	36	1	SE	116-165	49	TNP	TNP	1.0	1.0	--	--	--	--	--	--
MW-39	200	195.5	-113.6	less-open	72	168	155	65	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--	--
MW-39	201	196.5	-114.7	less-open	59	131	118	28	1	SE	116-165	49	TNP	TNP	1.0	1.0	--	--	--	--	--	--
MW-39	202	196.5	-114.7	less-open	64	170	157	67	1	SE	116-165	49	TNP	TNP	0.0	0.0	--	--	--	--	--	--
MW-39	203	196.6	-114.7	less-open	57	146	133	43	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--	--
MW-39	204	196.9	-115.0	less-open	47	151	138	48	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--
MW-39	205	196.9	-115.0	less-open	55	211	198	108	5	S	166-200	34	TNP	TNP	0.0	--	--	--	--	6.2	--	--
MW-39	206	197.1	-115.2	less-open	46	166	153	63	1	SE	116-165	49	TNP	TNP	0.2	0.2	--	--	--	--	--	--
MW-39	207	197.4	-115.5	less-open	49	151	138	48	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--
MW-39	208	197.9	-116.1	less-open	4	157	144	54	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-39	209	198.8	-116.9	less-open	1	199	186	96	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--	--
MW-39	210	198.9	-117.1	less-open	2	206	193	103	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-39	211	199.2	-117.3	less-open	2	189	176	86	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--
MW-40	1	17.2	57.8	less-open	48	209	196	106	5	S	166-200	34	TNP	TNP	NA	--	--	--	--	17.2	--	--
MW-40	2	17.3	57.7	less-open	44	211	198	108	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	0.1	--	--
MW-40	3	18.4	56.6	less-open	61	119	106	16	3	E	70-115	45	3.2E-03	9.1E+00	1.1	--	--	18.4	--	--	--	--
MW-40	4	18.8	56.2	open	11	239	226	136	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.4	--	--	--	--	--	--	--
MW-40	5	19.4	55.6	less-open	59	18	5	275	6	N	336-21	45	3.2E-03	9.1E+00	0.5	--	--	--	--	--	19.4	--
MW-40	6	20.5	54.5	open	12	146	133	43	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	1.1	--	--	--	--	--	--	--
MW-40	7	21.5	53.5	open	32	138	125	35	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	1.1	--	--	--	--	--	--	--
MW-40	8	22.4	52.5	less-open	59	342	329	239	2	NW	291-335	44	3.2E-03	9.1E+00	0.9	--	22.4	--	--	--	--	--
MW-40	9	22.7	52.3	less-open	59	358	345	255	6	N	336-21	45	3.2E-03	9.1E+00	0.3	--	--	--	--	--	3.4	--
MW-40	10	22.9	52.1	less-open	58	352	339	249	6	N	336-21	45	3.2E-03	9.1E+00	0.1	--	--	--	--	--	0.1	--
MW-40	11	22.9	52.0	open	15	335	322	232	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.1	--	--	--	--	--	--	--
MW-40	12	23.0	52.0	less-open	60	344	331	241	2	NW	291-335	44	3.2E-03	9.1E+00	0.1	--	0.6	--	--	--	--	--
MW-40	13	23.2	51.8	less-open	55	360	347	257	6	N	336-21	45	3.2E-03	9.1E+00	0.2	--	--	--	--	--	0.3	--
MW-40	14	23.9	51.1	less-open	45	335	322	232	2	NW	291-335	44	3.2E-03	9.1E+00	0.8	--	0.9	--	--	--	--	--
MW-40	15	24.2	50.8	less-open	50	336	323	233	2	NW	291-335	44	3.2E-03	9.1E+00	0.2	--	0.2	--	--	--	--	--
MW-40	16	24.3	50.7	less-open	58	331	318	228	2	NW	291-335	44	3.2E-03	9.1E+00	0.1	--	0.1	--	--	--	--	--
MW-40	17	24.5	50.5	less-open	66	341	328	238	2	NW	291-335	44	3.2E-03	9.1E+00	0.2	--	0.2	--	--	--	--	--
MW-40	18	24.7	50.3	less-open	30	357	344	254	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.2	--	--	--	--	--	--	--
MW-40	19	25.5	49.5	less-open	65	9	356	266	6	N	336-21	45	3.2E-03	9.1E+00	0.8	--	--	--	--	--	2.3	--
MW-40	20	26.2	48.8	less-open	29	3	350	260	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.7	--	--	--	--	--	--	--
MW-40	21	26.4	48.5	open	31	2	349	259	NSR	NSR	NSR	NSR	3.2E-03	9.1E+00	0.2	--	--	--	--	--	--	--
MW-40	22	26.8	48.2	less-open	44	352	339	249	6	N	336-21	45	3.2E-03	9.1E+00	0.3	--	--	--	--	--	1.3	--
MW-40	23	27.3	47.7	less-open	44	355	342	252	6	N	336-21	45	3.2E-03	9.1E+00	0.5	--	--	--	--	--	0.5	--
MW-40	24	28.2	46.8	less-open	68	116	103	13	3	E	70-115	45	3.9E-04	1.1E+00	0.9	--	--	9.8	--	--	--	--
MW-40	25	28.2	46.8	less-open	59	344	331	241	2	NW	291-335	44	3.9E-04	1.1E+00	0.0	--	3.7	--	--	--	--	--
MW-40	26	28.2	46.8	less-open	40	11	358	268	6	N	336-21	45	3.9E-04	1.1E+00	0.0	--	--	--	--	--	1.0	--
MW-40	27	28.6	46.4	less-open	42	14	1	271	6	N	336-21	45	3.9E-04	1.1E+00	0.4	--	--	--	--	--	0.4	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

File No. 17869.10  
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Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-40	28	29.2	45.8	less-open	57	325	312	222	2	NW	291-335	44	3.9E-04	1.1E+00	0.6	--	1.0	--	--	--	--	--	
MW-40	29	29.3	45.7	less-open	60	341	328	238	2	NW	291-335	44	3.9E-04	1.1E+00	0.1	--	0.1	--	--	--	--	--	
MW-40	30	29.3	45.7	less-open	24	338	325	235	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.1	--	--	--	--	--	--	--	
MW-40	31	29.7	45.3	less-open	54	136	123	33	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	29.7	--	--	--	--	--	--	
MW-40	32	29.9	45.1	open	23	273	260	170	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.3	--	--	--	--	--	--	--	
MW-40	33	30.5	44.5	less-open	50	159	146	56	1	SE	116-165	49	3.9E-04	1.1E+00	0.6	0.8	--	--	--	--	--	--	
MW-40	34	30.6	44.4	less-open	38	29	16	286	6	N	336-21	45	3.9E-04	1.1E+00	0.1	--	--	--	--	--	2.0	--	
MW-40	35	31.0	44.0	less-open	50	153	140	50	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	0.5	--	--	--	--	--	--	
MW-40	36	31.1	43.9	less-open	43	125	112	22	3	E	70-115	45	3.9E-04	1.1E+00	0.1	--	--	2.9	--	--	--	--	
MW-40	37	32.0	43.0	less-open	66	11	358	268	6	N	336-21	45	3.9E-04	1.1E+00	0.9	--	--	--	--	--	--	1.4	
MW-40	38	32.2	42.8	less-open	60	336	323	233	2	NW	291-335	44	3.9E-04	1.1E+00	0.1	--	2.9	--	--	--	--	--	
MW-40	39	32.6	42.4	less-open	53	153	140	50	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	1.6	--	--	--	--	--	--	
MW-40	40	33.0	42.0	less-open	57	131	118	28	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	0.4	--	--	--	--	--	--	
MW-40	41	33.4	41.6	less-open	5	42	29	299	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.4	--	--	--	--	--	--	--	
MW-40	42	33.6	41.3	less-open	51	14	1	271	6	N	336-21	45	3.9E-04	1.1E+00	0.2	--	--	--	--	--	--	1.6	
MW-40	43	34.7	40.3	less-open	65	335	322	232	2	NW	291-335	44	3.9E-04	7.1E-06	1.1E+00	2.0E-02	1.1	--	2.6	--	--	--	--
MW-40	44	35.0	39.9	open	24	86	73	343	NSR	NSR	NSR	NSR	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.3	--	--	--	--	--	
MW-40	45	35.3	39.6	less-open	54	3	350	260	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.3	--	--	--	--	1.7	
MW-40	46	35.6	39.4	less-open	50	9	356	266	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	--	--	--	0.2	
MW-40	47	35.8	39.2	less-open	63	3	350	260	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	--	--	--	0.2	
MW-40	48	36.0	39.0	less-open	70	348	335	245	2	NW	291-335	44	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	1.3	--	--	--	--
MW-40	49	36.3	38.7	less-open	76	353	340	250	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.3	--	--	--	--	0.5	
MW-40	50	36.7	38.3	less-open	56	359	346	256	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.4	--	--	--	--	0.4	
MW-40	51	36.8	38.2	less-open	54	8	355	265	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.1	--	--	--	--	0.1	
MW-40	52	36.9	38.1	less-open	43	7	354	264	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.0	--	--	--	--	0.0	
MW-40	53	36.9	38.1	less-open	38	350	337	247	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.1	--	--	--	--	0.1	
MW-40	54	37.1	37.9	less-open	51	350	337	247	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	--	--	--	0.2	
MW-40	55	37.2	37.8	less-open	53	351	338	248	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.1	--	--	--	--	0.1	
MW-40	56	37.5	37.5	less-open	47	14	1	271	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.3	--	--	--	--	0.3	
MW-40	57	38.2	36.8	less-open	60	9	356	266	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.7	--	--	--	--	0.7	
MW-40	58	38.4	36.6	less-open	56	7	354	264	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	--	--	--	0.2	
MW-40	59	40.5	34.5	less-open	73	347	334	244	2	NW	291-335	44	3.9E-04	7.1E-06	1.1E+00	2.0E-02	2.1	--	4.4	--	--	--	--
MW-40	60	40.6	34.4	less-open	70	114	101	11	3	E	70-115	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.1	--	--	9.5	--	--	--
MW-40	61	41.7	33.3	less-open	67	132	119	29	1	SE	116-165	49	3.9E-04	7.1E-06	1.1E+00	2.0E-02	1.1	8.7	--	--	--	--	--
MW-40	62	41.9	33.1	less-open	39	9	356	266	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.2	--	--	--	--	--	3.5
MW-40	63	42.6	32.4	less-open	26	57	44	314	NSR	NSR	NSR	NSR	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.7	--	--	--	--	--	--
MW-40	64	43.4	31.6	less-open	38	7	354	264	6	N	336-21	45	3.9E-04	7.1E-06	1.1E+00	2.0E-02	0.8	--	--	--	--	--	1.5
MW-40	65	44.3	30.7	less-open	30	148	135	45	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	0.9	--	--	--	--	--	--	--	
MW-40	66	47.6	27.4	open	41	10	357	267	6	N	336-21	45	1.4E-05	4.0E-02	3.3	--	--	--	--	--	--	4.2	
MW-40	67	48.2	26.8	less-open	39	8	355	265	6	N	336-21	45	1.4E-05	4.0E-02	0.6	--	--	--	--	--	--	0.6	
MW-40	68	49.1	25.9	less-open	46	315	302	212	2	NW	291-335	44	1.4E-05	4.0E-02	0.9	--	8.7	--	--	--	--	--	
MW-40	69	49.8	25.2	less-open	52	8	355	265	6	N	336-21	45	1.4E-05	4.0E-02	0.7	--	--	--	--	--	--	1.6	
MW-40	70	50.4	24.5	less-open	41	14	1	271	6	N	336-21	45	1.4E-05	4.0E-02	0.6	--	--	--	--	--	--	0.6	
MW-40	71	51.5	23.4	less-open	29	17	4	274	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	1.1	--	--	--	--	--	--	--	
MW-40	72	53.4	21.6	less-open	60	135	122	32	1	SE	116-165	49	1.4E-05	3.5E-05	4.0E-02	1.0E-01	1.9	11.7	--	--	--	--	--
MW-40	73	54.1	20.9	less-open	26	11	358	268	NSR	NSR	NSR	NSR	3.5E-05	4.0E-02	1.0E-01	0.7	--	--	--	--	--	--	
MW-40	74	55.4	19.6	less-open	43	350	337	247	6	N	336-21	45	3.5E-05	4.0E-02	1.0E-01	1.3	--	--	--	--	--	5.0	
MW-40	75	58.8	16.2	less-open	40	26	13	283	6	N	336-21	45	3.5E-05	1.0E-01	3.4	--	--	--	--	--	--	3.4	
MW-40	76	59.7	15.3	less-open	65	349	336	246	6	N	336-21	45	3.5E-05	1.0E-01	0.9	--	--	--	--	--	--	0.9	
MW-40	77	60.5	14.4	less-open	64	350	337	247	6	N	336-21	45	3.5E-05	1.0E-01	0.8	--	--	--	--	--	--	0.8	
MW-40	78	61.3	13.7	less-open	41	6	353	263	6	N	336-21	45	3.5E-05	1.0E-01	0.7	--	--	--	--	--	--	0.7	
MW-40	79	61.6	13.4	less-open	53	18	5	275	6	N	336-21	45	3.5E-05	1.0E-01	0.4	--	--	--	--	--	--	0.4	
MW-40	80	63.0	12.0	less-open	60	143	130	40	1	SE	116-165	49	3.5E-06	1.0E-02	1.3	9.6	--	--	--	--	--	--	
MW-40	81	63.4	11.6	less-open	40	5	352	262	6	N	336-21	45	3.5E-06	1.0E-02	0.4	--	--	--	--	--	--	1.7	

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-40	82	64.3	10.6	less-open	14	50	37	307	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	1.0	--	--	--	--	--	--
MW-40	83	67.0	8.0	less-open	67	243	230	140	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	2.7	--	--	--	--	--	--
MW-40	84	67.6	7.4	less-open	27	59	46	316	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	0.5	--	--	--	--	--	--
MW-40	85	68.5	6.5	less-open	59	135	122	32	1	SE	116-165	49	3.5E-06	1.0E-02	0.9	5.5	--	--	--	--	--
MW-40	86	68.8	6.2	less-open	63	157	144	54	1	SE	116-165	49	3.5E-06	1.0E-02	0.3	0.3	--	--	--	--	--
MW-40	87	70.4	4.6	open	37	306	293	203	2	NW	291-335	44	3.5E-06	1.0E-02	1.6	--	21.3	--	--	--	--
MW-40	88	71.4	3.6	less-open	54	303	290	200	4	W	245-290	45	3.5E-06	1.0E-02	1.0	--	--	--	71.4	--	--
MW-40	89	71.8	3.2	less-open	36	7	354	264	6	N	336-21	45	3.5E-06	1.0E-02	0.4	--	--	--	--	--	8.4
MW-40	90	72.6	2.4	less-open	38	20	7	277	6	N	336-21	45	3.5E-06	1.0E-02	0.8	--	--	--	--	--	0.8
MW-40	91	74.2	0.8	less-open	57	119	106	16	3	E	70-115	45	TNP	TNP	1.5	--	--	33.6	--	--	--
MW-40	92	78.0	-3.0	less-open	37	4	351	261	6	N	336-21	45	TNP	TNP	3.8	--	--	--	--	--	5.3
MW-40	93	80.2	-5.2	less-open	46	359	346	256	6	N	336-21	45	3.5E-06	1.0E-02	2.2	--	--	--	--	--	2.2
MW-40	94	81.4	-6.4	less-open	63	125	112	22	3	E	70-115	45	3.5E-06	1.0E-02	1.2	--	--	7.2	--	--	--
MW-40	95	81.8	-6.8	less-open	64	131	118	28	1	SE	116-165	49	3.5E-06	1.0E-02	0.4	13.0	--	--	--	--	--
MW-40	96	82.4	-7.4	open	61	116	103	13	3	E	70-115	45	3.5E-06	1.0E-02	0.6	--	--	1.0	--	--	--
MW-40	97	83.6	-8.6	open	60	121	108	18	3	E	70-115	45	3.5E-06	1.0E-02	1.2	--	--	1.2	--	--	--
MW-40	98	83.6	-8.6	less-open	56	353	340	250	6	N	336-21	45	3.5E-06	1.0E-02	0.0	--	--	--	--	--	3.4
MW-40	99	85.2	-10.3	less-open	69	354	341	251	6	N	336-21	45	3.5E-06	1.0E-02	1.6	--	--	--	--	--	1.6
MW-40	100	85.7	-10.7	less-open	37	334	321	231	2	NW	291-335	44	3.5E-06	1.0E-02	0.5	--	15.3	--	--	--	--
MW-40	101	89.5	-14.5	less-open	40	21	8	278	6	N	336-21	45	3.5E-06	1.0E-02	3.7	--	--	--	--	--	4.2
MW-40	102	89.9	-14.9	less-open	63	144	131	41	1	SE	116-165	49	3.5E-06	1.0E-02	0.4	8.1	--	--	--	--	--
MW-40	103	91.1	-16.1	less-open	51	8	355	265	6	N	336-21	45	TNP	TNP	1.2	--	--	--	--	--	1.6
MW-40	104	95.6	-20.6	less-open	23	227	214	124	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	4.5	--	--	--	--	--	--
MW-40	105	96.8	-21.8	less-open	41	351	338	248	6	N	336-21	45	1.1E-04	3.0E-01	1.2	--	--	--	--	--	5.7
MW-40	106	97.5	-22.6	less-open	49	327	314	224	2	NW	291-335	44	1.1E-04	3.0E-01	0.8	--	11.8	--	--	--	--
MW-40	107	98.9	-23.9	less-open	46	10	357	267	6	N	336-21	45	1.1E-04	3.0E-01	1.4	--	--	--	--	--	2.2
MW-40	108	99.2	-24.2	less-open	41	6	353	263	6	N	336-21	45	1.1E-04	3.0E-01	0.3	--	--	--	--	--	0.3
MW-40	109	100.9	-25.9	less-open	54	324	311	221	2	NW	291-335	44	1.1E-04	3.0E-01	1.7	--	3.3	--	--	--	--
MW-40	110	101.3	-26.3	less-open	40	347	334	244	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.4	--	--	--	--
MW-40	111	101.5	-26.6	less-open	36	2	349	259	6	N	336-21	45	1.1E-04	3.0E-01	0.2	--	--	--	--	--	2.4
MW-40	112	101.9	-26.9	less-open	49	345	332	242	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.6	--	--	--	--
MW-40	113	102.5	-27.5	less-open	49	4	351	261	6	N	336-21	45	1.1E-04	3.0E-01	0.5	--	--	--	--	--	0.9
MW-40	114	103.0	-28.1	less-open	75	68	55	325	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.6	--	--	--	--	--	--
MW-40	115	103.6	-28.6	less-open	54	109	96	6	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	20.0	--	--	--
MW-40	116	104.1	-29.1	less-open	55	345	332	242	2	NW	291-335	44	1.1E-04	3.0E-01	0.5	--	2.2	--	--	--	--
MW-40	117	106.3	-31.3	less-open	51	281	268	178	4	W	245-290	45	TNP	TNP	2.2	--	--	--	34.9	--	--
MW-40	118	107.0	-32.0	less-open	29	289	276	186	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--
MW-40	119	107.4	-32.4	less-open	25	328	315	225	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-40	120	115.5	-40.5	less-open	34	243	230	140	NSR	NSR	NSR	NSR	TNP	TNP	8.1	--	--	--	--	--	--
MW-40	121	117.6	-42.6	less-open	55	105	92	2	3	E	70-115	45	TNP	TNP	2.1	--	--	14.0	--	--	--
MW-40	122	118.1	-43.1	less-open	60	106	93	3	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-40	123	118.3	-43.3	less-open	56	332	319	229	2	NW	291-335	44	TNP	TNP	0.2	--	14.1	--	--	--	--
MW-40	124	118.3	-43.3	less-open	66	113	100	10	3	E	70-115	45	TNP	TNP	0.0	--	--	0.2	--	--	--
MW-40	125	119.0	-44.0	less-open	38	294	281	191	4	W	245-290	45	TNP	TNP	0.7	--	--	--	12.6	--	--
MW-40	126	120.7	-45.7	less-open	62	121	108	18	3	E	70-115	45	TNP	TNP	1.8	--	--	2.4	--	--	--
MW-40	127	121.5	-46.6	less-open	49	354	341	251	6	N	336-21	45	TNP	TNP	0.8	--	--	--	--	--	19.1
MW-40	128	122.7	-47.7	less-open	37	334	321	231	2	NW	291-335	44	TNP	TNP	1.1	--	4.4	--	--	--	--
MW-40	129	123.4	-48.4	less-open	40	339	326	236	2	NW	291-335	44	TNP	TNP	0.8	--	0.8	--	--	--	--
MW-40	130	124.9	-49.9	less-open	50	356	343	253	6	N	336-21	45	TNP	TNP	1.4	--	--	--	--	--	3.3
MW-40	131	126.0	-53.1	less-open	60	315	302	212	2	NW	291-335	44	7.1E-05	2.0E-01	3.2	--	4.6	--	--	--	--
MW-40	132	126.2	-53.2	less-open	63	300	287	197	4	W	245-290	45	7.1E-05	2.0E-01	0.2	--	--	--	9.3	--	--
MW-40	133	126.5	-53.5	less-open	46	292	279	189	4	W	245-290	45	7.1E-05	2.0E-01	0.2	--	--	--	0.2	--	--
MW-40	134	126.6	-53.6	less-open	68	310	297	207	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	0.5	--	--	--	--
MW-40	135	128.6	-53.6	less-open	62	120	107	17	3	E	70-115	45	7.1E-05	2.0E-01	0.1	--	--	7.9	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-40	136	129.5	-54.5	less-open	60	330	317	227	2	NW	291-335	44	7.1E-05	2.0E-01	0.9	--	0.9	--	--	--	--	--
MW-40	137	130.3	-55.3	less-open	49	3	350	260	6	N	336-21	45	7.1E-05	2.0E-01	0.8	--	--	--	--	--	--	5.5
MW-40	138	131.1	-56.1	less-open	30	276	263	173	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.8	--	--	--	--	--	--	--
MW-40	139	131.9	-56.9	less-open	35	281	268	178	4	W	245-290	45	7.1E-05	2.0E-01	0.8	--	--	--	3.4	--	--	--
MW-40	140	134.5	-59.5	less-open	56	252	239	149	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	2.6	--	--	--	--	--	--	--
MW-40	141	135.1	-60.1	less-open	52	278	265	175	4	W	245-290	45	7.1E-05	2.0E-01	0.7	--	--	--	3.3	--	--	--
MW-40	142	136.1	-61.1	less-open	51	250	237	147	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	1.0	--	--	--	--	--	--	--
MW-40	143	136.3	-61.3	less-open	52	245	232	142	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.2	--	--	--	--	--	--	--
MW-40	144	137.6	-62.6	less-open	45	352	339	249	6	N	336-21	45	TNP	TNP	1.3	--	--	--	--	--	--	7.2
MW-40	145	138.1	-63.1	less-open	59	2	349	259	6	N	336-21	45	TNP	TNP	0.5	--	--	--	--	--	--	0.5
MW-40	146	138.2	-63.2	less-open	44	10	357	267	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	--	0.1
MW-40	147	142.4	-67.4	less-open	51	8	355	265	6	N	336-21	45	TNP	TNP	4.2	--	--	--	--	--	--	4.2
MW-40	148	145.3	-70.3	less-open	58	102	89	359	3	E	70-115	45	TNP	TNP	2.9	--	--	16.7	--	--	--	--
MW-40	149	149.0	-74.0	less-open	49	130	117	27	1	SE	116-165	49	1.1E-04	3.0E-01	3.7	59.2	--	--	--	--	--	--
MW-40	150	149.1	-74.1	less-open	55	351	338	248	6	N	336-21	45	1.1E-04	3.0E-01	0.0	--	--	--	--	--	--	6.7
MW-40	151	150.1	-75.2	less-open	62	272	259	169	4	W	245-290	45	1.1E-04	3.0E-01	1.1	--	--	--	15.0	--	--	--
MW-40	152	155.5	-80.5	less-open	40	205	192	102	5	S	166-200	34	1.1E-04	3.0E-01	5.3	--	--	--	--	138.1	--	--
MW-40	153	161.5	-86.5	less-open	50	354	341	251	6	N	336-21	45	3.5E-06	1.0E-02	6.0	--	--	--	--	--	--	12.4
MW-40	154	161.8	-86.9	less-open	40	335	322	232	2	NW	291-335	44	3.5E-06	1.0E-02	0.4	--	32.3	--	--	--	--	--
MW-40	155	163.4	-88.5	less-open	48	352	339	249	6	N	336-21	45	3.5E-06	1.0E-02	1.6	--	--	--	--	--	--	2.0
MW-40	156	164.1	-89.1	less-open	43	333	320	230	2	NW	291-335	44	3.5E-06	1.0E-02	0.7	--	2.3	--	--	--	--	--
MW-40	157	164.3	-89.3	less-open	41	340	327	237	2	NW	291-335	44	3.5E-06	1.0E-02	0.2	--	0.2	--	--	--	--	--
MW-40	158	164.8	-89.8	less-open	51	358	345	255	6	N	336-21	45	3.5E-06	1.0E-02	0.6	--	--	--	--	--	--	1.4
MW-40	159	166.6	-91.6	less-open	52	354	341	251	6	N	336-21	45	3.5E-06	1.0E-02	1.8	--	--	--	--	--	--	1.8
MW-40	160	167.5	-92.5	less-open	67	288	275	185	4	W	245-290	45	3.5E-06	1.0E-02	0.9	--	--	--	17.4	--	--	--
MW-40	161	169.2	-94.2	less-open	29	197	184	94	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	1.7	--	--	--	--	--	--	--
MW-40	162	171.4	-96.4	less-open	63	326	313	223	2	NW	291-335	44	TNP	TNP	2.2	--	7.1	--	--	--	--	--
MW-40	163	171.7	-96.7	less-open	62	313	300	210	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--	--
MW-40	164	186.4	-111.4	less-open	26	284	271	181	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	14.8	--	--	--	--	--	--	--
MW-40	165	188.7	-113.8	less-open	73	99	86	356	3	E	70-115	45	3.5E-06	1.0E-02	2.3	--	--	43.4	--	--	--	--
MW-40	166	188.9	-113.9	less-open	85	290	277	187	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-40	167	189.0	-114.0	less-open	79	272	259	169	4	W	245-290	45	TNP	TNP	0.1	--	--	--	21.5	--	--	--
MW-40	168	190.4	-115.4	less-open	48	212	199	109	5	S	166-200	34	TNP	TNP	1.4	--	--	--	--	--	35.0	--
MW-51	1	28.7	41.0	less-open	73	147	134	44	1	SE	116-165	49	6.0E-05	1.7E-01	NA	28.7	--	--	--	--	--	--
MW-51	2	29.3	40.4	less-open	23	350	337	247	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.6	--	--	--	--	--	--	--
MW-51	3	29.7	39.9	less-open	11	331	318	228	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.4	--	--	--	--	--	--	--
MW-51	4	30.3	39.3	less-open	24	258	245	155	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.6	--	--	--	--	--	--	--
MW-51	5	31.4	38.2	less-open	73	235	222	132	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	1.1	--	--	--	--	--	--	--
MW-51	6	31.4	38.2	less-open	65	124	111	21	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	31.4	--	--	--	--
MW-51	7	31.8	37.8	less-open	5	301	288	198	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.4	--	--	--	--	--	--	--
MW-51	8	31.9	37.7	less-open	55	140	127	37	1	SE	116-165	49	6.0E-05	1.7E-01	0.1	3.2	--	--	--	--	--	--
MW-51	9	32.2	37.5	less-open	45	131	118	28	1	SE	116-165	49	6.0E-05	1.7E-01	0.3	0.3	--	--	--	--	--	--
MW-51	10	32.5	37.1	less-open	62	144	131	41	1	SE	116-165	49	6.0E-05	1.7E-01	0.3	0.3	--	--	--	--	--	--
MW-51	11	32.7	37.0	less-open	11	222	209	119	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.2	--	--	--	--	--	--	--
MW-51	12	32.7	36.9	less-open	61	130	117	27	1	SE	116-165	49	6.0E-05	1.7E-01	0.0	0.2	--	--	--	--	--	--
MW-51	13	32.7	36.9	less-open	69	316	303	213	2	NW	291-335	44	6.0E-05	1.7E-01	0.0	--	32.7	--	--	--	--	--
MW-51	14	33.2	36.4	less-open	12	159	146	56	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.5	--	--	--	--	--	--	--
MW-51	15	33.5	36.2	less-open	71	136	123	33	1	SE	116-165	49	6.0E-05	1.7E-01	0.2	0.8	--	--	--	--	--	--
MW-51	16	33.6	36.0	less-open	28	241	228	138	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.2	--	--	--	--	--	--	--
MW-51	17	34.1	35.6	less-open	53	145	132	42	1	SE	116-165	49	6.0E-05	1.7E-01	0.5	0.6	--	--	--	--	--	--
MW-51	18	34.3	35.3	less-open	56	129	116	26	1	SE	116-165	49	6.0E-05	1.7E-01	0.2	0.2	--	--	--	--	--	--
MW-51	19	34.4	35.2	less-open	60	136	123	33	1	SE	116-165	49	6.0E-05	1.7E-01	0.2	0.2	--	--	--	--	--	--
MW-51	20	34.8	34.9	less-open	51	134	121	31	1	SE	116-165	49	6.0E-05	1.7E-01	0.3	0.3	--	--	--	--	--	--
MW-51	21	35.2	34.4	less-open	13	141	128	38	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.4	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-51	22	35.3	34.3	less-open	50	315	302	212	2	NW	291-335	44	6.0E-05	1.7E-01	0.1	--	2.6	--	--	--	--	--
MW-51	23	35.4	34.2	less-open	78	140	127	37	1	SE	116-165	49	6.0E-05	1.7E-01	0.1	0.6	--	--	--	--	--	--
MW-51	24	35.7	33.9	less-open	64	124	111	21	3	E	70-115	45	6.0E-05	1.7E-01	0.3	--	--	4.3	--	--	--	--
MW-51	25	36.6	33.1	less-open	55	134	121	31	1	SE	116-165	49	6.0E-05	1.7E-01	0.8	1.2	--	--	--	--	--	--
MW-51	26	36.6	33.0	less-open	60	295	282	192	4	W	245-290	45	6.0E-05	1.7E-01	0.0	--	--	--	36.6	--	--	--
MW-51	27	37.3	32.3	less-open	40	123	110	20	3	E	70-115	45	6.0E-05	1.7E-01	0.7	--	--	1.6	--	--	--	--
MW-51	28	38.3	31.4	less-open	29	158	145	55	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	1.0	--	--	--	--	--	--	--
MW-51	29	38.8	30.8	less-open	79	134	121	31	1	SE	116-165	49	1.4E-04	3.9E-01	0.5	2.2	--	--	--	--	--	--
MW-51	30	39.1	30.6	less-open	57	318	305	215	2	NW	291-335	44	1.4E-04	3.9E-01	0.3	--	3.8	--	--	--	--	--
MW-51	31	39.9	29.8	less-open	71	313	300	210	2	NW	291-335	44	1.4E-04	3.9E-01	0.8	--	0.8	--	--	--	--	--
MW-51	32	40.9	28.8	less-open	48	141	128	38	1	SE	116-165	49	1.4E-04	3.9E-01	1.0	2.1	--	--	--	--	--	--
MW-51	33	41.0	28.7	less-open	54	131	118	28	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	0.1	--	--	--	--	--	--
MW-51	34	41.0	28.6	less-open	57	132	119	29	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	0.1	--	--	--	--	--	--
MW-51	35	41.3	28.4	less-open	53	156	143	53	1	SE	116-165	49	1.4E-04	3.9E-01	0.2	0.2	--	--	--	--	--	--
MW-51	36	41.6	28.0	less-open	61	138	125	35	1	SE	116-165	49	1.4E-04	3.9E-01	0.4	0.4	--	--	--	--	--	--
MW-51	37	41.7	27.9	less-open	59	138	125	35	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	0.1	--	--	--	--	--	--
MW-51	38	41.8	27.8	less-open	73	191	178	88	5	S	166-200	34	1.4E-04	3.9E-01	0.1	--	--	--	--	41.8	--	--
MW-51	39	42.1	27.6	less-open	31	143	130	40	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.3	--	--	--	--	--	--	--
MW-51	40	42.2	27.4	less-open	57	151	138	48	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	0.5	--	--	--	--	--	--
MW-51	41	42.6	27.1	less-open	50	137	124	34	1	SE	116-165	49	1.4E-04	3.9E-01	0.4	0.4	--	--	--	--	--	--
MW-51	42	43.4	26.2	less-open	65	132	119	29	1	SE	116-165	49	1.4E-04	3.9E-01	0.9	0.9	--	--	--	--	--	--
MW-51	43	43.6	26.1	less-open	66	124	111	21	3	E	70-115	45	1.4E-04	3.9E-01	0.1	--	--	6.3	--	--	--	--
MW-51	44	43.7	25.9	less-open	27	301	288	198	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.2	--	--	--	--	--	--	--
MW-51	45	44.5	25.2	less-open	45	270	257	167	4	W	245-290	45	1.4E-04	3.9E-01	0.7	--	--	--	7.9	--	--	--
MW-51	46	45.4	24.2	less-open	41	276	263	173	4	W	245-290	45	1.4E-04	3.9E-01	0.9	--	--	--	0.9	--	--	--
MW-51	47	45.7	23.9	less-open	39	324	311	221	2	NW	291-335	44	1.4E-04	3.9E-01	0.3	--	5.8	--	--	--	--	--
MW-51	48	45.8	23.8	less-open	55	146	133	43	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	2.4	--	--	--	--	--	--
MW-51	49	47.6	22.1	less-open	47	289	276	186	4	W	245-290	45	1.4E-04	3.9E-01	1.8	--	--	--	2.2	--	--	--
MW-51	50	48.5	21.1	less-open	39	295	282	192	4	W	245-290	45	1.4E-04	3.9E-01	0.9	--	--	--	0.9	--	--	--
MW-51	51	48.8	20.8	less-open	7	325	312	222	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.3	--	--	--	--	--	--	--
MW-51	52	50.0	19.7	less-open	45	200	187	97	5	S	166-200	34	2.5E-05	7.0E-02	1.2	--	--	--	--	8.2	--	--
MW-51	53	50.8	18.8	less-open	38	170	157	67	1	SE	116-165	49	2.5E-05	7.0E-02	0.8	5.0	--	--	--	--	--	--
MW-51	54	51.2	18.4	less-open	26	167	154	64	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.4	--	--	--	--	--	--	--
MW-51	55	52.8	16.8	less-open	28	307	294	204	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	1.7	--	--	--	--	--	--	--
MW-51	56	55.9	13.8	less-open	32	322	309	219	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	3.0	--	--	--	--	--	--	--
MW-51	57	56.7	12.9	less-open	20	304	291	201	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.9	--	--	--	--	--	--	--
MW-51	58	57.2	12.5	less-open	31	285	272	182	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.4	--	--	--	--	--	--	--
MW-51	59	57.3	12.4	less-open	61	147	134	44	1	SE	116-165	49	2.5E-05	7.0E-02	0.1	6.5	--	--	--	--	--	--
MW-51	60	58.2	11.4	less-open	60	164	151	61	1	SE	116-165	49	2.5E-05	7.0E-02	1.0	1.0	--	--	--	--	--	--
MW-51	61	59.0	10.6	less-open	17	275	262	172	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.8	--	--	--	--	--	--	--
MW-51	62	59.3	10.4	less-open	18	214	201	111	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.3	--	--	--	--	--	--	--
MW-51	63	60.3	9.4	less-open	28	215	202	112	NSR	NSR	NSR	NSR	TNP	TNP	1.0	--	--	--	--	--	--	--
MW-51	64	61.9	7.8	less-open	69	174	161	71	1	SE	116-165	49	TNP	TNP	1.6	3.6	--	--	--	--	--	--
MW-51	65	63.3	6.3	less-open	46	202	189	99	5	S	166-200	34	TNP	TNP	1.4	--	--	--	--	13.3	--	--
MW-51	66	65.5	4.2	less-open	48	331	318	228	2	NW	291-335	44	2.5E-05	7.0E-02	2.2	--	19.8	--	--	--	--	--
MW-51	67	65.9	3.7	less-open	53	174	161	71	1	SE	116-165	49	2.5E-05	7.0E-02	0.5	4.1	--	--	--	--	--	--
MW-51	68	66.7	2.9	less-open	11	227	214	124	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.8	--	--	--	--	--	--	--
MW-51	69	66.8	2.9	less-open	39	294	281	191	4	W	245-290	45	2.5E-05	7.0E-02	0.0	--	--	--	18.3	--	--	--
MW-51	70	67.9	1.7	less-open	78	179	166	76	5	S	166-200	34	2.5E-05	7.0E-02	1.1	--	--	--	--	4.6	--	--
MW-51	71	68.9	0.7	less-open	74	195	182	92	5	S	166-200	34	2.5E-05	7.0E-02	1.0	--	--	--	--	1.0	--	--
MW-51	72	69.5	0.1	less-open	25	173	160	70	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.6	--	--	--	--	--	--	--
MW-51	73	70.5	-0.8	less-open	10	195	182	92	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.9	--	--	--	--	--	--	--
MW-51	74	70.7	-1.1	less-open	37	353	340	250	6	N	336-21	45	2.5E-05	7.0E-02	0.2	--	--	--	--	--	--	70.7
MW-51	75	70.9	-1.3	less-open	17	180	167	77	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.2	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-51	76	71.2	-1.6	less-open	16	197	184	94	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.3	--	--	--	--	--	--
MW-51	77	72.8	-3.2	less-open	78	359	346	256	6	N	336-21	45	2.5E-05	7.0E-02	1.6	--	--	--	--	--	2.1
MW-51	78	73.0	-3.3	less-open	54	143	130	40	1	SE	116-165	49	2.5E-05	7.0E-02	0.2	7.1	--	--	--	--	--
MW-51	79	73.6	-4.0	less-open	61	138	125	35	1	SE	116-165	49	2.5E-05	7.0E-02	0.7	0.7	--	--	--	--	--
MW-51	80	74.2	-4.6	less-open	59	142	129	39	1	SE	116-165	49	2.5E-05	7.0E-02	0.6	0.6	--	--	--	--	--
MW-51	81	74.5	-4.9	less-open	37	244	231	141	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.3	--	--	--	--	--	--
MW-51	82	75.7	-6.0	less-open	63	133	120	30	1	SE	116-165	49	TNP	TNP	1.2	1.4	--	--	--	--	--
MW-51	83	76.3	-6.7	less-open	51	320	307	217	2	NW	291-335	44	TNP	TNP	0.7	--	10.9	--	--	--	--
MW-51	84	78.1	-8.5	less-open	18	261	248	158	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	1.8	--	--	--	--	--	--
MW-51	85	79.8	-10.2	less-open	48	282	269	179	4	W	245-290	45	2.8E-05	8.0E-02	1.7	--	--	--	13.1	--	--
MW-51	86	80.6	-11.0	open	16	129	116	26	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.7	--	--	--	--	--	--
MW-51	87	80.9	-11.2	less-open	57	136	123	33	1	SE	116-165	49	2.8E-05	8.0E-02	0.3	5.2	--	--	--	--	--
MW-51	88	81.5	-11.9	less-open	52	304	291	201	2	NW	291-335	44	2.8E-05	8.0E-02	0.6	--	5.2	--	--	--	--
MW-51	89	82.0	-12.4	less-open	63	121	108	18	3	E	70-115	45	2.8E-05	8.0E-02	0.5	--	--	38.4	--	--	--
MW-51	90	82.1	-12.5	less-open	47	332	319	229	2	NW	291-335	44	2.8E-05	8.0E-02	0.1	--	0.6	--	--	--	--
MW-51	91	82.4	-12.8	less-open	50	324	311	221	2	NW	291-335	44	2.8E-05	8.0E-02	0.3	--	0.3	--	--	--	--
MW-51	92	83.0	-13.4	less-open	41	140	127	37	1	SE	116-165	49	2.8E-05	8.0E-02	0.6	2.2	--	--	--	--	--
MW-51	93	84.3	-14.7	less-open	67	134	121	31	1	SE	116-165	49	2.8E-05	8.0E-02	1.3	1.3	--	--	--	--	--
MW-51	94	86.1	-16.5	less-open	58	301	288	198	4	W	245-290	45	2.8E-05	8.0E-02	1.8	--	--	--	6.2	--	--
MW-51	95	86.8	-17.2	less-open	61	133	120	30	1	SE	116-165	49	2.8E-05	8.0E-02	0.8	2.5	--	--	--	--	--
MW-51	96	87.3	-17.6	less-open	50	282	269	179	4	W	245-290	45	2.8E-05	8.0E-02	0.4	--	--	--	1.2	--	--
MW-51	97	88.1	-18.5	less-open	39	289	276	186	4	W	245-290	45	TNP	TNP	0.8	--	--	--	0.8	--	--
MW-51	98	88.4	-18.8	less-open	49	308	295	205	2	NW	291-335	44	TNP	TNP	0.3	--	6.0	--	--	--	--
MW-51	99	89.4	-19.8	less-open	38	288	275	185	4	W	245-290	45	7.8E-05	2.2E-01	0.9	--	--	--	1.3	--	--
MW-51	100	89.6	-20.0	less-open	45	288	275	185	4	W	245-290	45	7.8E-05	2.2E-01	0.2	--	--	--	0.2	--	--
MW-51	101	89.8	-20.1	less-open	53	120	107	17	3	E	70-115	45	7.8E-05	2.2E-01	0.2	--	--	7.8	--	--	--
MW-51	102	91.0	-21.3	less-open	26	275	262	172	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	1.2	--	--	--	--	--	--
MW-51	103	92.5	-22.9	less-open	57	133	120	30	1	SE	116-165	49	7.8E-05	2.2E-01	1.5	5.7	--	--	--	--	--
MW-51	104	93.0	-23.4	less-open	40	288	275	185	4	W	245-290	45	7.8E-05	2.2E-01	0.5	--	--	--	3.4	--	--
MW-51	105	93.5	-23.9	less-open	24	325	312	222	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.5	--	--	--	--	--	--
MW-51	106	94.1	-24.5	less-open	42	333	320	230	2	NW	291-335	44	7.8E-05	2.2E-01	0.6	--	5.7	--	--	--	--
MW-51	107	94.8	-25.2	less-open	29	299	286	196	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.7	--	--	--	--	--	--
MW-51	108	95.1	-25.5	less-open	44	308	295	205	2	NW	291-335	44	7.8E-05	2.2E-01	0.3	--	1.0	--	--	--	--
MW-51	109	95.5	-25.9	less-open	55	294	281	191	4	W	245-290	45	7.8E-05	2.2E-01	0.4	--	--	--	2.5	--	--
MW-51	110	95.7	-26.0	less-open	65	303	290	200	4	W	245-290	45	7.8E-05	2.2E-01	0.2	--	--	--	0.2	--	--
MW-51	111	96.1	-26.5	less-open	61	316	303	213	2	NW	291-335	44	7.8E-05	2.2E-01	0.4	--	0.9	--	--	--	--
MW-51	112	96.4	-26.8	less-open	51	305	292	202	2	NW	291-335	44	7.8E-05	2.2E-01	0.4	--	0.4	--	--	--	--
MW-51	113	96.7	-27.1	less-open	45	324	311	221	2	NW	291-335	44	7.8E-05	2.2E-01	0.3	--	0.3	--	--	--	--
MW-51	114	97.4	-27.7	less-open	34	281	268	178	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.6	--	--	--	--	--	--
MW-51	115	97.6	-28.0	less-open	37	297	284	194	4	W	245-290	45	7.8E-05	2.2E-01	0.3	--	--	--	2.0	--	--
MW-51	116	99.0	-29.3	less-open	40	317	304	214	2	NW	291-335	44	TNP	TNP	1.3	--	2.2	--	--	--	--
MW-51	117	100.6	-30.9	less-open	35	213	200	110	5	S	166-200	34	5.6E-05	1.6E-01	1.6	--	--	--	--	31.7	--
MW-51	118	102.9	-33.3	less-open	62	313	300	210	2	NW	291-335	44	5.6E-05	1.6E-01	2.4	--	4.0	--	--	--	--
MW-51	119	103.2	-33.5	less-open	58	283	270	180	4	W	245-290	45	5.6E-05	1.6E-01	0.2	--	--	--	5.5	--	--
MW-51	120	103.6	-34.0	less-open	67	299	286	196	4	W	245-290	45	5.6E-05	1.6E-01	0.5	--	--	--	0.5	--	--
MW-51	121	103.6	-34.0	less-open	44	288	275	185	4	W	245-290	45	5.6E-05	1.6E-01	0.0	--	--	--	0.0	--	--
MW-51	122	104.2	-34.6	less-open	59	299	286	196	4	W	245-290	45	5.6E-05	1.6E-01	0.6	--	--	--	0.6	--	--
MW-51	123	104.9	-35.3	open	17	259	246	156	NSR	NSR	NSR	NSR	5.6E-05	1.6E-01	0.7	--	--	--	--	--	--
MW-51	124	105.5	-35.8	less-open	16	187	174	84	NSR	NSR	NSR	NSR	5.6E-05	1.6E-01	0.6	--	--	--	--	--	--
MW-51	125	110.7	-41.1	less-open	61	110	97	7	3	E	70-115	45	4.2E-05	1.2E-01	5.2	--	--	20.9	--	--	--
MW-51	126	112.7	-43.1	open	4	98	85	355	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	2.0	--	--	--	--	--	--
MW-51	127	115.2	-45.6	less-open	28	253	240	150	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	2.5	--	--	--	--	--	--
MW-51	128	118.1	-48.5	less-open	8	97	84	354	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	2.9	--	--	--	--	--	--
MW-51	129	118.2	-48.5	less-open	13	88	75	345	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	0.1	--	--	--	--	--	--



APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>9</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-51	130	118.4	-48.8	less-open	30	186	173	83	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	0.2	--	--	--	--	--	--	
MW-51	131	118.8	-49.1	less-open	22	222	209	119	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	
MW-51	132	119.2	-49.5	less-open	26	227	214	124	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	
MW-51	133	119.5	-49.9	less-open	40	257	244	154	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	
MW-51	134	120.5	-50.9	less-open	39	287	274	184	4	W	245-290	45	1.4E-05	4.0E-02	1.0	--	--	--	16.3	--	--	
MW-51	135	120.6	-51.0	less-open	44	273	260	170	4	W	245-290	45	1.4E-05	4.0E-02	0.2	--	--	--	0.2	--	--	
MW-51	136	121.5	-51.9	less-open	51	293	280	190	4	W	245-290	45	1.4E-05	4.0E-02	0.9	--	--	--	0.9	--	--	
MW-51	137	121.6	-52.0	less-open	75	316	303	213	2	NW	291-335	44	1.4E-05	4.0E-02	0.1	--	18.7	--	--	--	--	
MW-51	138	123.1	-53.5	less-open	17	97	84	354	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	1.5	--	--	--	--	--	--	
MW-51	139	123.6	-53.9	less-open	33	72	59	329	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	0.5	--	--	--	--	--	--	
MW-51	140	124.6	-55.0	less-open	42	295	282	192	4	W	245-290	45	1.4E-05	4.0E-02	1.1	--	--	--	3.1	--	--	
MW-51	141	125.9	-56.3	less-open	33	258	245	155	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	1.3	--	--	--	--	--	--	
MW-51	142	126.2	-56.6	less-open	66	123	110	20	3	E	70-115	45	1.4E-05	4.0E-02	0.3	--	--	15.5	--	--	--	
MW-51	143	126.8	-57.2	less-open	41	263	250	160	4	W	245-290	45	1.4E-05	4.0E-02	0.6	--	--	--	2.2	--	--	
MW-51	144	127.0	-57.4	less-open	57	259	246	156	4	W	245-290	45	1.4E-05	4.0E-02	0.2	--	--	--	0.2	--	--	
MW-51	145	127.5	-57.9	less-open	26	288	275	185	NSR	NSR	NSR	NSR	1.4E-05	4.0E-02	0.6	--	--	--	--	--	--	
MW-51	146	128.7	-59.1	less-open	39	287	274	184	4	W	245-290	45	1.4E-05	4.0E-02	1.1	--	--	--	1.7	--	--	
MW-51	147	128.9	-59.3	less-open	62	132	119	29	1	SE	116-165	49	1.4E-05	4.0E-02	0.3	36.5	--	--	--	--	--	
MW-51	148	129.3	-59.7	less-open	64	326	313	223	2	NW	291-335	44	1.4E-05	4.0E-02	0.3	--	7.7	--	--	--	--	
MW-51	149	129.3	-59.7	less-open	65	147	134	44	1	SE	116-165	49	1.4E-05	4.0E-02	0.0	0.4	--	--	--	--	--	
MW-51	150	131.9	-62.3	less-open	49	247	234	144	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	2.6	--	--	--	--	--	--	
MW-51	151	132.5	-62.9	less-open	27	334	321	231	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.6	--	--	--	--	--	--	
MW-51	152	133.1	-63.5	less-open	60	36	23	293	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.6	--	--	--	--	--	--	
MW-51	153	133.8	-64.2	less-open	28	265	252	162	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.7	--	--	--	--	--	--	
MW-51	154	135.1	-65.5	less-open	15	125	112	22	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	1.3	--	--	--	--	--	--	
MW-51	155	136.0	-66.4	less-open	37	300	287	197	4	W	245-290	45	2.8E-05	8.0E-02	0.8	--	--	--	7.3	--	--	
MW-51	156	136.2	-66.6	less-open	29	276	263	173	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.2	--	--	--	--	--	--	
MW-51	157	136.3	-66.7	less-open	41	278	265	175	4	W	245-290	45	2.8E-05	8.0E-02	0.1	--	--	--	0.3	--	--	
MW-51	158	136.9	-67.3	less-open	57	133	120	30	1	SE	116-165	49	2.8E-05	8.0E-02	0.6	7.6	--	--	--	--	--	
MW-51	159	137.1	-67.5	less-open	34	119	106	16	3	E	70-115	45	2.8E-05	8.0E-02	0.3	--	--	11.0	--	--	--	
MW-51	160	137.6	-68.0	less-open	37	257	244	154	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.4	--	--	--	--	--	--	
MW-51	161	137.7	-68.1	less-open	26	238	225	135	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.1	--	--	--	--	--	--	
MW-51	162	138.9	-69.3	less-open	55	133	120	30	1	SE	116-165	49	2.8E-05	8.0E-02	1.2	2.0	--	--	--	--	--	
MW-51	163	139.4	-69.8	less-open	56	127	114	24	3	E	70-115	45	2.8E-05	8.0E-02	0.5	--	--	2.3	--	--	--	
MW-51	164	139.7	-70.1	less-open	59	127	114	24	3	E	70-115	45	2.8E-05	8.0E-02	0.3	--	--	0.3	--	--	--	
MW-51	165	140.1	-70.5	less-open	22	281	268	178	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	0.4	--	--	--	--	--	--	
MW-51	166	140.7	-71.1	less-open	56	116	103	13	3	E	70-115	45	TNP	TNP	0.6	--	--	1.0	--	--	--	
MW-51	167	141.7	-72.1	less-open	35	91	78	348	3	E	70-115	45	TNP	TNP	1.1	--	--	1.1	--	--	--	
MW-51	168	144.3	-74.7	less-open	31	128	115	25	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	2.5	--	--	--	--	--	--	
MW-51	169	144.9	-75.3	less-open	40	224	211	121	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	0.6	--	--	--	--	--	--	
MW-51	170	145.0	-75.3	less-open	43	303	290	200	4	W	245-290	45	1.8E-05	5.0E-02	0.1	--	--	--	8.6	--	--	
MW-51	171	145.2	-75.5	less-open	38	111	98	8	3	E	70-115	45	1.8E-05	5.0E-02	0.2	--	--	3.4	--	--	--	
MW-51	172	151.1	-81.5	less-open	15	284	271	181	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	5.9	--	--	--	--	--	--	
MW-51	173	151.4	-81.8	less-open	32	269	256	166	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	0.4	--	--	--	--	--	--	
MW-51	174	152.1	-82.5	less-open	22	298	285	195	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	0.7	--	--	--	--	--	--	
MW-51	175	153.3	-83.7	less-open	57	296	283	193	4	W	245-290	45	TNP	TNP	1.2	--	--	--	8.4	--	--	
MW-51	176	155.0	-85.4	less-open	62	24	11	281	6	N	336-21	45	2.8E-05	8.0E-02	1.7	--	--	--	--	--	82.2	
MW-51	177	156.9	-87.3	less-open	48	316	303	213	2	NW	291-335	44	2.8E-05	8.0E-02	1.9	--	27.6	--	--	--	--	
MW-51	178	157.9	-88.3	less-open	56	287	274	184	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	1.0	--	--	4.6	--	--
MW-51	179	158.3	-88.7	less-open	41	285	272	182	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.4	--	--	0.4	--	--
MW-51	180	159.0	-89.3	less-open	56	111	98	8	3	E	70-115	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.7	--	--	13.8	--	--
MW-51	181	159.2	-89.6	less-open	45	281	268	178	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.2	--	--	0.9	--	--
MW-51	182	159.7	-90.1	less-open	40	264	251	161	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.5	--	--	0.5	--	--
MW-51	183	160.8	-91.2	less-open	39	284	271	181	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	1.1	--	--	1.1	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)			Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s			ft/day	1	2	3	4	5	6	
MW-51	184	161.3	-91.7	less-open	47	293	280	190	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.5	--	--	--	0.5	--	--
MW-51	185	161.8	-92.2	less-open	41	272	259	169	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.5	--	--	--	0.5	--	--
MW-51	186	162.4	-92.8	less-open	45	276	263	173	4	W	245-290	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.6	--	--	--	0.6	--	--
MW-51	187	163.0	-93.3	less-open	40	315	302	212	2	NW	291-335	44	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.5	--	6.1	--	--	--	--
MW-51	188	163.2	-93.6	less-open	57	101	88	358	3	E	70-115	45	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.3	--	--	4.3	--	--	--
MW-51	189	163.3	-93.7	less-open	30	285	272	182	NSR	NSR	NSR	NSR	2.8E-05	6.4E-05	8.0E-02	1.8E-01	0.1	--	--	--	--	--	--
MW-51	190	164.5	-94.8	less-open	28	308	295	205	NSR	NSR	NSR	NSR		6.4E-05		1.8E-01	1.2	--	--	--	--	--	--
MW-51	191	165.1	-95.5	less-open	32	297	284	194	NSR	NSR	NSR	NSR		6.4E-05		1.8E-01	0.6	--	--	--	--	--	--
MW-51	192	165.4	-95.8	less-open	64	116	103	13	3	E	70-115	45		6.4E-05		1.8E-01	0.3	--	--	2.2	--	--	--
MW-51	193	165.6	-95.9	less-open	65	127	114	24	3	E	70-115	45		6.4E-05		1.8E-01	0.2	--	--	0.2	--	--	--
MW-51	194	166.6	-97.0	less-open	36	330	317	227	2	NW	291-335	44		6.4E-05		1.8E-01	1.1	--	3.7	--	--	--	--
MW-51	195	168.0	-98.4	less-open	58	304	291	201	2	NW	291-335	44	TNP		TNP		1.4	--	1.4	--	--	--	--
MW-51	196	171.1	-101.5	less-open	44	259	246	156	4	W	245-290	45	TNP		TNP		3.1	--	--	--	8.7	--	--
MW-51	197	171.5	-101.9	less-open	29	312	299	209	NSR	NSR	NSR	NSR	TNP		TNP		0.4	--	--	--	--	--	--
MW-51	198	174.4	-104.7	less-open	60	286	273	183	4	W	245-290	45	4.9E-05		1.4E-01		2.8	--	--	--	3.2	--	--
MW-51	199	178.0	-108.4	less-open	80	150	137	47	1	SE	116-165	49	4.9E-05		1.4E-01		3.6	39.1	--	--	--	--	--
MW-51	200	180.0	-110.4	less-open	33	313	300	210	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		2.0	--	--	--	--	--	--
MW-51	201	181.2	-111.5	less-open	37	282	269	179	4	W	245-290	45	4.9E-05		1.4E-01		1.2	--	--	--	6.8	--	--
MW-51	202	181.2	-111.6	less-open	62	200	187	97	5	S	166-200	34	4.9E-05		1.4E-01		0.1	--	--	--	--	80.7	--
MW-51	203	182.5	-112.8	less-open	32	311	298	208	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		1.2	--	--	--	--	--	--
MW-51	204	184.7	-115.1	less-open	58	291	278	188	4	W	245-290	45	6.7E-05		1.9E-01		2.2	--	--	--	3.5	--	--
MW-51	205	186.8	-117.2	less-open	28	291	278	188	NSR	NSR	NSR	NSR	6.7E-05		1.9E-01		2.1	--	--	--	--	--	--
MW-51	206	187.1	-117.5	less-open	78	209	196	106	5	S	166-200	34	6.7E-05		1.9E-01		0.3	--	--	--	--	5.9	--
MW-51	207	188.0	-118.3	less-open	48	281	268	178	4	W	245-290	45	6.7E-05		1.9E-01		0.8	--	--	--	3.3	--	--
MW-51	208	188.7	-119.0	less-open	46	266	253	163	4	W	245-290	45	6.7E-05		1.9E-01		0.7	--	--	--	0.7	--	--
MW-51	209	189.0	-119.4	less-open	62	133	120	30	1	SE	116-165	49	6.7E-05		1.9E-01		0.3	11.0	--	--	--	--	--
MW-51	210	189.6	-120.0	less-open	60	110	97	7	3	E	70-115	45	6.7E-05		1.9E-01		0.6	--	--	24.0	--	--	--
MW-51	211	190.2	-120.5	less-open	62	123	110	20	3	E	70-115	45	6.7E-05		1.9E-01		0.6	--	--	0.6	--	--	--
MW-51	212	191.0	-121.4	less-open	40	286	273	183	4	W	245-290	45	6.7E-05		1.9E-01		0.8	--	--	--	2.3	--	--
MW-51	213	191.2	-121.5	less-open	54	141	128	38	1	SE	116-165	49	6.7E-05		1.9E-01		0.2	2.2	--	--	--	--	--
MW-51	214	191.3	-121.7	less-open	53	282	269	179	4	W	245-290	45	6.7E-05		1.9E-01		0.1	--	--	--	0.3	--	--
MW-51	215	191.8	-122.2	less-open	49	260	247	157	4	W	245-290	45	6.7E-05		1.9E-01		0.5	--	--	--	0.5	--	--
MW-51	216	192.0	-122.4	less-open	35	262	249	159	4	W	245-290	45	6.7E-05		1.9E-01		0.2	--	--	--	0.2	--	--
MW-51	217	192.3	-122.6	less-open	44	303	290	200	4	W	245-290	45	6.7E-05		1.9E-01		0.2	--	--	--	0.2	--	--
MW-51	218	193.0	-123.4	less-open	60	141	128	38	1	SE	116-165	49	6.7E-05		1.9E-01		0.8	1.9	--	--	--	--	--
MW-51	219	193.6	-123.9	less-open	39	315	302	212	2	NW	291-335	44	6.7E-05		1.9E-01		0.5	--	25.6	--	--	--	--
MW-51	220	194.5	-124.8	less-open	63	134	121	31	1	SE	116-165	49	TNP		TNP		0.9	1.4	--	--	--	--	--
MW-51	221	194.5	-124.8	less-open	46	242	229	139	NSR	NSR	NSR	NSR	TNP		TNP		0.0	--	--	--	--	--	--
MW-51	222	195.2	-125.6	less-open	13	319	306	216	NSR	NSR	NSR	NSR	TNP		TNP		0.8	--	--	--	--	--	--
MW-51	223	196.6	-127.0	less-open	74	23	10	280	6	N	336-21	45	TNP		TNP		1.4	--	--	--	--	--	41.6
MW-51	224	197.7	-128.1	less-open	2	360	347	257	NSR	NSR	NSR	NSR	TNP		TNP		1.1	--	--	--	--	--	--
MW-51	225	197.9	-128.3	less-open	1	346	333	243	NSR	NSR	NSR	NSR	TNP		TNP		0.2	--	--	--	--	--	--
MW-51	226	198.1	-128.5	less-open	6	127	114	24	NSR	NSR	NSR	NSR	TNP		TNP		0.2	--	--	--	--	--	--
MW-52	1	13.8	3.0	less-open	62	55	42	312	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		NA	--	--	--	--	--	--
MW-52	2	13.8	3.0	open	47	115	102	12	3	E	70-115	45	1.4E-04		4.0E-01		0.0	--	--	13.8	--	--	--
MW-52	3	13.9	2.9	less-open	64	56	43	313	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.1	--	--	--	--	--	--
MW-52	4	14.0	2.8	open	42	129	116	26	1	SE	116-165	49	1.4E-04		4.0E-01		0.1	14.0	--	--	--	--	--
MW-52	5	14.2	2.5	less-open	53	102	89	359	3	E	70-115	45	1.4E-04		4.0E-01		0.3	--	--	0.4	--	--	--
MW-52	6	14.5	2.3	less-open	38	64	51	321	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.3	--	--	--	--	--	--
MW-52	7	14.6	2.1	less-open	37	56	43	313	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.1	--	--	--	--	--	--
MW-52	8	14.7	2.1	less-open	66	164	151	61	1	SE	116-165	49	1.4E-04		4.0E-01		0.0	0.7	--	--	--	--	--
MW-52	9	14.8	1.9	open	60	69	56	326	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.2	--	--	--	--	--	--
MW-52	10	15.1	1.7	less-open	67	71	58	328	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.2	--	--	--	--	--	--
MW-52	11	15.2	1.5	less-open	58	70	57	327	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01		0.2	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-52	12	15.6	1.2	less-open	61	76	63	333	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.3	--	--	--	--	--	--	
MW-52	13	15.6	1.1	less-open	63	71	58	328	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.1	--	--	--	--	--	--	
MW-52	14	15.7	1.1	less-open	59	8	355	265	6	N	336-21	45	1.4E-04	4.0E-01	0.0	--	--	--	--	--	15.7	
MW-52	15	16.0	0.7	less-open	50	82	69	339	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.4	--	--	--	--	--	--	
MW-52	16	16.3	0.5	less-open	61	71	58	328	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.2	--	--	--	--	--	--	
MW-52	17	16.4	0.3	less-open	53	76	63	333	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.2	--	--	--	--	--	--	
MW-52	18	16.7	0.1	less-open	59	66	53	323	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.3	--	--	--	--	--	--	
MW-52	19	16.8	0.0	less-open	40	281	268	178	4	W	245-290	45	1.4E-04	4.0E-01	0.1	--	--	--	16.8	--	--	
MW-52	20	16.9	-0.1	less-open	65	162	149	59	1	SE	116-165	49	1.4E-04	4.0E-01	0.1	2.2	--	--	--	--	--	
MW-52	21	17.0	-0.3	less-open	60	76	63	333	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.1	--	--	--	--	--	--	
MW-52	22	17.6	-0.9	less-open	62	72	59	329	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.6	--	--	--	--	--	--	
MW-52	23	18.9	-2.2	less-open	59	82	69	339	NSR	NSR	NSR	NSR	1.4E-04	2.5E-07	4.0E-01	7.0E-04	1.3	--	--	--	--	--
MW-52	24	19.1	-2.3	less-open	66	148	135	45	1	SE	116-165	49	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.1	2.2	--	--	--	--
MW-52	25	19.1	-2.3	less-open	52	98	85	355	3	E	70-115	45	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.0	--	--	4.9	--	--
MW-52	26	19.6	-2.9	less-open	60	148	135	45	1	SE	116-165	49	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.6	0.6	--	--	--	--
MW-52	27	19.7	-2.9	less-open	73	167	154	64	1	SE	116-165	49	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.1	0.1	--	--	--	--
MW-52	28	20.3	-3.5	open	61	72	59	329	NSR	NSR	NSR	NSR	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.6	--	--	--	--	--
MW-52	29	20.4	-3.6	open	56	64	51	321	NSR	NSR	NSR	NSR	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.1	--	--	--	--	--
MW-52	30	20.5	-3.7	open	60	74	61	331	NSR	NSR	NSR	NSR	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.1	--	--	--	--	--
MW-52	31	20.9	-4.1	less-open	43	98	85	355	3	E	70-115	45	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.4	--	--	1.8	--	--
MW-52	32	21.4	-4.6	less-open	51	96	83	353	3	E	70-115	45	1.4E-04	2.5E-07	4.0E-01	7.0E-04	0.6	--	--	0.6	--	--
MW-52	33	21.8	-5.1	less-open	44	300	287	197	4	W	245-290	45	2.5E-07	7.0E-04	0.4	--	--	--	5.1	--	--	
MW-52	34	23.0	-6.2	less-open	62	163	150	60	1	SE	116-165	49	2.5E-07	7.0E-04	1.1	3.3	--	--	--	--	--	
MW-52	35	23.9	-7.1	less-open	72	73	60	330	NSR	NSR	NSR	NSR	2.5E-07	7.0E-04	0.9	--	--	--	--	--	--	
MW-52	36	24.5	-7.7	less-open	62	72	59	329	NSR	NSR	NSR	NSR	2.5E-07	7.0E-04	0.6	--	--	--	--	--	--	
MW-52	37	25.2	-8.4	less-open	28	326	313	223	NSR	NSR	NSR	NSR	2.5E-07	7.0E-04	0.7	--	--	--	--	--	--	
MW-52	38	25.6	-8.8	less-open	25	321	308	218	NSR	NSR	NSR	NSR	2.5E-07	7.0E-04	0.4	--	--	--	--	--	--	
MW-52	39	26.3	-9.5	less-open	35	139	126	36	1	SE	116-165	49	2.5E-07	7.0E-04	0.7	3.3	--	--	--	--	--	
MW-52	40	26.7	-10.0	less-open	78	154	141	51	1	SE	116-165	49	2.5E-07	7.0E-04	0.4	0.4	--	--	--	--	--	
MW-52	41	26.8	-10.1	less-open	79	162	149	59	1	SE	116-165	49	2.5E-07	7.0E-04	0.1	0.1	--	--	--	--	--	
MW-52	42	27.3	-10.6	less-open	43	112	99	9	3	E	70-115	45	2.5E-07	7.0E-04	0.5	--	--	5.9	--	--	--	
MW-52	43	28.6	-11.8	less-open	48	272	259	169	4	W	245-290	45	3.5E-07	1.0E-03	1.2	--	--	--	6.7	--	--	
MW-52	44	29.1	-12.3	less-open	33	300	287	197	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	0.5	--	--	--	--	--	--	
MW-52	45	29.4	-12.6	less-open	81	152	139	49	1	SE	116-165	49	3.5E-07	1.0E-03	0.3	2.6	--	--	--	--	--	
MW-52	46	30.4	-13.6	less-open	29	285	272	182	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	1.0	--	--	--	--	--	--	
MW-52	47	31.1	-14.3	less-open	58	117	104	14	3	E	70-115	45	3.5E-07	1.0E-03	0.7	--	--	3.8	--	--	--	
MW-52	48	31.5	-14.7	less-open	80	184	171	81	5	S	166-200	34	3.5E-07	1.0E-03	0.4	--	--	--	--	31.5	--	
MW-52	49	31.9	-15.1	less-open	51	328	315	225	2	NW	291-335	44	3.5E-07	1.0E-03	0.4	--	31.9	--	--	--	--	
MW-52	50	33.3	-16.6	less-open	26	217	204	114	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	1.5	--	--	--	--	--	--	
MW-52	51	34.1	-17.4	less-open	17	50	37	307	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	0.8	--	--	--	--	--	--	
MW-52	52	34.2	-17.4	less-open	68	116	103	13	3	E	70-115	45	3.5E-07	1.0E-03	0.0	--	--	3.1	--	--	--	
MW-52	53	34.8	-18.0	less-open	24	329	316	226	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	0.6	--	--	--	--	--	--	
MW-52	54	36.7	-19.9	less-open	20	349	336	246	NSR	NSR	NSR	NSR	3.5E-07	1.0E-03	1.9	--	--	--	--	--	--	
MW-52	55	38.2	-21.4	less-open	41	143	130	40	1	SE	116-165	49	TNP	1.3E-03	1.5	8.8	--	--	--	--	--	
MW-52	56	39.2	-22.4	less-open	47	127	114	24	3	E	70-115	45	4.6E-07	1.3E-03	1.0	--	--	5.0	--	--	--	
MW-52	57	39.9	-23.1	less-open	59	88	75	345	3	E	70-115	45	4.6E-07	1.3E-03	0.8	--	--	0.8	--	--	--	
MW-52	58	40.1	-23.3	less-open	53	126	113	23	3	E	70-115	45	4.6E-07	1.3E-03	0.2	--	--	0.2	--	--	--	
MW-52	59	40.2	-23.4	less-open	73	170	157	67	1	SE	116-165	49	4.6E-07	1.3E-03	0.1	2.0	--	--	--	--	--	
MW-52	60	40.9	-24.1	less-open	61	159	146	56	1	SE	116-165	49	4.6E-07	1.3E-03	0.7	0.7	--	--	--	--	--	
MW-52	61	41.3	-24.5	less-open	42	101	88	358	3	E	70-115	45	4.6E-07	1.3E-03	0.4	--	--	1.2	--	--	--	
MW-52	62	41.8	-25.0	less-open	71	165	152	62	1	SE	116-165	49	4.6E-07	1.3E-03	0.5	0.9	--	--	--	--	--	
MW-52	63	41.8	-25.1	less-open	71	84	71	341	3	E	70-115	45	4.6E-07	1.3E-03	0.0	--	--	0.5	--	--	--	
MW-52	64	43.3	-26.5	less-open	28	326	313	223	NSR	NSR	NSR	NSR	4.6E-07	1.3E-03	1.5	--	--	--	--	--	--	
MW-52	65	44.3	-27.5	less-open	32	150	137	47	NSR	NSR	NSR	NSR	4.6E-07	1.3E-03	1.0	--	--	--	--	--	--	

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-52	66	44.6	-27.8	less-open	34	121	108	18	3	E	70-115	45	4.6E-07	1.3E-03	0.3	--	--	2.7	--	--	--
MW-52	67	44.9	-28.1	less-open	66	166	153	63	1	SE	116-165	49	4.6E-07	1.3E-03	0.3	3.1	--	--	--	--	--
MW-52	68	44.9	-28.2	less-open	40	296	283	193	4	W	245-290	45	4.6E-07	1.3E-03	0.1	--	--	--	16.4	--	--
MW-52	69	46.0	-29.3	less-open	43	129	116	26	1	SE	116-165	49	4.6E-07	1.3E-03	1.1	1.2	--	--	--	--	--
MW-52	70	46.1	-29.3	less-open	62	165	152	62	1	SE	116-165	49	4.6E-07	1.3E-03	0.1	0.1	--	--	--	--	--
MW-52	71	46.7	-29.9	less-open	63	71	58	328	NSR	NSR	NSR	NSR	4.6E-07	1.3E-03	0.5	--	--	--	--	--	--
MW-52	72	46.7	-29.9	less-open	51	68	55	325	NSR	NSR	NSR	NSR	4.6E-07	1.3E-03	0.0	--	--	--	--	--	--
MW-52	73	46.7	-29.9	less-open	31	139	126	36	NSR	NSR	NSR	NSR	4.6E-07	1.3E-03	0.0	--	--	--	--	--	--
MW-52	74	46.9	-30.1	less-open	53	14	1	271	6	N	336-21	45	4.6E-07	1.3E-03	0.2	--	--	--	--	--	31.2
MW-52	75	47.1	-30.4	less-open	36	351	338	248	6	N	336-21	45	4.6E-07	1.3E-03	0.3	--	--	--	--	--	0.3
MW-52	76	47.6	-30.8	less-open	49	5	352	262	6	N	336-21	45	4.6E-07	1.3E-03	0.4	--	--	--	--	--	0.4
MW-52	77	48.2	-31.4	less-open	44	8	355	265	6	N	336-21	45	4.6E-07	1.3E-03	0.6	--	--	--	--	--	0.6
MW-52	78	50.6	-33.8	less-open	70	228	215	125	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	2.3	--	--	--	--	--	--
MW-52	79	50.6	-33.8	less-open	44	359	346	256	6	N	336-21	45	6.0E-05	1.7E-01	0.0	--	--	--	--	--	2.4
MW-52	80	51.2	-34.4	open	40	10	357	267	6	N	336-21	45	6.0E-05	1.7E-01	0.6	--	--	--	--	--	0.6
MW-52	81	51.2	-34.4	less-open	80	204	191	101	5	S	166-200	34	6.0E-05	1.7E-01	0.1	--	--	--	--	19.8	--
MW-52	82	53.6	-36.8	less-open	64	228	215	125	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	2.4	--	--	--	--	--	--
MW-52	83	54.4	-37.6	less-open	53	80	67	337	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.8	--	--	--	--	--	--
MW-52	84	54.6	-37.8	less-open	76	71	58	328	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.2	--	--	--	--	--	--
MW-52	85	56.4	-39.7	less-open	63	83	70	340	3	E	70-115	45	6.0E-05	1.7E-01	1.8	--	--	11.9	--	--	--
MW-52	86	56.6	-39.9	less-open	50	345	332	242	2	NW	291-335	44	6.0E-05	1.7E-01	0.2	--	24.8	--	--	--	--
MW-52	87	56.8	-40.0	less-open	62	88	75	345	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	0.3	--	--	--
MW-52	88	56.9	-40.1	less-open	61	94	81	351	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	0.1	--	--	--
MW-52	89	57.2	-40.4	less-open	72	79	66	336	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.3	--	--	--	--	--	--
MW-52	90	57.4	-40.6	less-open	68	331	318	228	2	NW	291-335	44	6.0E-05	1.7E-01	0.2	--	0.7	--	--	--	--
MW-52	91	57.4	-40.7	less-open	67	95	82	352	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	0.6	--	--	--
MW-52	92	57.9	-41.2	less-open	69	96	83	353	3	E	70-115	45	6.0E-05	1.7E-01	0.5	--	--	0.5	--	--	--
MW-52	93	58.3	-41.5	less-open	65	86	73	343	3	E	70-115	45	6.0E-05	1.7E-01	0.4	--	--	0.4	--	--	--
MW-52	94	60.5	-43.7	less-open	53	354	341	251	6	N	336-21	45	7.1E-07	2.0E-03	2.2	--	--	--	--	--	9.3
MW-52	95	61.2	-44.4	less-open	51	8	355	265	6	N	336-21	45	7.1E-07	2.0E-03	0.7	--	--	--	--	--	0.7
MW-52	96	61.6	-44.9	less-open	47	107	94	4	3	E	70-115	45	7.1E-07	2.0E-03	0.5	--	--	3.4	--	--	--
MW-52	97	62.0	-45.2	less-open	27	140	127	37	NSR	NSR	NSR	NSR	7.1E-07	2.0E-03	0.3	--	--	--	--	--	--
MW-52	98	62.1	-45.4	less-open	40	120	107	17	3	E	70-115	45	7.1E-07	2.0E-03	0.2	--	--	0.5	--	--	--
MW-52	99	62.6	-45.9	less-open	37	121	108	18	3	E	70-115	45	7.1E-07	2.0E-03	0.5	--	--	0.5	--	--	--
MW-52	100	63.0	-46.2	less-open	49	353	340	250	6	N	336-21	45	7.1E-07	2.0E-03	0.4	--	--	--	--	--	1.8
MW-52	101	63.5	-46.7	less-open	64	307	294	204	2	NW	291-335	44	7.1E-07	2.0E-03	0.5	--	6.2	--	--	--	--
MW-52	102	63.8	-47.1	less-open	67	82	69	339	NSR	NSR	NSR	NSR	7.1E-07	2.0E-03	0.3	--	--	--	--	--	--
MW-52	103	64.3	-47.6	less-open	72	81	68	338	NSR	NSR	NSR	NSR	7.1E-07	2.0E-03	0.5	--	--	--	--	--	--
MW-52	104	64.6	-47.8	less-open	62	85	72	342	3	E	70-115	45	7.1E-07	2.0E-03	0.3	--	--	2.0	--	--	--
MW-52	105	64.8	-48.0	less-open	50	111	98	8	3	E	70-115	45	7.1E-07	2.0E-03	0.2	--	--	0.2	--	--	--
MW-52	106	64.8	-48.0	less-open	48	107	94	4	3	E	70-115	45	7.1E-07	2.0E-03	0.0	--	--	0.0	--	--	--
MW-52	107	64.9	-48.2	less-open	53	100	87	357	3	E	70-115	45	7.1E-07	2.0E-03	0.1	--	--	0.1	--	--	--
MW-52	108	65.2	-48.4	less-open	50	112	99	9	3	E	70-115	45	7.1E-07	2.0E-03	0.3	--	--	0.3	--	--	--
MW-52	109	65.3	-48.5	less-open	75	110	97	7	3	E	70-115	45	7.1E-07	2.0E-03	0.1	--	--	0.1	--	--	--
MW-52	110	65.3	-48.5	less-open	51	109	96	6	3	E	70-115	45	7.1E-07	2.0E-03	0.0	--	--	0.0	--	--	--
MW-52	111	65.5	-48.8	less-open	52	102	89	359	3	E	70-115	45	7.1E-07	2.0E-03	0.2	--	--	0.2	--	--	--
MW-52	112	65.7	-48.9	open	54	95	82	352	3	E	70-115	45	7.1E-07	2.0E-03	0.2	--	--	0.2	--	--	--
MW-52	113	66.1	-49.4	less-open	52	89	76	346	3	E	70-115	45	7.1E-07	2.0E-03	0.4	--	--	0.4	--	--	--
MW-52	114	66.4	-49.6	less-open	48	111	98	8	3	E	70-115	45	7.1E-07	2.0E-03	0.2	--	--	0.2	--	--	--
MW-52	115	66.5	-49.7	less-open	76	75	62	332	NSR	NSR	NSR	NSR	7.1E-07	2.0E-03	0.1	--	--	--	--	--	--
MW-52	116	66.6	-49.8	less-open	60	91	78	348	3	E	70-115	45	7.1E-07	2.0E-03	0.1	--	--	0.2	--	--	--
MW-52	117	67.0	-50.2	less-open	66	284	271	181	4	W	245-290	45	7.1E-07	2.0E-03	0.4	--	--	--	22.0	--	--
MW-52	118	67.0	-50.2	less-open	48	100	87	357	3	E	70-115	45	7.1E-07	2.0E-03	0.0	--	--	0.4	--	--	--
MW-52	119	67.1	-50.3	less-open	63	69	56	326	NSR	NSR	NSR	NSR	7.1E-07	2.0E-03	0.1	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-52	120	67.2	-50.4	less-open	47	104	91	1	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.2	--	--	--	
MW-52	121	67.4	-50.6	less-open	59	111	98	8	3	E	70-115	45	7.1E-07		2.0E-03	0.2	--	--	0.2	--	--	--	
MW-52	122	67.7	-50.9	less-open	44	103	90	360	3	E	70-115	45	7.1E-07		2.0E-03	0.3	--	--	0.3	--	--	--	
MW-52	123	67.8	-51.0	less-open	48	120	107	17	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.1	--	--	--	
MW-52	124	69.3	-52.5	less-open	49	104	91	1	3	E	70-115	45	7.1E-07		2.0E-03	1.5	--	--	1.5	--	--	--	
MW-52	125	69.5	-52.8	less-open	51	108	95	5	3	E	70-115	45	7.1E-07		2.0E-03	0.3	--	--	0.3	--	--	--	
MW-52	126	69.7	-52.9	less-open	47	109	96	6	3	E	70-115	45	7.1E-07		2.0E-03	0.2	--	--	0.2	--	--	--	
MW-52	127	70.0	-53.2	less-open	45	99	86	356	3	E	70-115	45	7.1E-07		2.0E-03	0.3	--	--	0.3	--	--	--	
MW-52	128	70.2	-53.4	less-open	53	117	104	14	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.1	--	--	--	
MW-52	129	71.4	-54.6	less-open	52	108	95	5	3	E	70-115	45	7.1E-07		2.0E-03	1.2	--	--	1.2	--	--	--	
MW-52	130	72.0	-55.2	less-open	56	91	78	348	3	E	70-115	45	7.1E-07		2.0E-03	0.7	--	--	0.7	--	--	--	
MW-52	131	72.1	-55.4	less-open	60	97	84	354	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.1	--	--	--	
MW-52	132	72.4	-55.7	less-open	51	114	101	11	3	E	70-115	45	7.1E-07		2.0E-03	0.3	--	--	0.3	--	--	--	
MW-52	133	74.1	-57.3	less-open	60	93	80	350	3	E	70-115	45	7.1E-07		2.0E-03	1.7	--	--	1.7	--	--	--	
MW-52	134	74.2	-57.4	less-open	61	102	89	359	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.1	--	--	--	
MW-52	135	74.5	-57.7	less-open	61	88	75	345	3	E	70-115	45	7.1E-07		2.0E-03	0.2	--	--	0.2	--	--	--	
MW-52	136	74.6	-57.9	less-open	65	92	79	349	3	E	70-115	45	7.1E-07		2.0E-03	0.2	--	--	0.2	--	--	--	
MW-52	137	74.8	-58.0	less-open	64	90	77	347	3	E	70-115	45	7.1E-07		2.0E-03	0.1	--	--	0.1	--	--	--	
MW-52	138	77.0	-60.2	less-open	66	82	69	339	NSR	NSR	NSR	NSR	7.1E-07	7.1E-06	2.0E-03	2.0E-02	2.3	--	--	--	--	--	
MW-52	139	77.2	-60.5	less-open	81	195	182	92	5	S	166-200	34	7.1E-07	7.1E-06	2.0E-03	2.0E-02	0.2	--	--	--	--	26.0	--
MW-52	140	79.3	-62.5	less-open	54	354	341	251	6	N	336-21	45	7.1E-06		2.0E-02	2.0	--	--	--	--	--	16.3	
MW-52	141	79.4	-62.6	less-open	63	336	323	233	2	NW	291-335	44	7.1E-06		2.0E-02	0.1	--	15.9	--	--	--	--	--
MW-52	142	80.5	-63.7	less-open	79	129	116	26	1	SE	116-165	49	7.1E-06		2.0E-02	1.1	34.4	--	--	--	--	--	--
MW-52	143	81.7	-64.9	less-open	75	176	163	73	1	SE	116-165	49	7.1E-06		2.0E-02	1.1	1.1	--	--	--	--	--	--
MW-52	144	82.7	-65.9	less-open	71	175	162	72	1	SE	116-165	49	7.1E-06		2.0E-02	1.0	1.0	--	--	--	--	--	--
MW-52	145	84.5	-67.7	less-open	70	212	199	109	5	S	166-200	34	7.1E-06		2.0E-02	1.8	--	--	--	--	7.3	--	
MW-52	146	84.5	-67.8	less-open	72	174	161	71	1	SE	116-165	49	7.1E-06		2.0E-02	0.0	1.9	--	--	--	--	--	--
MW-52	147	84.8	-68.1	less-open	60	339	326	236	2	NW	291-335	44	7.1E-06		2.0E-02	0.3	--	5.4	--	--	--	--	--
MW-52	148	85.4	-68.7	less-open	73	190	177	87	5	S	166-200	34	7.1E-06		2.0E-02	0.6	--	--	--	--	0.9	--	
MW-52	149	85.7	-68.9	less-open	48	113	100	10	3	E	70-115	45	7.1E-06		2.0E-02	0.3	--	--	10.9	--	--	--	--
MW-52	150	85.7	-69.0	less-open	55	343	330	240	2	NW	291-335	44	7.1E-06		2.0E-02	0.0	--	0.9	--	--	--	--	--
MW-52	151	85.8	-69.0	less-open	74	182	169	79	5	S	166-200	34	7.1E-06		2.0E-02	0.0	--	--	--	--	0.3	--	--
MW-52	152	87.0	-70.2	less-open	50	112	99	9	3	E	70-115	45	TNP		TNP	1.3	--	--	1.3	--	--	--	--
MW-52	153	88.2	-71.4	less-open	55	343	330	240	2	NW	291-335	44	TNP		TNP	1.2	--	2.5	--	--	--	--	--
MW-52	154	89.0	-72.2	less-open	55	91	78	348	3	E	70-115	45	8.5E-05		2.4E-01	0.8	--	--	2.0	--	--	--	--
MW-52	155	89.2	-72.4	less-open	63	102	89	359	3	E	70-115	45	8.5E-05		2.4E-01	0.2	--	--	0.2	--	--	--	--
MW-52	156	89.8	-73.0	less-open	56	114	101	11	3	E	70-115	45	8.5E-05		2.4E-01	0.6	--	--	0.6	--	--	--	--
MW-52	157	89.8	-73.1	less-open	58	356	343	253	6	N	336-21	45	8.5E-05		2.4E-01	0.0	--	--	--	--	--	10.6	--
MW-52	158	90.8	-74.0	less-open	76	126	113	23	3	E	70-115	45	8.5E-05		2.4E-01	1.0	--	--	1.0	--	--	--	--
MW-52	159	92.4	-75.7	less-open	57	188	175	85	5	S	166-200	34	8.5E-05		2.4E-01	1.6	--	--	--	--	6.7	--	
MW-52	160	92.6	-75.8	less-open	60	197	184	94	5	S	166-200	34	8.5E-05		2.4E-01	0.1	--	--	--	--	0.1	--	--
MW-52	161	92.8	-76.1	less-open	55	356	343	253	6	N	336-21	45	8.5E-05		2.4E-01	0.3	--	--	--	--	--	3.0	--
MW-52	162	92.9	-76.2	less-open	72	179	166	76	5	S	166-200	34	8.5E-05		2.4E-01	0.1	--	--	--	--	0.4	--	--
MW-52	163	93.1	-76.3	less-open	65	190	177	87	5	S	166-200	34	8.5E-05		2.4E-01	0.1	--	--	--	--	0.1	--	--
MW-52	164	93.1	-76.4	less-open	42	294	281	191	4	W	245-290	45	8.5E-05		2.4E-01	0.1	--	--	--	26.2	--	--	--
MW-52	165	93.5	-76.7	less-open	53	348	335	245	2	NW	291-335	44	8.5E-05		2.4E-01	0.3	--	5.3	--	--	--	--	--
MW-52	166	96.3	-79.6	less-open	36	107	94	4	3	E	70-115	45	8.5E-05		2.4E-01	2.8	--	--	5.5	--	--	--	--
MW-52	167	96.5	-79.7	less-open	54	123	110	20	3	E	70-115	45	8.5E-05		2.4E-01	0.1	--	--	0.1	--	--	--	--
MW-52	168	96.6	-79.8	less-open	47	124	111	21	3	E	70-115	45	8.5E-05		2.4E-01	0.1	--	--	0.1	--	--	--	--
MW-52	169	97.0	-80.3	less-open	53	205	192	102	5	S	166-200	34	8.5E-05		2.4E-01	0.4	--	--	--	--	4.0	--	--
MW-52	170	98.2	-81.5	less-open	31	319	306	216	NSR	NSR	NSR	NSR	8.5E-05		2.4E-01	1.2	--	--	--	--	--	--	--
MW-52	171	100.6	-83.8	less-open	51	352	339	249	6	N	336-21	45	TNP		TNP	2.3	--	--	--	--	--	7.7	--
MW-52	172	100.7	-83.9	less-open	57	346	333	243	2	NW	291-335	44	TNP		TNP	0.1	--	7.2	--	--	--	--	--
MW-52	173	101.4	-84.6	less-open	62	325	312	222	2	NW	291-335	44	5.6E-05		1.6E-01	0.7	--	0.7	--	--	--	--	--

APPENDIX Q  
FRACTURE FLOW MODEL DATABASE  
Indian Point  
Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-52	174	102.0	-85.2	less-open	50	357	344	254	6	N	336-21	45	5.6E-05	1.6E-01	0.6	--	--	--	--	--	1.4	
MW-52	175	104.6	-87.8	less-open	34	157	144	54	1	SE	116-165	49	5.6E-05	1.6E-01	2.6	20.1	--	--	--	--	--	--
MW-52	176	104.6	-87.9	less-open	51	354	341	251	6	N	336-21	45	5.6E-05	1.6E-01	0.1	--	--	--	--	--	2.6	
MW-52	177	104.8	-88.0	less-open	40	183	170	80	5	S	166-200	34	5.6E-05	1.6E-01	0.1	--	--	--	--	7.7	--	
MW-52	178	105.2	-88.5	less-open	46	198	185	95	5	S	166-200	34	5.6E-05	1.6E-01	0.5	--	--	--	--	0.5	--	
MW-52	179	106.0	-89.2	less-open	45	177	164	74	1	SE	116-165	49	5.6E-05	1.6E-01	0.8	1.4	--	--	--	--	--	
MW-52	180	108.9	-92.1	less-open	36	161	148	58	1	SE	116-165	49	5.6E-05	1.6E-01	2.9	2.9	--	--	--	--	--	
MW-52	181	109.0	-92.2	less-open	47	333	320	230	2	NW	291-335	44	5.6E-05	1.6E-01	0.1	--	7.6	--	--	--	--	
MW-52	182	109.1	-92.3	less-open	47	5	352	262	6	N	336-21	45	5.6E-05	1.6E-01	0.1	--	--	--	--	--	4.4	
MW-52	183	110.0	-93.2	less-open	48	125	112	22	3	E	70-115	45	TNP	TNP	0.9	--	--	13.4	--	--	--	
MW-52	184	111.7	-94.9	less-open	70	212	199	109	5	S	166-200	34	TNP	TNP	1.7	--	--	--	--	6.5	--	
MW-52	185	112.5	-95.7	less-open	67	220	207	117	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--	
MW-52	186	113.0	-96.2	less-open	52	354	341	251	6	N	336-21	45	TNP	TNP	0.5	--	--	--	--	--	4.0	
MW-52	187	113.5	-96.8	less-open	71	94	81	351	3	E	70-115	45	TNP	TNP	0.5	--	--	3.6	--	--	--	
MW-52	188	114.8	-98.0	less-open	67	174	161	71	1	SE	116-165	49	TNP	TNP	1.2	5.9	--	--	--	--	--	
MW-52	189	115.3	-98.6	less-open	62	106	93	3	3	E	70-115	45	TNP	TNP	0.6	--	--	1.8	--	--	--	
MW-52	190	116.5	-99.7	less-open	63	102	89	359	3	E	70-115	45	4.6E-05	1.3E-01	1.2	--	--	1.2	--	--	--	
MW-52	191	116.6	-99.8	less-open	60	99	86	356	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.1	--	--	--	
MW-52	192	117.2	-100.5	less-open	54	113	100	10	3	E	70-115	45	4.6E-05	1.3E-01	0.7	--	--	0.7	--	--	--	
MW-52	193	117.3	-100.5	less-open	56	107	94	4	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.1	--	--	--	
MW-52	194	117.7	-100.9	less-open	53	104	91	1	3	E	70-115	45	4.6E-05	1.3E-01	0.4	--	--	0.4	--	--	--	
MW-52	195	117.9	-101.1	less-open	40	112	99	9	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	196	118.5	-101.7	less-open	60	103	90	360	3	E	70-115	45	4.6E-05	1.3E-01	0.6	--	--	0.6	--	--	--	
MW-52	197	118.8	-102.0	less-open	68	103	90	360	3	E	70-115	45	4.6E-05	1.3E-01	0.3	--	--	0.3	--	--	--	
MW-52	198	118.9	-102.1	open	58	103	90	360	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.1	--	--	--	
MW-52	199	119.1	-102.3	less-open	52	107	94	4	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	200	119.2	-102.4	less-open	52	111	98	8	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.1	--	--	--	
MW-52	201	119.4	-102.6	less-open	58	120	107	17	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	202	120.0	-103.2	less-open	52	105	92	2	3	E	70-115	45	4.6E-05	1.3E-01	0.6	--	--	0.6	--	--	--	
MW-52	203	120.3	-103.6	less-open	52	101	88	358	3	E	70-115	45	4.6E-05	1.3E-01	0.3	--	--	0.3	--	--	--	
MW-52	204	120.7	-104.0	open	64	102	89	359	3	E	70-115	45	4.6E-05	1.3E-01	0.4	--	--	0.4	--	--	--	
MW-52	205	120.9	-104.1	less-open	42	129	116	26	1	SE	116-165	49	4.6E-05	1.3E-01	0.2	6.2	--	--	--	--	--	
MW-52	206	121.2	-104.5	less-open	52	118	105	15	3	E	70-115	45	4.6E-05	1.3E-01	0.3	--	--	0.5	--	--	--	
MW-52	207	121.7	-104.9	less-open	53	122	109	19	3	E	70-115	45	4.6E-05	1.3E-01	0.4	--	--	0.4	--	--	--	
MW-52	208	121.8	-105.1	less-open	50	104	91	1	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	209	122.0	-105.2	less-open	43	129	116	26	1	SE	116-165	49	4.6E-05	1.3E-01	0.1	1.1	--	--	--	--	--	
MW-52	210	122.7	-105.9	less-open	40	116	103	13	3	E	70-115	45	4.6E-05	1.3E-01	0.7	--	--	0.8	--	--	--	
MW-52	211	122.8	-106.1	less-open	57	117	104	14	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.1	--	--	--	
MW-52	212	123.3	-106.6	less-open	43	120	107	17	3	E	70-115	45	4.6E-05	1.3E-01	0.5	--	--	0.5	--	--	--	
MW-52	213	123.5	-106.8	less-open	74	115	102	12	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	214	123.8	-107.0	open	64	107	94	4	3	E	70-115	45	4.6E-05	1.3E-01	0.2	--	--	0.2	--	--	--	
MW-52	215	124.0	-107.3	less-open	32	166	153	63	NSR	NSR	NSR	NSR	4.6E-05	1.3E-01	0.3	--	--	--	--	--	--	
MW-52	216	124.0	-107.3	less-open	33	167	154	64	NSR	NSR	NSR	NSR	4.6E-05	1.3E-01	0.0	--	--	--	--	--	--	
MW-52	217	124.2	-107.4	less-open	32	155	142	52	NSR	NSR	NSR	NSR	4.6E-05	1.3E-01	0.1	--	--	--	--	--	--	
MW-52	218	124.4	-107.7	open	48	142	129	39	1	SE	116-165	49	4.6E-05	1.3E-01	0.3	2.5	--	--	--	--	--	
MW-52	219	124.6	-107.8	less-open	50	138	125	35	1	SE	116-165	49	4.6E-05	1.3E-01	0.2	0.2	--	--	--	--	--	
MW-52	220	124.7	-107.9	open	53	111	98	8	3	E	70-115	45	4.6E-05	1.3E-01	0.1	--	--	0.9	--	--	--	
MW-52	221	128.8	-112.1	less-open	10	322	309	219	NSR	NSR	NSR	NSR	TNP	TNP	4.1	--	--	--	--	--	--	
MW-52	222	133.8	-117.0	less-open	68	111	98	8	3	E	70-115	45	2.8E-05	8.0E-02	4.9	--	--	9.1	--	--	--	
MW-52	223	134.8	-118.0	less-open	68	105	92	2	3	E	70-115	45	2.8E-05	8.0E-02	1.0	--	--	1.0	--	--	--	
MW-52	224	141.4	-124.6	less-open	60	114	101	11	3	E	70-115	45	2.8E-05	8.0E-02	6.6	--	--	6.6	--	--	--	
MW-52	225	142.4	-125.6	less-open	26	246	233	143	NSR	NSR	NSR	NSR	2.8E-05	8.0E-02	1.0	--	--	--	--	--	--	
MW-52	226	144.4	-127.6	less-open	35	214	201	111	NSR	NSR	NSR	NSR	5.3E-05	1.5E-01	2.0	--	--	--	--	--	--	
MW-52	227	145.1	-128.4	less-open	33	207	194	104	NSR	NSR	NSR	NSR	5.3E-05	1.5E-01	0.8	--	--	--	--	--	--	



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-52	228	145.2	-128.4	less-open	73	320	307	217	2	NW	291-335	44	5.3E-05	1.5E-01	0.1	--	36.2	--	--	--	--	--
MW-52	229	148.4	-131.6	less-open	80	101	88	358	3	E	70-115	45	5.3E-05	1.5E-01	3.2	--	--	7.0	--	--	--	--
MW-52	230	149.7	-133.0	less-open	68	201	188	98	5	S	166-200	34	5.3E-05	1.5E-01	1.4	--	--	--	--	38.1	--	--
MW-52	231	150.4	-133.7	less-open	40	215	202	112	NSR	NSR	NSR	NSR	5.3E-05	1.5E-01	0.7	--	--	--	--	--	--	--
MW-52	232	151.4	-134.7	less-open	38	273	260	170	4	W	245-290	45	5.3E-05	1.5E-01	1.0	--	--	--	58.3	--	--	--
MW-52	233	159.2	-142.5	less-open	45	91	78	348	3	E	70-115	45	4.9E-05	1.4E-01	7.8	--	--	10.9	--	--	--	--
MW-52	234	160.1	-143.3	less-open	68	97	84	354	3	E	70-115	45	4.9E-05	1.4E-01	0.9	--	--	0.9	--	--	--	--
MW-52	235	162.4	-145.6	less-open	61	106	93	3	3	E	70-115	45	4.9E-05	1.4E-01	2.3	--	--	2.3	--	--	--	--
MW-52	236	162.7	-146.0	less-open	46	151	138	48	1	SE	116-165	49	4.9E-05	1.4E-01	0.3	38.1	--	--	--	--	--	--
MW-52	237	162.9	-146.1	less-open	60	106	93	3	3	E	70-115	45	4.9E-05	1.4E-01	0.2	--	--	0.5	--	--	--	--
MW-52	238	163.5	-146.7	less-open	48	194	181	91	5	S	166-200	34	4.9E-05	1.4E-01	0.6	--	--	--	--	13.7	--	--
MW-52	239	164.0	-147.2	less-open	46	274	261	171	4	W	245-290	45	4.9E-05	1.4E-01	0.5	--	--	--	12.6	--	--	--
MW-52	240	164.3	-147.6	less-open	50	99	86	356	3	E	70-115	45	4.9E-05	1.4E-01	0.3	--	--	1.5	--	--	--	--
MW-52	241	164.6	-147.8	less-open	64	106	93	3	3	E	70-115	45	4.9E-05	1.4E-01	0.2	--	--	0.2	--	--	--	--
MW-52	242	164.9	-148.1	less-open	49	281	268	178	4	W	245-290	45	4.9E-05	1.4E-01	0.3	--	--	--	0.8	--	--	--
MW-52	243	164.9	-148.1	less-open	67	103	90	360	3	E	70-115	45	4.9E-05	1.4E-01	0.1	--	--	0.3	--	--	--	--
MW-52	244	165.1	-148.4	less-open	59	105	92	2	3	E	70-115	45	4.9E-05	1.4E-01	0.2	--	--	0.2	--	--	--	--
MW-52	245	165.3	-148.5	less-open	58	102	89	359	3	E	70-115	45	4.9E-05	1.4E-01	0.1	--	--	0.1	--	--	--	--
MW-52	246	165.5	-148.7	less-open	60	90	77	347	3	E	70-115	45	4.9E-05	1.4E-01	0.2	--	--	0.2	--	--	--	--
MW-52	247	166.3	-149.5	less-open	66	108	95	5	3	E	70-115	45	4.9E-05	1.4E-01	0.8	--	--	0.8	--	--	--	--
MW-52	248	166.8	-150.1	less-open	60	91	78	348	3	E	70-115	45	4.9E-05	1.4E-01	0.5	--	--	0.5	--	--	--	--
MW-52	249	169.1	-152.4	less-open	74	97	84	354	3	E	70-115	45	2.1E-05	6.0E-02	2.3	--	--	2.3	--	--	--	--
MW-52	250	169.7	-153.0	less-open	70	104	91	1	3	E	70-115	45	2.1E-05	6.0E-02	0.6	--	--	0.6	--	--	--	--
MW-52	251	173.2	-156.4	less-open	64	263	250	160	4	W	245-290	45	2.1E-05	6.0E-02	3.4	--	--	--	8.3	--	--	--
MW-52	252	174.0	-157.3	less-open	62	127	114	24	3	E	70-115	45	2.1E-05	6.0E-02	0.9	--	--	4.3	--	--	--	--
MW-52	253	175.0	-158.2	less-open	29	289	276	186	NSR	NSR	NSR	NSR	2.1E-05	6.0E-02	1.0	--	--	--	--	--	--	--
MW-52	254	175.1	-158.3	less-open	60	158	145	55	1	SE	116-165	49	2.1E-05	6.0E-02	0.1	12.4	--	--	--	--	--	--
MW-52	255	175.3	-158.5	less-open	62	151	138	48	1	SE	116-165	49	2.1E-05	6.0E-02	0.2	0.2	--	--	--	--	--	--
MW-52	256	175.7	-158.9	less-open	66	145	132	42	1	SE	116-165	49	2.1E-05	6.0E-02	0.3	0.3	--	--	--	--	--	--
MW-52	257	176.5	-159.8	less-open	49	262	249	159	4	W	245-290	45	2.1E-05	6.0E-02	0.9	--	--	--	3.4	--	--	--
MW-52	258	178.5	-161.7	less-open	43	241	228	138	NSR	NSR	NSR	NSR	TNP	TNP	2.0	--	--	--	--	--	--	--
MW-52	259	179.7	-162.9	less-open	54	267	254	164	4	W	245-290	45	TNP	TNP	1.2	--	--	--	3.2	--	--	--
MW-52	260	180.1	-163.3	less-open	41	271	258	168	4	W	245-290	45	TNP	TNP	0.4	--	--	--	0.4	--	--	--
MW-52	261	180.4	-163.6	less-open	46	271	258	168	4	W	245-290	45	TNP	TNP	0.3	--	--	--	0.3	--	--	--
MW-52	262	181.2	-164.4	less-open	44	280	267	177	4	W	245-290	45	TNP	TNP	0.8	--	--	--	0.8	--	--	--
MW-52	263	182.8	-166.0	less-open	69	134	121	31	1	SE	116-165	49	TNP	TNP	1.6	7.2	--	--	--	--	--	--
MW-52	264	183.5	-166.7	less-open	73	133	120	30	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--	--
MW-52	265	184.2	-167.4	less-open	67	131	118	28	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--	--
MW-52	266	185.7	-168.9	less-open	56	120	107	17	3	E	70-115	45	TNP	TNP	1.5	--	--	11.7	--	--	--	--
MW-52	267	186.2	-169.4	less-open	73	111	98	8	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--	--
MW-52	268	187.1	-170.3	less-open	46	282	269	179	4	W	245-290	45	TNP	TNP	0.9	--	--	--	5.8	--	--	--
MW-52	269	187.3	-170.5	less-open	45	279	266	176	4	W	245-290	45	TNP	TNP	0.2	--	--	--	0.2	--	--	--
MW-52	270	188.0	-171.2	less-open	74	182	169	79	5	S	166-200	34	TNP	TNP	0.7	--	--	--	--	24.5	--	--
MW-52	271	188.8	-172.0	less-open	45	181	168	78	5	S	166-200	34	TNP	TNP	0.8	--	--	--	--	0.8	--	--
MW-52	272	190.2	-173.4	less-open	60	286	273	183	4	W	245-290	45	TNP	TNP	1.4	--	--	--	2.9	--	--	--
MW-53	1	59.49	10.8	less-open	36	212	199	109	5	S	166-200	34	0.0	3.0E-01	NA	--	--	--	--	59.5	--	--
MW-53	2	59.87	10.4	less-open	66	91	78	348	3	E	70-115	45	0.0	3.0E-01	0.4	--	--	59.9	--	--	--	--
MW-53	3	60.26	10.0	less-open	22	9	356	266	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.4	--	--	--	--	--	--	--
MW-53	4	61.46	8.8	less-open	21	186	173	83	NSR	NSR	NSR	NSR	0.0	3.0E-01	1.2	--	--	--	--	--	--	--
MW-53	5	61.52	8.7	less-open	80	239	226	136	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.1	--	--	--	--	--	--	--
MW-53	6	62.51	7.8	less-open	76	246	233	143	NSR	NSR	NSR	NSR	0.0	3.0E-01	1.0	--	--	--	--	--	--	--
MW-53	7	63.02	7.2	less-open	16	234	221	131	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.5	--	--	--	--	--	--	--
MW-53	8	63.35	6.9	less-open	76	244	231	141	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.3	--	--	--	--	--	--	--
MW-53	9	63.96	6.3	less-open	80	249	236	146	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.6	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-53	10	64.71	5.6	less-open	81	250	237	147	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.7	--	--	--	--	--	--
MW-53	11	64.93	5.3	less-open	24	211	198	108	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.2	--	--	--	--	--	--
MW-53	12	65.3	5.0	less-open	20	200	187	97	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.4	--	--	--	--	--	--
MW-53	13	66.26	4.0	less-open	55	110	97	7	3	E	70-115	45	0.0	3.0E-01	1.0	--	--	6.4	--	--	--
MW-53	14	66.92	3.3	less-open	31	208	195	105	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.7	--	--	--	--	--	--
MW-53	15	66.93	3.3	less-open	74	243	230	140	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.0	--	--	--	--	--	--
MW-53	16	67.07	3.2	less-open	59	49	36	306	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.1	--	--	--	--	--	--
MW-53	17	67.58	2.7	less-open	17	340	327	237	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.5	--	--	--	--	--	--
MW-53	18	68.22	2.0	less-open	79	244	231	141	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.6	--	--	--	--	--	--
MW-53	19	68.89	1.4	less-open	51	101	88	358	3	E	70-115	45	0.0	3.0E-01	0.7	--	--	2.6	--	--	--
MW-53	20	69.39	0.9	less-open	17	298	285	195	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.5	--	--	--	--	--	--
MW-53	21	70.71	-0.4	less-open	43	82	69	339	NSR	NSR	NSR	NSR	0.0	3.0E-01	1.3	--	--	--	--	--	--
MW-53	22	72.16	-1.9	less-open	46	225	212	122	NSR	NSR	NSR	NSR	0.0	3.0E-01	1.5	--	--	--	--	--	--
MW-53	23	72.43	-2.2	less-open	47	72	59	329	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.3	--	--	--	--	--	--
MW-53	24	72.64	-2.4	less-open	44	61	48	318	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.2	--	--	--	--	--	--
MW-53	25	72.87	-2.6	less-open	37	81	68	338	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.2	--	--	--	--	--	--
MW-53	26	72.97	-2.7	less-open	66	304	291	201	2	NW	291-335	44	0.0	3.0E-01	0.1	--	73.0	--	--	--	--
MW-53	27	73.11	-2.8	less-open	46	82	69	339	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.1	--	--	--	--	--	--
MW-53	28	73.29	-3.0	less-open	10	267	254	164	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.2	--	--	--	--	--	--
MW-53	29	73.32	-3.1	less-open	38	113	100	10	3	E	70-115	45	0.0	3.0E-01	0.0	--	--	4.4	--	--	--
MW-53	30	73.64	-3.4	less-open	33	331	318	228	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.3	--	--	--	--	--	--
MW-53	31	73.84	-3.6	less-open	64	83	70	340	3	E	70-115	45	0.0	3.0E-01	0.2	--	--	0.5	--	--	--
MW-53	32	73.94	-3.7	less-open	65	89	76	346	3	E	70-115	45	0.0	3.0E-01	0.1	--	--	0.1	--	--	--
MW-53	33	74.26	-4.0	less-open	53	93	80	350	3	E	70-115	45	0.0	3.0E-01	0.3	--	--	0.3	--	--	--
MW-53	34	74.36	-4.1	less-open	54	97	84	354	3	E	70-115	45	0.0	3.0E-01	0.1	--	--	0.1	--	--	--
MW-53	35	74.47	-4.2	less-open	56	85	72	342	3	E	70-115	45	0.0	3.0E-01	0.1	--	--	0.1	--	--	--
MW-53	36	74.69	-4.4	less-open	51	73	60	330	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.2	--	--	--	--	--	--
MW-53	37	75.09	-4.8	less-open	57	94	81	351	3	E	70-115	45	0.0	3.0E-01	0.4	--	--	0.6	--	--	--
MW-53	38	75.44	-5.2	less-open	58	95	82	352	3	E	70-115	45	0.0	3.0E-01	0.3	--	--	0.3	--	--	--
MW-53	39	75.55	-5.3	less-open	53	87	74	344	3	E	70-115	45	0.0	3.0E-01	0.1	--	--	0.1	--	--	--
MW-53	40	75.73	-5.5	less-open	58	128	115	25	3	E	70-115	45	0.0	3.0E-01	0.2	--	--	0.2	--	--	--
MW-53	41	76.2	-5.9	less-open	60	91	78	348	3	E	70-115	45	0.0	3.0E-01	0.5	--	--	0.5	--	--	--
MW-53	42	76.35	-6.1	less-open	35	84	71	341	3	E	70-115	45	0.0	3.0E-01	0.1	--	--	0.1	--	--	--
MW-53	43	76.39	-6.1	less-open	44	81	68	338	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.0	--	--	--	--	--	--
MW-53	44	76.8	-6.5	less-open	43	79	66	336	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.4	--	--	--	--	--	--
MW-53	45	77.26	-7.0	less-open	50	97	84	354	3	E	70-115	45	0.0	3.0E-01	0.5	--	--	0.9	--	--	--
MW-53	46	77.98	-7.7	less-open	63	97	84	354	3	E	70-115	45	0.0	3.0E-01	0.7	--	--	0.7	--	--	--
MW-53	47	78.86	-8.6	less-open	58	91	78	348	3	E	70-115	45	0.0	3.0E-01	0.9	--	--	0.9	--	--	--
MW-53	48	79.55	-9.3	less-open	48	81	68	338	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.7	--	--	--	--	--	--
MW-53	49	79.68	-9.4	less-open	27	249	236	146	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.1	--	--	--	--	--	--
MW-53	50	79.73	-9.5	less-open	40	67	54	324	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.0	--	--	--	--	--	--
MW-53	51	83.82	-13.6	less-open	39	283	270	180	4	W	245-290	45	0.0	3.0E-01	4.1	--	--	--	83.8	--	--
MW-53	52	83.96	-13.7	less-open	20	228	215	125	NSR	NSR	NSR	NSR	0.0	3.0E-01	0.1	--	--	--	--	--	--
MW-53	53	85.22	-15.0	less-open	83	176	163	73	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--
MW-53	54	85.75	-15.5	less-open	83	182	169	79	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-53	55	87.78	-17.5	less-open	49	174	161	71	1	SE	116-165	49	TNP	TNP	2.0	87.8	--	--	--	--	--
MW-53	56	87.98	-17.7	less-open	18	177	164	74	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-53	57	90.57	-20.3	less-open	43	278	265	175	4	W	245-290	45	TNP	TNP	2.6	--	--	--	6.8	--	--
MW-53	58	90.66	-20.4	less-open	34	71	58	328	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-53	59	91.5	-21.2	less-open	77	283	270	180	4	W	245-290	45	TNP	TNP	0.8	--	--	--	0.9	--	--
MW-53	60	91.51	-21.3	less-open	49	124	111	21	3	E	70-115	45	TNP	TNP	0.0	--	--	12.7	--	--	--
MW-53	61	92.29	-22.0	less-open	39	292	279	189	4	W	245-290	45	TNP	TNP	0.8	--	--	--	0.8	--	--
MW-53	62	92.76	-22.5	less-open	23	223	210	120	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-53	63	93.8	-23.5	less-open	27	301	288	198	NSR	NSR	NSR	NSR	TNP	TNP	1.0	--	--	--	--	--	--

APPENDIX Q  
FRACTURE FLOW MODEL DATABASE  
Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-53	64	94.12	-23.9	less-open	33	231	218	128	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-53	65	94.51	-24.3	less-open	54	297	284	194	4	W	245-290	45	TNP	TNP	0.4	--	--	--	2.2	--	--
MW-53	66	95	-24.7	less-open	64	166	153	63	1	SE	116-165	49	TNP	TNP	0.5	7.2	--	--	--	--	--
MW-53	67	95.28	-25.0	less-open	66	149	136	46	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-53	68	95.92	-25.7	less-open	50	98	85	355	3	E	70-115	45	TNP	TNP	0.6	--	--	4.4	--	--	--
MW-53	69	96.21	-26.0	less-open	34	214	201	111	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-53	70	96.82	-26.6	less-open	78	97	84	354	3	E	70-115	45	TNP	TNP	0.6	--	--	0.9	--	--	--
MW-53	71	98.29	-28.0	less-open	75	73	60	330	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-53	72	100.16	-29.9	less-open	44	87	74	344	3	E	70-115	45	0.0	1.5E-01	1.9	--	--	3.3	--	--	--
MW-53	73	100.81	-30.6	less-open	47	318	305	215	2	NW	291-335	44	0.0	1.5E-01	0.7	--	27.8	--	--	--	--
MW-53	74	101.34	-31.1	less-open	40	307	294	204	2	NW	291-335	44	0.0	1.5E-01	0.5	--	0.5	--	--	--	--
MW-53	75	101.65	-31.4	less-open	57	286	273	183	4	W	245-290	45	0.0	1.5E-01	0.3	--	--	--	7.1	--	--
MW-53	76	103.35	-33.1	less-open	68	78	65	335	NSR	NSR	NSR	NSR	0.0	1.5E-01	1.7	--	--	--	--	--	--
MW-53	77	103.37	-33.1	less-open	43	319	306	216	2	NW	291-335	44	0.0	1.5E-01	0.0	--	2.0	--	--	--	--
MW-53	78	103.62	-33.4	less-open	42	241	228	138	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.3	--	--	--	--	--	--
MW-53	79	103.96	-33.7	less-open	70	76	63	333	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.3	--	--	--	--	--	--
MW-53	80	104.57	-34.3	less-open	68	73	60	330	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.6	--	--	--	--	--	--
MW-53	81	104.65	-34.4	less-open	39	273	260	170	4	W	245-290	45	0.0	1.5E-01	0.1	--	--	--	3.0	--	--
MW-53	82	104.85	-34.6	less-open	48	273	260	170	4	W	245-290	45	0.0	1.5E-01	0.2	--	--	--	0.2	--	--
MW-53	83	105.48	-35.2	less-open	25	303	290	200	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.6	--	--	--	--	--	--
MW-53	84	105.75	-35.5	less-open	23	281	268	178	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.3	--	--	--	--	--	--
MW-53	85	106.77	-36.5	less-open	25	300	287	197	NSR	NSR	NSR	NSR	0.0	1.5E-01	1.0	--	--	--	--	--	--
MW-53	86	106.85	-36.6	less-open	27	270	257	167	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.1	--	--	--	--	--	--
MW-53	87	108.23	-38.0	less-open	63	176	163	73	1	SE	116-165	49	0.0	1.5E-01	1.4	13.0	--	--	--	--	--
MW-53	88	109.11	-38.9	less-open	47	170	157	67	1	SE	116-165	49	0.0	1.5E-01	0.9	0.9	--	--	--	--	--
MW-53	89	109.67	-39.4	less-open	32	0	347	257	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.6	--	--	--	--	--	--
MW-53	90	110.19	-39.9	less-open	33	310	297	207	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.5	--	--	--	--	--	--
MW-53	91	110.61	-40.4	less-open	42	303	290	200	4	W	245-290	45	0.0	1.5E-01	0.4	--	--	--	5.8	--	--
MW-53	92	110.8	-40.5	less-open	39	313	300	210	2	NW	291-335	44	0.0	1.5E-01	0.2	--	7.4	--	--	--	--
MW-53	93	111.13	-40.9	less-open	36	301	288	198	4	W	245-290	45	0.0	1.5E-01	0.3	--	--	--	0.5	--	--
MW-53	94	111.56	-41.3	less-open	30	281	268	178	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.4	--	--	--	--	--	--
MW-53	95	113.18	-42.9	less-open	36	282	269	179	4	W	245-290	45	0.0	1.5E-01	1.6	--	--	--	2.1	--	--
MW-53	96	113.37	-43.1	less-open	30	267	254	164	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.2	--	--	--	--	--	--
MW-53	97	114.51	-44.3	less-open	17	294	281	191	NSR	NSR	NSR	NSR	0.0	1.5E-01	1.1	--	--	--	--	--	--
MW-53	98	114.95	-44.7	less-open	39	322	309	219	2	NW	291-335	44	0.0	1.5E-01	0.4	--	4.2	--	--	--	--
MW-53	99	116.43	-46.2	less-open	46	307	294	204	2	NW	291-335	44	0.0	1.5E-01	1.5	--	1.5	--	--	--	--
MW-53	100	116.66	-46.4	less-open	42	318	305	215	2	NW	291-335	44	0.0	1.5E-01	0.2	--	0.2	--	--	--	--
MW-53	101	117.27	-47.0	less-open	39	312	299	209	2	NW	291-335	44	0.0	1.5E-01	0.6	--	0.6	--	--	--	--
MW-53	102	117.44	-47.2	less-open	34	282	269	179	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.2	--	--	--	--	--	--
MW-53	103	117.78	-47.5	less-open	28	258	245	155	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.3	--	--	--	--	--	--
MW-53	104	118.4	-48.1	less-open	19	307	294	204	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.6	--	--	--	--	--	--
MW-53	105	119.38	-49.1	less-open	36	310	297	207	2	NW	291-335	44	0.0	1.5E-01	1.0	--	2.1	--	--	--	--
MW-53	106	119.61	-49.4	less-open	90	61	48	318	NSR	NSR	NSR	NSR	0.0	1.5E-01	0.2	--	--	--	--	--	--
MW-53	107	124.11	-53.9	less-open	9	161	148	58	NSR	NSR	NSR	NSR	TNP	TNP	4.5	--	--	--	--	--	--
MW-54	1	20.71	-5.7	less-open	68	48	35	305	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	NA	--	--	--	--	--	--
MW-54	2	21.20	-6.2	less-open	58	70	57	327	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.5	--	--	--	--	--	--
MW-54	3	21.41	-6.4	less-open	53	55	42	312	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.2	--	--	--	--	--	--
MW-54	4	21.52	-6.5	less-open	52	58	45	315	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.1	--	--	--	--	--	--
MW-54	5	22.36	-7.4	less-open	52	74	61	331	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.8	--	--	--	--	--	--
MW-54	6	22.60	-7.6	less-open	65	55	42	312	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.2	--	--	--	--	--	--
MW-54	7	22.79	-7.8	less-open	45	74	61	331	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.2	--	--	--	--	--	--
MW-54	8	23.14	-8.2	less-open	61	85	72	342	3	E	70-115	45	7.8E-05	2.2E-01	0.4	--	--	23.1	--	--	--
MW-54	9	23.32	-8.3	less-open	40	246	233	143	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.2	--	--	--	--	--	--
MW-54	10	23.37	-8.4	less-open	27	232	219	129	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.1	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-54	11	23.41	-8.4	less-open	20	235	222	132	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.0	--	--	--	--	--	--
MW-54	12	23.66	-8.7	less-open	70	66	53	323	NSR	NSR	NSR	NSR	7.8E-05	2.2E-01	0.3	--	--	--	--	--	--
MW-54	13	25.25	-10.3	less-open	31	224	211	121	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	1.6	--	--	--	--	--	--
MW-54	14	25.82	-10.8	less-open	6	252	239	149	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.6	--	--	--	--	--	--
MW-54	15	26.11	-11.1	less-open	5	305	292	202	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.3	--	--	--	--	--	--
MW-54	16	26.45	-11.5	less-open	8	256	243	153	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.3	--	--	--	--	--	--
MW-54	17	27.60	-12.6	less-open	75	60	47	317	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	1.2	--	--	--	--	--	--
MW-54	18	28.65	-13.7	less-open	43	63	50	320	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	1.1	--	--	--	--	--	--
MW-54	19	31.48	-16.5	less-open	65	142	129	39	1	SE	116-165	49	1.7E-04	4.7E-01	2.8	31.5	--	--	--	--	--
MW-54	20	31.80	-16.8	less-open	55	303	290	200	4	W	245-290	45	1.7E-04	4.7E-01	0.3	--	--	--	31.8	--	--
MW-54	21	32.45	-17.5	less-open	19	305	292	202	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.7	--	--	--	--	--	--
MW-54	22	32.53	-17.5	less-open	18	269	256	166	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.1	--	--	--	--	--	--
MW-54	23	32.65	-17.7	less-open	68	111	98	8	3	E	70-115	45	1.7E-04	4.7E-01	0.1	--	--	9.5	--	--	--
MW-54	24	32.97	-18.0	less-open	64	101	88	358	3	E	70-115	45	1.7E-04	4.7E-01	0.3	--	--	0.3	--	--	--
MW-54	25	33.16	-18.2	less-open	68	99	86	356	3	E	70-115	45	1.7E-04	4.7E-01	0.2	--	--	0.2	--	--	--
MW-54	26	33.45	-18.5	less-open	72	80	67	337	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.3	--	--	--	--	--	--
MW-54	27	33.59	-18.6	less-open	72	85	72	342	3	E	70-115	45	1.7E-04	4.7E-01	0.1	--	--	0.4	--	--	--
MW-54	28	33.79	-18.8	less-open	72	85	72	342	3	E	70-115	45	1.7E-04	4.7E-01	0.2	--	--	0.2	--	--	--
MW-54	29	33.98	-19.0	less-open	72	85	72	342	3	E	70-115	45	1.7E-04	4.7E-01	0.2	--	--	0.2	--	--	--
MW-54	30	34.40	-19.4	less-open	67	87	74	344	3	E	70-115	45	1.7E-04	4.7E-01	0.4	--	--	0.4	--	--	--
MW-54	31	34.51	-19.5	less-open	66	104	91	1	3	E	70-115	45	1.7E-04	4.7E-01	0.1	--	--	0.1	--	--	--
MW-54	32	34.82	-19.8	less-open	35	79	66	336	NSR	NSR	NSR	NSR	1.7E-04	4.7E-01	0.3	--	--	--	--	--	--
MW-54	33	35.39	-20.4	less-open	71	116	103	13	3	E	70-115	45	2.4E-04	6.9E-01	0.6	--	--	0.9	--	--	--
MW-54	34	35.54	-20.6	less-open	60	98	85	355	3	E	70-115	45	2.4E-04	6.9E-01	0.1	--	--	0.1	--	--	--
MW-54	35	35.55	-20.6	less-open	71	127	114	24	3	E	70-115	45	2.4E-04	6.9E-01	0.0	--	--	0.0	--	--	--
MW-54	36	36.28	-21.3	less-open	71	89	76	346	3	E	70-115	45	2.4E-04	6.9E-01	0.7	--	--	0.7	--	--	--
MW-54	37	37.22	-22.2	less-open	80	90	77	347	3	E	70-115	45	2.4E-04	6.9E-01	0.9	--	--	0.9	--	--	--
MW-54	38	37.66	-22.7	open	75	94	81	351	3	E	70-115	45	2.4E-04	6.9E-01	0.4	--	--	0.4	--	--	--
MW-54	39	38.47	-23.5	less-open	46	300	287	197	4	W	245-290	45	2.4E-04	6.9E-01	0.8	--	--	--	6.7	--	--
MW-54	40	38.76	-23.8	less-open	38	278	265	175	4	W	245-290	45	2.4E-04	6.9E-01	0.3	--	--	--	0.3	--	--
MW-54	41	39.40	-24.4	less-open	67	65	52	322	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	0.6	--	--	--	--	--	--
MW-54	42	39.43	-24.4	less-open	29	230	217	127	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	0.0	--	--	--	--	--	--
MW-54	43	39.82	-24.8	less-open	67	100	87	357	3	E	70-115	45	2.4E-04	6.9E-01	0.4	--	--	2.2	--	--	--
MW-54	44	41.26	-26.3	less-open	42	248	235	145	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	1.4	--	--	--	--	--	--
MW-54	45	43.44	-28.5	less-open	69	357	344	254	6	N	336-21	45	2.4E-04	6.9E-01	2.2	--	--	--	--	--	43.4
MW-54	46	43.64	-28.7	less-open	72	97	84	354	3	E	70-115	45	2.4E-04	6.9E-01	0.2	--	--	3.8	--	--	--
MW-54	47	43.64	-28.7	less-open	61	75	62	332	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	0.0	--	--	--	--	--	--
MW-54	48	44.43	-29.4	less-open	21	113	100	10	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	0.8	--	--	--	--	--	--
MW-54	49	45.99	-31.0	less-open	68	286	273	183	4	W	245-290	45	2.4E-04	6.9E-01	1.6	--	--	--	7.2	--	--
MW-54	50	47.02	-32.0	less-open	77	312	299	209	2	NW	291-335	44	2.4E-04	6.9E-01	1.0	--	47.0	--	--	--	--
MW-54	51	48.78	-33.8	less-open	77	91	78	348	3	E	70-115	45	2.4E-04	6.9E-01	1.8	--	--	5.1	--	--	--
MW-54	52	49.92	-34.9	less-open	75	93	80	350	3	E	70-115	45	2.4E-04	6.9E-01	1.1	--	--	1.1	--	--	--
MW-54	53	50.11	-35.1	less-open	66	96	83	353	3	E	70-115	45	2.4E-04	6.9E-01	0.2	--	--	0.2	--	--	--
MW-54	54	50.18	-35.2	less-open	40	137	124	34	1	SE	116-165	49	2.4E-04	6.9E-01	0.1	18.7	--	--	--	--	--
MW-54	55	50.30	-35.3	less-open	71	97	84	354	3	E	70-115	45	2.4E-04	6.9E-01	0.1	--	--	0.2	--	--	--
MW-54	56	50.74	-35.8	less-open	67	102	89	359	3	E	70-115	45	2.4E-04	6.9E-01	0.4	--	--	0.4	--	--	--
MW-54	57	51.21	-36.2	less-open	67	92	79	349	3	E	70-115	45	2.4E-04	6.9E-01	0.5	--	--	0.5	--	--	--
MW-54	58	52.70	-37.7	less-open	34	213	200	110	5	S	166-200	34	2.4E-04	6.9E-01	1.5	--	--	--	--	52.7	--
MW-54	59	53.21	-38.2	less-open	59	98	85	355	3	E	70-115	45	2.4E-04	6.9E-01	0.5	--	--	2.0	--	--	--
MW-54	60	53.26	-38.3	less-open	18	127	114	24	NSR	NSR	NSR	NSR	2.4E-04	6.9E-01	0.0	--	--	--	--	--	--
MW-54	61	54.21	-39.2	less-open	11	173	160	70	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.0	--	--	--	--	--	--
MW-54	62	54.29	-39.3	less-open	5	255	242	152	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	0.1	--	--	--	--	--	--
MW-54	63	55.13	-40.1	less-open	66	116	103	13	3	E	70-115	45	1.4E-04	4.0E-01	0.8	--	--	1.9	--	--	--
MW-54	64	55.52	-40.5	less-open	61	118	105	15	3	E	70-115	45	1.4E-04	4.0E-01	0.4	--	--	0.4	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-54	65	55.82	-40.8	less-open	57	110	97	7	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.3	--	--	--	--	--
MW-54	66	56.38	-41.4	less-open	55	100	87	357	3	E	70-115	45	1.4E-04	4.0E-01	0.6	--	--	0.6	--	--	--	--	--
MW-54	67	56.70	-41.7	less-open	65	102	89	359	3	E	70-115	45	1.4E-04	4.0E-01	0.3	--	--	0.3	--	--	--	--	--
MW-54	68	57.66	-42.7	less-open	76	76	63	333	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.0	--	--	--	--	--	--	--	--
MW-54	69	58.87	-43.9	less-open	33	345	332	242	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.2	--	--	--	--	--	--	--	--
MW-54	70	59.20	-44.2	less-open	60	326	313	223	2	NW	291-335	44	1.4E-04	4.0E-01	0.3	--	12.2	--	--	--	--	--	--
MW-54	71	59.43	-44.4	less-open	39	110	97	7	3	E	70-115	45	1.4E-04	4.0E-01	0.2	--	--	2.7	--	--	--	--	--
MW-54	72	59.56	-44.6	less-open	59	334	321	231	2	NW	291-335	44	1.4E-04	4.0E-01	0.1	--	0.4	--	--	--	--	--	--
MW-54	73	60.81	-45.8	less-open	51	77	64	334	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.3	--	--	--	--	--	--	--	--
MW-54	74	61.18	-46.2	less-open	63	323	310	220	2	NW	291-335	44	1.4E-04	4.0E-01	0.4	--	1.6	--	--	--	--	--	--
MW-54	75	61.48	-46.5	open	70	289	276	186	4	W	245-290	45	1.4E-04	4.0E-01	0.3	--	--	--	15.5	--	--	--	--
MW-54	76	61.77	-46.8	less-open	54	293	280	190	4	W	245-290	45	1.4E-04	4.0E-01	0.3	--	--	--	0.3	--	--	--	--
MW-54	77	62.54	-47.6	less-open	40	343	330	240	2	NW	291-335	44	1.4E-04	4.0E-01	0.8	--	1.4	--	--	--	--	--	--
MW-54	78	62.90	-47.9	less-open	37	347	334	244	2	NW	291-335	44	1.4E-04	4.0E-01	0.4	--	0.4	--	--	--	--	--	--
MW-54	79	64.24	-49.3	less-open	22	317	304	214	NSR	NSR	NSR	NSR	1.4E-04	4.0E-01	1.3	--	--	--	--	--	--	--	--
MW-54	80	64.90	-49.9	less-open	77	132	119	29	1	SE	116-165	49	9.8E-05	2.8E-01	0.7	14.7	--	--	--	--	--	--	--
MW-54	81	65.14	-50.2	less-open	75	129	116	26	1	SE	116-165	49	9.8E-05	2.8E-01	0.2	0.2	--	--	--	--	--	--	--
MW-54	82	66.50	-51.5	less-open	67	315	302	212	2	NW	291-335	44	9.8E-05	2.8E-01	1.4	--	3.6	--	--	--	--	--	--
MW-54	83	67.36	-52.4	less-open	51	1	348	258	6	N	336-21	45	9.8E-05	2.8E-01	0.9	--	--	--	--	--	--	23.9	--
MW-54	84	68.03	-53.0	less-open	60	353	340	250	6	N	336-21	45	9.8E-05	2.8E-01	0.7	--	--	--	--	--	--	0.7	--
MW-54	85	68.45	-53.5	less-open	57	347	334	244	2	NW	291-335	44	9.8E-05	2.8E-01	0.4	--	2.0	--	--	--	--	--	--
MW-54	86	68.52	-53.5	less-open	71	358	345	255	6	N	336-21	45	9.8E-05	2.8E-01	0.1	--	--	--	--	--	--	0.5	--
MW-54	87	68.92	-53.9	less-open	74	341	328	238	2	NW	291-335	44	9.8E-05	2.8E-01	0.4	--	0.5	--	--	--	--	--	--
MW-54	88	69.29	-54.3	less-open	64	344	331	241	2	NW	291-335	44	9.8E-05	2.8E-01	0.4	--	0.4	--	--	--	--	--	--
MW-54	89	69.38	-54.4	less-open	54	105	92	2	3	E	70-115	45	9.8E-05	2.8E-01	0.1	--	--	10.0	--	--	--	--	--
MW-54	90	70.25	-55.3	less-open	60	98	85	355	3	E	70-115	45	9.8E-05	2.8E-01	0.9	--	--	0.9	--	--	--	--	--
MW-54	91	70.72	-55.7	less-open	63	115	102	12	3	E	70-115	45	9.8E-05	2.8E-01	0.5	--	--	0.5	--	--	--	--	--
MW-54	92	70.86	-55.9	less-open	52	342	329	239	2	NW	291-335	44	9.8E-05	2.8E-01	0.1	--	1.6	--	--	--	--	--	--
MW-54	93	71.09	-56.1	less-open	44	308	295	205	2	NW	291-335	44	9.8E-05	2.8E-01	0.2	--	0.2	--	--	--	--	--	--
MW-54	94	71.27	-56.3	less-open	55	324	311	221	2	NW	291-335	44	9.8E-05	2.8E-01	0.2	--	0.2	--	--	--	--	--	--
MW-54	95	72.00	-57.0	less-open	72	107	94	4	3	E	70-115	45	9.8E-05	2.8E-01	0.7	--	--	1.3	--	--	--	--	--
MW-54	96	72.19	-57.2	less-open	69	104	91	1	3	E	70-115	45	9.8E-05	2.8E-01	0.2	--	--	0.2	--	--	--	--	--
MW-54	97	72.71	-57.7	less-open	67	108	95	5	3	E	70-115	45	9.8E-05	2.8E-01	0.5	--	--	0.5	--	--	--	--	--
MW-54	98	73.48	-58.5	less-open	68	100	87	357	3	E	70-115	45	9.8E-05	2.8E-01	0.8	--	--	0.8	--	--	--	--	--
MW-54	99	74.00	-59.0	less-open	67	102	89	359	3	E	70-115	45	9.8E-05	2.8E-01	0.5	--	--	0.5	--	--	--	--	--
MW-54	100	74.48	-59.5	less-open	74	107	94	4	3	E	70-115	45	6.0E-05	1.7E-01	0.5	--	--	0.5	--	--	--	--	--
MW-54	101	75.56	-60.6	less-open	71	279	266	176	4	W	245-290	45	6.0E-05	1.7E-01	1.1	--	--	--	13.8	--	--	--	--
MW-54	102	76.13	-61.1	less-open	76	321	308	218	2	NW	291-335	44	6.0E-05	1.7E-01	0.6	--	4.9	--	--	--	--	--	--
MW-54	103	76.24	-61.3	less-open	65	102	89	359	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	1.8	--	--	--	--	--
MW-54	104	77.22	-62.2	less-open	43	106	93	3	3	E	70-115	45	6.0E-05	1.7E-01	1.0	--	--	1.0	--	--	--	--	--
MW-54	105	77.25	-62.3	less-open	66	98	85	355	3	E	70-115	45	6.0E-05	1.7E-01	0.0	--	--	0.0	--	--	--	--	--
MW-54	106	77.43	-62.4	less-open	60	112	99	9	3	E	70-115	45	6.0E-05	1.7E-01	0.2	--	--	0.2	--	--	--	--	--
MW-54	107	78.78	-63.8	less-open	82	108	95	5	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	1.3	--	--	--	--	--	--	--	--
MW-54	108	79.9	-64.9	less-open	55	208	195	105	5	S	166-200	34	6.0E-05	1.7E-01	1.1	--	--	--	--	--	27.2	--	--
MW-54	109	80.4	-65.4	less-open	43	201	188	98	5	S	166-200	34	6.0E-05	1.7E-01	0.5	--	--	--	--	--	0.5	--	--
MW-54	110	80.97	-66.0	less-open	51	197	184	94	5	S	166-200	34	6.0E-05	1.7E-01	0.6	--	--	--	--	--	0.6	--	--
MW-54	111	81.31	-66.3	less-open	37	152	139	49	1	SE	116-165	49	6.0E-05	1.7E-01	0.3	16.2	--	--	--	--	--	--	--
MW-54	112	82.49	-67.5	less-open	39	65	52	322	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	1.2	--	--	--	--	--	--	--	--
MW-54	113	84.73	-69.7	less-open	55	201	188	98	5	S	166-200	34	1.1E-04	3.0E-01	2.2	--	--	--	--	--	3.8	--	--
MW-54	114	85.38	-70.4	less-open	68	342	329	239	2	NW	291-335	44	1.1E-04	3.0E-01	0.6	--	9.3	--	--	--	--	--	--
MW-54	115	86.44	-71.5	less-open	76	330	317	227	2	NW	291-335	44	1.1E-04	3.0E-01	1.1	--	1.1	--	--	--	--	--	--
MW-54	116	87.15	-72.2	less-open	49	355	342	252	6	N	336-21	45	1.1E-04	3.0E-01	0.7	--	--	--	--	--	--	18.6	--
MW-54	117	87.27	-72.3	less-open	49	343	330	240	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	--	0.8	--	--	--	--	--
MW-54	118	88.01	-73.0	less-open	61	326	313	223	2	NW	291-335	44	1.1E-04	3.0E-01	0.7	--	0.7	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-54	119	88.18	-73.2	less-open	55	323	310	220	2	NW	291-335	44	1.1E-04	3.0E-01	0.2	--	0.2	--	--	--	--	--
MW-54	120	88.95	-74.0	less-open	72	115	102	12	3	E	70-115	45	1.1E-04	3.0E-01	0.8	--	--	11.5	--	--	--	--
MW-54	121	89.87	-74.9	less-open	67	330	317	227	2	NW	291-335	44	1.1E-04	3.0E-01	0.9	--	1.7	--	--	--	--	--
MW-54	122	90.03	-75.0	less-open	61	357	344	254	6	N	336-21	45	1.1E-04	3.0E-01	0.2	--	--	--	--	--	--	2.9
MW-54	123	90.32	-75.3	less-open	68	6	353	263	6	N	336-21	45	1.1E-04	3.0E-01	0.3	--	--	--	--	--	--	0.3
MW-54	124	90.45	-75.5	less-open	22	90	77	347	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.1	--	--	--	--	--	--	--
MW-54	125	91.5	-76.5	less-open	61	330	317	227	2	NW	291-335	44	1.1E-04	3.0E-01	1.1	--	1.6	--	--	--	--	--
MW-54	126	91.8	-76.8	less-open	54	313	300	210	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	0.3	--	--	--	--	--
MW-54	127	92.37	-77.4	less-open	75	148	135	45	1	SE	116-165	49	1.1E-04	3.0E-01	0.6	11.1	--	--	--	--	--	--
MW-54	128	92.5	-77.5	less-open	57	346	333	243	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.7	--	--	--	--	--
MW-54	129	93.33	-78.3	less-open	66	150	137	47	1	SE	116-165	49	1.1E-04	3.0E-01	0.8	1.0	--	--	--	--	--	--
MW-54	130	93.85	-78.9	less-open	77	148	135	45	1	SE	116-165	49	1.1E-04	3.0E-01	0.5	0.5	--	--	--	--	--	--
MW-54	131	95.47	-80.5	less-open	37	267	254	164	4	W	245-290	45	1.1E-04	3.0E-01	1.6	--	--	--	19.9	--	--	--
MW-54	132	96.07	-81.1	less-open	58	120	107	17	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	7.1	--	--	--	--
MW-54	133	97.15	-82.2	less-open	65	307	294	204	2	NW	291-335	44	1.1E-04	3.0E-01	1.1	--	4.7	--	--	--	--	--
MW-54	134	97.62	-82.6	less-open	65	145	132	42	1	SE	116-165	49	1.1E-04	3.0E-01	0.5	3.8	--	--	--	--	--	--
MW-54	135	97.65	-82.7	less-open	64	297	284	194	4	W	245-290	45	1.1E-04	3.0E-01	0.0	--	--	--	2.2	--	--	--
MW-54	136	97.78	-82.8	less-open	32	127	114	24	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.1	--	--	--	--	--	--	--
MW-54	137	98.28	-83.3	less-open	49	90	77	347	3	E	70-115	45	1.1E-04	3.0E-01	0.5	--	--	2.2	--	--	--	--
MW-54	138	98.33	-83.3	less-open	41	204	191	101	5	S	166-200	34	1.1E-04	3.0E-01	0.0	--	--	--	--	--	13.6	--
MW-54	139	98.89	-83.9	less-open	80	118	105	15	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	0.6	--	--	--	--
MW-54	140	100.31	-85.3	less-open	65	90	77	347	3	E	70-115	45	1.1E-04	3.0E-01	1.4	--	--	1.4	--	--	--	--
MW-54	141	101.02	-86.0	less-open	73	140	127	37	1	SE	116-165	49	1.6E-04	4.5E-01	0.7	3.4	--	--	--	--	--	--
MW-54	142	101.48	-86.5	less-open	60	134	121	31	1	SE	116-165	49	1.6E-04	4.5E-01	0.5	0.5	--	--	--	--	--	--
MW-54	143	101.99	-87.0	less-open	68	341	328	238	2	NW	291-335	44	1.6E-04	4.5E-01	0.5	--	4.8	--	--	--	--	--
MW-54	144	102.21	-87.2	less-open	58	87	74	344	3	E	70-115	45	1.6E-04	4.5E-01	0.2	--	--	1.9	--	--	--	--
MW-54	145	102.57	-87.6	less-open	54	98	85	355	3	E	70-115	45	1.6E-04	4.5E-01	0.4	--	--	0.4	--	--	--	--
MW-54	146	102.96	-88.0	less-open	58	88	75	345	3	E	70-115	45	1.6E-04	4.5E-01	0.4	--	--	0.4	--	--	--	--
MW-54	147	103.22	-88.2	less-open	64	94	81	351	3	E	70-115	45	1.6E-04	4.5E-01	0.3	--	--	0.3	--	--	--	--
MW-54	148	104.37	-89.4	less-open	66	131	118	28	1	SE	116-165	49	1.6E-04	4.5E-01	1.2	2.9	--	--	--	--	--	--
MW-54	149	105.64	-90.7	less-open	60	183	170	80	5	S	166-200	34	1.6E-04	4.5E-01	1.3	--	--	--	--	--	7.3	--
MW-54	150	105.7	-90.7	less-open	72	296	283	193	4	W	245-290	45	1.6E-04	4.5E-01	0.1	--	--	--	8.1	--	--	--
MW-54	151	106.64	-91.7	less-open	50	129	116	26	1	SE	116-165	49	1.6E-04	4.5E-01	0.9	2.3	--	--	--	--	--	--
MW-54	152	106.65	-91.7	less-open	72	301	288	198	4	W	245-290	45	1.6E-04	4.5E-01	0.0	--	--	--	1.0	--	--	--
MW-54	153	107.08	-92.1	less-open	72	302	289	199	4	W	245-290	45	1.6E-04	4.5E-01	0.4	--	--	--	0.4	--	--	--
MW-54	154	107.56	-92.6	less-open	41	285	272	182	4	W	245-290	45	1.6E-04	4.5E-01	0.5	--	--	--	0.5	--	--	--
MW-54	155	107.82	-92.8	less-open	58	285	272	182	4	W	245-290	45	1.6E-04	4.5E-01	0.3	--	--	--	0.3	--	--	--
MW-54	156	108.11	-93.1	less-open	50	138	125	35	1	SE	116-165	49	1.6E-04	4.5E-01	0.3	1.5	--	--	--	--	--	--
MW-54	157	108.41	-93.4	less-open	56	144	131	41	1	SE	116-165	49	1.6E-04	4.5E-01	0.3	0.3	--	--	--	--	--	--
MW-54	158	108.86	-93.9	less-open	49	280	267	177	4	W	245-290	45	1.6E-04	4.5E-01	0.5	--	--	--	1.0	--	--	--
MW-54	159	109.19	-94.2	less-open	47	146	133	43	1	SE	116-165	49	1.6E-04	4.5E-01	0.3	0.8	--	--	--	--	--	--
MW-54	160	109.71	-94.7	less-open	65	292	279	189	4	W	245-290	45	1.6E-04	4.5E-01	0.5	--	--	--	0.8	--	--	--
MW-54	161	109.73	-94.7	less-open	47	118	105	15	3	E	70-115	45	1.6E-04	4.5E-01	0.0	--	--	6.5	--	--	--	--
MW-54	162	109.97	-95.0	less-open	58	129	116	26	1	SE	116-165	49	1.6E-04	4.5E-01	0.2	0.8	--	--	--	--	--	--
MW-54	163	110.15	-95.2	less-open	63	130	117	27	1	SE	116-165	49	1.6E-04	4.5E-01	0.2	0.2	--	--	--	--	--	--
MW-54	164	110.52	-95.5	less-open	65	132	119	29	1	SE	116-165	49	1.6E-04	4.5E-01	0.4	0.4	--	--	--	--	--	--
MW-54	165	110.85	-95.9	less-open	54	148	135	45	1	SE	116-165	49	2.1E-04	6.0E-01	0.3	0.3	--	--	--	--	--	--
MW-54	166	111.47	-96.5	less-open	68	145	132	42	1	SE	116-165	49	2.1E-04	6.0E-01	0.6	0.6	--	--	--	--	--	--
MW-54	167	111.78	-96.8	less-open	66	125	112	22	3	E	70-115	45	2.1E-04	6.0E-01	0.3	--	--	2.1	--	--	--	--
MW-54	168	112.62	-97.6	less-open	63	320	307	217	2	NW	291-335	44	2.1E-04	6.0E-01	0.8	--	10.6	--	--	--	--	--
MW-54	169	112.89	-97.9	less-open	54	328	315	225	2	NW	291-335	44	2.1E-04	6.0E-01	0.3	--	0.3	--	--	--	--	--
MW-54	170	113.88	-98.9	less-open	68	105	92	2	3	E	70-115	45	2.1E-04	6.0E-01	1.0	--	--	2.1	--	--	--	--
MW-54	171	114.08	-99.1	less-open	62	109	96	6	3	E	70-115	45	2.1E-04	6.0E-01	0.2	--	--	0.2	--	--	--	--
MW-54	172	115.33	-100.3	less-open	68	154	141	51	1	SE	116-165	49	2.1E-04	6.0E-01	1.3	3.9	--	--	--	--	--	--



APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-54	173	115.48	-100.5	less-open	68	157	144	54	1	SE	116-165	49	2.1E-04	6.0E-01	0.2	0.2	--	--	--	--	--	--
MW-54	174	116.64	-101.7	less-open	37	145	132	42	1	SE	116-165	49	2.1E-04	6.0E-01	1.2	1.2	--	--	--	--	--	--
MW-54	175	117.38	-102.4	less-open	65	117	104	14	3	E	70-115	45	2.1E-04	6.0E-01	0.7	--	--	3.3	--	--	--	--
MW-54	176	117.96	-103.0	less-open	58	100	87	357	3	E	70-115	45	2.1E-04	6.0E-01	0.6	--	--	0.6	--	--	--	--
MW-54	177	118.31	-103.3	less-open	56	94	81	351	3	E	70-115	45	2.1E-04	6.0E-01	0.4	--	--	0.4	--	--	--	--
MW-54	178	118.44	-103.5	less-open	57	97	84	354	3	E	70-115	45	2.1E-04	6.0E-01	0.1	--	--	0.1	--	--	--	--
MW-54	179	118.71	-103.7	less-open	55	110	97	7	3	E	70-115	45	2.1E-04	6.0E-01	0.3	--	--	0.3	--	--	--	--
MW-54	180	119.21	-104.2	less-open	67	128	115	25	3	E	70-115	45	2.1E-04	6.0E-01	0.5	--	--	0.5	--	--	--	--
MW-54	181	119.85	-104.9	less-open	61	126	113	23	3	E	70-115	45	2.1E-04	6.0E-01	0.6	--	--	0.6	--	--	--	--
MW-54	182	120.39	-105.4	less-open	54	132	119	29	1	SE	116-165	49	2.1E-04	6.0E-01	0.5	3.8	--	--	--	--	--	--
MW-54	183	120.72	-105.7	less-open	64	127	114	24	3	E	70-115	45	8.7E-04	2.5E+00	0.3	--	--	0.9	--	--	--	--
MW-54	184	120.78	-105.8	less-open	44	193	180	90	5	S	166-200	34	8.7E-04	2.5E+00	0.1	--	--	--	--	--	15.1	--
MW-54	185	121.03	-106.0	less-open	62	115	102	12	3	E	70-115	45	8.7E-04	2.5E+00	0.3	--	--	0.3	--	--	--	--
MW-54	186	121.93	-106.9	less-open	66	138	125	35	1	SE	116-165	49	8.7E-04	2.5E+00	0.9	1.5	--	--	--	--	--	--
MW-54	187	122.49	-107.5	less-open	75	154	141	51	1	SE	116-165	49	8.7E-04	2.5E+00	0.6	0.6	--	--	--	--	--	--
MW-54	188	122.66	-107.7	less-open	77	299	286	196	4	W	245-290	45	8.7E-04	2.5E+00	0.2	--	--	--	13.0	--	--	--
MW-54	189	122.85	-107.9	less-open	81	150	137	47	1	SE	116-165	49	8.7E-04	2.5E+00	0.2	0.4	--	--	--	--	--	--
MW-54	190	123.08	-108.1	less-open	73	301	288	198	4	W	245-290	45	8.7E-04	2.5E+00	0.2	--	--	--	0.4	--	--	--
MW-54	191	123.32	-108.3	less-open	46	178	165	75	1	SE	116-165	49	8.7E-04	2.5E+00	0.2	0.5	--	--	--	--	--	--
MW-54	192	123.44	-108.5	less-open	60	310	297	207	2	NW	291-335	44	8.7E-04	2.5E+00	0.1	--	10.6	--	--	--	--	--
MW-54	193	123.94	-109.0	less-open	60	143	130	40	1	SE	116-165	49	8.7E-04	2.5E+00	0.5	0.6	--	--	--	--	--	--
MW-54	194	123.96	-109.0	less-open	60	283	270	180	4	W	245-290	45	8.7E-04	2.5E+00	0.0	--	--	--	0.9	--	--	--
MW-54	195	124.35	-109.4	less-open	32	243	230	140	NSR	NSR	NSR	NSR	8.7E-04	2.5E+00	0.4	--	--	--	--	--	--	--
MW-54	196	124.59	-109.6	less-open	33	246	233	143	NSR	NSR	NSR	NSR	8.7E-04	2.5E+00	0.2	--	--	--	--	--	--	--
MW-54	197	124.66	-109.7	less-open	35	253	240	150	NSR	NSR	NSR	NSR	8.7E-04	2.5E+00	0.1	--	--	--	--	--	--	--
MW-54	198	124.87	-109.9	less-open	52	114	101	11	3	E	70-115	45	8.7E-04	2.5E+00	0.2	--	--	3.8	--	--	--	--
MW-54	199	125.01	-110.0	less-open	80	112	99	9	3	E	70-115	45	8.7E-04	2.5E+00	0.1	--	--	0.1	--	--	--	--
MW-54	200	125.49	-110.5	less-open	42	113	100	10	3	E	70-115	45	8.7E-04	2.5E+00	0.5	--	--	0.5	--	--	--	--
MW-54	201	125.8	-110.8	less-open	74	165	152	62	1	SE	116-165	49	8.7E-04	2.5E+00	0.3	1.9	--	--	--	--	--	--
MW-54	202	126.33	-111.3	less-open	76	153	140	50	1	SE	116-165	49	8.7E-04	2.5E+00	0.5	0.5	--	--	--	--	--	--
MW-54	203	127.48	-112.5	less-open	47	298	285	195	4	W	245-290	45	8.7E-04	2.5E+00	1.2	--	--	--	3.5	--	--	--
MW-54	204	129.57	-114.6	less-open	45	108	95	5	3	E	70-115	45	8.7E-04	2.5E+00	2.1	--	--	4.1	--	--	--	--
MW-54	205	129.83	-114.8	less-open	55	236	223	133	NSR	NSR	NSR	NSR	8.7E-04	2.5E+00	0.3	--	--	--	--	--	--	--
MW-54	206	130.24	-115.3	less-open	63	103	90	0	3	E	70-115	45	8.7E-04	2.5E+00	0.4	--	--	0.7	--	--	--	--
MW-54	207	130.68	-115.7	less-open	58	96	83	353	3	E	70-115	45	8.7E-04	2.5E+00	0.4	--	--	0.4	--	--	--	--
MW-54	208	130.89	-115.9	less-open	38	93	80	350	3	E	70-115	45	8.7E-04	2.5E+00	0.2	--	--	0.2	--	--	--	--
MW-54	209	131.08	-116.1	less-open	51	107	94	4	3	E	70-115	45	8.7E-04	2.5E+00	0.2	--	--	0.2	--	--	--	--
MW-54	210	131.82	-116.8	less-open	42	124	111	21	3	E	70-115	45	8.7E-04	2.5E+00	0.7	--	--	0.7	--	--	--	--
MW-54	211	133.03	-118.0	less-open	30	314	301	211	NSR	NSR	NSR	NSR	8.7E-04	2.5E+00	1.2	--	--	--	--	--	--	--
MW-54	212	133.16	-118.2	less-open	49	309	296	206	2	NW	291-335	44	8.7E-04	2.5E+00	0.1	--	9.7	--	--	--	--	--
MW-54	213	133.99	-119.0	less-open	56	130	117	27	1	SE	116-165	49	8.7E-04	2.5E+00	0.8	7.7	--	--	--	--	--	--
MW-54	214	135.09	-120.1	less-open	57	331	318	228	2	NW	291-335	44	8.7E-04	2.5E+00	1.1	--	1.9	--	--	--	--	--
MW-54	215	136.35	-121.4	less-open	49	112	99	9	3	E	70-115	45	9.9E-04	2.8E+00	1.3	--	--	4.5	--	--	--	--
MW-54	216	137.05	-122.1	less-open	58	99	86	356	3	E	70-115	45	9.9E-04	2.8E+00	0.7	--	--	0.7	--	--	--	--
MW-54	217	137.38	-122.4	less-open	44	74	61	331	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.3	--	--	--	--	--	--	--
MW-54	218	137.47	-122.5	less-open	64	115	102	12	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.4	--	--	--	--
MW-54	219	137.58	-122.6	less-open	51	95	82	352	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.1	--	--	--	--
MW-54	220	137.78	-122.8	less-open	57	88	75	345	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	0.2	--	--	--	--
MW-54	221	137.9	-122.9	less-open	72	337	324	234	2	NW	291-335	44	9.9E-04	2.8E+00	0.1	--	2.8	--	--	--	--	--
MW-54	222	137.97	-123.0	less-open	68	89	76	346	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.2	--	--	--	--
MW-54	223	138.09	-123.1	less-open	53	295	282	192	4	W	245-290	45	9.9E-04	2.8E+00	0.1	--	--	--	10.6	--	--	--
MW-54	224	138.66	-123.7	less-open	40	120	107	17	3	E	70-115	45	9.9E-04	2.8E+00	0.6	--	--	0.7	--	--	--	--
MW-54	225	138.94	-124.0	less-open	50	99	86	356	3	E	70-115	45	9.9E-04	2.8E+00	0.3	--	--	0.3	--	--	--	--
MW-54	226	139.27	-124.3	less-open	64	122	109	19	3	E	70-115	45	9.9E-04	2.8E+00	0.3	--	--	0.3	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-54	227	139.51	-124.5	less-open	59	96	83	353	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	0.2	--	--	--
MW-54	228	139.57	-124.6	less-open	62	286	273	183	4	W	245-290	45	9.9E-04	2.8E+00	0.1	--	--	--	1.5	--	--
MW-54	229	139.59	-124.6	less-open	46	125	112	22	3	E	70-115	45	9.9E-04	2.8E+00	0.0	--	--	0.1	--	--	--
MW-54	230	139.97	-125.0	less-open	58	69	56	326	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.4	--	--	--	--	--	--
MW-54	231	140.15	-125.2	less-open	49	169	156	66	1	SE	116-165	49	9.9E-04	2.8E+00	0.2	6.2	--	--	--	--	--
MW-54	232	140.41	-125.4	less-open	21	45	32	302	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.3	--	--	--	--	--	--
MW-54	233	140.45	-125.5	less-open	32	226	213	123	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.0	--	--	--	--	--	--
MW-54	234	140.5	-125.5	less-open	63	84	71	341	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.9	--	--	--
MW-54	235	140.74	-125.8	less-open	63	219	206	116	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.2	--	--	--	--	--	--
MW-54	236	141.23	-126.2	less-open	27	244	231	141	NSR	NSR	NSR	NSR	9.9E-04	2.8E+00	0.5	--	--	--	--	--	--
MW-54	237	142.24	-127.3	less-open	37	185	172	82	5	S	166-200	34	9.9E-04	2.8E+00	1.0	--	--	--	--	21.5	--
MW-54	238	142.43	-127.4	less-open	78	120	107	17	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	1.9	--	--	--
MW-54	239	144.42	-129.4	less-open	38	124	111	21	3	E	70-115	45	9.9E-04	2.8E+00	2.0	--	--	2.0	--	--	--
MW-54	240	144.49	-129.5	less-open	68	113	100	10	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.1	--	--	--
MW-54	241	144.61	-129.6	open	40	114	101	11	3	E	70-115	45	9.9E-04	2.8E+00	0.1	--	--	0.1	--	--	--
MW-54	242	144.84	-129.9	open	41	125	112	22	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	0.2	--	--	--
MW-54	243	145.01	-130.0	open	44	116	103	13	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	0.2	--	--	--
MW-54	244	145.55	-130.6	less-open	44	95	82	352	3	E	70-115	45	9.9E-04	2.8E+00	0.5	--	--	0.5	--	--	--
MW-54	245	145.86	-130.9	less-open	41	114	101	11	3	E	70-115	45	9.9E-04	2.8E+00	0.3	--	--	0.3	--	--	--
MW-54	246	146.02	-131.0	less-open	46	104	91	1	3	E	70-115	45	9.9E-04	2.8E+00	0.2	--	--	0.2	--	--	--
MW-54	247	146.14	-131.2	less-open	45	98	85	355	3	E	70-115	45	6.7E-04	1.9E+00	0.1	--	--	0.1	--	--	--
MW-54	248	146.96	-132.0	less-open	75	176	163	73	1	SE	116-165	49	6.7E-04	1.9E+00	0.8	6.8	--	--	--	--	--
MW-54	249	147.41	-132.4	less-open	37	188	175	85	5	S	166-200	34	6.7E-04	1.9E+00	0.4	--	--	--	--	5.2	--
MW-54	250	148.09	-133.1	less-open	57	325	312	222	2	NW	291-335	44	6.7E-04	1.9E+00	0.7	--	10.2	--	--	--	--
MW-54	251	148.52	-133.5	less-open	60	215	202	112	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.4	--	--	--	--	--	--
MW-54	252	148.68	-133.7	less-open	35	197	184	94	5	S	166-200	34	6.7E-04	1.9E+00	0.2	--	--	--	--	1.3	--
MW-54	253	148.82	-133.8	less-open	53	179	166	76	5	S	166-200	34	6.7E-04	1.9E+00	0.1	--	--	--	--	0.1	--
MW-54	254	149.33	-134.3	less-open	40	188	175	85	5	S	166-200	34	6.7E-04	1.9E+00	0.5	--	--	--	--	0.5	--
MW-54	255	149.42	-134.4	less-open	48	236	223	133	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.1	--	--	--	--	--	--
MW-54	256	149.49	-134.5	less-open	41	183	170	80	5	S	166-200	34	6.7E-04	1.9E+00	0.1	--	--	--	--	0.2	--
MW-54	257	149.8	-134.8	less-open	68	139	126	36	1	SE	116-165	49	6.7E-04	1.9E+00	0.3	2.8	--	--	--	--	--
MW-54	258	150.35	-135.4	less-open	50	81	68	338	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.5	--	--	--	--	--	--
MW-54	259	150.59	-135.6	less-open	45	90	77	347	3	E	70-115	45	6.7E-04	1.9E+00	0.2	--	--	4.5	--	--	--
MW-54	260	150.88	-135.9	less-open	69	123	110	20	3	E	70-115	45	6.7E-04	1.9E+00	0.3	--	--	0.3	--	--	--
MW-54	261	151.01	-136.0	less-open	62	104	91	1	3	E	70-115	45	6.7E-04	1.9E+00	0.1	--	--	0.1	--	--	--
MW-54	262	151.11	-136.1	less-open	81	358	345	255	6	N	336-21	45	6.7E-04	1.9E+00	0.1	--	--	--	--	--	60.8
MW-54	263	151.24	-136.3	less-open	41	101	88	358	3	E	70-115	45	6.7E-04	1.9E+00	0.1	--	--	0.2	--	--	--
MW-54	264	151.41	-136.4	less-open	47	109	96	6	3	E	70-115	45	6.7E-04	1.9E+00	0.2	--	--	0.2	--	--	--
MW-54	265	151.51	-136.5	less-open	82	326	313	223	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.1	--	--	--	--	--	--
MW-54	266	151.56	-136.6	less-open	50	112	99	9	3	E	70-115	45	6.7E-04	1.9E+00	0.1	--	--	0.2	--	--	--
MW-54	267	151.94	-137.0	less-open	35	122	109	19	3	E	70-115	45	6.7E-04	1.9E+00	0.4	--	--	0.4	--	--	--
MW-54	268	152.29	-137.3	less-open	34	142	129	39	1	SE	116-165	49	6.7E-04	1.9E+00	0.3	2.5	--	--	--	--	--
MW-54	269	152.67	-137.7	less-open	19	136	123	33	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.4	--	--	--	--	--	--
MW-54	270	152.9	-137.9	less-open	50	116	103	13	3	E	70-115	45	6.7E-04	1.9E+00	0.2	--	--	1.0	--	--	--
MW-54	271	153	-138.0	less-open	48	129	116	26	1	SE	116-165	49	6.7E-04	1.9E+00	0.1	0.7	--	--	--	--	--
MW-54	272	154.36	-139.4	less-open	51	81	68	338	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	1.4	--	--	--	--	--	--
MW-54	273	155.49	-140.5	less-open	81	98	85	355	3	E	70-115	45	6.7E-04	1.9E+00	1.1	--	--	2.6	--	--	--
MW-54	274	155.63	-140.6	less-open	55	74	61	331	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.1	--	--	--	--	--	--
MW-54	275	155.69	-140.7	less-open	80	108	95	5	3	E	70-115	45	6.7E-04	1.9E+00	0.1	--	--	0.2	--	--	--
MW-54	276	155.85	-140.9	less-open	55	149	136	46	1	SE	116-165	49	6.7E-04	1.9E+00	0.2	2.8	--	--	--	--	--
MW-54	277	156.47	-141.5	less-open	44	142	129	39	1	SE	116-165	49	6.7E-04	1.9E+00	0.6	0.6	--	--	--	--	--
MW-54	278	156.79	-141.8	less-open	45	144	131	41	1	SE	116-165	49	6.7E-04	1.9E+00	0.3	0.3	--	--	--	--	--
MW-54	279	156.99	-142.0	less-open	44	138	125	35	1	SE	116-165	49	6.7E-04	1.9E+00	0.2	0.2	--	--	--	--	--
MW-54	280	157.19	-142.2	less-open	22	181	168	78	NSR	NSR	NSR	NSR	6.7E-04	1.9E+00	0.2	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
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Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-54	281	157.47	-142.5	less-open	36	155	142	52	1	SE	116-165	49	3.7E-04		1.1E+00	0.3	0.5	--	--	--	--	--	--
MW-54	282	157.75	-142.8	less-open	25	137	124	34	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.3	--	--	--	--	--	--	--
MW-54	283	157.97	-143.0	less-open	35	117	104	14	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	2.3	--	--	--	--
MW-54	284	158.23	-143.2	less-open	54	112	99	9	3	E	70-115	45	3.7E-04		1.1E+00	0.3	--	--	0.3	--	--	--	--
MW-54	285	158.56	-143.6	less-open	61	96	83	353	3	E	70-115	45	3.7E-04		1.1E+00	0.3	--	--	0.3	--	--	--	--
MW-54	286	158.81	-143.8	less-open	66	93	80	350	3	E	70-115	45	3.7E-04		1.1E+00	0.3	--	--	0.3	--	--	--	--
MW-54	287	159	-144.0	less-open	64	119	106	16	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	0.2	--	--	--	--
MW-54	288	159.12	-144.1	less-open	64	107	94	4	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.1	--	--	--	--
MW-54	289	159.25	-144.3	less-open	54	199	186	96	5	S	166-200	34	3.7E-04		1.1E+00	0.1	--	--	--	--	9.8	--	
MW-54	290	159.38	-144.4	less-open	58	103	90	360	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.3	--	--	--	--
MW-54	291	159.42	-144.4	less-open	54	201	188	98	5	S	166-200	34	3.7E-04		1.1E+00	0.0	--	--	--	--	0.2	--	
MW-54	292	159.52	-144.5	less-open	65	97	84	354	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.1	--	--	--	--
MW-54	293	160.2	-145.2	less-open	23	174	161	71	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.7	--	--	--	--	--	--	
MW-54	294	160.44	-145.5	less-open	72	109	96	6	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	0.9	--	--	--	--
MW-54	295	161.52	-146.5	less-open	61	98	85	355	3	E	70-115	45	3.7E-04		1.1E+00	1.1	--	--	1.1	--	--	--	--
MW-54	296	161.59	-146.6	less-open	72	102	89	359	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.1	--	--	--	--
MW-54	297	162.09	-147.1	less-open	49	68	55	325	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.5	--	--	--	--	--	--	--
MW-54	298	162.15	-147.2	less-open	62	190	177	87	5	S	166-200	34	3.7E-04		1.1E+00	0.1	--	--	--	--	2.7	--	
MW-54	299	162.29	-147.3	less-open	55	102	89	359	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.7	--	--	--	--
MW-54	300	162.66	-147.7	less-open	67	270	257	167	4	W	245-290	45	3.7E-04		1.1E+00	0.4	--	--	--	23.1	--	--	--
MW-54	301	162.79	-147.8	less-open	80	112	99	9	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.5	--	--	--	--
MW-54	302	163.16	-148.2	less-open	23	258	245	155	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.4	--	--	--	--	--	--	--
MW-54	303	163.81	-148.8	less-open	67	42	29	299	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.7	--	--	--	--	--	--	--
MW-54	304	164.21	-149.2	less-open	76	76	63	333	NSR	NSR	NSR	NSR	3.7E-04		1.1E+00	0.4	--	--	--	--	--	--	--
MW-54	305	164.5	-149.5	less-open	76	112	99	9	3	E	70-115	45	3.7E-04		1.1E+00	0.3	--	--	1.7	--	--	--	--
MW-54	306	164.67	-149.7	less-open	76	136	123	33	1	SE	116-165	49	3.7E-04		1.1E+00	0.2	7.2	--	--	--	--	--	--
MW-54	307	166.59	-151.6	less-open	70	110	97	7	3	E	70-115	45	3.7E-04		1.1E+00	1.9	--	--	2.1	--	--	--	--
MW-54	308	166.77	-151.8	less-open	57	103	90	0	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	0.2	--	--	--	--
MW-54	309	167.12	-152.1	less-open	51	115	102	12	3	E	70-115	45	3.7E-04		1.1E+00	0.3	--	--	0.3	--	--	--	--
MW-54	310	167.78	-152.8	less-open	48	90	77	347	3	E	70-115	45	3.7E-04		1.1E+00	0.7	--	--	0.7	--	--	--	--
MW-54	311	168.4	-153.4	less-open	45	104	91	1	3	E	70-115	45	3.7E-04		1.1E+00	0.6	--	--	0.6	--	--	--	--
MW-54	312	168.58	-153.6	less-open	45	114	101	11	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	0.2	--	--	--	--
MW-54	313	168.8	-153.8	less-open	51	121	108	18	3	E	70-115	45	3.7E-04		1.1E+00	0.2	--	--	0.2	--	--	--	--
MW-54	314	168.84	-153.9	less-open	72	299	286	196	4	W	245-290	45	3.7E-04		1.1E+00	0.0	--	--	--	6.2	--	--	--
MW-54	315	169.27	-154.3	less-open	44	347	334	244	2	NW	291-335	44	3.7E-04		1.1E+00	0.4	--	21.2	--	--	--	--	--
MW-54	316	169.48	-154.5	less-open	39	336	323	233	2	NW	291-335	44	3.7E-04		1.1E+00	0.2	--	0.2	--	--	--	--	--
MW-54	317	169.61	-154.6	less-open	57	127	114	24	3	E	70-115	45	3.7E-04		1.1E+00	0.1	--	--	0.8	--	--	--	--
MW-54	318	170.51	-155.5	less-open	76	109	96	6	3	E	70-115	45	3.7E-04		1.1E+00	0.9	--	--	0.9	--	--	--	--
MW-54	319	170.9	-155.9	less-open	55	120	107	17	3	E	70-115	45	3.7E-04		1.1E+00	0.4	--	--	0.4	--	--	--	--
MW-54	320	171.09	-156.1	less-open	57	146	133	43	1	SE	116-165	49	3.7E-04		1.1E+00	0.2	6.4	--	--	--	--	--	--
MW-54	321	172.27	-157.3	less-open	70	260	247	157	4	W	245-290	45	8.8E-04		2.5E+00	1.2	--	--	--	3.4	--	--	--
MW-54	322	172.59	-157.6	less-open	75	266	253	163	4	W	245-290	45	8.8E-04		2.5E+00	0.3	--	--	--	0.3	--	--	--
MW-54	323	172.65	-157.7	less-open	54	302	289	199	4	W	245-290	45	8.8E-04		2.5E+00	0.1	--	--	--	0.1	--	--	--
MW-54	324	173.22	-158.2	less-open	58	107	94	4	3	E	70-115	45	8.8E-04		2.5E+00	0.6	--	--	2.3	--	--	--	--
MW-54	325	173.55	-158.6	less-open	58	96	83	353	3	E	70-115	45	8.8E-04		2.5E+00	0.3	--	--	0.3	--	--	--	--
MW-54	326	173.82	-158.8	open	54	320	307	217	2	NW	291-335	44	8.8E-04		2.5E+00	0.3	--	4.3	--	--	--	--	--
MW-54	327	173.9	-158.9	open	64	282	269	179	4	W	245-290	45	8.8E-04		2.5E+00	0.1	--	--	--	1.3	--	--	--
MW-54	328	174.28	-159.3	open	70	304	291	201	2	NW	291-335	44	8.8E-04		2.5E+00	0.4	--	0.5	--	--	--	--	--
MW-54	329	175.46	-160.5	open	66	99	86	356	3	E	70-115	45	8.8E-04		2.5E+00	1.2	--	--	1.9	--	--	--	--
MW-54	330	175.68	-160.7	open	58	100	87	357	3	E	70-115	45	8.8E-04		2.5E+00	0.2	--	--	0.2	--	--	--	--
MW-54	331	176.3	-161.3	less-open	62	108	95	5	3	E	70-115	45	8.8E-04		2.5E+00	0.6	--	--	0.6	--	--	--	--
MW-54	332	176.53	-161.5	less-open	60	115	102	12	3	E	70-115	45	8.8E-04		2.5E+00	0.2	--	--	0.2	--	--	--	--
MW-54	333	177.18	-162.2	less-open	75	132	119	29	1	SE	116-165	49	8.8E-04		2.5E+00	0.7	6.1	--	--	--	--	--	--
MW-54	334	177.33	-162.3	less-open	70	134	121	31	1	SE	116-165	49	8.8E-04		2.5E+00	0.2	0.2	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-54	335	177.56	-162.6	less-open	70	128	115	25	3	E	70-115	45	8.8E-04	2.5E+00	0.2	--	--	1.0	--	--	--
MW-54	336	177.71	-162.7	less-open	74	115	102	12	3	E	70-115	45	8.8E-04	2.5E+00	0.2	--	--	0.2	--	--	--
MW-54	337	178.62	-163.6	less-open	58	206	193	103	5	S	166-200	34	8.8E-04	2.5E+00	0.9	--	--	--	--	16.5	--
MW-54	338	178.62	-163.6	less-open	35	357	344	254	6	N	336-21	45	8.8E-04	2.5E+00	0.0	--	--	--	--	--	27.5
MW-54	339	179.28	-164.3	less-open	57	136	123	33	1	SE	116-165	49	8.8E-04	2.5E+00	0.7	1.9	--	--	--	--	--
MW-54	340	179.55	-164.6	less-open	86	358	345	255	NSR	NSR	NSR	NSR	8.8E-04	2.5E+00	0.3	--	--	--	--	--	--
MW-54	341	179.58	-164.6	less-open	51	126	113	23	3	E	70-115	45	8.8E-04	2.5E+00	0.0	--	--	1.9	--	--	--
MW-54	342	179.94	-165.0	less-open	32	112	99	9	NSR	NSR	NSR	NSR	8.8E-04	2.5E+00	0.4	--	--	--	--	--	--
MW-54	343	180.6	-165.6	less-open	41	103	90	360	3	E	70-115	45	8.8E-04	2.5E+00	0.7	--	--	1.0	--	--	--
MW-54	344	181.37	-166.4	less-open	69	175	162	72	1	SE	116-165	49	8.8E-04	2.5E+00	0.8	2.1	--	--	--	--	--
MW-54	345	181.72	-166.7	less-open	38	338	325	235	2	NW	291-335	44	8.8E-04	2.5E+00	0.3	--	7.4	--	--	--	--
MW-54	346	181.84	-166.9	less-open	32	37	24	294	NSR	NSR	NSR	NSR	8.8E-04	2.5E+00	0.1	--	--	--	--	--	--
MW-54	347	181.94	-167.0	less-open	69	215	202	112	NSR	NSR	NSR	NSR	8.8E-04	2.5E+00	0.1	--	--	--	--	--	--
MW-54	348	182.26	-167.3	less-open	31	253	240	150	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.3	--	--	--	--	--	--
MW-54	349	182.43	-167.4	less-open	67	139	126	36	1	SE	116-165	49	3.9E-04	1.1E+00	0.2	1.1	--	--	--	--	--
MW-54	350	183.02	-168.0	less-open	71	113	100	10	3	E	70-115	45	3.9E-04	1.1E+00	0.6	--	--	2.4	--	--	--
MW-54	351	183.3	-168.3	less-open	75	354	341	251	6	N	336-21	45	3.9E-04	1.1E+00	0.3	--	--	--	--	--	4.7
MW-54	352	183.5	-168.5	less-open	74	107	94	4	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	0.5	--	--	--
MW-54	353	183.85	-168.9	less-open	56	348	335	245	2	NW	291-335	44	3.9E-04	1.1E+00	0.3	--	2.1	--	--	--	--
MW-54	354	183.9	-168.9	less-open	75	88	75	345	3	E	70-115	45	3.9E-04	1.1E+00	0.1	--	--	0.4	--	--	--
MW-54	355	184.48	-169.5	less-open	45	324	311	221	2	NW	291-335	44	3.9E-04	1.1E+00	0.6	--	0.6	--	--	--	--
MW-54	356	184.71	-169.7	less-open	50	105	92	2	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	0.8	--	--	--
MW-54	357	185.31	-170.3	less-open	62	144	131	41	1	SE	116-165	49	3.9E-04	1.1E+00	0.6	2.9	--	--	--	--	--
MW-54	358	185.43	-170.4	less-open	58	313	300	210	2	NW	291-335	44	3.9E-04	1.1E+00	0.1	--	1.0	--	--	--	--
MW-54	359	185.58	-170.6	less-open	44	203	190	100	5	S	166-200	34	3.9E-04	1.1E+00	0.2	--	--	--	--	7.0	--
MW-54	360	186.25	-171.3	less-open	70	323	310	220	2	NW	291-335	44	3.9E-04	1.1E+00	0.7	--	0.8	--	--	--	--
MW-54	361	186.28	-171.3	less-open	49	352	339	249	6	N	336-21	45	3.9E-04	1.1E+00	0.0	--	--	--	--	--	3.0
MW-54	362	186.63	-171.6	less-open	73	108	95	5	3	E	70-115	45	3.9E-04	1.1E+00	0.3	--	--	1.9	--	--	--
MW-54	363	186.71	-171.7	less-open	79	349	336	246	6	N	336-21	45	3.9E-04	1.1E+00	0.1	--	--	--	--	--	0.4
MW-54	364	187.43	-172.4	less-open	65	85	72	342	3	E	70-115	45	3.9E-04	1.1E+00	0.7	--	--	0.8	--	--	--
MW-54	365	187.66	-172.7	less-open	40	191	178	88	5	S	166-200	34	3.9E-04	1.1E+00	0.2	--	--	--	--	2.1	--
MW-54	366	187.71	-172.7	less-open	56	134	121	31	1	SE	116-165	49	3.9E-04	1.1E+00	0.1	2.4	--	--	--	--	--
MW-54	367	187.98	-173.0	less-open	64	121	108	18	3	E	70-115	45	3.9E-04	1.1E+00	0.3	--	--	0.5	--	--	--
MW-54	368	189.96	-175.0	less-open	53	174	161	71	1	SE	116-165	49	3.9E-04	1.1E+00	2.0	2.3	--	--	--	--	--
MW-54	369	189.98	-175.0	less-open	84	172	159	69	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.0	--	--	--	--	--	--
MW-54	370	190.27	-175.3	less-open	44	164	151	61	1	SE	116-165	49	3.9E-04	1.1E+00	0.3	0.3	--	--	--	--	--
MW-54	371	190.76	-175.8	open	48	202	189	99	5	S	166-200	34	3.9E-04	1.1E+00	0.5	--	--	--	--	3.1	--
MW-54	372	191.04	-176.1	open	47	146	133	43	1	SE	116-165	49	3.9E-04	1.1E+00	0.3	0.8	--	--	--	--	--
MW-54	373	192.42	-177.4	open	74	307	294	204	2	NW	291-335	44	3.9E-04	1.1E+00	1.4	--	6.2	--	--	--	--
MW-54	374	193.1	-178.1	less-open	41	101	88	358	3	E	70-115	45	3.9E-04	1.1E+00	0.7	--	--	5.1	--	--	--
MW-54	375	193.48	-178.5	less-open	42	133	120	30	1	SE	116-165	49	3.9E-04	1.1E+00	0.4	2.4	--	--	--	--	--
MW-54	376	193.95	-179.0	less-open	60	201	188	98	5	S	166-200	34	3.9E-04	1.1E+00	0.5	--	--	--	--	3.2	--
MW-54	377	194	-179.0	less-open	64	186	173	83	5	S	166-200	34	3.9E-04	1.1E+00	0.1	--	--	--	--	0.1	--
MW-54	378	194.17	-179.2	less-open	63	102	89	359	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	1.1	--	--	--
MW-54	379	194.72	-179.7	less-open	22	152	139	49	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.6	--	--	--	--	--	--
MW-54	380	194.74	-179.8	less-open	71	181	168	78	5	S	166-200	34	3.9E-04	1.1E+00	0.0	--	--	--	--	0.7	--
MW-54	381	194.94	-180.0	less-open	67	186	173	83	5	S	166-200	34	3.9E-04	1.1E+00	0.2	--	--	--	--	0.2	--
MW-54	382	195.41	-180.4	less-open	39	321	308	218	2	NW	291-335	44	3.9E-04	1.1E+00	0.5	--	3.0	--	--	--	--
MW-54	383	195.58	-180.6	less-open	70	277	264	174	4	W	245-290	45	3.9E-04	1.1E+00	0.2	--	--	--	21.7	--	--
MW-54	384	195.95	-181.0	less-open	36	108	95	5	3	E	70-115	45	3.9E-04	1.1E+00	0.4	--	--	1.8	--	--	--
MW-54	385	196.75	-181.8	less-open	77	131	118	28	1	SE	116-165	49	3.9E-04	1.1E+00	0.8	3.3	--	--	--	--	--
MW-54	386	196.9	-181.9	less-open	73	319	306	216	2	NW	291-335	44	3.9E-04	1.1E+00	0.2	--	1.5	--	--	--	--
MW-54	387	197.52	-182.5	less-open	63	305	292	202	2	NW	291-335	44	3.9E-04	1.1E+00	0.6	--	0.6	--	--	--	--
MW-54	388	197.68	-182.7	less-open	43	107	94	4	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	1.7	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-54	389	197.8	-182.8	less-open	57	302	289	199	4	W	245-290	45	3.9E-04	1.1E+00	0.1	--	--	--	2.2	--	--
MW-54	390	198.26	-183.3	less-open	83	165	152	62	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.5	--	--	--	--	--	--
MW-54	391	198.32	-183.3	less-open	75	145	132	42	1	SE	116-165	49	3.9E-04	1.1E+00	0.1	1.6	--	--	--	--	--
MW-54	392	199.48	-184.5	open	42	49	36	306	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	1.2	--	--	--	--	--	--
MW-54	393	200.29	-185.3	less-open	34	118	105	15	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.8	--	--	--	--	--	--
MW-54	394	200.52	-185.5	open	51	265	252	162	4	W	245-290	45	3.9E-04	1.1E+00	0.2	--	--	--	2.7	--	--
MW-54	395	200.83	-185.8	less-open	45	290	277	187	4	W	245-290	45	3.9E-04	1.1E+00	0.3	--	--	--	0.3	--	--
MW-54	396	201.07	-186.1	less-open	50	302	289	199	4	W	245-290	45	3.9E-04	1.1E+00	0.2	--	--	--	0.2	--	--
MW-54	397	201.24	-186.3	less-open	44	278	265	175	4	W	245-290	45	3.9E-04	1.1E+00	0.2	--	--	--	0.2	--	--
MW-54	398	201.72	-186.7	less-open	52	89	76	346.7	3	E	70-115	45	3.9E-04	1.1E+00	0.5	--	--	4.0	--	--	--
MW-54	399	201.89	-186.9	less-open	56	112	99	9	3	E	70-115	45	3.9E-04	1.1E+00	0.2	--	--	0.2	--	--	--
MW-54	400	201.97	-187.0	open	82	91	78	348	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.1	--	--	--	--	--	--
MW-54	401	202.85	-187.9	less-open	54	134	121	31	1	SE	116-165	49	3.9E-04	1.1E+00	0.9	4.5	--	--	--	--	--
MW-54	402	203.08	-188.1	less-open	90	132	119	29	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.2	--	--	--	--	--	--
MW-54	403	203.46	-188.5	less-open	89	272	259	169	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.4	--	--	--	--	--	--
MW-54	404	203.68	-188.7	less-open	90	269	256	166	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.2	--	--	--	--	--	--
MW-54	405	203.94	-189.0	less-open	90	290	277	187	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.3	--	--	--	--	--	--
MW-54	406	204.3	-189.3	less-open	90	99	86	356	NSR	NSR	NSR	NSR	3.9E-04	1.1E+00	0.4	--	--	--	--	--	--
MW-55	1	12.4	5.8	less-open	63	74	61	331	NSR	NSR	NSR	NSR	TNP	TNP	NA	--	--	--	--	--	--
MW-55	2	13.1	5.1	less-open	67	64	51	321	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--
MW-55	3	13.4	4.9	less-open	67	48	35	305	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	4	13.9	4.4	less-open	61	316	303	213	2	NW	291-335	44	2.6E-04	7.5E-01	0.5	--	13.9	--	--	--	--
MW-55	5	14.3	4.0	less-open	61	138	125	35	1	SE	116-165	49	2.6E-04	7.5E-01	0.4	14.3	--	--	--	--	--
MW-55	6	14.6	3.6	less-open	54	113	100	10	3	E	70-115	45	2.6E-04	7.5E-01	0.3	--	--	14.6	--	--	--
MW-55	7	15.2	3.1	less-open	59	170	157	67	1	SE	116-165	49	2.6E-04	7.5E-01	0.6	0.9	--	--	--	--	--
MW-55	8	15.8	2.5	less-open	51	143	130	40	1	SE	116-165	49	2.6E-04	7.5E-01	0.6	0.6	--	--	--	--	--
MW-55	9	15.9	2.3	less-open	79	161	148	58	1	SE	116-165	49	2.6E-04	7.5E-01	0.1	0.1	--	--	--	--	--
MW-55	10	16.8	1.5	less-open	68	226	213	123	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	0.8	--	--	--	--	--	--
MW-55	11	16.9	1.3	less-open	79	195	182	92	5	S	166-200	34	2.6E-04	7.5E-01	0.2	--	--	--	--	16.9	--
MW-55	12	17.1	1.2	less-open	60	161	148	58	1	SE	116-165	49	2.6E-04	7.5E-01	0.2	1.2	--	--	--	--	--
MW-55	13	17.2	1.0	less-open	70	142	129	39	1	SE	116-165	49	2.6E-04	7.5E-01	0.1	0.1	--	--	--	--	--
MW-55	14	18.4	-0.1	less-open	70	73	60	330	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	1.2	--	--	--	--	--	--
MW-55	15	19.4	-1.2	less-open	44	29	16	286	6	N	336-21	45	2.6E-04	7.5E-01	1.1	--	--	--	--	--	19.4
MW-55	16	19.8	-1.5	less-open	38	108	95	5	3	E	70-115	45	2.6E-04	7.5E-01	0.3	--	--	5.1	--	--	--
MW-55	17	20.0	-1.8	less-open	28	224	211	121	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	0.3	--	--	--	--	--	--
MW-55	18	20.5	-2.2	less-open	24	203	190	100	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	0.4	--	--	--	--	--	--
MW-55	19	20.5	-2.3	less-open	61	52	39	309	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	0.1	--	--	--	--	--	--
MW-55	20	21.0	-2.7	less-open	61	328	315	225	2	NW	291-335	44	2.6E-04	7.5E-01	0.4	--	7.1	--	--	--	--
MW-55	21	21.9	-3.7	less-open	40	270	257	167	4	W	245-290	45	2.6E-04	7.5E-01	1.0	--	--	--	21.9	--	--
MW-55	22	22.1	-3.8	less-open	75	310	297	207	2	NW	291-335	44	2.6E-04	7.5E-01	0.1	--	1.1	--	--	--	--
MW-55	23	23.3	-5.1	less-open	37	194	181	91	5	S	166-200	34	2.6E-04	7.5E-01	1.2	--	--	--	--	6.4	--
MW-55	24	23.6	-5.3	less-open	68	317	304	214	2	NW	291-335	44	2.6E-04	7.5E-01	0.2	--	1.5	--	--	--	--
MW-55	25	23.7	-5.5	less-open	22	246	233	143	NSR	NSR	NSR	NSR	2.6E-04	7.5E-01	0.2	--	--	--	--	--	--
MW-55	26	24.1	-5.8	less-open	39	141	128	38	1	SE	116-165	49	TNP	TNP	0.4	6.9	--	--	--	--	--
MW-55	27	24.5	-6.3	less-open	43	152	139	49	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--
MW-55	28	24.8	-6.6	less-open	24	174	161	71	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-55	29	25.0	-6.8	less-open	27	250	237	147	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	30	25.3	-7.0	less-open	31	160	147	57	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-55	31	25.6	-7.4	less-open	21	200	187	97	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-55	32	26.2	-7.9	less-open	24	138	125	35	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-55	33	27.0	-8.7	less-open	31	223	210	120	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--
MW-55	34	27.6	-9.4	less-open	50	198	185	95	5	S	166-200	34	TNP	TNP	0.7	--	--	--	--	4.3	--
MW-55	35	27.7	-9.4	less-open	44	49	36	306	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-55	36	28.4	-10.1	less-open	68	270	257	167	4	W	245-290	45	TNP	TNP	0.7	--	--	--	6.4	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-55	37	29.5	-11.3	less-open	23	256	243	153	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--
MW-55	38	30.1	-11.9	less-open	40	120	107	17	3	E	70-115	45	8.8E-04	2.5E+00	0.6	--	--	10.4	--	--	--
MW-55	39	32.3	-14.0	less-open	40	152	139	49	1	SE	116-165	49	8.8E-04	2.5E+00	2.2	7.8	--	--	--	--	--
MW-55	40	32.6	-14.4	less-open	53	85	72	342	3	E	70-115	45	8.8E-04	2.5E+00	0.4	--	--	2.5	--	--	--
MW-55	41	32.7	-14.5	less-open	37	83	70	340	3	E	70-115	45	8.8E-04	2.5E+00	0.1	--	--	0.1	--	--	--
MW-55	42	33.1	-14.8	less-open	73	112	99	9	3	E	70-115	45	8.8E-04	2.5E+00	0.3	--	--	0.3	--	--	--
MW-55	43	33.2	-15.0	less-open	55	94	81	351	3	E	70-115	45	8.8E-04	2.5E+00	0.2	--	--	0.2	--	--	--
MW-55	44	33.3	-15.0	less-open	83	314	301	211	NSR	NSR	NSR	NSR	8.8E-04	2.5E+00	0.0	--	--	--	--	--	--
MW-55	45	33.6	-15.3	less-open	63	141	128	38	1	SE	116-165	49	8.8E-04	2.5E+00	0.3	1.3	--	--	--	--	--
MW-55	46	34.3	-16.0	less-open	68	316	303	213	2	NW	291-335	44	8.8E-04	2.5E+00	0.7	--	10.7	--	--	--	--
MW-55	47	34.5	-16.2	less-open	63	169	156	66	1	SE	116-165	49	8.8E-04	2.5E+00	0.2	0.9	--	--	--	--	--
MW-55	48	35.6	-17.3	less-open	72	152	139	49	1	SE	116-165	49	TNP	TNP	1.1	1.1	--	--	--	--	--
MW-55	49	35.6	-17.4	less-open	76	290	277	187	4	W	245-290	45	TNP	TNP	0.0	--	--	--	7.3	--	--
MW-55	50	36.1	-17.8	less-open	40	310	297	207	2	NW	291-335	44	TNP	TNP	0.5	--	1.8	--	--	--	--
MW-55	51	37.6	-19.3	less-open	53	245	232	142	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-55	52	37.8	-19.6	less-open	78	141	128	38	1	SE	116-165	49	TNP	TNP	0.2	2.2	--	--	--	--	--
MW-55	53	38.5	-20.3	less-open	79	115	102	12	3	E	70-115	45	TNP	TNP	0.7	--	--	5.3	--	--	--
MW-55	54	39.7	-21.4	less-open	69	308	295	205	2	NW	291-335	44	TNP	TNP	1.2	--	3.6	--	--	--	--
MW-55	55	41.5	-23.3	less-open	54	186	173	83	5	S	166-200	34	TNP	TNP	1.9	--	--	--	--	13.9	--
MW-55	56	43.4	-25.1	less-open	64	165	152	62	1	SE	116-165	49	TNP	TNP	1.8	5.6	--	--	--	--	--
MW-55	57	44.3	-26.0	less-open	64	178	165	75	1	SE	116-165	49	1.3E-03	3.7E+00	0.9	0.9	--	--	--	--	--
MW-55	58	45.0	-26.7	less-open	59	227	214	124	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.7	--	--	--	--	--	--
MW-55	59	45.7	-27.5	less-open	33	24	11	281	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.7	--	--	--	--	--	--
MW-55	60	45.9	-27.6	less-open	76	148	135	45	1	SE	116-165	49	1.3E-03	3.7E+00	0.2	1.6	--	--	--	--	--
MW-55	61	46.1	-27.8	less-open	70	204	191	101	5	S	166-200	34	1.3E-03	3.7E+00	0.2	--	--	--	--	4.5	--
MW-55	62	46.1	-27.9	less-open	79	333	320	230	2	NW	291-335	44	1.3E-03	3.7E+00	0.1	--	6.5	--	--	--	--
MW-55	63	46.7	-28.5	less-open	45	102	89	359	3	E	70-115	45	1.3E-03	3.7E+00	0.6	--	--	8.2	--	--	--
MW-55	64	47.0	-28.8	less-open	51	106	93	3	3	E	70-115	45	1.3E-03	3.7E+00	0.3	--	--	0.3	--	--	--
MW-55	65	47.5	-29.2	open	21	94	81	351	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.4	--	--	--	--	--	--
MW-55	66	48.7	-30.5	less-open	68	71	58	328	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	1.3	--	--	--	--	--	--
MW-55	67	49.4	-31.1	less-open	33	249	236	146	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.6	--	--	--	--	--	--
MW-55	68	49.8	-31.6	less-open	13	214	201	111	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.5	--	--	--	--	--	--
MW-55	69	51.0	-32.7	less-open	55	283	270	180	4	W	245-290	45	1.3E-03	3.7E+00	1.2	--	--	--	15.4	--	--
MW-55	70	51.2	-33.0	less-open	49	315	302	212	2	NW	291-335	44	1.3E-03	3.7E+00	0.2	--	5.1	--	--	--	--
MW-55	71	51.4	-33.2	less-open	14	124	111	21	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.2	--	--	--	--	--	--
MW-55	72	51.6	-33.3	less-open	53	318	305	215	2	NW	291-335	44	1.3E-03	3.7E+00	0.2	--	0.4	--	--	--	--
MW-55	73	52.5	-34.2	less-open	36	86	73	343	3	E	70-115	45	1.3E-03	3.7E+00	0.9	--	--	5.4	--	--	--
MW-55	74	52.9	-34.7	less-open	67	101	88	358	3	E	70-115	45	1.3E-03	3.7E+00	0.5	--	--	0.5	--	--	--
MW-55	75	53.4	-35.2	open	43	81	68	338	NSR	NSR	NSR	NSR	1.3E-03	3.7E+00	0.5	--	--	--	--	--	--
MW-55	76	53.6	-35.4	open	44	92	79	349	3	E	70-115	45	1.3E-03	3.7E+00	0.2	--	--	0.7	--	--	--
MW-55	77	54.5	-36.2	less-open	38	287	274	184	4	W	245-290	45	TNP	TNP	0.9	--	--	--	3.5	--	--
MW-55	78	55.3	-37.1	less-open	17	275	262	172	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--
MW-55	79	56.8	-38.6	less-open	59	64	51	321	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-55	80	57.3	-39.1	less-open	64	72	59	329	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-55	81	57.8	-39.5	less-open	59	97	84	354	3	E	70-115	45	TNP	TNP	0.4	--	--	4.2	--	--	--
MW-55	82	58.6	-40.3	less-open	63	303	290	200	4	W	245-290	45	TNP	TNP	0.8	--	--	--	4.1	--	--
MW-55	83	59.0	-40.7	less-open	62	289	276	186	4	W	245-290	45	TNP	TNP	0.4	--	--	--	0.4	--	--
MW-55	84	59.1	-40.9	less-open	63	179	166	76	5	S	166-200	34	TNP	TNP	0.2	--	--	--	--	13.1	--
MW-55	85	59.9	-41.7	less-open	42	321	308	218	2	NW	291-335	44	TNP	TNP	0.8	--	8.3	--	--	--	--
MW-55	86	60.4	-42.1	less-open	44	175	162	72	1	SE	116-165	49	TNP	TNP	0.5	14.5	--	--	--	--	--
MW-55	87	60.4	-42.2	less-open	57	315	302	212	2	NW	291-335	44	TNP	TNP	0.1	--	0.5	--	--	--	--
MW-55	88	60.5	-42.2	less-open	62	79	66	336	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-55	89	60.7	-42.4	less-open	74	96	83	353	3	E	70-115	45	TNP	TNP	0.2	--	--	2.9	--	--	--
MW-55	90	61.3	-43.1	less-open	76	76	63	333	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
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Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-55	91	61.4	-43.2	less-open	78	103	90	0	3	E	70-115	45	TNP	TNP	0.1	--	--	0.7	--	--	--
MW-55	92	61.6	-43.3	less-open	74	254	241	151	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-55	93	61.7	-43.5	less-open	66	75	62	332	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	94	61.8	-43.6	less-open	41	290	277	187	4	W	245-290	45	TNP	TNP	0.1	--	--	--	2.8	--	--
MW-55	95	62.2	-44.0	less-open	52	268	255	165	4	W	245-290	45	TNP	TNP	0.4	--	--	--	0.4	--	--
MW-55	96	62.5	-44.2	less-open	51	89	76	346	3	E	70-115	45	TNP	TNP	0.2	--	--	1.1	--	--	--
MW-55	97	62.7	-44.5	less-open	44	311	298	208	2	NW	291-335	44	TNP	TNP	0.2	--	2.3	--	--	--	--
MW-55	98	63.3	-45.0	less-open	37	304	291	201	2	NW	291-335	44	TNP	TNP	0.5	--	0.5	--	--	--	--
MW-55	99	63.4	-45.1	less-open	51	88	75	345	3	E	70-115	45	TNP	TNP	0.1	--	--	0.9	--	--	--
MW-55	100	63.5	-45.3	less-open	55	325	312	222	2	NW	291-335	44	TNP	TNP	0.1	--	0.3	--	--	--	--
MW-55	101	63.7	-45.5	less-open	30	239	226	136	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	102	64.0	-45.8	less-open	74	95	82	352	3	E	70-115	45	TNP	TNP	0.3	--	--	0.7	--	--	--
MW-55	103	64.4	-46.1	less-open	68	87	74	344	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-55	104	64.5	-46.3	less-open	52	280	267	177	4	W	245-290	45	TNP	TNP	0.2	--	--	--	2.3	--	--
MW-55	105	64.6	-46.4	less-open	48	295	282	192	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.1	--	--
MW-55	106	64.9	-46.7	less-open	31	75	62	332	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-55	107	65.0	-46.7	less-open	70	85	72	342	3	E	70-115	45	TNP	TNP	0.1	--	--	0.6	--	--	--
MW-55	108	65.0	-46.8	less-open	78	313	300	210	2	NW	291-335	44	TNP	TNP	0.0	--	1.5	--	--	--	--
MW-55	109	65.5	-47.3	less-open	52	360	347	257	6	N	336-21	45	TNP	TNP	0.5	--	--	--	--	--	46.1
MW-55	110	65.8	-47.5	less-open	79	170	157	67	1	SE	116-165	49	TNP	TNP	0.2	5.4	--	--	--	--	--
MW-55	111	65.9	-47.6	less-open	44	324	311	221	2	NW	291-335	44	TNP	TNP	0.1	--	0.8	--	--	--	--
MW-55	112	66.1	-47.8	less-open	52	106	93	3	3	E	70-115	45	TNP	TNP	0.2	--	--	1.1	--	--	--
MW-55	113	66.3	-48.0	less-open	69	62	49	319	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	114	66.7	-48.5	less-open	50	340	327	237	2	NW	291-335	44	TNP	TNP	0.5	--	0.9	--	--	--	--
MW-55	115	67.0	-48.7	less-open	56	359	346	256	6	N	336-21	45	TNP	TNP	0.2	--	--	--	--	--	1.5
MW-55	116	67.3	-49.1	less-open	57	6	353	263	6	N	336-21	45	TNP	TNP	0.4	--	--	--	--	--	0.4
MW-55	117	67.8	-49.5	less-open	55	1	348	258	6	N	336-21	45	TNP	TNP	0.4	--	--	--	--	--	0.4
MW-55	118	68.1	-49.8	less-open	47	5	352	262	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	0.3
MW-55	119	68.4	-50.1	less-open	47	339	326	236	2	NW	291-335	44	TNP	TNP	0.3	--	1.6	--	--	--	--
MW-55	120	68.6	-50.3	less-open	72	208	195	105	5	S	166-200	34	TNP	TNP	0.2	--	--	--	--	9.5	--
MW-55	121	69.2	-51.0	less-open	48	302	289	199	4	W	245-290	45	TNP	TNP	0.7	--	--	--	4.6	--	--
MW-55	122	69.8	-51.5	less-open	57	122	109	19	3	E	70-115	45	TNP	TNP	0.5	--	--	3.7	--	--	--
MW-55	123	69.9	-51.6	less-open	60	201	188	98	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	1.3	--
MW-55	124	70.6	-52.3	less-open	39	295	282	192	4	W	245-290	45	TNP	TNP	0.7	--	--	--	1.3	--	--
MW-55	125	71.1	-52.8	less-open	27	270	257	167	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-55	126	71.4	-53.2	less-open	48	188	175	85	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	1.6	--
MW-55	127	71.8	-53.5	less-open	60	203	190	100	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	0.3	--
MW-55	128	72.1	-53.9	less-open	66	93	80	350	3	E	70-115	45	TNP	TNP	0.4	--	--	2.4	--	--	--
MW-55	129	72.4	-54.2	less-open	56	187	174	84	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	0.7	--
MW-55	130	73.9	-55.7	less-open	27	255	242	152	NSR	NSR	NSR	NSR	TNP	TNP	1.5	--	--	--	--	--	--
MW-55	131	74.1	-55.8	less-open	60	179	166	76	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	1.7	--
MW-55	132	74.3	-56.0	less-open	60	163	150	60	1	SE	116-165	49	TNP	TNP	0.2	8.5	--	--	--	--	--
MW-55	133	74.7	-56.5	less-open	47	330	317	227	2	NW	291-335	44	TNP	TNP	0.4	--	6.4	--	--	--	--
MW-55	134	75.3	-57.0	less-open	53	332	319	229	2	NW	291-335	44	TNP	TNP	0.5	--	0.5	--	--	--	--
MW-55	135	76.0	-57.7	less-open	5	307	294	204	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--
MW-55	136	76.2	-57.9	less-open	7	297	284	194	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-55	137	76.6	-58.3	less-open	12	175	162	72	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-56	1	31.02	39.2	less-open	78	193	180	90	5	S	166-200	34	TNP	TNP	NA	--	--	--	--	31.0	--
MW-56	2	32.45	37.81	less-open	52	173	160	70	1	SE	116-165	49	TNP	TNP	1.4	32.5	--	--	--	--	--
MW-56	3	32.56	37.7	less-open	80	223	210	120	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-56	4	32.91	37.35	less-open	79	228	215	125	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-56	5	33.01	37.25	less-open	74	12	359	269	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	33.0
MW-56	6	33.68	36.58	less-open	40	338	325	235	2	NW	291-335	44	TNP	TNP	0.7	--	33.7	--	--	--	--
MW-56	7	35.65	34.61	less-open	20	144	131	41	NSR	NSR	NSR	NSR	TNP	TNP	2.0	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-56	8	36.9	33.36	less-open	64	147	134	44	1	SE	116-165	49	TNP	TNP	1.3	4.5	--	--	--	--	--	--
MW-56	9	37.81	32.45	less-open	50	347	334	244	2	NW	291-335	44	TNP	TNP	0.9	--	4.1	--	--	--	--	--
MW-56	10	38.79	31.47	less-open	73	5	352	262	6	N	336-21	45	TNP	TNP	1.0	--	--	--	--	--	--	5.8
MW-56	11	39.83	30.43	less-open	30	86	73	343	NSR	NSR	NSR	NSR	TNP	TNP	1.0	--	--	--	--	--	--	--
MW-56	12	40.01	30.25	less-open	34	115	102	12	3	E	70-115	45	TNP	TNP	0.2	--	--	40.0	--	--	--	--
MW-56	13	41.21	29.05	less-open	67	13	0	270	6	N	336-21	45	TNP	TNP	1.2	--	--	--	--	--	--	2.4
MW-56	14	41.71	28.55	less-open	52	301	288	198	4	W	245-290	45	TNP	TNP	0.5	--	--	--	41.7	--	--	--
MW-56	15	42.54	27.72	less-open	60	2	349	259	6	N	336-21	45	TNP	TNP	0.8	--	--	--	--	--	--	1.3
MW-56	16	42.6	27.66	open	64	155	142	52	1	SE	116-165	49	TNP	TNP	0.1	5.7	--	--	--	--	--	--
MW-56	17	43.33	26.93	less-open	20	80	67	337	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--	--
MW-56	18	43.83	26.43	less-open	65	1	348	258	6	N	336-21	45	TNP	TNP	0.5	--	--	--	--	--	--	1.3
MW-56	19	44.42	25.84	less-open	69	1	348	258	6	N	336-21	45	TNP	TNP	0.6	--	--	--	--	--	--	0.6
MW-56	20	44.83	25.43	less-open	67	176	163	73	1	SE	116-165	49	TNP	TNP	0.4	2.2	--	--	--	--	--	--
MW-56	21	45.02	25.24	less-open	66	4	351	261	6	N	336-21	45	TNP	TNP	0.2	--	--	--	--	--	--	0.6
MW-56	22	45.29	24.97	less-open	71	7	354	264	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	--	0.3
MW-56	23	45.7	24.56	less-open	74	8	355	265	6	N	336-21	45	TNP	TNP	0.4	--	--	--	--	--	--	0.4
MW-56	24	46.96	23.3	less-open	36	173	160	70	1	SE	116-165	49	TNP	TNP	1.3	2.1	--	--	--	--	--	--
MW-56	25	47.05	23.21	less-open	71	10	357	267	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	--	1.3
MW-56	26	48.1	22.16	less-open	18	167	154	64	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--	--
MW-56	27	48.39	21.87	less-open	75	4	351	261	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	--	1.3
MW-56	28	50.31	19.95	less-open	15	212	199	109	NSR	NSR	NSR	NSR	TNP	TNP	1.9	--	--	--	--	--	--	--
MW-56	29	51.62	18.64	less-open	3	188	175	85	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--	--
MW-56	30	51.7	18.56	less-open	6	330	317	227	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-56	31	51.78	18.48	less-open	8	156	143	53	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-56	32	51.94	18.32	less-open	9	10	357	267	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-56	33	52.5	17.76	less-open	66	6	353	263	6	N	336-21	45	TNP	TNP	0.6	--	--	--	--	--	--	4.1
MW-56	34	52.84	17.42	less-open	5	198	185	95	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--
MW-56	35	53.2	17.06	less-open	62	221	208	118	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	--
MW-56	36	53.68	16.58	less-open	44	341	328	238	2	NW	291-335	44	TNP	TNP	0.5	--	15.9	--	--	--	--	--
MW-56	37	54.13	16.13	less-open	13	121	108	18	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-56	38	56.09	14.17	less-open	38	331	318	228	2	NW	291-335	44	TNP	TNP	2.0	--	2.4	--	--	--	--	--
MW-56	39	57.17	13.09	less-open	53	352	339	249	6	N	336-21	45	TNP	TNP	1.1	--	--	--	--	--	--	4.7
MW-56	40	57.2	13.06	less-open	48	321	308	218	2	NW	291-335	44	TNP	TNP	0.0	--	1.1	--	--	--	--	--
MW-56	41	57.22	13.04	less-open	37	204	191	101	5	S	166-200	34	TNP	TNP	0.0	--	--	--	--	--	26.2	--
MW-56	42	57.59	12.67	less-open	70	201	188	98	5	S	166-200	34	TNP	TNP	0.4	--	--	--	--	--	0.4	--
MW-56	43	57.62	12.64	less-open	15	290	277	187	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--	--
MW-56	44	58.17	12.09	less-open	78	208	195	105	5	S	166-200	34	TNP	TNP	0.6	--	--	--	--	--	0.6	--
MW-56	45	59.12	11.14	less-open	8	85	72	342	NSR	NSR	NSR	NSR	TNP	TNP	0.9	--	--	--	--	--	--	--
MW-56	46	59.84	10.42	less-open	74	119	106	16	3	E	70-115	45	TNP	TNP	0.7	--	--	19.8	--	--	--	--
MW-56	47	60.9	9.36	less-open	46	341	328	238	2	NW	291-335	44	TNP	TNP	1.1	--	3.7	--	--	--	--	--
MW-56	48	61.1	9.16	less-open	69	221	208	118	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-56	49	61.53	8.73	less-open	62	223	210	120	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	--
MW-56	50	61.69	8.57	less-open	57	234	221	131	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-56	51	61.8	8.46	less-open	9	28	15	285	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-56	52	61.86	8.4	less-open	27	147	134	44	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-56	53	62.52	7.74	less-open	41	357	344	254	6	N	336-21	45	TNP	TNP	0.7	--	--	--	--	--	--	5.4
MW-56	54	62.52	7.74	less-open	68	143	130	40	1	SE	116-165	49	TNP	TNP	0.0	15.6	--	--	--	--	--	--
MW-56	55	63.1	7.16	less-open	36	275	262	172	4	W	245-290	45	TNP	TNP	0.6	--	--	--	21.4	--	--	--
MW-56	56	63.33	6.93	less-open	32	34	21	291	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-56	57	63.94	6.32	less-open	37	307	294	204	2	NW	291-335	44	TNP	TNP	0.6	--	3.0	--	--	--	--	--
MW-56	58	64.5	5.76	less-open	53	303	290	200	4	W	245-290	45	TNP	TNP	0.6	--	--	--	1.4	--	--	--
MW-56	59	65.12	5.14	less-open	59	172	159	69	1	SE	116-165	49	TNP	TNP	0.6	2.6	--	--	--	--	--	--
MW-56	60	65.4	4.86	less-open	58	175	162	72	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--	--
MW-56	61	66.67	3.59	less-open	61	328	315	225	2	NW	291-335	44	TNP	TNP	1.3	--	2.7	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-56	62	67.98	2.28	less-open	66	274	261	171	4	W	245-290	45	TNP	TNP	1.3	--	--	--	3.5	--	--
MW-56	63	68.04	2.22	less-open	63	275	262	172	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.1	--	--
MW-56	64	68.71	1.55	less-open	57	231	218	128	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--
MW-56	65	69.08	1.18	less-open	8	271	258	168	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-56	66	69.29	0.97	less-open	8	340	327	237	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-56	67	69.45	0.81	less-open	50	173	160	70	1	SE	116-165	49	TNP	TNP	0.2	4.1	--	--	--	--	--
MW-56	68	69.86	0.4	less-open	8	236	223	133	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-56	69	69.97	0.29	less-open	18	326	313	223	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-56	70	70.17	0.09	less-open	58	277	264	174	4	W	245-290	45	0.0	9.0E-01	0.2	--	--	--	2.1	--	--
MW-56	71	70.2	0.06	less-open	72	176	163	73	1	SE	116-165	49	0.0	9.0E-01	0.0	0.8	--	--	--	--	--
MW-56	72	70.33	-0.07	less-open	46	29	16	286	6	N	336-21	45	0.0	9.0E-01	0.1	--	--	--	--	--	7.8
MW-56	73	70.92	-0.66	less-open	6	295	282	192	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.6	--	--	--	--	--	--
MW-56	74	71	-0.74	less-open	23	314	301	211	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.1	--	--	--	--	--	--
MW-56	75	71.02	-0.76	less-open	66	295	282	192	4	W	245-290	45	0.0	9.0E-01	0.0	--	--	--	0.8	--	--
MW-56	76	71.54	-1.28	less-open	18	278	265	175	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.5	--	--	--	--	--	--
MW-56	77	71.57	-1.31	less-open	76	179	166	76	5	S	166-200	34	0.0	9.0E-01	0.0	--	--	--	--	13.4	--
MW-56	78	71.68	-1.42	less-open	39	351	338	248	6	N	336-21	45	0.0	9.0E-01	0.1	--	--	--	--	--	1.4
MW-56	79	71.8	-1.54	less-open	36	19	6	276	6	N	336-21	45	0.0	9.0E-01	0.1	--	--	--	--	--	0.1
MW-56	80	72.66	-2.4	less-open	17	293	280	190	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.9	--	--	--	--	--	--
MW-56	81	72.85	-2.59	less-open	79	220	207	117	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.2	--	--	--	--	--	--
MW-56	82	73.3	-3.04	less-open	78	224	211	121	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.5	--	--	--	--	--	--
MW-56	83	73.49	-3.23	less-open	26	219	206	116	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.2	--	--	--	--	--	--
MW-56	84	73.79	-3.53	less-open	33	1	348	258	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.3	--	--	--	--	--	--
MW-56	85	73.93	-3.67	less-open	63	171	158	68	1	SE	116-165	49	0.0	9.0E-01	0.1	3.7	--	--	--	--	--
MW-56	86	74.41	-4.15	less-open	52	273	260	170	4	W	245-290	45	0.0	9.0E-01	0.5	--	--	--	3.4	--	--
MW-56	87	74.73	-4.47	less-open	45	254	241	151	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.3	--	--	--	--	--	--
MW-56	88	75.28	-5.02	less-open	75	142	129	39	1	SE	116-165	49	0.0	9.0E-01	0.5	1.3	--	--	--	--	--
MW-56	89	75.59	-5.33	less-open	24	352	339	249	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.3	--	--	--	--	--	--
MW-56	90	75.77	-5.51	less-open	61	206	193	103	5	S	166-200	34	0.0	9.0E-01	0.2	--	--	--	--	4.2	--
MW-56	91	76.08	-5.82	less-open	71	171	158	68	1	SE	116-165	49	0.0	9.0E-01	0.3	0.8	--	--	--	--	--
MW-56	92	76.61	-6.35	less-open	58	264	251	161	4	W	245-290	45	0.0	9.0E-01	0.5	--	--	--	2.2	--	--
MW-56	93	76.96	-6.7	less-open	57	258	245	155	4	W	245-290	45	0.0	9.0E-01	0.3	--	--	--	0.3	--	--
MW-56	94	77.04	-6.78	less-open	24	93	80	350	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.1	--	--	--	--	--	--
MW-56	95	77.07	-6.81	less-open	57	263	250	160	4	W	245-290	45	0.0	9.0E-01	0.0	--	--	--	0.1	--	--
MW-56	96	77.33	-7.07	less-open	49	170	157	67	1	SE	116-165	49	0.0	9.0E-01	0.3	1.3	--	--	--	--	--
MW-56	97	77.53	-7.27	less-open	61	204	191	101	5	S	166-200	34	0.0	9.0E-01	0.2	--	--	--	--	1.8	--
MW-56	98	77.54	-7.28	less-open	59	187	174	84	5	S	166-200	34	0.0	9.0E-01	0.0	--	--	--	--	0.0	--
MW-56	99	78.64	-8.38	less-open	72	162	149	59	1	SE	116-165	49	0.0	9.0E-01	1.1	1.3	--	--	--	--	--
MW-56	100	78.8	-8.54	less-open	83	357	344	254	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.2	--	--	--	--	--	--
MW-56	101	78.92	-8.66	less-open	55	162	149	59	1	SE	116-165	49	0.0	9.0E-01	0.1	0.3	--	--	--	--	--
MW-56	102	79.13	-8.87	less-open	80	171	158	68	1	SE	116-165	49	0.0	9.0E-01	0.2	0.2	--	--	--	--	--
MW-56	103	79.25	-8.99	less-open	64	179	166	76	5	S	166-200	34	0.0	9.0E-01	0.1	--	--	--	--	1.7	--
MW-56	104	79.39	-9.13	less-open	79	123	110	20	3	E	70-115	45	0.0	9.0E-01	0.1	--	--	19.6	--	--	--
MW-56	105	79.77	-9.51	less-open	40	256	243	153	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.4	--	--	--	--	--	--
MW-56	106	79.96	-9.7	less-open	51	172	159	69	1	SE	116-165	49	0.0	9.0E-01	0.2	0.8	--	--	--	--	--
MW-56	107	80.5	-10.24	less-open	24	175	162	72	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.5	--	--	--	--	--	--
MW-56	108	80.66	-10.4	less-open	71	178	165	75	1	SE	116-165	49	0.0	9.0E-01	0.2	0.7	--	--	--	--	--
MW-56	109	80.75	-10.49	less-open	35	221	208	118	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.1	--	--	--	--	--	--
MW-56	110	80.83	-10.57	less-open	53	318	305	215	2	NW	291-335	44	0.0	9.0E-01	0.1	--	14.2	--	--	--	--
MW-56	111	80.98	-10.72	less-open	78	178	165	75	1	SE	116-165	49	0.0	9.0E-01	0.2	0.3	--	--	--	--	--
MW-56	112	81.11	-10.85	less-open	53	239	226	136	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.1	--	--	--	--	--	--
MW-56	113	81.19	-10.93	less-open	75	180	167	77	5	S	166-200	34	0.0	9.0E-01	0.1	--	--	--	--	1.9	--
MW-56	114	81.58	-11.32	less-open	73	181	168	78	5	S	166-200	34	0.0	9.0E-01	0.4	--	--	--	--	0.4	--
MW-56	115	81.72	-11.46	less-open	36	174	161	71	1	SE	116-165	49	0.0	9.0E-01	0.1	0.7	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-56	116	81.9	-11.64	less-open	71	155	142	52	1	SE	116-165	49	0.0	9.0E-01	0.2	0.2	--	--	--	--	--	--
MW-56	117	83.01	-12.75	less-open	80	186	173	83	5	S	166-200	34	0.0	9.0E-01	1.1	--	--	--	--	1.4	--	--
MW-56	118	83.93	-13.67	less-open	59	150	137	47	1	SE	116-165	49	0.0	9.0E-01	0.9	2.0	--	--	--	--	--	--
MW-56	119	84.27	-14.01	less-open	31	229	216	126	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.3	--	--	--	--	--	--	--
MW-56	120	84.28	-14.02	less-open	67	342	329	239	2	NW	291-335	44	0.0	9.0E-01	0.0	--	3.5	--	--	--	--	--
MW-56	121	84.59	-14.33	less-open	39	221	208	118	NSR	NSR	NSR	NSR	0.0	9.0E-01	0.3	--	--	--	--	--	--	--
MW-56	122	84.86	-14.6	less-open	54	207	194	104	5	S	166-200	34	0.0	9.0E-01	0.3	--	--	--	--	1.8	--	--
MW-56	123	85.35	-15.09	less-open	63	236	223	133	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-56	124	85.61	-15.35	less-open	90	60	47	317	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--
MW-56	125	86.14	-15.88	less-open	87	71	58	328	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-56	126	86.51	-16.25	less-open	90	216	203	113	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	--
MW-57	1	6.17	8.81	less-open	78	133	120	30	1	SE	116-165	49	0.0	3.8E-01	NA	6.2	--	--	--	--	--	--
MW-57	2	6.44	8.54	open	16	65	52	322	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.3	--	--	--	--	--	--	--
MW-57	3	6.61	8.37	less-open	5	300	287	197	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.2	--	--	--	--	--	--	--
MW-57	4	6.88	8.1	less-open	44	162	149	59	1	SE	116-165	49	0.0	3.8E-01	0.3	0.7	--	--	--	--	--	--
MW-57	5	7.36	7.62	less-open	37	235	222	132	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.5	--	--	--	--	--	--	--
MW-57	6	7.46	7.52	less-open	16	42	29	299	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.1	--	--	--	--	--	--	--
MW-57	7	7.75	7.23	less-open	22	26	13	283	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.3	--	--	--	--	--	--	--
MW-57	8	7.86	7.12	open	9	336	323	233	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.1	--	--	--	--	--	--	--
MW-57	9	8.53	6.45	less-open	16	345	332	242	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.7	--	--	--	--	--	--	--
MW-57	10	9.12	5.86	less-open	73	254	241	151	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.6	--	--	--	--	--	--	--
MW-57	11	9.44	5.54	less-open	48	352	339	249	6	N	336-21	45	0.0	3.8E-01	0.3	--	--	--	--	--	9.4	--
MW-57	12	10.25	4.73	less-open	29	46	33	303	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.8	--	--	--	--	--	--	--
MW-57	13	10.52	4.46	less-open	18	40	27	297	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.3	--	--	--	--	--	--	--
MW-57	14	10.74	4.24	less-open	21	356	343	253	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.2	--	--	--	--	--	--	--
MW-57	15	10.87	4.11	less-open	31	15	2	272	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.1	--	--	--	--	--	--	--
MW-57	16	11.03	3.95	open	25	29	16	286	NSR	NSR	NSR	NSR	0.0	3.8E-01	0.2	--	--	--	--	--	--	--
MW-57	17	11.12	3.86	less-open	27	308	295	205	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-57	18	11.24	3.74	less-open	27	332	319	229	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-57	19	11.41	3.57	less-open	56	99	86	356	3	E	70-115	45	TNP	TNP	0.2	--	--	11.4	--	--	--	--
MW-57	20	11.99	2.99	less-open	62	102	89	359	3	E	70-115	45	TNP	TNP	0.6	--	--	0.6	--	--	--	--
MW-57	21	12.2	2.78	less-open	18	356	343	253	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-57	22	12.7	2.28	less-open	11	41	28	298	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-57	23	13.42	1.56	less-open	68	98	85	355	3	E	70-115	45	TNP	TNP	0.7	--	--	1.4	--	--	--	--
MW-57	24	15.9	-0.92	less-open	16	314	301	211	NSR	NSR	NSR	NSR	0.0	3.2E+00	2.5	--	--	--	--	--	--	--
MW-57	25	16.34	-1.36	less-open	16	4	351	261	NSR	NSR	NSR	NSR	0.0	3.2E+00	0.4	--	--	--	--	--	--	--
MW-57	26	16.34	-1.36	less-open	80	106	93	3	3	E	70-115	45	0.0	3.2E+00	0.0	--	--	2.9	--	--	--	--
MW-57	27	17.61	-2.63	less-open	16	355	342	252	NSR	NSR	NSR	NSR	0.0	3.2E+00	1.3	--	--	--	--	--	--	--
MW-57	28	18.44	-3.46	less-open	56	172	159	69	1	SE	116-165	49	0.0	3.2E+00	0.8	11.6	--	--	--	--	--	--
MW-57	29	19.58	-4.6	less-open	32	292	279	189	NSR	NSR	NSR	NSR	0.0	3.2E+00	1.1	--	--	--	--	--	--	--
MW-57	30	19.82	-4.84	less-open	68	90	77	347	3	E	70-115	45	0.0	3.2E+00	0.2	--	--	3.5	--	--	--	--
MW-57	31	21.17	-6.19	less-open	26	8	355	265	NSR	NSR	NSR	NSR	0.0	3.2E+00	1.4	--	--	--	--	--	--	--
MW-57	32	21.76	-6.78	less-open	16	336	323	233	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--	--
MW-57	33	22.01	-7.03	less-open	22	266	253	163	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--	--
MW-57	34	22.85	-7.87	less-open	33	311	298	208	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--	--
MW-57	35	22.86	-7.88	less-open	64	195	182	92	5	S	166-200	34	TNP	TNP	0.0	--	--	--	--	22.9	--	--
MW-57	36	23.76	-8.78	less-open	47	344	331	241	2	NW	291-335	44	TNP	TNP	0.9	--	23.8	--	--	--	--	--
MW-57	37	24.19	-9.21	less-open	60	132	119	29	1	SE	116-165	49	TNP	TNP	0.4	5.8	--	--	--	--	--	--
MW-57	38	25.08	-10.1	less-open	68	147	134	44	1	SE	116-165	49	TNP	TNP	0.9	0.9	--	--	--	--	--	--
MW-57	39	25.76	-10.78	less-open	69	170	157	67	1	SE	116-165	49	TNP	TNP	0.7	0.7	--	--	--	--	--	--
MW-57	40	28.16	-13.18	less-open	59	110	97	7	3	E	70-115	45	TNP	TNP	2.4	--	--	8.3	--	--	--	--
MW-57	41	28.35	-13.37	less-open	73	257	244	154	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-57	42	29.15	-14.17	less-open	74	115	102	12	3	E	70-115	45	TNP	TNP	0.8	--	--	1.0	--	--	--	--
MW-57	43	29.71	-14.73	open	21	280	267	177	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--	--

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-57	44	29.77	-14.79	less-open	75	82	69	339	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-57	45	30.12	-15.14	less-open	74	77	64	334	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-57	46	30.46	-15.48	less-open	78	91	78	348	3	E	70-115	45	TNP	TNP	0.3	--	--	1.3	--	--	--
MW-57	47	30.95	-15.97	less-open	73	95	82	352	3	E	70-115	45	0.0	2.8E-01	0.5	--	--	0.5	--	--	--
MW-57	48	31.81	-16.83	less-open	78	143	130	40	1	SE	116-165	49	0.0	2.8E-01	0.9	6.1	--	--	--	--	--
MW-57	49	32.02	-17.04	less-open	73	129	116	26	1	SE	116-165	49	0.0	2.8E-01	0.2	0.2	--	--	--	--	--
MW-57	50	32.04	-17.06	less-open	37	331	318	228	2	NW	291-335	44	0.0	2.8E-01	0.0	--	8.3	--	--	--	--
MW-57	51	32.37	-17.39	less-open	33	291	278	188	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.3	--	--	--	--	--	--
MW-57	52	32.5	-17.52	less-open	81	247	234	144	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.1	--	--	--	--	--	--
MW-57	53	32.72	-17.74	less-open	35	115	102	12	3	E	70-115	45	0.0	2.8E-01	0.2	--	--	1.8	--	--	--
MW-57	54	32.87	-17.89	less-open	61	284	271	181	4	W	245-290	45	0.0	2.8E-01	0.1	--	--	--	32.9	--	--
MW-57	55	32.96	-17.98	less-open	38	286	273	183	4	W	245-290	45	0.0	2.8E-01	0.1	--	--	--	0.1	--	--
MW-57	56	33.37	-18.39	less-open	74	90	77	347	3	E	70-115	45	0.0	2.8E-01	0.4	--	--	0.6	--	--	--
MW-57	57	33.37	-18.39	less-open	73	287	274	184	4	W	245-290	45	0.0	2.8E-01	0.0	--	--	--	0.4	--	--
MW-57	58	34.23	-19.25	less-open	77	298	285	195	4	W	245-290	45	0.0	2.8E-01	0.9	--	--	--	0.9	--	--
MW-57	59	34.57	-19.59	less-open	63	329	316	226	2	NW	291-335	44	0.0	2.8E-01	0.3	--	2.5	--	--	--	--
MW-57	60	35.3	-20.32	less-open	46	292	279	189	4	W	245-290	45	0.0	2.8E-01	0.7	--	--	--	1.1	--	--
MW-57	61	35.59	-20.61	less-open	48	105	92	2	3	E	70-115	45	0.0	2.8E-01	0.3	--	--	2.2	--	--	--
MW-57	62	35.64	-20.66	less-open	56	318	305	215	2	NW	291-335	44	0.0	2.8E-01	0.0	--	1.1	--	--	--	--
MW-57	63	35.81	-20.83	less-open	22	312	299	209	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.2	--	--	--	--	--	--
MW-57	64	36.08	-21.1	less-open	53	304	291	201	2	NW	291-335	44	0.0	2.8E-01	0.3	--	0.4	--	--	--	--
MW-57	65	36.37	-21.39	less-open	47	312	299	209	2	NW	291-335	44	0.0	2.8E-01	0.3	--	0.3	--	--	--	--
MW-57	66	36.53	-21.55	less-open	53	307	294	204	2	NW	291-335	44	0.0	2.8E-01	0.2	--	0.2	--	--	--	--
MW-57	67	36.73	-21.75	less-open	69	87	74	344	3	E	70-115	45	0.0	2.8E-01	0.2	--	--	1.1	--	--	--
MW-57	68	36.79	-21.81	less-open	45	312	299	209	2	NW	291-335	44	0.0	2.8E-01	0.1	--	0.3	--	--	--	--
MW-57	69	36.97	-21.99	less-open	48	287	274	184	4	W	245-290	45	0.0	2.8E-01	0.2	--	--	--	1.7	--	--
MW-57	70	37.16	-22.18	less-open	43	307	294	204	2	NW	291-335	44	0.0	2.8E-01	0.2	--	0.4	--	--	--	--
MW-57	71	38.09	-23.11	less-open	42	317	304	214	2	NW	291-335	44	0.0	2.8E-01	0.9	--	0.9	--	--	--	--
MW-57	72	38.31	-23.33	less-open	56	316	303	213	2	NW	291-335	44	0.0	2.8E-01	0.2	--	0.2	--	--	--	--
MW-57	73	38.45	-23.47	less-open	77	127	114	24	3	E	70-115	45	0.0	2.8E-01	0.1	--	--	1.7	--	--	--
MW-57	74	38.76	-23.78	less-open	66	306	293	203	2	NW	291-335	44	0.0	2.8E-01	0.3	--	0.4	--	--	--	--
MW-57	75	38.85	-23.87	less-open	65	321	308	218	2	NW	291-335	44	0.0	2.8E-01	0.1	--	0.1	--	--	--	--
MW-57	76	38.96	-23.98	less-open	64	312	299	209	2	NW	291-335	44	0.0	2.8E-01	0.1	--	0.1	--	--	--	--
MW-57	77	39.15	-24.17	less-open	32	307	294	204	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.2	--	--	--	--	--	--
MW-57	78	39.38	-24.4	less-open	53	326	313	223	2	NW	291-335	44	0.0	2.8E-01	0.2	--	0.4	--	--	--	--
MW-57	79	39.64	-24.66	less-open	63	317	304	214	2	NW	291-335	44	0.0	2.8E-01	0.3	--	0.3	--	--	--	--
MW-57	80	39.8	-24.82	less-open	66	323	310	220	2	NW	291-335	44	0.0	2.8E-01	0.2	--	0.2	--	--	--	--
MW-57	81	40.03	-25.05	less-open	76	126	113	23	3	E	70-115	45	0.0	2.8E-01	0.2	--	--	1.6	--	--	--
MW-57	82	40.7	-25.72	less-open	52	216	203	113	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.7	--	--	--	--	--	--
MW-57	83	41.35	-26.37	less-open	40	58	45	315	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.6	--	--	--	--	--	--
MW-57	84	41.44	-26.46	less-open	47	215	202	112	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.1	--	--	--	--	--	--
MW-57	85	42.13	-27.15	less-open	57	122	109	19	3	E	70-115	45	0.0	2.8E-01	0.7	--	--	2.1	--	--	--
MW-57	86	43.03	-28.05	less-open	15	31	18	288	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.9	--	--	--	--	--	--
MW-57	87	43.06	-28.08	less-open	74	312	299	209	2	NW	291-335	44	0.0	2.8E-01	0.0	--	3.3	--	--	--	--
MW-57	88	43.26	-28.28	less-open	29	325	312	222	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.2	--	--	--	--	--	--
MW-57	89	43.37	-28.39	less-open	67	290	277	187	4	W	245-290	45	0.0	2.8E-01	0.1	--	--	--	6.4	--	--
MW-57	90	43.66	-28.68	less-open	52	116	103	13	3	E	70-115	45	0.0	2.8E-01	0.3	--	--	1.5	--	--	--
MW-57	91	43.78	-28.8	less-open	83	83	70	340	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.1	--	--	--	--	--	--
MW-57	92	43.84	-28.86	less-open	54	93	80	350	3	E	70-115	45	0.0	2.8E-01	0.1	--	--	0.2	--	--	--
MW-57	93	44.11	-29.13	less-open	67	72	59	329	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.3	--	--	--	--	--	--
MW-57	94	44.13	-29.15	less-open	76	349	336	246	6	N	336-21	45	0.0	2.8E-01	0.0	--	--	--	--	--	34.7
MW-57	95	44.33	-29.35	less-open	78	86	73	343	3	E	70-115	45	0.0	2.8E-01	0.2	--	--	0.5	--	--	--
MW-57	96	44.91	-29.93	less-open	90	328	315	225	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.6	--	--	--	--	--	--
MW-57	97	45.17	-30.19	less-open	89	310	297	207	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.3	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-57	98	45.73	-30.75	less-open	90	306	293	203	NSR	NSR	NSR	NSR	0.0	2.8E-01	0.6	--	--	--	--	--	--
MW-58	1	16.76	-2.19	less-open	36	344	331	241	2	NW	291-335	44	1.1E-04	3.0E-01	NA	--	16.8	--	--	--	--
MW-58	2	16.95	-2.38	less-open	43	341	328	238	2	NW	291-335	44	1.1E-04	3.0E-01	0.2	--	0.2	--	--	--	--
MW-58	3	17.41	-2.84	less-open	67	171	158	68	1	SE	116-165	49	1.1E-04	3.0E-01	0.5	17.4	--	--	--	--	--
MW-58	4	17.82	-3.25	less-open	67	357	344	254	6	N	336-21	45	1.1E-04	3.0E-01	0.4	--	--	--	--	--	17.8
MW-58	5	17.99	-3.42	less-open	59	349	336	246	6	N	336-21	45	1.1E-04	3.0E-01	0.2	--	--	--	--	--	0.2
MW-58	6	18.30	-3.73	less-open	53	12	359	269	6	N	336-21	45	1.1E-04	3.0E-01	0.3	--	--	--	--	--	0.3
MW-58	7	18.72	-4.15	less-open	73	204	191	101	5	S	166-200	34	1.1E-04	3.0E-01	0.4	--	--	--	--	--	18.7
MW-58	8	18.75	-4.18	less-open	33	21	8	278	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.0	--	--	--	--	--	--
MW-58	9	18.86	-4.29	less-open	67	4	351	261	6	N	336-21	45	1.1E-04	3.0E-01	0.1	--	--	--	--	--	0.6
MW-58	10	19.14	-4.57	less-open	30	15	2	272	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.3	--	--	--	--	--	--
MW-58	11	19.28	-4.71	less-open	35	353	340	250	6	N	336-21	45	1.1E-04	3.0E-01	0.1	--	--	--	--	--	0.4
MW-58	12	19.43	-4.86	open	29	344	331	241	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.1	--	--	--	--	--	--
MW-58	13	19.96	-5.39	less-open	66	164	151	61	1	SE	116-165	49	1.1E-04	3.0E-01	0.5	2.6	--	--	--	--	--
MW-58	14	20.28	-5.71	less-open	57	335	322	232	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	3.3	--	--	--	--
MW-58	15	20.34	-5.77	less-open	70	162	149	59	1	SE	116-165	49	1.1E-04	3.0E-01	0.1	0.4	--	--	--	--	--
MW-58	16	20.53	-5.96	less-open	62	171	158	68	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	0.2	--	--	--	--	--
MW-58	17	20.64	-6.07	less-open	35	340	327	237	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.4	--	--	--	--
MW-58	18	20.94	-6.37	less-open	66	158	145	55	1	SE	116-165	49	1.1E-04	3.0E-01	0.3	0.4	--	--	--	--	--
MW-58	19	21.03	-6.46	less-open	32	345	332	242	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.1	--	--	--	--	--	--
MW-58	20	21.11	-6.54	less-open	35	351	338	248	6	N	336-21	45	1.1E-04	3.0E-01	0.1	--	--	--	--	--	1.8
MW-58	21	21.30	-6.73	less-open	42	352	339	249	6	N	336-21	45	1.1E-04	3.0E-01	0.2	--	--	--	--	--	0.2
MW-58	22	21.56	-6.99	open	42	343	330	240	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	0.9	--	--	--	--
MW-58	23	21.81	-7.24	less-open	39	355	342	252	6	N	336-21	45	1.1E-04	3.0E-01	0.3	--	--	--	--	--	0.5
MW-58	24	21.97	-7.40	less-open	40	343	330	240	2	NW	291-335	44	1.1E-04	3.0E-01	0.2	--	0.4	--	--	--	--
MW-58	25	22.40	-7.83	less-open	56	315	302	212	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.4	--	--	--	--
MW-58	26	22.94	-8.37	less-open	27	321	308	218	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.5	--	--	--	--	--	--
MW-58	27	23.23	-8.66	less-open	50	307	294	204	2	NW	291-335	44	1.1E-04	3.0E-01	0.3	--	0.8	--	--	--	--
MW-58	28	23.38	-8.81	less-open	73	133	120	30	1	SE	116-165	49	1.1E-04	3.0E-01	0.1	2.4	--	--	--	--	--
MW-58	29	23.49	-8.92	less-open	50	334	321	231	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.3	--	--	--	--
MW-58	30	23.92	-9.35	less-open	46	325	312	222	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.4	--	--	--	--
MW-58	31	24.04	-9.47	less-open	72	119	106	16	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	--	24.0	--	--	--
MW-58	32	24.40	-9.83	less-open	44	319	306	216	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.5	--	--	--	--
MW-58	33	25.06	-10.49	less-open	64	121	108	18	3	E	70-115	45	1.1E-04	3.0E-01	0.7	--	1.0	--	--	--	--
MW-58	34	25.10	-10.53	less-open	63	327	314	224	2	NW	291-335	44	1.1E-04	3.0E-01	0.0	--	0.7	--	--	--	--
MW-58	35	25.16	-10.59	less-open	57	339	326	236	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.1	--	--	--	--
MW-58	36	25.31	-10.74	less-open	69	117	104	14	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	0.3	--	--	--	--
MW-58	37	25.38	-10.81	less-open	62	329	316	226	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.2	--	--	--	--
MW-58	38	26.18	-11.61	less-open	61	317	304	214	2	NW	291-335	44	1.1E-04	3.0E-01	0.8	--	0.8	--	--	--	--
MW-58	39	26.28	-11.71	less-open	45	322	309	219	2	NW	291-335	44	1.1E-04	3.0E-01	0.1	--	0.1	--	--	--	--
MW-58	40	26.46	-11.89	less-open	47	343	330	240	2	NW	291-335	44	1.1E-04	3.0E-01	0.2	--	0.2	--	--	--	--
MW-58	41	26.94	-12.37	less-open	66	121	108	18	3	E	70-115	45	1.1E-04	3.0E-01	0.5	--	1.6	--	--	--	--
MW-58	42	27.37	-12.80	less-open	59	345	332	242	2	NW	291-335	44	1.1E-04	3.0E-01	0.4	--	0.9	--	--	--	--
MW-58	43	28.08	-13.51	less-open	60	341	328	238	2	NW	291-335	44	1.1E-04	3.0E-01	0.7	--	0.7	--	--	--	--
MW-58	44	28.36	-13.79	less-open	63	176	163	73	1	SE	116-165	49	TNP	TNP	0.3	5.0	--	--	--	--	--
MW-58	45	28.98	-14.41	less-open	58	340	327	237	2	NW	291-335	44	TNP	TNP	0.6	--	0.9	--	--	--	--
MW-58	46	29.42	-14.85	less-open	41	329	316	226	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-58	47	30.06	-15.49	less-open	43	320	307	217	2	NW	291-335	44	TNP	TNP	0.6	--	0.6	--	--	--	--
MW-58	48	30.77	-16.20	less-open	42	313	300	210	2	NW	291-335	44	TNP	TNP	0.7	--	0.7	--	--	--	--
MW-58	49	31.20	-16.63	less-open	64	150	137	47	1	SE	116-165	49	TNP	TNP	0.4	2.8	--	--	--	--	--
MW-58	50	32.00	-17.43	less-open	36	311	298	208	2	NW	291-335	44	TNP	TNP	0.8	--	1.2	--	--	--	--
MW-58	51	32.46	-17.89	less-open	33	314	301	211	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-58	52	33.06	-18.49	less-open	35	291	278	188	4	W	245-290	45	TNP	TNP	0.6	--	--	--	33.1	--	--
MW-58	53	33.20	-18.63	less-open	29	300	287	197	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-58	54	33.56	-18.99	less-open	32	310	297	207	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-58	55	34.03	-19.46	less-open	41	340	327	237	2	NW	291-335	44	TNP	TNP	0.5	--	2.0	--	--	--	--
MW-58	56	34.37	-19.80	less-open	61	133	120	30	1	SE	116-165	49	TNP	TNP	0.3	3.2	--	--	--	--	--
MW-58	57	34.68	-20.11	less-open	29	283	270	180	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-58	58	35.02	-20.45	less-open	66	113	100	10	3	E	70-115	45	TNP	TNP	0.3	--	--	8.1	--	--	--
MW-58	59	35.37	-20.80	less-open	62	103	90	360	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-58	60	35.84	-21.27	less-open	68	100	87	357	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-58	61	35.92	-21.35	less-open	66	332	319	229	2	NW	291-335	44	TNP	TNP	0.1	--	1.9	--	--	--	--
MW-58	62	36.38	-21.81	less-open	43	312	299	209	2	NW	291-335	44	TNP	TNP	0.5	--	0.5	--	--	--	--
MW-58	63	36.52	-21.95	less-open	65	111	98	8	3	E	70-115	45	TNP	TNP	0.1	--	--	0.7	--	--	--
MW-58	64	36.60	-22.03	less-open	53	303	290	200	4	W	245-290	45	TNP	TNP	0.1	--	--	--	3.5	--	--
MW-58	65	37.10	-22.53	less-open	45	313	300	210	2	NW	291-335	44	TNP	TNP	0.5	--	0.7	--	--	--	--
MW-58	66	37.22	-22.65	less-open	41	327	314	224	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--
MW-58	67	37.58	-23.01	less-open	40	323	310	220	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-58	68	38.17	-23.60	less-open	50	315	302	212	2	NW	291-335	44	TNP	TNP	0.6	--	0.6	--	--	--	--
MW-58	69	38.25	-23.68	less-open	47	315	302	212	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--
MW-58	70	38.40	-23.83	less-open	59	311	298	208	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--
MW-58	71	38.82	-24.25	less-open	33	333	320	230	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-58	72	39.06	-24.49	less-open	70	95	82	352	3	E	70-115	45	TNP	TNP	0.2	--	--	2.5	--	--	--
MW-58	73	39.22	-24.65	less-open	40	298	285	195	4	W	245-290	45	TNP	TNP	0.2	--	--	--	2.6	--	--
MW-58	74	39.54	-24.97	less-open	48	297	284	194	4	W	245-290	45	TNP	TNP	0.3	--	--	--	0.3	--	--
MW-58	75	39.94	-25.37	less-open	57	327	314	224	2	NW	291-335	44	TNP	TNP	0.4	--	1.5	--	--	--	--
MW-58	76	40.08	-25.51	less-open	71	97	84	354	3	E	70-115	45	TNP	TNP	0.1	--	--	1.0	--	--	--
MW-58	77	40.62	-26.05	less-open	71	94	81	351	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-58	78	41.16	-26.59	less-open	32	314	301	211	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-58	79	41.35	-26.78	less-open	71	79	66	336	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-58	80	41.53	-26.96	less-open	25	297	284	194	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-58	81	42.27	-27.70	less-open	52	306	293	203	2	NW	291-335	44	TNP	TNP	0.7	--	2.3	--	--	--	--
MW-58	82	42.70	-28.13	less-open	42	334	321	231	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-58	83	43.04	-28.47	less-open	47	301	288	198	4	W	245-290	45	TNP	TNP	0.3	--	--	--	3.5	--	--
MW-58	84	43.16	-28.59	less-open	53	295	282	192	4	W	245-290	45	TNP	TNP	0.1	--	--	--	0.1	--	--
MW-58	85	43.74	-29.17	less-open	47	317	304	214	2	NW	291-335	44	TNP	TNP	0.6	--	1.0	--	--	--	--
MW-58	86	44.46	-29.89	less-open	63	102	89	359	3	E	70-115	45	TNP	TNP	0.7	--	--	3.8	--	--	--
MW-58	87	44.5	-29.93	less-open	45	336	323	233	2	NW	291-335	44	TNP	TNP	0.0	--	0.8	--	--	--	--
MW-58	88	45.32	-30.75	less-open	39	342	329	239	2	NW	291-335	44	TNP	TNP	0.8	--	0.8	--	--	--	--
MW-58	89	46.27	-31.70	less-open	41	301	288	198	4	W	245-290	45	TNP	TNP	1.0	--	--	--	3.1	--	--
MW-58	90	46.98	-32.41	less-open	35	310	297	207	2	NW	291-335	44	TNP	TNP	0.7	--	1.7	--	--	--	--
MW-58	91	48.89	-34.32	less-open	23	351	338	248	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	1.9	--	--	--	--	--	--
MW-58	92	52.82	-38.25	less-open	59	97	84	354	3	E	70-115	45	3.5E-04	1.0E+00	3.9	--	--	8.4	--	--	--
MW-58	93	53.46	-38.89	less-open	65	107	94	4	3	E	70-115	45	3.5E-04	1.0E+00	0.6	--	--	0.6	--	--	--
MW-58	94	53.77	-39.20	less-open	66	107	94	4	3	E	70-115	45	3.5E-04	1.0E+00	0.3	--	--	0.3	--	--	--
MW-58	95	54.36	-39.79	open	39	305	292	202	2	NW	291-335	44	3.5E-04	1.0E+00	0.6	--	7.4	--	--	--	--
MW-58	96	56.84	-42.27	less-open	41	290	277	187	4	W	245-290	45	3.5E-04	1.0E+00	2.5	--	--	--	10.6	--	--
MW-58	97	57.63	-43.06	less-open	50	296	283	193	4	W	245-290	45	3.5E-04	1.0E+00	0.8	--	--	--	0.8	--	--
MW-58	98	58.41	-43.84	less-open	73	163	150	60	1	SE	116-165	49	3.5E-04	1.0E+00	0.8	24.0	--	--	--	--	--
MW-58	99	59.02	-44.45	less-open	63	105	92	2	3	E	70-115	45	3.5E-04	1.0E+00	0.6	--	--	5.3	--	--	--
MW-58	100	59.22	-44.65	less-open	62	303	290	200	4	W	245-290	45	3.5E-04	1.0E+00	0.2	--	--	--	1.6	--	--
MW-58	101	59.63	-45.06	less-open	64	283	270	180	4	W	245-290	45	3.5E-04	1.0E+00	0.4	--	--	--	0.4	--	--
MW-58	102	60.77	-46.20	less-open	61	297	284	194	4	W	245-290	45	3.5E-04	1.0E+00	1.1	--	--	--	1.1	--	--
MW-58	103	60.99	-46.42	less-open	67	102	89	359	3	E	70-115	45	3.5E-04	1.0E+00	0.2	--	--	2.0	--	--	--
MW-58	104	61.41	-46.84	less-open	64	122	109	19	3	E	70-115	45	3.5E-04	1.0E+00	0.4	--	--	0.4	--	--	--
MW-58	105	61.77	-47.20	less-open	68	103	90	360	3	E	70-115	45	3.5E-04	1.0E+00	0.4	--	--	0.4	--	--	--
MW-58	106	63.25	-48.68	less-open	38	301	288	198	4	W	245-290	45	3.5E-04	1.0E+00	1.5	--	--	--	2.5	--	--
MW-58	107	64.06	-49.49	less-open	66	72	59	329	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.8	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-58	108	64.34	-49.77	less-open	64	143	130	40	1	SE	116-165	49	3.5E-04	1.0E+00	0.3	5.9	--	--	--	--	--	--
MW-58	109	64.38	-49.81	less-open	36	319	306	216	2	NW	291-335	44	3.5E-04	1.0E+00	0.0	--	10.0	--	--	--	--	--
MW-58	110	64.81	-50.24	less-open	41	292	279	189	4	W	245-290	45	3.5E-04	1.0E+00	0.4	--	--	--	1.6	--	--	--
MW-58	111	64.92	-50.35	less-open	68	181	168	78	5	S	166-200	34	3.5E-04	1.0E+00	0.1	--	--	--	--	--	46.2	--
MW-58	112	65.13	-50.56	less-open	70	177	164	74	1	SE	116-165	49	3.5E-04	1.0E+00	0.2	0.8	--	--	--	--	--	--
MW-58	113	65.22	-50.65	less-open	68	171	158	68	1	SE	116-165	49	3.5E-04	1.0E+00	0.1	0.1	--	--	--	--	--	--
MW-58	114	65.71	-51.14	less-open	70	179	166	76	5	S	166-200	34	3.5E-04	1.0E+00	0.5	--	--	--	--	0.8	--	--
MW-58	115	65.96	-51.39	less-open	53	323	310	220	2	NW	291-335	44	3.5E-04	1.0E+00	0.3	--	1.6	--	--	--	--	--
MW-58	116	66.21	-51.64	less-open	61	111	98	8	3	E	70-115	45	3.5E-04	1.0E+00	0.3	--	--	4.4	--	--	--	--
MW-58	117	66.33	-51.76	less-open	66	108	95	5	3	E	70-115	45	3.5E-04	1.0E+00	0.1	--	--	0.1	--	--	--	--
MW-58	118	66.68	-52.11	less-open	56	288	275	185	4	W	245-290	45	3.5E-04	1.0E+00	0.4	--	--	--	1.9	--	--	--
MW-58	119	66.94	-52.37	less-open	59	112	99	9	3	E	70-115	45	3.5E-04	1.0E+00	0.3	--	--	0.6	--	--	--	--
MW-58	120	67.26	-52.69	less-open	67	115	102	12	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--	--
MW-58	121	67.89	-53.32	less-open	70	100	87	357	3	E	70-115	45	TNP	TNP	0.6	--	--	0.6	--	--	--	--
MW-58	122	67.96	-53.39	less-open	71	108	95	5	3	E	70-115	45	TNP	TNP	0.1	--	--	0.1	--	--	--	--
MW-58	123	68.07	-53.50	less-open	54	306	293	203	2	NW	291-335	44	TNP	TNP	0.1	--	2.1	--	--	--	--	--
MW-58	124	68.28	-53.71	less-open	73	109	96	6	3	E	70-115	45	TNP	TNP	0.2	--	--	0.3	--	--	--	--
MW-58	125	68.93	-54.36	less-open	65	96	83	353	3	E	70-115	45	TNP	TNP	0.7	--	--	0.7	--	--	--	--
MW-58	126	70.24	-55.67	less-open	6	193	180	90	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--	--
MW-59	1	20.8	-6.3	open	29	254	241	151	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	NA	--	--	--	--	--	--	--
MW-59	2	21.7	-7.2	less-open	63	222	209	119	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.9	--	--	--	--	--	--	--
MW-59	3	21.8	-7.2	less-open	72	213	200	110	5	S	166-200	34	2.1E-03	6.0E+00	0.1	--	--	--	--	21.8	--	--
MW-59	4	23.5	-9.0	open	61	226	213	123	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	1.8	--	--	--	--	--	--	--
MW-59	5	23.7	-9.2	less-open	70	217	204	114	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.2	--	--	--	--	--	--	--
MW-59	6	24.1	-9.6	less-open	78	220	207	117	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.5	--	--	--	--	--	--	--
MW-59	7	24.1	-9.6	less-open	75	219	206	116	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.0	--	--	--	--	--	--	--
MW-59	8	24.4	-9.9	less-open	48	132	119	29	1	SE	116-165	49	2.1E-03	6.0E+00	0.3	24.4	--	--	--	--	--	--
MW-59	9	24.8	-10.3	less-open	50	354	341	251	6	N	336-21	45	2.1E-03	6.0E+00	0.3	--	--	--	--	--	24.8	--
MW-59	10	25.0	-10.5	less-open	77	208	195	105	5	S	166-200	34	2.1E-03	6.0E+00	0.2	--	--	--	--	3.2	--	--
MW-59	11	25.1	-10.6	less-open	46	358	345	255	6	N	336-21	45	2.1E-03	6.0E+00	0.1	--	--	--	--	--	0.3	--
MW-59	12	25.2	-10.7	less-open	41	151	138	48	1	SE	116-165	49	2.1E-03	6.0E+00	0.1	0.8	--	--	--	--	--	--
MW-59	13	25.3	-10.8	less-open	34	136	123	33	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.1	--	--	--	--	--	--	--
MW-59	14	25.5	-11.0	less-open	52	148	135	45	1	SE	116-165	49	2.1E-03	6.0E+00	0.2	0.3	--	--	--	--	--	--
MW-59	15	26.1	-11.6	less-open	57	142	129	39	1	SE	116-165	49	2.1E-03	6.0E+00	0.6	0.6	--	--	--	--	--	--
MW-59	16	26.2	-11.7	less-open	58	147	134	44	1	SE	116-165	49	2.1E-03	6.0E+00	0.1	0.1	--	--	--	--	--	--
MW-59	17	26.8	-12.3	less-open	84	188	175	85	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.6	--	--	--	--	--	--	--
MW-59	18	26.9	-12.4	less-open	60	135	122	32	1	SE	116-165	49	2.1E-03	6.0E+00	0.1	0.7	--	--	--	--	--	--
MW-59	19	26.9	-12.4	less-open	39	324	311	221	2	NW	291-335	44	2.1E-03	6.0E+00	0.1	--	26.9	--	--	--	--	--
MW-59	20	27.2	-12.7	less-open	46	285	272	182	4	W	245-290	45	2.1E-03	6.0E+00	0.2	--	--	27.2	--	--	--	--
MW-59	21	27.3	-12.7	less-open	37	142	129	39	1	SE	116-165	49	2.1E-03	6.0E+00	0.1	0.4	--	--	--	--	--	--
MW-59	22	27.3	-12.8	less-open	85	188	175	85	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.1	--	--	--	--	--	--	--
MW-59	23	27.3	-12.8	less-open	48	129	116	26	1	SE	116-165	49	2.1E-03	6.0E+00	0.0	0.1	--	--	--	--	--	--
MW-59	24	28.0	-13.5	less-open	59	124	111	21	3	E	70-115	45	2.1E-03	6.0E+00	0.6	--	--	28.0	--	--	--	--
MW-59	25	28.1	-13.6	less-open	46	159	146	56	1	SE	116-165	49	2.1E-03	6.0E+00	0.2	0.8	--	--	--	--	--	--
MW-59	26	28.5	-13.9	less-open	47	229	216	126	NSR	NSR	NSR	NSR	2.1E-03	6.0E+00	0.3	--	--	--	--	--	--	--
MW-59	27	28.8	-14.3	less-open	66	133	120	30	1	SE	116-165	49	2.1E-03	6.0E+00	0.4	0.7	--	--	--	--	--	--
MW-59	28	29.1	-14.6	less-open	52	136	123	33	1	SE	116-165	49	2.1E-03	6.0E+00	0.3	0.3	--	--	--	--	--	--
MW-59	29	29.4	-14.9	less-open	54	120	107	17	3	E	70-115	45	2.1E-03	6.0E+00	0.3	--	--	1.4	--	--	--	--
MW-59	30	29.4	-14.9	open	38	317	304	214	2	NW	291-335	44	2.1E-03	6.0E+00	0.0	--	2.5	--	--	--	--	--
MW-59	31	29.8	-15.3	less-open	55	141	128	38	1	SE	116-165	49	2.1E-03	6.0E+00	0.4	0.7	--	--	--	--	--	--
MW-59	32	30.1	-15.6	open	43	325	312	222	2	NW	291-335	44	2.1E-03	6.0E+00	0.3	--	0.7	--	--	--	--	--
MW-59	33	30.2	-15.7	less-open	62	148	135	45	1	SE	116-165	49	2.1E-03	6.0E+00	0.1	0.4	--	--	--	--	--	--
MW-59	34	30.4	-15.9	open	42	313	300	210	2	NW	291-335	44	2.1E-03	6.0E+00	0.2	--	0.3	--	--	--	--	--
MW-59	35	30.6	-16.0	less-open	45	317	304	214	2	NW	291-335	44	2.1E-03	6.0E+00	0.1	--	0.1	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-59	36	31.2	-16.7	less-open	41	195	182	92	5	S	166-200	34	TNP	TNP	0.6	--	--	--	--	6.2	--
MW-59	37	31.5	-17.0	less-open	38	183	170	80	5	S	166-200	34	TNP	TNP	0.4	--	--	--	--	0.4	--
MW-59	38	31.8	-17.3	less-open	45	304	291	201	2	NW	291-335	44	TNP	TNP	0.2	--	1.2	--	--	--	--
MW-59	39	32.0	-17.5	less-open	46	306	293	203	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-59	40	32.2	-17.6	less-open	66	115	102	12	3	E	70-115	45	TNP	TNP	0.1	--	--	2.8	--	--	--
MW-59	41	32.3	-17.8	less-open	57	121	108	18	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-59	42	32.5	-17.9	less-open	59	121	108	18	3	E	70-115	45	TNP	TNP	0.1	--	--	0.1	--	--	--
MW-59	43	32.6	-18.1	less-open	64	211	198	108	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	1.1	--
MW-59	44	32.8	-18.3	less-open	68	124	111	21	3	E	70-115	45	TNP	TNP	0.2	--	--	0.4	--	--	--
MW-59	45	33.5	-19.0	less-open	46	128	115	25	3	E	70-115	45	TNP	TNP	0.7	--	--	0.7	--	--	--
MW-59	46	34.1	-19.5	less-open	64	204	191	101	5	S	166-200	34	TNP	TNP	0.5	--	--	--	--	1.5	--
MW-59	47	34.2	-19.6	less-open	63	7	354	264	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	9.1
MW-59	48	34.3	-19.8	less-open	47	200	187	97	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	0.2	--
MW-59	49	35.0	-20.5	less-open	70	340	327	237	2	NW	291-335	44	TNP	TNP	0.7	--	3.0	--	--	--	--
MW-59	50	35.7	-21.2	less-open	56	183	170	80	5	S	166-200	34	6.4E-04	1.8E+00	0.7	--	--	--	--	1.4	--
MW-59	51	36.8	-22.3	less-open	60	116	103	13	3	E	70-115	45	6.4E-04	1.8E+00	1.1	--	--	3.2	--	--	--
MW-59	52	37.1	-22.6	less-open	59	189	176	86	5	S	166-200	34	6.4E-04	1.8E+00	0.3	--	--	--	--	1.4	--
MW-59	53	37.6	-23.1	less-open	55	137	124	34	1	SE	116-165	49	6.4E-04	1.8E+00	0.6	7.4	--	--	--	--	--
MW-59	54	37.9	-23.4	less-open	57	132	119	29	1	SE	116-165	49	6.4E-04	1.8E+00	0.3	0.3	--	--	--	--	--
MW-59	55	38.2	-23.7	less-open	71	198	185	95	5	S	166-200	34	6.4E-04	1.8E+00	0.3	--	--	--	--	1.2	--
MW-59	56	38.6	-24.1	less-open	62	175	162	72	1	SE	116-165	49	6.4E-04	1.8E+00	0.4	0.8	--	--	--	--	--
MW-59	57	39.7	-25.1	less-open	43	166	153	63	1	SE	116-165	49	6.4E-04	1.8E+00	1.0	1.0	--	--	--	--	--
MW-59	58	41.7	-27.1	less-open	44	339	326	236	2	NW	291-335	44	6.4E-04	1.8E+00	2.0	--	6.7	--	--	--	--
MW-59	59	42.2	-27.7	less-open	15	212	199	109	NSR	NSR	NSR	NSR	6.4E-04	1.8E+00	0.6	--	--	--	--	--	--
MW-59	60	42.5	-28.0	less-open	49	254	241	151	NSR	NSR	NSR	NSR	6.4E-04	1.8E+00	0.2	--	--	--	--	--	--
MW-59	61	42.8	-28.3	less-open	54	156	143	53	1	SE	116-165	49	6.4E-04	1.8E+00	0.3	3.1	--	--	--	--	--
MW-59	62	42.9	-28.4	less-open	46	158	145	55	1	SE	116-165	49	6.4E-04	1.8E+00	0.1	0.1	--	--	--	--	--
MW-59	63	43.1	-28.6	less-open	23	146	133	43	NSR	NSR	NSR	NSR	6.4E-04	1.8E+00	0.2	--	--	--	--	--	--
MW-59	64	43.4	-28.9	less-open	48	120	107	17	3	E	70-115	45	6.4E-04	1.8E+00	0.3	--	--	6.6	--	--	--
MW-59	65	43.5	-29.0	less-open	19	181	168	78	NSR	NSR	NSR	NSR	6.4E-04	1.8E+00	0.1	--	--	--	--	--	--
MW-59	66	43.5	-29.0	less-open	67	197	184	94	5	S	166-200	34	6.4E-04	1.8E+00	0.1	--	--	--	--	5.3	--
MW-59	67	43.7	-29.2	less-open	41	180	167	77	5	S	166-200	34	6.4E-04	1.8E+00	0.2	--	--	--	--	0.2	--
MW-59	68	44.6	-30.1	less-open	46	182	169	79	5	S	166-200	34	6.4E-04	1.8E+00	0.9	--	--	--	--	0.9	--
MW-59	69	44.7	-30.1	less-open	14	214	201	111	NSR	NSR	NSR	NSR	6.4E-04	1.8E+00	0.1	--	--	--	--	--	--
MW-59	70	45.1	-30.6	less-open	66	196	183	93	5	S	166-200	34	6.4E-04	1.8E+00	0.4	--	--	--	--	0.5	--
MW-59	71	46.0	-31.4	less-open	52	167	154	64	1	SE	116-165	49	TNP	TNP	0.9	3.1	--	--	--	--	--
MW-59	72	46.4	-31.9	less-open	51	325	312	222	2	NW	291-335	44	TNP	TNP	0.5	--	4.8	--	--	--	--
MW-59	73	46.4	-31.9	less-open	38	187	174	84	5	S	166-200	34	TNP	TNP	0.0	--	--	--	--	1.3	--
MW-59	74	46.7	-32.2	less-open	61	209	196	106	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	0.3	--
MW-59	75	47.6	-33.1	less-open	42	339	326	236	2	NW	291-335	44	TNP	TNP	0.9	--	1.2	--	--	--	--
MW-59	76	48.0	-33.5	less-open	45	329	316	226	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-59	77	48.3	-33.7	less-open	55	136	123	33	1	SE	116-165	49	TNP	TNP	0.3	2.3	--	--	--	--	--
MW-59	78	48.4	-33.9	less-open	59	157	144	54	1	SE	116-165	49	TNP	TNP	0.1	0.1	--	--	--	--	--
MW-59	79	48.5	-33.9	less-open	43	323	310	220	2	NW	291-335	44	TNP	TNP	0.1	--	0.5	--	--	--	--
MW-59	80	48.7	-34.2	less-open	57	141	128	38	1	SE	116-165	49	TNP	TNP	0.2	0.3	--	--	--	--	--
MW-59	81	49.4	-34.9	less-open	35	310	297	207	2	NW	291-335	44	TNP	TNP	0.7	--	0.9	--	--	--	--
MW-59	82	49.8	-35.2	less-open	36	305	292	202	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-59	83	50.2	-35.7	less-open	42	343	330	240	2	NW	291-335	44	TNP	TNP	0.5	--	0.5	--	--	--	--
MW-59	84	50.4	-35.9	less-open	40	329	316	226	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--
MW-59	85	50.6	-36.1	less-open	45	212	199	109	5	S	166-200	34	TNP	TNP	0.2	--	--	--	--	3.9	--
MW-59	86	50.9	-36.4	less-open	48	135	122	32	1	SE	116-165	49	TNP	TNP	0.4	2.3	--	--	--	--	--
MW-59	87	51.4	-36.9	less-open	42	332	319	229	2	NW	291-335	44	TNP	TNP	0.5	--	1.0	--	--	--	--
MW-59	88	51.7	-37.1	less-open	30	324	311	221	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-59	89	51.8	-37.3	less-open	43	320	307	217	2	NW	291-335	44	TNP	TNP	0.1	--	0.4	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-59	90	52.2	-37.6	less-open	43	314	301	211	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--	--
MW-59	91	52.5	-38.0	less-open	61	203	190	100	5	S	166-200	34	TNP	TNP	0.3	--	--	--	--	1.9	--	--
MW-59	92	52.9	-38.4	less-open	36	320	307	217	2	NW	291-335	44	TNP	TNP	0.4	--	0.8	--	--	--	--	--
MW-59	93	53.1	-38.5	less-open	66	193	180	90	5	S	166-200	34	7.1E-05	2.0E-01	0.1	--	--	--	--	0.6	--	--
MW-59	94	53.3	-38.8	less-open	39	338	325	235	2	NW	291-335	44	7.1E-05	2.0E-01	0.3	--	0.4	--	--	--	--	--
MW-59	95	53.5	-39.0	less-open	36	320	307	217	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	0.2	--	--	--	--	--
MW-59	96	54.2	-39.7	less-open	35	325	312	222	2	NW	291-335	44	7.1E-05	2.0E-01	0.7	--	0.7	--	--	--	--	--
MW-59	97	55.0	-40.5	less-open	72	214	201	111	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.8	--	--	--	--	--	--	--
MW-59	98	55.3	-40.8	less-open	70	203	190	100	5	S	166-200	34	7.1E-05	2.0E-01	0.3	--	--	--	--	2.3	--	--
MW-59	99	55.4	-40.9	less-open	36	327	314	224	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	1.2	--	--	--	--	--
MW-59	100	55.5	-41.0	less-open	66	208	195	105	5	S	166-200	34	7.1E-05	2.0E-01	0.1	--	--	--	--	0.2	--	--
MW-59	101	55.7	-41.1	less-open	31	298	285	195	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.2	--	--	--	--	--	--	--
MW-59	102	56.7	-42.2	less-open	18	312	299	209	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	1.1	--	--	--	--	--	--	--
MW-59	103	57.2	-42.7	less-open	39	331	318	228	2	NW	291-335	44	7.1E-05	2.0E-01	0.4	--	1.7	--	--	--	--	--
MW-59	104	57.3	-42.8	less-open	34	318	305	215	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.1	--	--	--	--	--	--	--
MW-59	105	57.5	-42.9	less-open	47	324	311	221	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	0.3	--	--	--	--	--
MW-59	106	57.8	-43.3	less-open	75	189	176	86	5	S	166-200	34	7.1E-05	2.0E-01	0.3	--	--	--	--	2.3	--	--
MW-59	107	58.2	-43.6	less-open	27	320	307	217	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.4	--	--	--	--	--	--	--
MW-59	108	58.2	-43.7	less-open	32	312	299	209	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.1	--	--	--	--	--	--	--
MW-59	109	58.3	-43.8	less-open	48	310	297	207	2	NW	291-335	44	7.1E-05	2.0E-01	0.0	--	0.8	--	--	--	--	--
MW-59	110	58.4	-43.9	less-open	36	314	301	211	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	0.1	--	--	--	--	--
MW-59	111	58.8	-44.2	less-open	56	186	173	83	5	S	166-200	34	7.1E-05	2.0E-01	0.3	--	--	--	--	1.0	--	--
MW-59	112	59.9	-45.4	less-open	36	336	323	233	2	NW	291-335	44	7.1E-05	2.0E-01	1.1	--	1.5	--	--	--	--	--
MW-59	113	60.1	-45.6	less-open	40	351	338	248	6	N	336-21	45	7.1E-05	2.0E-01	0.2	--	--	--	--	--	26.0	--
MW-59	114	60.3	-45.8	less-open	34	329	316	226	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.2	--	--	--	--	--	--	--
MW-59	115	60.4	-45.9	less-open	38	340	327	237	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	0.5	--	--	--	--	--
MW-59	116	60.6	-46.1	less-open	73	184	171	81	5	S	166-200	34	7.1E-05	2.0E-01	0.2	--	--	--	--	1.9	--	--
MW-59	117	60.7	-46.1	less-open	35	323	310	220	2	NW	291-335	44	7.1E-05	2.0E-01	0.0	--	0.2	--	--	--	--	--
MW-59	118	61.0	-46.5	less-open	72	104	91	1	3	E	70-115	45	7.1E-05	2.0E-01	0.4	--	--	17.6	--	--	--	--
MW-59	119	61.5	-47.0	less-open	66	116	103	13	3	E	70-115	45	7.1E-05	2.0E-01	0.5	--	--	0.5	--	--	--	--
MW-59	120	62.0	-47.4	less-open	40	328	315	225	2	NW	291-335	44	7.1E-05	2.0E-01	0.5	--	1.3	--	--	--	--	--
MW-59	121	62.1	-47.6	less-open	62	144	131	41	1	SE	116-165	49	7.1E-05	2.0E-01	0.2	11.2	--	--	--	--	--	--
MW-59	122	62.6	-48.1	less-open	10	12	359	269	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.5	--	--	--	--	--	--	--
MW-59	123	62.9	-48.4	less-open	22	310	297	207	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.3	--	--	--	--	--	--	--
MW-59	124	63.2	-48.7	less-open	67	135	122	32	1	SE	116-165	49	7.1E-05	2.0E-01	0.3	1.1	--	--	--	--	--	--
MW-59	125	63.2	-48.7	less-open	51	313	300	210	2	NW	291-335	44	7.1E-05	2.0E-01	0.0	--	1.3	--	--	--	--	--
MW-59	126	63.8	-49.3	less-open	26	123	110	20	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.6	--	--	--	--	--	--	--
MW-59	127	65.4	-50.9	less-open	30	297	284	194	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	1.6	--	--	--	--	--	--	--
MW-59	128	65.5	-51.0	less-open	31	301	288	198	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.1	--	--	--	--	--	--	--
MW-59	129	67.4	-52.9	less-open	60	158	145	55	1	SE	116-165	49	7.1E-05	2.0E-01	1.9	4.2	--	--	--	--	--	--
MW-59	130	67.7	-53.1	less-open	40	320	307	217	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	4.4	--	--	--	--	--
MW-59	131	67.9	-53.4	less-open	41	322	309	219	2	NW	291-335	44	7.1E-05	2.0E-01	0.3	--	0.3	--	--	--	--	--
MW-59	132	68.1	-53.6	less-open	41	319	306	216	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	0.2	--	--	--	--	--
MW-59	133	70.4	-55.9	less-open	45	322	309	219	2	NW	291-335	44	TNP	TNP	2.3	--	2.3	--	--	--	--	--
MW-59	134	70.8	-56.3	less-open	46	306	293	203	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--	--
MW-59	135	70.9	-56.4	less-open	45	311	298	208	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--	--
MW-59	136	71.0	-56.5	less-open	48	312	299	209	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--	--
MW-59	137	71.2	-56.7	less-open	39	318	305	215	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--	--
MW-59	138	71.3	-56.8	less-open	42	307	294	204	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--	--
MW-59	139	71.4	-56.9	less-open	37	307	294	204	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--	--
MW-59	140	72.3	-57.8	less-open	39	304	291	201	2	NW	291-335	44	TNP	TNP	0.9	--	0.9	--	--	--	--	--
MW-59	141	73.6	-59.1	less-open	62	121	108	18	3	E	70-115	45	TNP	TNP	1.3	--	--	12.1	--	--	--	--
MW-59	142	73.7	-59.2	less-open	14	33	20	290	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-59	143	74.3	-59.7	less-open	23	316	303	213	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-59	144	74.7	-60.2	less-open	29	305	292	202	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-59	145	75.2	-60.7	less-open	87	342	329	239	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-59	146	76.3	-61.7	less-open	88	316	303	213	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--
MW-60	1	10.40	3.9	less-open	36	296	283	193	4	W	245-290	45	TNP	TNP	NA	--	--	--	10.4	--	--
MW-60	2	11.96	2.4	less-open	36	104	91	1	3	E	70-115	45	TNP	TNP	1.6	--	--	12.0	--	--	--
MW-60	3	12.08	2.2	less-open	51	300	287	197	4	W	245-290	45	TNP	TNP	0.1	--	--	--	1.7	--	--
MW-60	4	13.20	1.1	less-open	39	304	291	201	2	NW	291-335	44	0.0E+00	0.0E+00	1.1	--	13.2	--	--	--	--
MW-60	5	14.40	-0.1	less-open	62	276	263	173	4	W	245-290	45	0.0E+00	0.0E+00	1.2	--	--	--	2.3	--	--
MW-60	6	14.49	-0.2	less-open	35	144	131	41	1	SE	116-165	49	0.0E+00	0.0E+00	0.1	14.5	--	--	--	--	--
MW-60	7	16.02	-1.7	less-open	58	104	91	1	3	E	70-115	45	0.0E+00	0.0E+00	1.5	--	--	4.1	--	--	--
MW-60	8	16.86	-2.6	less-open	60	116	103	13	3	E	70-115	45	0.0E+00	0.0E+00	0.8	--	--	0.8	--	--	--
MW-60	9	18.00	-3.7	less-open	61	283	270	180	4	W	245-290	45	0.0E+00	0.0E+00	1.1	--	--	--	3.6	--	--
MW-60	10	19.74	-5.4	less-open	49	38	25	295	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	1.7	--	--	--	--	--	--
MW-60	11	20.11	-5.8	less-open	31	249	236	146	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.4	--	--	--	--	--	--
MW-60	12	20.46	-6.2	less-open	47	113	100	10	3	E	70-115	45	0.0E+00	0.0E+00	0.4	--	--	3.6	--	--	--
MW-60	13	22.94	-8.6	less-open	52	315	302	212	2	NW	291-335	44	0.0E+00	0.0E+00	2.5	--	9.7	--	--	--	--
MW-60	14	27.05	-12.7	less-open	35	134	121	31	1	SE	116-165	49	0.0E+00	0.0E+00	4.1	12.6	--	--	--	--	--
MW-60	15	29.75	-15.4	less-open	54	100	87	357	3	E	70-115	45	0.0E+00	0.0E+00	2.7	--	--	9.3	--	--	--
MW-60	16	36.27	-22.0	less-open	57	222	209	119	NSR	NSR	NSR	NSR	9.0E-06	2.6E-02	6.5	--	--	--	--	--	--
MW-60	17	36.47	-22.2	less-open	61	331	318	228	2	NW	291-335	44	9.0E-06	2.6E-02	0.2	--	13.5	--	--	--	--
MW-60	18	36.99	-22.7	open	48	303	290	200	4	W	245-290	45	9.0E-06	2.6E-02	0.5	--	--	--	19.0	--	--
MW-60	19	37.39	-23.1	less-open	39	323	310	220	2	NW	291-335	44	9.0E-06	2.6E-02	0.4	--	0.9	--	--	--	--
MW-60	20	38.54	-24.2	less-open	13	25	12	282	NSR	NSR	NSR	NSR	9.0E-06	2.6E-02	1.2	--	--	--	--	--	--
MW-60	21	39.31	-25.0	less-open	63	119	106	16	3	E	70-115	45	9.0E-06	2.6E-02	0.8	--	--	9.6	--	--	--
MW-60	22	39.73	-25.4	less-open	59	110	97	7	3	E	70-115	45	9.0E-06	2.6E-02	0.4	--	--	0.4	--	--	--
MW-60	23	40.60	-26.3	less-open	72	125	112	22	3	E	70-115	45	9.0E-06	2.6E-02	0.9	--	--	0.9	--	--	--
MW-60	24	43.20	-28.9	less-open	58	205	192	102	5	S	166-200	34	9.0E-06	2.6E-02	2.6	--	--	--	--	43.2	--
MW-60	25	49.41	-35.1	less-open	45	132	119	29	1	SE	116-165	49	2.9E-04	8.3E-01	6.2	22.4	--	--	--	--	--
MW-60	26	50.09	-35.8	less-open	86	147	134	44	NSR	NSR	NSR	NSR	2.9E-04	8.3E-01	0.7	--	--	--	--	--	--
MW-60	27	52.30	-38.0	less-open	42	314	301	211	2	NW	291-335	44	2.9E-04	8.3E-01	2.2	--	14.9	--	--	--	--
MW-60	28	52.64	-38.3	less-open	31	9	356	266	NSR	NSR	NSR	NSR	2.9E-04	8.3E-01	0.3	--	--	--	--	--	--
MW-60	29	52.82	-38.5	less-open	42	337	324	234	2	NW	291-335	44	2.9E-04	8.3E-01	0.2	--	0.5	--	--	--	--
MW-60	30	53.12	-38.8	less-open	62	354	341	251	6	N	336-21	45	2.9E-04	8.3E-01	0.3	--	--	--	--	--	53.1
MW-60	31	53.64	-39.3	less-open	23	331	318	228	NSR	NSR	NSR	NSR	2.9E-04	8.3E-01	0.5	--	--	--	--	--	--
MW-60	32	54.14	-39.8	less-open	68	274	261	171	4	W	245-290	45	2.9E-04	8.3E-01	0.5	--	--	--	17.2	--	--
MW-60	33	54.14	-39.8	less-open	59	259	246	156	4	W	245-290	45	2.9E-04	8.3E-01	0.0	--	--	--	0.0	--	--
MW-60	34	54.42	-40.1	open	22	342	329	239	NSR	NSR	NSR	NSR	2.9E-04	8.3E-01	0.3	--	--	--	--	--	--
MW-60	35	55.83	-41.5	open	59	325	312	222	2	NW	291-335	44	2.9E-04	8.3E-01	1.4	--	3.0	--	--	--	--
MW-60	36	55.86	-41.6	less-open	5	254	241	151	NSR	NSR	NSR	NSR	2.9E-04	8.3E-01	0.0	--	--	--	--	--	--
MW-60	37	56.89	-42.6	less-open	42	326	313	223	2	NW	291-335	44	2.9E-04	8.3E-01	1.0	--	1.1	--	--	--	--
MW-60	38	57.06	-42.8	less-open	58	304	291	201	2	NW	291-335	44	2.9E-04	8.3E-01	0.2	--	0.2	--	--	--	--
MW-60	39	57.62	-43.3	less-open	73	326	313	223	2	NW	291-335	44	2.9E-04	8.3E-01	0.6	--	0.6	--	--	--	--
MW-60	40	58.23	-43.9	less-open	75	327	314	224	2	NW	291-335	44	2.9E-04	8.3E-01	0.6	--	0.6	--	--	--	--
MW-60	41	58.78	-44.5	less-open	78	337	324	234	2	NW	291-335	44	2.9E-04	8.3E-01	0.6	--	0.6	--	--	--	--
MW-60	42	59.00	-44.7	less-open	76	352	339	249	6	N	336-21	45	2.9E-04	8.3E-01	0.2	--	--	--	--	--	5.9
MW-60	43	60.03	-45.7	less-open	53	307	294	204	2	NW	291-335	44	TNP	TNP	1.0	--	1.3	--	--	--	--
MW-60	44	60.07	-45.8	less-open	52	147	134	44	1	SE	116-165	49	TNP	TNP	0.0	10.7	--	--	--	--	--
MW-60	45	60.65	-46.3	less-open	62	337	324	234	2	NW	291-335	44	TNP	TNP	0.6	--	0.6	--	--	--	--
MW-60	46	60.67	-46.4	less-open	70	149	136	46	1	SE	116-165	49	TNP	TNP	0.0	0.6	--	--	--	--	--
MW-60	47	61.21	-46.9	less-open	36	110	97	7	3	E	70-115	45	TNP	TNP	0.5	--	--	20.6	--	--	--
MW-60	48	61.99	-47.7	less-open	53	330	317	227	2	NW	291-335	44	TNP	TNP	0.8	--	1.3	--	--	--	--
MW-60	49	62.23	-47.9	less-open	59	325	312	222	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--
MW-60	50	63.97	-49.7	less-open	63	307	294	204	2	NW	291-335	44	TNP	TNP	1.7	--	1.7	--	--	--	--
MW-60	51	64.16	-49.9	less-open	69	325	312	222	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
Indian Point  
Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)								
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6		
MW-60	52	64.25	-49.9	less-open	49	312	299	209	2	NW	291-335	44	TNP		TNP	0.1	--	0.1	--	--	--	--	--
MW-60	53	64.32	-50.0	less-open	68	202	189	99	5	S	166-200	34	TNP		TNP	0.1	--	--	--	--	--	21.1	--
MW-60	54	64.33	-50.0	less-open	46	299	286	196	4	W	245-290	45	TNP		TNP	0.0	--	--	--	10.2	--	--	--
MW-60	55	65.01	-50.7	less-open	73	197	184	94	5	S	166-200	34	TNP		TNP	0.7	--	--	--	--	--	0.7	--
MW-60	56	65.45	-51.1	less-open	63	313	300	210	2	NW	291-335	44	TNP		TNP	0.4	--	1.2	--	--	--	--	--
MW-60	57	66.44	-52.1	less-open	64	308	295	205	2	NW	291-335	44	TNP		TNP	1.0	--	1.0	--	--	--	--	--
MW-60	58	68.01	-53.7	less-open	77	323	310	220	2	NW	291-335	44	TNP		TNP	1.6	--	1.6	--	--	--	--	--
MW-60	59	68.29	-54.0	less-open	74	300	287	197	4	W	245-290	45	TNP		TNP	0.3	--	--	--	4.0	--	--	--
MW-60	60	69.39	-55.1	less-open	42	127	114	24	3	E	70-115	45	1.4E-04		4.0E-01	1.1	--	--	8.2	--	--	--	--
MW-60	61	69.59	-55.3	less-open	40	131	118	28	1	SE	116-165	49	1.4E-04		4.0E-01	0.2	8.9	--	--	--	--	--	--
MW-60	62	69.83	-55.5	less-open	67	293	280	190	4	W	245-290	45	1.4E-04		4.0E-01	0.2	--	--	--	1.5	--	--	--
MW-60	63	70.53	-56.2	less-open	70	309	296	206	2	NW	291-335	44	1.4E-04		4.0E-01	0.7	--	2.5	--	--	--	--	--
MW-60	64	70.67	-56.4	less-open	54	103	90	0	3	E	70-115	45	1.4E-04		4.0E-01	0.1	--	--	1.3	--	--	--	--
MW-60	65	71.50	-57.2	less-open	71	324	311	221	2	NW	291-335	44	1.4E-04		4.0E-01	0.8	--	1.0	--	--	--	--	--
MW-60	66	71.80	-57.5	less-open	63	320	307	217	2	NW	291-335	44	1.4E-04		4.0E-01	0.3	--	0.3	--	--	--	--	--
MW-60	67	72.77	-58.5	less-open	60	319	306	216	2	NW	291-335	44	1.4E-04		4.0E-01	1.0	--	1.0	--	--	--	--	--
MW-60	68	73.78	-59.5	less-open	60	325	312	222	2	NW	291-335	44	1.4E-04		4.0E-01	1.0	--	1.0	--	--	--	--	--
MW-60	69	74.10	-59.8	less-open	62	310	297	207	2	NW	291-335	44	1.4E-04		4.0E-01	0.3	--	0.3	--	--	--	--	--
MW-60	70	74.40	-60.1	less-open	67	275	262	172	4	W	245-290	45	1.4E-04		4.0E-01	0.3	--	--	--	4.6	--	--	--
MW-60	71	74.83	-60.5	less-open	15	80	67	337	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.4	--	--	--	--	--	--	--
MW-60	72	74.95	-60.6	less-open	66	186	173	83	5	S	166-200	34	1.4E-04		4.0E-01	0.1	--	--	--	--	9.9	--	
MW-60	73	75.20	-60.9	less-open	69	187	174	84	5	S	166-200	34	1.4E-04		4.0E-01	0.3	--	--	--	--	0.3	--	
MW-60	74	75.96	-61.7	less-open	46	315	302	212	2	NW	291-335	44	1.4E-04		4.0E-01	0.8	--	1.9	--	--	--	--	--
MW-60	75	76.39	-62.1	less-open	43	323	310	220	2	NW	291-335	44	1.4E-04		4.0E-01	0.4	--	0.4	--	--	--	--	--
MW-60	76	77.23	-62.9	less-open	17	354	341	251	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.8	--	--	--	--	--	--	--
MW-60	77	77.34	-63.0	less-open	21	38	25	295	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.1	--	--	--	--	--	--	--
MW-60	78	78.12	-63.8	less-open	68	284	271	181	4	W	245-290	45	1.4E-04		4.0E-01	0.8	--	--	--	3.7	--	--	--
MW-60	79	78.69	-64.4	less-open	80	221	208	118	NSR	NSR	NSR	NSR	1.4E-04		4.0E-01	0.6	--	--	--	--	--	--	--
MW-60	80	84.49	-70.2	less-open	48	318	305	215	2	NW	291-335	44	TNP		TNP	5.8	--	8.1	--	--	--	--	--
MW-60	81	84.71	-70.4	less-open	56	325	312	222	2	NW	291-335	44	TNP		TNP	0.2	--	0.2	--	--	--	--	--
MW-60	82	85.36	-71.1	less-open	48	304	291	201	2	NW	291-335	44	TNP		TNP	0.7	--	0.7	--	--	--	--	--
MW-60	83	90.85	-76.5	less-open	31	31	18	288	NSR	NSR	NSR	NSR	9.5E-05		2.7E-01	5.5	--	--	--	--	--	--	--
MW-60	84	91.38	-77.1	less-open	73	158	145	55	1	SE	116-165	49	9.5E-05		2.7E-01	0.5	21.8	--	--	--	--	--	--
MW-60	85	91.64	-77.3	less-open	32	311	298	208	NSR	NSR	NSR	NSR	9.5E-05		2.7E-01	0.3	--	--	--	--	--	--	--
MW-60	86	92.9	-78.6	less-open	80	169	156	66	1	SE	116-165	49	9.5E-05		2.7E-01	1.3	1.5	--	--	--	--	--	--
MW-60	87	93.3	-79.0	less-open	33	192	179	89	NSR	NSR	NSR	NSR	9.5E-05		2.7E-01	0.4	--	--	--	--	--	--	--
MW-60	88	93.73	-79.4	less-open	67	172	159	69	1	SE	116-165	49	9.5E-05		2.7E-01	0.4	0.8	--	--	--	--	--	--
MW-60	89	93.81	-79.5	less-open	45	232	219	129	NSR	NSR	NSR	NSR	9.5E-05		2.7E-01	0.1	--	--	--	--	--	--	--
MW-60	90	94.97	-80.7	less-open	39	304	291	201	2	NW	291-335	44	9.5E-05		2.7E-01	1.2	--	9.6	--	--	--	--	--
MW-60	91	95.18	-80.9	less-open	53	196	183	93	5	S	166-200	34	9.5E-05		2.7E-01	0.2	--	--	--	--	20.0	--	--
MW-60	92	95.39	-81.1	less-open	77	98	85	355	3	E	70-115	45	9.5E-05		2.7E-01	0.2	--	--	24.7	--	--	--	--
MW-60	93	96.46	-82.2	less-open	44	327	314	224	2	NW	291-335	44	9.5E-05		2.7E-01	1.1	--	1.5	--	--	--	--	--
MW-60	94	98.00	-83.7	less-open	68	288	275	185	4	W	245-290	45	9.5E-05		2.7E-01	1.5	--	--	--	19.9	--	--	--
MW-60	95	98.23	-83.9	less-open	70	312	299	209	2	NW	291-335	44	9.5E-05		2.7E-01	0.2	--	1.8	--	--	--	--	--
MW-60	96	99.24	-84.9	less-open	66	313	300	210	2	NW	291-335	44	4.2E-05		1.2E-01	1.0	--	1.0	--	--	--	--	--
MW-60	97	99.43	-85.1	less-open	64	342	329	239	2	NW	291-335	44	4.2E-05		1.2E-01	0.2	--	0.2	--	--	--	--	--
MW-60	98	100.51	-86.2	less-open	68	268	255	165	4	W	245-290	45	4.2E-05		1.2E-01	1.1	--	--	--	2.5	--	--	--
MW-60	99	100.83	-86.5	less-open	58	135	122	32	1	SE	116-165	49	4.2E-05		1.2E-01	0.3	7.1	--	--	--	--	--	--
MW-60	100	101.41	-87.1	less-open	27	158	145	55	NSR	NSR	NSR	NSR	4.2E-05		1.2E-01	0.6	--	--	--	--	--	--	--
MW-60	101	102.04	-87.7	less-open	31	151	138	48	NSR	NSR	NSR	NSR	4.2E-05		1.2E-01	0.6	--	--	--	--	--	--	--
MW-60	102	102.54	-88.2	less-open	68	193	180	90	5	S	166-200	34	4.2E-05		1.2E-01	0.5	--	--	--	--	7.4	--	--
MW-60	103	102.94	-88.6	less-open	79	191	178	88	5	S	166-200	34	4.2E-05		1.2E-01	0.4	--	--	--	--	0.4	--	--
MW-60	104	103.87	-89.6	less-open	81	210	197	107	NSR	NSR	NSR	NSR	4.2E-05		1.2E-01	0.9	--	--	--	--	--	--	--
MW-60	105	104.51	-90.2	less-open	50	357	344	254	6	N	336-21	45	4.2E-05		1.2E-01	0.6	--	--	--	--	--	--	45.5



APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-60	106	104.85	-90.5	less-open	47	344	331	241	2	NW	291-335	44	4.2E-05	1.2E-01	0.3	--	5.4	--	--	--	--	--
MW-60	107	107.14	-92.8	less-open	67	94	81	351	3	E	70-115	45	4.2E-05	1.2E-01	2.3	--	--	11.8	--	--	--	--
MW-60	108	107.23	-92.9	less-open	44	139	126	36	1	SE	116-165	49	4.2E-05	1.2E-01	0.1	6.4	--	--	--	--	--	--
MW-60	109	107.82	-93.5	less-open	20	95	82	352	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	0.6	--	--	--	--	--	--	--
MW-60	110	108.3	-94.0	less-open	28	126	113	23	NSR	NSR	NSR	NSR	4.2E-05	1.2E-01	0.5	--	--	--	--	--	--	--
MW-60	111	108.86	-94.6	less-open	76	335	322	232	2	NW	291-335	44	4.2E-05	1.2E-01	0.6	--	4.0	--	--	--	--	--
MW-60	112	109.35	-95.0	less-open	70	310	297	207	2	NW	291-335	44	4.2E-05	1.2E-01	0.5	--	0.5	--	--	--	--	--
MW-60	113	110.23	-95.9	less-open	59	319	306	216	2	NW	291-335	44	TNP	TNP	0.9	--	0.9	--	--	--	--	--
MW-60	114	110.43	-96.1	less-open	59	311	298	208	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--	--
MW-60	115	110.61	-96.3	less-open	60	313	300	210	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--	--
MW-60	116	111.11	-96.8	less-open	31	192	179	89	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--	--
MW-60	117	111.35	-97.0	less-open	34	150	137	47	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-60	118	111.84	-97.5	less-open	66	168	155	65	1	SE	116-165	49	TNP	TNP	0.5	4.6	--	--	--	--	--	--
MW-60	119	112.38	-98.1	less-open	65	149	136	46	1	SE	116-165	49	TNP	TNP	0.5	0.5	--	--	--	--	--	--
MW-60	120	113.09	-98.8	less-open	32	307	294	204	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--	--
MW-60	121	113.72	-99.4	less-open	31	329	316	226	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--	--
MW-60	122	114.14	-99.8	less-open	55	112	99	9	3	E	70-115	45	TNP	TNP	0.4	--	--	7.0	--	--	--	--
MW-60	123	116.59	-102.3	less-open	53	14	1	271	6	N	336-21	45	7.8E-06	2.2E-02	2.5	--	--	--	--	--	--	12.1
MW-60	124	116.89	-102.6	less-open	67	100	87	357	3	E	70-115	45	7.8E-06	2.2E-02	0.3	--	--	2.8	--	--	--	--
MW-60	125	117.53	-103.2	less-open	45	117	104	14	3	E	70-115	45	7.8E-06	2.2E-02	0.6	--	--	0.6	--	--	--	--
MW-60	126	117.91	-103.6	less-open	37	118	105	15	3	E	70-115	45	7.8E-06	2.2E-02	0.4	--	--	0.4	--	--	--	--
MW-60	127	118.37	-104.1	less-open	39	139	126	36	1	SE	116-165	49	7.8E-06	2.2E-02	0.5	6.0	--	--	--	--	--	--
MW-60	128	118.62	-104.3	less-open	47	121	108	18	3	E	70-115	45	7.8E-06	2.2E-02	0.3	--	--	0.7	--	--	--	--
MW-60	129	119.19	-104.9	less-open	74	330	317	227	2	NW	291-335	44	7.8E-06	2.2E-02	0.6	--	8.6	--	--	--	--	--
MW-60	130	119.59	-105.3	less-open	50	146	133	43	1	SE	116-165	49	7.8E-06	2.2E-02	0.4	1.2	--	--	--	--	--	--
MW-60	131	119.87	-105.6	less-open	36	143	130	40	1	SE	116-165	49	7.8E-06	2.2E-02	0.3	0.3	--	--	--	--	--	--
MW-60	132	120.16	-105.9	less-open	30	121	108	18	NSR	NSR	NSR	NSR	7.8E-06	2.2E-02	0.3	--	--	--	--	--	--	--
MW-60	133	120.64	-106.3	less-open	68	118	105	15	3	E	70-115	45	7.8E-06	2.2E-02	0.5	--	--	2.0	--	--	--	--
MW-60	134	122.21	-107.9	less-open	30	137	124	34	NSR	NSR	NSR	NSR	7.8E-06	2.2E-02	1.6	--	--	--	--	--	--	--
MW-60	135	122.37	-108.1	less-open	42	123	110	20	3	E	70-115	45	7.8E-06	2.2E-02	0.2	--	--	1.7	--	--	--	--
MW-60	136	122.54	-108.2	less-open	30	126	113	23	NSR	NSR	NSR	NSR	7.8E-06	2.2E-02	0.2	--	--	--	--	--	--	--
MW-60	137	122.7	-108.4	less-open	36	147	134	44	1	SE	116-165	49	7.8E-06	2.2E-02	0.2	2.8	--	--	--	--	--	--
MW-60	138	122.93	-108.6	less-open	34	131	118	28	NSR	NSR	NSR	NSR	7.8E-06	2.2E-02	0.2	--	--	--	--	--	--	--
MW-60	139	123.15	-108.8	less-open	42	131	118	28	1	SE	116-165	49	7.8E-06	2.2E-02	0.2	0.5	--	--	--	--	--	--
MW-60	140	123.35	-109.0	less-open	30	126	113	23	NSR	NSR	NSR	NSR	7.8E-06	2.2E-02	0.2	--	--	--	--	--	--	--
MW-60	141	125.48	-111.2	less-open	57	118	105	15	3	E	70-115	45	7.8E-06	2.2E-02	2.1	--	--	3.1	--	--	--	--
MW-60	142	126.31	-112.0	less-open	35	140	127	37	1	SE	116-165	49	TNP	TNP	0.8	3.2	--	--	--	--	--	--
MW-60	143	127.91	-113.6	less-open	38	141	128	38	1	SE	116-165	49	TNP	TNP	1.6	1.6	--	--	--	--	--	--
MW-60	144	128.72	-114.4	less-open	58	332	319	229	2	NW	291-335	44	TNP	TNP	0.8	--	9.5	--	--	--	--	--
MW-60	145	128.78	-114.5	less-open	40	144	131	41	1	SE	116-165	49	TNP	TNP	0.1	0.9	--	--	--	--	--	--
MW-60	146	129.39	-115.1	less-open	53	156	143	53	1	SE	116-165	49	TNP	TNP	0.6	0.6	--	--	--	--	--	--
MW-60	147	129.83	-115.5	less-open	47	134	121	31	1	SE	116-165	49	TNP	TNP	0.4	0.4	--	--	--	--	--	--
MW-60	148	131.48	-117.2	less-open	29	120	107	17	NSR	NSR	NSR	NSR	TNP	TNP	1.6	--	--	--	--	--	--	--
MW-60	149	133.43	-119.1	less-open	33	166	153	63	NSR	NSR	NSR	NSR	TNP	TNP	2.0	--	--	--	--	--	--	--
MW-60	150	135.7	-121.4	less-open	56	132	119	29	1	SE	116-165	49	1.3E-04	3.7E-01	2.3	5.9	--	--	--	--	--	--
MW-60	151	136.57	-122.3	open	33	144	131	41	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.9	--	--	--	--	--	--	--
MW-60	152	136.69	-122.4	open	31	122	109	19	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.1	--	--	--	--	--	--	--
MW-60	153	136.82	-122.5	less-open	30	124	111	21	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.1	--	--	--	--	--	--	--
MW-60	154	137.19	-122.9	less-open	45	133	120	30	1	SE	116-165	49	1.3E-04	3.7E-01	0.4	1.5	--	--	--	--	--	--
MW-60	155	137.34	-123.0	less-open	47	119	106	16	3	E	70-115	45	1.3E-04	3.7E-01	0.2	--	--	11.9	--	--	--	--
MW-60	156	137.87	-123.6	less-open	33	147	134	44	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.5	--	--	--	--	--	--	--
MW-60	157	138.06	-123.8	less-open	26	177	164	74	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.2	--	--	--	--	--	--	--
MW-60	158	139.39	-125.1	less-open	33	151	138	48	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	1.3	--	--	--	--	--	--	--
MW-60	159	140.27	-126.0	less-open	35	131	118	28	1	SE	116-165	49	1.3E-04	3.7E-01	0.9	3.1	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)								
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6			
MW-60	160	140.74	-126.4	less-open	34	134	121	31	1	SE	116-165	49	1.3E-04		3.7E-01	0.5	0.5	--	--	--	--	--	--	
MW-60	161	141.43	-127.1	less-open	40	107	94	4	3	E	70-115	45	1.3E-04		3.7E-01	0.7	--	--	4.1	--	--	--	--	--
MW-60	162	142.39	-128.1	less-open	33	141	128	38	NSR	NSR	NSR	NSR	1.3E-04		3.7E-01	1.0	--	--	--	--	--	--	--	--
MW-60	163	142.5	-128.2	less-open	29	142	129	39	NSR	NSR	NSR	NSR	1.3E-04		3.7E-01	0.1	--	--	--	--	--	--	--	--
MW-60	164	142.63	-128.3	less-open	28	150	137	47	NSR	NSR	NSR	NSR	1.3E-04		3.7E-01	0.1	--	--	--	--	--	--	--	--
MW-60	165	142.94	-128.6	less-open	30	137	124	34	NSR	NSR	NSR	NSR	1.3E-04		3.7E-01	0.3	--	--	--	--	--	--	--	--
MW-60	166	145.3	-131.0	less-open	31	128	115	25	NSR	NSR	NSR	NSR	TNP		TNP	2.4	--	--	--	--	--	--	--	--
MW-60	167	145.38	-131.1	less-open	30	130	117	27	NSR	NSR	NSR	NSR	TNP		TNP	0.1	--	--	--	--	--	--	--	--
MW-60	168	146.06	-131.8	less-open	33	151	138	48	NSR	NSR	NSR	NSR	TNP		TNP	0.7	--	--	--	--	--	--	--	--
MW-60	169	146.73	-132.4	less-open	34	137	124	34	NSR	NSR	NSR	NSR	TNP		TNP	0.7	--	--	--	--	--	--	--	--
MW-60	170	148.94	-134.6	less-open	81	321	308	218	2	NW	291-335	44	TNP		TNP	2.2	--	20.2	--	--	--	--	--	--
MW-60	171	149.76	-135.5	less-open	33	133	120	30	NSR	NSR	NSR	NSR	TNP		TNP	0.8	--	--	--	--	--	--	--	--
MW-60	172	150.12	-135.8	less-open	35	129	116	26	1	SE	116-165	49	TNP		TNP	0.4	9.4	--	--	--	--	--	--	--
MW-60	173	150.35	-136.0	less-open	39	131	118	28	1	SE	116-165	49	TNP		TNP	0.2	0.2	--	--	--	--	--	--	--
MW-60	174	150.46	-136.2	less-open	35	120	107	17	3	E	70-115	45	TNP		TNP	0.1	--	--	9.0	--	--	--	--	--
MW-60	175	150.58	-136.3	less-open	43	116	103	13	3	E	70-115	45	TNP		TNP	0.1	--	--	0.1	--	--	--	--	--
MW-60	176	151.1	-136.8	less-open	37	157	144	54	1	SE	116-165	49	1.9E-04		5.4E-01	0.5	0.8	--	--	--	--	--	--	--
MW-60	177	151.51	-137.2	less-open	37	159	146	56	1	SE	116-165	49	1.9E-04		5.4E-01	0.4	0.4	--	--	--	--	--	--	--
MW-60	178	151.82	-137.3	less-open	34	150	137	47	1	SE	116-165	49	1.9E-04		5.4E-01	0.1	0.1	--	--	--	--	--	--	--
MW-60	179	151.68	-137.4	less-open	32	146	133	43	NSR	NSR	NSR	NSR	1.9E-04		5.4E-01	0.1	--	--	--	--	--	--	--	--
MW-60	180	151.84	-137.5	less-open	30	144	131	41	NSR	NSR	NSR	NSR	1.9E-04		5.4E-01	0.2	--	--	--	--	--	--	--	--
MW-60	181	152.01	-137.7	less-open	35	143	130	40	1	SE	116-165	49	1.9E-04		5.4E-01	0.2	0.4	--	--	--	--	--	--	--
MW-60	182	152.55	-138.2	less-open	39	145	132	42	1	SE	116-165	49	1.9E-04		5.4E-01	0.5	0.5	--	--	--	--	--	--	--
MW-60	183	152.81	-138.5	less-open	38	142	129	39	1	SE	116-165	49	1.9E-04		5.4E-01	0.3	0.3	--	--	--	--	--	--	--
MW-60	184	153.39	-139.1	less-open	39	134	121	31	1	SE	116-165	49	1.9E-04		5.4E-01	0.6	0.6	--	--	--	--	--	--	--
MW-60	185	153.46	-139.2	less-open	38	148	135	45	1	SE	116-165	49	1.9E-04		5.4E-01	0.1	0.1	--	--	--	--	--	--	--
MW-60	186	153.74	-139.4	less-open	39	141	128	38	1	SE	116-165	49	1.9E-04		5.4E-01	0.3	0.3	--	--	--	--	--	--	--
MW-60	187	155.22	-140.9	less-open	45	117	104	14	3	E	70-115	45	1.9E-04		5.4E-01	1.5	--	--	4.6	--	--	--	--	--
MW-60	188	155.58	-141.3	less-open	52	129	116	26	1	SE	116-165	49	1.9E-04		5.4E-01	0.4	1.8	--	--	--	--	--	--	--
MW-60	189	155.66	-141.4	less-open	34	342	329	239	2	NW	291-335	44	1.9E-04		5.4E-01	0.1	--	6.7	--	--	--	--	--	--
MW-60	190	155.86	-141.6	open	36	125	112	22	3	E	70-115	45	1.9E-04		5.4E-01	0.2	--	--	0.6	--	--	--	--	--
MW-60	191	156.17	-141.9	less-open	36	143	130	40	1	SE	116-165	49	1.9E-04		5.4E-01	0.3	0.6	--	--	--	--	--	--	--
MW-60	192	156.49	-142.2	less-open	46	123	110	20	3	E	70-115	45	1.9E-04		5.4E-01	0.3	--	--	0.6	--	--	--	--	--
MW-60	193	156.91	-142.6	less-open	39	153	140	50	1	SE	116-165	49	1.9E-04		5.4E-01	0.4	0.7	--	--	--	--	--	--	--
MW-60	194	157.09	-142.8	less-open	37	142	129	39	1	SE	116-165	49	1.9E-04		5.4E-01	0.2	0.2	--	--	--	--	--	--	--
MW-60	195	158.08	-143.8	less-open	42	134	121	31	1	SE	116-165	49	1.9E-04		5.4E-01	1.0	1.0	--	--	--	--	--	--	--
MW-60	196	158.3	-144.0	less-open	71	320	307	217	2	NW	291-335	44	1.9E-04		5.4E-01	0.2	--	2.6	--	--	--	--	--	--
MW-60	197	158.42	-144.1	less-open	48	115	102	12	3	E	70-115	45	1.9E-04		5.4E-01	0.1	--	--	1.9	--	--	--	--	--
MW-60	198	158.9	-144.6	less-open	60	104	91	1	3	E	70-115	45	1.9E-04		5.4E-01	0.5	--	--	0.5	--	--	--	--	--
MW-60	199	159.11	-144.8	less-open	75	95	82	352	3	E	70-115	45	1.9E-04		5.4E-01	0.2	--	--	0.2	--	--	--	--	--
MW-60	200	160.01	-145.7	less-open	78	100	87	357	3	E	70-115	45	1.9E-04		5.4E-01	0.9	--	--	0.9	--	--	--	--	--
MW-60	201	160.54	-146.2	less-open	42	306	293	203	2	NW	291-335	44	1.9E-04		5.4E-01	0.5	--	2.2	--	--	--	--	--	--
MW-60	202	160.83	-146.5	less-open	77	93	80	350	3	E	70-115	45	1.9E-04		5.4E-01	0.3	--	--	0.8	--	--	--	--	--
MW-60	203	162.32	-148.0	less-open	46	312	299	209	2	NW	291-335	44	3.4E-05		9.7E-02	1.5	--	1.8	--	--	--	--	--	--
MW-60	204	162.55	-148.2	less-open	26	4	351	261	NSR	NSR	NSR	NSR	3.4E-05		9.7E-02	0.2	--	--	--	--	--	--	--	--
MW-60	205	163.17	-148.9	less-open	50	118	105	15	3	E	70-115	45	3.4E-05		9.7E-02	0.6	--	--	2.3	--	--	--	--	--
MW-60	206	163.43	-149.1	less-open	61	115	102	12	3	E	70-115	45	3.4E-05		9.7E-02	0.3	--	--	0.3	--	--	--	--	--
MW-60	207	163.81	-149.5	less-open	49	310	297	207	2	NW	291-335	44	3.4E-05		9.7E-02	0.4	--	1.5	--	--	--	--	--	--
MW-60	208	163.92	-149.6	less-open	58	106	93	3	3	E	70-115	45	3.4E-05		9.7E-02	0.1	--	--	0.5	--	--	--	--	--
MW-60	209	164.64	-150.3	less-open	75	323	310	220	2	NW	291-335	44	3.4E-05		9.7E-02	0.7	--	0.8	--	--	--	--	--	--
MW-60	210	165.75	-151.4	less-open	45	3	350	260	6	N	336-21	45	3.4E-05		9.7E-02	1.1	--	--	--	--	--	--	49.2	--
MW-60	211	166.1	-151.8	less-open	49	132	119	29	1	SE	116-165	49	3.4E-05		9.7E-02	0.3	8.0	--	--	--	--	--	--	--
MW-60	212	166.44	-152.1	less-open	47	151	138	48	1	SE	116-165	49	3.4E-05		9.7E-02	0.3	0.3	--	--	--	--	--	--	--
MW-60	213	166.79	-152.5	less-open	30	231	218	128	NSR	NSR	NSR	NSR	3.4E-05		9.7E-02	0.3	--	--	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-60	214	166.87	-152.6	less-open	30	241	228	138	NSR	NSR	NSR	NSR	3.4E-05	9.7E-02	0.1	--	--	--	--	--	--
MW-60	215	167.59	-153.3	less-open	25	142	129	39	NSR	NSR	NSR	NSR	3.4E-05	9.7E-02	0.7	--	--	--	--	--	--
MW-60	216	167.96	-153.7	less-open	29	168	155	65	NSR	NSR	NSR	NSR	3.4E-05	9.7E-02	0.4	--	--	--	--	--	--
MW-60	217	168.6	-154.3	less-open	33	164	151	61	NSR	NSR	NSR	NSR	3.4E-05	9.7E-02	0.6	--	--	--	--	--	--
MW-60	218	169.15	-154.8	less-open	37	147	134	44	1	SE	116-165	49	3.4E-05	9.7E-02	0.6	2.7	--	--	--	--	--
MW-60	219	169.76	-155.5	less-open	36	137	124	34	1	SE	116-165	49	3.4E-05	9.7E-02	0.6	0.6	--	--	--	--	--
MW-60	220	170.01	-155.7	less-open	46	140	127	37	1	SE	116-165	49	3.4E-05	9.7E-02	0.3	0.3	--	--	--	--	--
MW-60	221	170.5	-156.2	less-open	39	180	167	77	5	S	166-200	34	3.4E-05	9.7E-02	0.5	--	--	--	--	67.6	--
MW-60	222	171.33	-157.0	less-open	35	166	153	63	1	SE	116-165	49	3.4E-05	9.7E-02	0.8	1.3	--	--	--	--	--
MW-60	223	172.15	-157.8	less-open	42	136	123	33	1	SE	116-165	49	3.5E-06	1.0E-02	0.8	0.8	--	--	--	--	--
MW-60	224	172.77	-158.5	less-open	33	341	328	238	NSR	NSR	NSR	NSR	3.5E-06	1.0E-02	0.6	--	--	--	--	--	--
MW-60	225	173.92	-159.6	less-open	34	123	110	20	3	E	70-115	45	3.5E-06	1.0E-02	1.1	--	--	10.0	--	--	--
MW-60	226	174.02	-159.7	open	41	160	147	57	1	SE	116-165	49	3.5E-06	1.0E-02	0.1	1.9	--	--	--	--	--
MW-60	227	174.25	-159.9	less-open	53	8	355	265	6	N	336-21	45	3.5E-06	1.0E-02	0.2	--	--	--	--	--	8.5
MW-60	228	174.31	-160.0	less-open	35	100	87	357	3	E	70-115	45	3.5E-06	1.0E-02	0.1	--	--	0.4	--	--	--
MW-60	229	174.67	-160.4	less-open	45	135	122	32	1	SE	116-165	49	3.5E-06	1.0E-02	0.4	0.6	--	--	--	--	--
MW-60	230	174.92	-160.6	less-open	41	128	115	25	3	E	70-115	45	3.5E-06	1.0E-02	0.3	--	--	0.6	--	--	--
MW-60	231	175.11	-160.8	less-open	34	152	139	49	1	SE	116-165	49	3.5E-06	1.0E-02	0.2	0.4	--	--	--	--	--
MW-60	232	175.79	-161.5	less-open	51	179	166	76	5	S	166-200	34	3.5E-06	1.0E-02	0.7	--	--	--	--	5.3	--
MW-60	233	176.98	-162.7	less-open	40	193	180	90	5	S	166-200	34	3.5E-06	1.0E-02	1.2	--	--	--	--	1.2	--
MW-60	234	177.26	-163.0	less-open	47	127	114	24	3	E	70-115	45	3.5E-06	1.0E-02	0.3	--	--	2.3	--	--	--
MW-60	235	177.75	-163.4	less-open	45	122	109	19	3	E	70-115	45	3.5E-06	1.0E-02	0.5	--	--	0.5	--	--	--
MW-60	236	178.07	-163.8	open	50	108	95	5	3	E	70-115	45	3.5E-06	1.0E-02	0.3	--	--	0.3	--	--	--
MW-60	237	178.31	-164.0	open	46	112	99	9	3	E	70-115	45	3.5E-06	1.0E-02	0.2	--	--	0.2	--	--	--
MW-60	238	179.73	-165.4	less-open	55	336	323	233	2	NW	291-335	44	3.5E-06	1.0E-02	1.4	--	15.1	--	--	--	--
MW-60	239	180.35	-166.0	less-open	55	123	110	20	3	E	70-115	45	3.5E-06	1.0E-02	0.6	--	--	2.0	--	--	--
MW-60	240	180.85	-166.5	less-open	67	263	250	160	4	W	245-290	45	3.5E-06	1.0E-02	0.5	--	--	--	--	80.3	--
MW-60	241	182.89	-168.6	less-open	79	269	256	166	4	W	245-290	45	3.5E-06	1.0E-02	2.0	--	--	--	2.0	--	--
MW-60	242	184.41	-170.1	less-open	63	123	110	20	3	E	70-115	45	TNP	TNP	1.5	--	--	4.1	--	--	--
MW-60	243	186.09	-171.8	less-open	33	220	207	117	NSR	NSR	NSR	NSR	TNP	TNP	1.7	--	--	--	--	--	--
MW-60	244	186.31	-172.0	less-open	68	265	252	162	4	W	245-290	45	TNP	TNP	0.2	--	--	--	3.4	--	--
MW-60	245	187.15	-172.8	less-open	66	317	304	214	2	NW	291-335	44	TNP	TNP	0.8	--	7.4	--	--	--	--
MW-60	246	187.83	-173.5	less-open	65	276	263	173	4	W	245-290	45	TNP	TNP	0.7	--	--	--	1.5	--	--
MW-60	247	188.27	-174.0	less-open	61	114	101	11	3	E	70-115	45	1.1E-06	3.0E-03	0.4	--	--	3.9	--	--	--
MW-60	248	189.48	-175.2	less-open	54	345	332	242	2	NW	291-335	44	1.1E-06	3.0E-03	1.2	--	2.3	--	--	--	--
MW-60	249	189.98	-175.7	less-open	56	109	96	6	3	E	70-115	45	1.1E-06	3.0E-03	0.5	--	--	1.7	--	--	--
MW-60	250	190.74	-176.4	less-open	31	139	126	36	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.8	--	--	--	--	--	--
MW-60	251	190.91	-176.6	less-open	58	109	96	6	3	E	70-115	45	1.1E-06	3.0E-03	0.2	--	--	0.9	--	--	--
MW-60	252	191.56	-177.3	less-open	47	132	119	29	1	SE	116-165	49	1.1E-06	3.0E-03	0.7	16.5	--	--	--	--	--
MW-60	253	192.04	-177.7	less-open	54	111	98	8	3	E	70-115	45	1.1E-06	3.0E-03	0.5	--	--	1.1	--	--	--
MW-60	254	192.27	-178.0	less-open	75	351	338	248	6	N	336-21	45	1.1E-06	3.0E-03	0.2	--	--	--	--	--	18.0
MW-60	255	192.91	-178.6	less-open	52	117	104	14	3	E	70-115	45	1.1E-06	3.0E-03	0.6	--	--	0.9	--	--	--
MW-60	256	193.4	-179.1	less-open	39	115	102	12	3	E	70-115	45	1.1E-06	3.0E-03	0.5	--	--	0.5	--	--	--
MW-60	257	193.65	-179.3	less-open	39	140	127	37	1	SE	116-165	49	1.1E-06	3.0E-03	0.3	2.1	--	--	--	--	--
MW-60	258	193.71	-179.4	less-open	33	166	153	63	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.1	--	--	--	--	--	--
MW-60	259	193.9	-179.6	less-open	41	129	116	26	1	SE	116-165	49	1.1E-06	3.0E-03	0.2	0.3	--	--	--	--	--
MW-60	260	194.13	-179.8	less-open	53	129	116	26	1	SE	116-165	49	1.1E-06	3.0E-03	0.2	0.2	--	--	--	--	--
MW-60	261	194.41	-180.1	less-open	43	139	126	36	1	SE	116-165	49	1.1E-06	3.0E-03	0.3	0.3	--	--	--	--	--
MW-60	262	195.27	-181.0	less-open	63	101	88	358	3	E	70-115	45	1.1E-06	3.0E-03	0.9	--	--	1.9	--	--	--
MW-60	263	195.54	-181.2	less-open	72	93	80	350	3	E	70-115	45	1.1E-06	3.0E-03	0.3	--	--	0.3	--	--	--
MW-60	264	197.4	-183.1	less-open	46	123	110	20	3	E	70-115	45	1.1E-06	3.0E-03	1.9	--	--	1.9	--	--	--
MW-60	265	198.21	-183.9	less-open	27	230	217	127	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.8	--	--	--	--	--	--
MW-60	266	199.28	-185.0	less-open	53	162	149	59	1	SE	116-165	49	1.1E-06	3.0E-03	1.1	4.9	--	--	--	--	--
MW-60	267	200.14	-185.8	less-open	89	116	103	13	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.9	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-60	268	200.31	-186.0	less-open	90	153	140	50	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.2	--	--	--	--	--	--	--
MW-60	269	200.52	-186.2	less-open	89	234	221	131	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.2	--	--	--	--	--	--	--
MW-60	270	200.95	-186.6	less-open	89	122	109	19	NSR	NSR	NSR	NSR	1.1E-06	3.0E-03	0.4	--	--	--	--	--	--	--
MW-62	1	43.33	-28.6	less-open	38	36	23	293	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	NA	--	--	--	--	--	--	--
MW-62	2	43.47	-28.8	less-open	68	96	83	353	3	E	70-115	45	0.0E+00	0.0E+00	0.1	--	--	43.5	--	--	--	--
MW-62	3	44.24	-29.6	less-open	50	352	339	249	6	N	336-21	45	0.0E+00	0.0E+00	0.8	--	--	--	--	--	44.2	--
MW-62	4	44.28	-29.6	less-open	71	100	87	357	3	E	70-115	45	0.0E+00	0.0E+00	0.0	--	--	0.8	--	--	--	--
MW-62	5	44.46	-29.8	less-open	51	327	314	224	2	NW	291-335	44	0.0E+00	0.0E+00	0.2	--	44.5	--	--	--	--	--
MW-62	6	44.56	-29.9	less-open	32	347	334	244	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.1	--	--	--	--	--	--	--
MW-62	7	44.77	-30.1	less-open	33	346	333	243	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.2	--	--	--	--	--	--	--
MW-62	8	44.82	-30.1	less-open	74	105	92	2	3	E	70-115	45	0.0E+00	0.0E+00	0.0	--	--	0.5	--	--	--	--
MW-62	9	45.40	-30.7	less-open	45	316	303	213	2	NW	291-335	44	0.0E+00	0.0E+00	0.6	--	0.9	--	--	--	--	--
MW-62	10	45.80	-31.1	less-open	64	98	85	355	3	E	70-115	45	0.0E+00	0.0E+00	0.4	--	--	1.0	--	--	--	--
MW-62	11	46.10	-31.4	less-open	67	101	88	358	3	E	70-115	45	0.0E+00	0.0E+00	0.3	--	--	0.3	--	--	--	--
MW-62	12	46.48	-31.8	less-open	64	106	93	3	3	E	70-115	45	0.0E+00	0.0E+00	0.4	--	--	0.4	--	--	--	--
MW-62	13	46.77	-32.1	less-open	32	331	318	228	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.3	--	--	--	--	--	--	--
MW-62	14	47.01	-32.3	less-open	52	93	80	350	3	E	70-115	45	0.0E+00	0.0E+00	0.2	--	--	0.5	--	--	--	--
MW-62	15	47.38	-32.7	less-open	50	331	318	228	2	NW	291-335	44	0.0E+00	0.0E+00	0.4	--	2.0	--	--	--	--	--
MW-62	16	47.65	-33.0	less-open	34	293	280	190	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.3	--	--	--	--	--	--	--
MW-62	17	47.97	-33.3	less-open	73	118	105	15	3	E	70-115	45	0.0E+00	0.0E+00	0.3	--	--	1.0	--	--	--	--
MW-62	18	47.98	-33.3	less-open	73	102	89	359	3	E	70-115	45	0.0E+00	0.0E+00	0.0	--	--	0.0	--	--	--	--
MW-62	19	48.31	-33.6	less-open	69	109	96	6	3	E	70-115	45	0.0E+00	0.0E+00	0.3	--	--	0.3	--	--	--	--
MW-62	20	48.89	-34.2	less-open	21	338	325	235	NSR	NSR	NSR	NSR	0.0E+00	0.0E+00	0.6	--	--	--	--	--	--	--
MW-62	21	49.14	-34.5	less-open	65	98	85	355	3	E	70-115	45	0.0E+00	0.0E+00	0.3	--	--	0.8	--	--	--	--
MW-62	22	49.83	-35.1	less-open	70	112	99	9	3	E	70-115	45	0.0E+00	0.0E+00	0.7	--	--	0.7	--	--	--	--
MW-62	23	50.44	-35.8	less-open	69	90	77	347	3	E	70-115	45	0.0E+00	0.0E+00	0.6	--	--	0.6	--	--	--	--
MW-62	24	50.63	-35.9	less-open	74	99	86	356	3	E	70-115	45	0.0E+00	0.0E+00	0.2	--	--	0.2	--	--	--	--
MW-62	25	51.40	-36.7	less-open	78	95	82	352	3	E	70-115	45	2.5E-06	7.2E-03	0.8	--	--	0.8	--	--	--	--
MW-62	26	51.67	-37.0	less-open	72	100	87	357	3	E	70-115	45	2.5E-06	7.2E-03	0.3	--	--	0.3	--	--	--	--
MW-62	27	52.71	-38.0	less-open	25	12	359	269	NSR	NSR	NSR	NSR	2.5E-06	7.2E-03	1.0	--	--	--	--	--	--	--
MW-62	28	52.95	-38.3	less-open	72	99	86	356	3	E	70-115	45	2.5E-06	7.2E-03	0.2	--	--	1.3	--	--	--	--
MW-62	29	53.32	-38.6	less-open	39	306	293	203	2	NW	291-335	44	2.5E-06	7.2E-03	0.4	--	5.9	--	--	--	--	--
MW-62	30	53.44	-38.8	less-open	73	203	190	100	5	S	166-200	34	2.5E-06	7.2E-03	0.1	--	--	--	--	--	53.4	--
MW-62	31	53.82	-39.1	less-open	35	301	288	198	4	W	245-290	45	2.5E-06	7.2E-03	0.4	--	--	--	--	53.8	--	--
MW-62	32	53.89	-39.2	less-open	69	108	95	5	3	E	70-115	45	2.5E-06	7.2E-03	0.1	--	--	0.9	--	--	--	--
MW-62	33	54.26	-39.6	less-open	69	207	194	104	5	S	166-200	34	2.5E-06	7.2E-03	0.4	--	--	--	--	--	0.8	--
MW-62	34	54.71	-40.0	less-open	65	207	194	104	5	S	166-200	34	2.5E-06	7.2E-03	0.5	--	--	--	--	--	0.5	--
MW-62	35	54.97	-40.3	less-open	68	214	201	111	NSR	NSR	NSR	NSR	2.5E-06	7.2E-03	0.3	--	--	--	--	--	--	--
MW-62	36	55.12	-40.4	less-open	64	205	192	102	5	S	166-200	34	2.5E-06	7.2E-03	0.1	--	--	--	--	--	0.4	--
MW-62	37	55.35	-40.7	less-open	71	207	194	104	5	S	166-200	34	2.5E-06	7.2E-03	0.2	--	--	--	--	--	0.2	--
MW-62	38	55.84	-41.2	less-open	45	301	288	198	4	W	245-290	45	2.5E-06	7.2E-03	0.5	--	--	--	--	2.0	--	--
MW-62	39	56.20	-41.5	less-open	43	310	297	207	2	NW	291-335	44	2.5E-06	7.2E-03	0.4	--	2.9	--	--	--	--	--
MW-62	40	56.73	-42.0	less-open	73	199	186	96	5	S	166-200	34	2.5E-06	7.2E-03	0.5	--	--	--	--	--	1.4	--
MW-62	41	57.74	-43.1	less-open	12	74	61	331	NSR	NSR	NSR	NSR	2.5E-06	7.2E-03	1.0	--	--	--	--	--	--	--
MW-62	42	58.29	-43.6	less-open	68	85	72	342	3	E	70-115	45	2.5E-06	7.2E-03	0.5	--	--	4.4	--	--	--	--
MW-62	43	58.70	-44.0	less-open	75	67	54	324	NSR	NSR	NSR	NSR	2.5E-06	7.2E-03	0.4	--	--	--	--	--	--	--
MW-62	44	58.70	-44.0	less-open	68	108	95	5	3	E	70-115	45	2.5E-06	7.2E-03	0.0	--	--	0.4	--	--	--	--
MW-62	45	59.43	-44.7	less-open	49	312	299	209	2	NW	291-335	44	2.5E-06	7.2E-03	0.7	--	3.2	--	--	--	--	--
MW-62	46	60.12	-45.4	less-open	67	105	92	2	3	E	70-115	45	2.5E-06	7.2E-03	0.7	--	--	1.4	--	--	--	--
MW-62	47	60.33	-45.6	less-open	81	197	184	94	5	S	166-200	34	2.5E-06	7.2E-03	0.2	--	--	--	--	--	3.6	--
MW-62	48	60.43	-45.7	less-open	65	291	278	188	4	W	245-290	45	2.5E-06	7.2E-03	0.1	--	--	--	--	4.6	--	--
MW-62	49	61.73	-47.0	less-open	24	6	353	263	NSR	NSR	NSR	NSR	2.8E-06	8.0E-03	1.3	--	--	--	--	--	--	--
MW-62	50	62.36	-47.7	less-open	32	307	294	204	NSR	NSR	NSR	NSR	2.8E-06	8.0E-03	0.6	--	--	--	--	--	--	--
MW-62	51	62.73	-48.0	less-open	68	100	87	357	3	E	70-115	45	2.8E-06	8.0E-03	0.4	--	--	2.6	--	--	--	--

APPENDIX Q  
FRACTURE FLOW MODEL DATABASE  
Indian Point  
Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-62	52	63.00	-48.3	less-open	65	300	287	197	4	W	245-290	45	2.8E-06		8.0E-03	0.3	--	--	--	2.6	--	--
MW-62	53	63.61	-48.9	less-open	60	209	196	106	5	S	166-200	34	2.8E-06		8.0E-03	0.6	--	--	--	--	3.3	--
MW-62	54	63.84	-49.2	less-open	64	111	98	8	3	E	70-115	45	2.8E-06		8.0E-03	0.2	--	--	1.1	--	--	--
MW-62	55	64.65	-50.0	less-open	66	100	87	357	3	E	70-115	45	2.8E-06		8.0E-03	0.8	--	--	0.8	--	--	--
MW-62	56	64.78	-50.1	less-open	60	213	200	110	5	S	166-200	34	2.8E-06		8.0E-03	0.1	--	--	--	--	1.2	--
MW-62	57	64.94	-50.3	less-open	47	303	290	200	4	W	245-290	45	2.8E-06		8.0E-03	0.2	--	--	--	1.9	--	--
MW-62	58	65.35	-50.7	less-open	70	108	95	5	3	E	70-115	45	2.8E-06		8.0E-03	0.4	--	--	0.7	--	--	--
MW-62	59	65.89	-51.2	less-open	68	112	99	9	3	E	70-115	45	2.8E-06		8.0E-03	0.5	--	--	0.5	--	--	--
MW-62	60	66.36	-51.7	less-open	64	113	100	10	3	E	70-115	45	2.8E-06		8.0E-03	0.5	--	--	0.5	--	--	--
MW-62	61	66.56	-51.9	less-open	65	122	109	19	3	E	70-115	45	2.8E-06		8.0E-03	0.2	--	--	0.2	--	--	--
MW-62	62	66.92	-52.2	less-open	63	110	97	7	3	E	70-115	45	2.8E-06		8.0E-03	0.4	--	--	0.4	--	--	--
MW-62	63	67.54	-52.9	less-open	50	109	96	6	3	E	70-115	45	2.8E-06		8.0E-03	0.6	--	--	0.6	--	--	--
MW-62	64	67.86	-53.2	less-open	68	104	91	1	3	E	70-115	45	2.8E-06		8.0E-03	0.3	--	--	0.3	--	--	--
MW-62	65	68.16	-53.5	less-open	43	284	271	181	4	W	245-290	45	2.8E-06		8.0E-03	0.3	--	--	--	3.2	--	--
MW-62	66	68.29	-53.6	less-open	75	99	86	356	3	E	70-115	45	2.8E-06		8.0E-03	0.1	--	--	0.4	--	--	--
MW-62	67	68.38	-53.7	less-open	58	93	80	350	3	E	70-115	45	2.8E-06		8.0E-03	0.1	--	--	0.1	--	--	--
MW-62	68	68.82	-54.1	less-open	65	97	84	354	3	E	70-115	45	2.8E-06		8.0E-03	0.4	--	--	0.4	--	--	--
MW-62	69	69.19	-54.5	less-open	67	216	203	113	NSR	NSR	NSR	NSR	2.8E-06		8.0E-03	0.4	--	--	--	--	--	--
MW-62	70	69.83	-55.1	less-open	72	220	207	117	NSR	NSR	NSR	NSR	2.8E-06		8.0E-03	0.6	--	--	--	--	--	--
MW-62	71	70.09	-55.4	less-open	62	116	103	13	3	E	70-115	45	2.8E-06		8.0E-03	0.3	--	--	1.3	--	--	--
MW-62	72	71.06	-56.4	less-open	60	115	102	12	3	E	70-115	45	2.8E-06		8.0E-03	1.0	--	--	1.0	--	--	--
MW-62	73	71.45	-56.8	less-open	62	130	117	27	1	SE	116-165	49	2.8E-06		8.0E-03	0.4	71.5	--	--	--	--	--
MW-62	74	72.05	-57.4	less-open	67	107	94	4	3	E	70-115	45	2.8E-06		8.0E-03	0.6	--	--	1.0	--	--	--
MW-62	75	72.09	-57.4	less-open	58	209	196	106	5	S	166-200	34	2.8E-06		8.0E-03	0.0	--	--	--	--	7.3	--
MW-62	76	72.22	-57.5	less-open	70	100	87	357	3	E	70-115	45	2.8E-06		8.0E-03	0.1	--	--	0.2	--	--	--
MW-62	77	72.64	-58.0	less-open	36	295	282	192	4	W	245-290	45	2.8E-06		8.0E-03	0.4	--	--	--	4.5	--	--
MW-62	78	72.72	-58.0	less-open	67	90	77	347	3	E	70-115	45	2.8E-06		8.0E-03	0.1	--	--	0.5	--	--	--
MW-62	79	73.46	-58.8	less-open	65	119	106	16	3	E	70-115	45	2.8E-06		8.0E-03	0.7	--	--	0.7	--	--	--
MW-62	80	73.85	-59.2	less-open	46	346	333	243	2	NW	291-335	44	2.8E-06		8.0E-03	0.4	--	14.4	--	--	--	--
MW-62	81	74.13	-59.4	less-open	65	109	96	6	3	E	70-115	45	2.8E-06		8.0E-03	0.3	--	--	0.7	--	--	--
MW-62	82	74.29	-59.6	less-open	46	345	332	242	2	NW	291-335	44	2.8E-06		8.0E-03	0.2	--	0.4	--	--	--	--
MW-62	83	74.55	-59.9	less-open	60	307	294	204	2	NW	291-335	44	2.8E-06		8.0E-03	0.3	--	0.3	--	--	--	--
MW-62	84	74.93	-60.2	less-open	50	351	338	248	6	N	336-21	45	2.8E-06		8.0E-03	0.4	--	--	--	--	--	30.7
MW-62	85	75.12	-60.4	less-open	63	107	94	4	3	E	70-115	45	2.8E-06		8.0E-03	0.2	--	--	1.0	--	--	--
MW-62	86	75.38	-60.7	less-open	67	117	104	14	3	E	70-115	45	2.8E-06		8.0E-03	0.3	--	--	0.3	--	--	--
MW-62	87	75.64	-61.0	less-open	68	108	95	5	3	E	70-115	45	2.8E-06		8.0E-03	0.3	--	--	0.3	--	--	--
MW-62	88	75.89	-61.2	less-open	49	352	339	249	6	N	336-21	45	2.8E-06		8.0E-03	0.3	--	--	--	--	--	1.0
MW-62	89	76.02	-61.3	less-open	52	356	343	253	6	N	336-21	45	2.8E-06		8.0E-03	0.1	--	--	--	--	--	0.1
MW-62	90	76.46	-61.8	less-open	71	112	99	9	3	E	70-115	45	2.8E-06		8.0E-03	0.4	--	--	0.8	--	--	--
MW-62	91	76.82	-62.1	less-open	37	357	344	254	6	N	336-21	45	2.8E-06		8.0E-03	0.4	--	--	--	--	--	0.8
MW-62	92	77.33	-62.6	less-open	27	301	288	198	NSR	NSR	NSR	NSR	2.8E-06		8.0E-03	0.5	--	--	--	--	--	--
MW-62	93	78.19	-63.5	less-open	55	3	350	260	6	N	336-21	45	2.8E-06		8.0E-03	0.9	--	--	--	--	--	1.4
MW-62	94	78.56	-63.9	less-open	63	127	114	24	3	E	70-115	45	2.8E-06		8.0E-03	0.4	--	--	2.1	--	--	--
MW-62	95	79.56	-64.9	less-open	64	110	97	7	3	E	70-115	45	1.8E-05		5.0E-02	1.0	--	--	1.0	--	--	--
MW-62	96	81.07	-66.4	less-open	70	262	249	159	4	W	245-290	45	1.8E-05		5.0E-02	1.5	--	--	--	8.4	--	--
MW-62	97	81.48	-66.8	less-open	54	319	306	216	2	NW	291-335	44	1.8E-05		5.0E-02	0.4	--	6.9	--	--	--	--
MW-62	98	81.60	-66.9	less-open	55	348	335	245	2	NW	291-335	44	1.8E-05		5.0E-02	0.1	--	0.1	--	--	--	--
MW-62	99	81.67	-67.0	less-open	38	306	293	203	2	NW	291-335	44	1.8E-05		5.0E-02	0.1	--	0.1	--	--	--	--
MW-62	100	82.28	-67.6	less-open	28	332	319	229	NSR	NSR	NSR	NSR	1.8E-05		5.0E-02	0.6	--	--	--	--	--	--
MW-62	101	82.53	-67.8	open	24	1	348	258	NSR	NSR	NSR	NSR	1.8E-05		5.0E-02	0.3	--	--	--	--	--	--
MW-62	102	82.88	-68.2	less-open	35	338	325	235	2	NW	291-335	44	1.8E-05		5.0E-02	0.3	--	1.2	--	--	--	--
MW-62	103	82.95	-68.3	less-open	46	355	342	252	6	N	336-21	45	1.8E-05		5.0E-02	0.1	--	--	--	--	--	4.8
MW-62	104	82.99	-68.3	less-open	70	95	82	352	3	E	70-115	45	1.8E-05		5.0E-02	0.0	--	--	3.4	--	--	--
MW-62	105	83.02	-68.3	less-open	46	305	292	202	2	NW	291-335	44	1.8E-05		5.0E-02	0.0	--	0.1	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

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Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-62	106	83.26	-68.6	less-open	72	122	109	19	3	E	70-115	45	1.8E-05	5.0E-02	0.2	--	--	0.3	--	--	--
MW-62	107	84.02	-69.3	less-open	38	305	292	202	2	NW	291-335	44	1.8E-05	5.0E-02	0.8	--	1.0	--	--	--	--
MW-62	108	84.4	-69.7	less-open	62	280	267	177	4	W	245-290	45	1.8E-05	5.0E-02	0.4	--	--	--	3.3	--	--
MW-62	109	84.81	-70.1	less-open	67	108	95	5	3	E	70-115	45	1.8E-05	5.0E-02	0.4	--	--	1.6	--	--	--
MW-62	110	85.95	-71.3	less-open	33	34	21	291	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	1.1	--	--	--	--	--	--
MW-62	111	86.49	-71.8	less-open	49	350	337	247	6	N	336-21	45	1.8E-05	5.0E-02	0.5	--	--	--	--	--	3.5
MW-62	112	86.68	-72.0	less-open	69	104	91	1	3	E	70-115	45	1.8E-05	5.0E-02	0.2	--	--	1.9	--	--	--
MW-62	113	87.44	-72.8	less-open	68	112	99	9	3	E	70-115	45	1.8E-05	5.0E-02	0.8	--	--	0.8	--	--	--
MW-62	114	87.83	-73.1	less-open	68	68	55	325	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	0.4	--	--	--	--	--	--
MW-62	115	88.01	-73.3	less-open	68	102	89	359	3	E	70-115	45	1.8E-05	5.0E-02	0.2	--	--	0.6	--	--	--
MW-62	116	88.66	-74.0	less-open	69	112	99	9	3	E	70-115	45	1.8E-05	5.0E-02	0.6	--	--	0.6	--	--	--
MW-62	117	88.8	-74.1	less-open	48	286	273	183	4	W	245-290	45	1.8E-05	5.0E-02	0.1	--	--	--	4.4	--	--
MW-62	118	89.82	-75.1	less-open	48	325	312	222	2	NW	291-335	44	1.8E-05	5.0E-02	1.0	--	5.8	--	--	--	--
MW-62	119	89.98	-75.3	less-open	54	289	276	186	4	W	245-290	45	1.8E-05	5.0E-02	0.2	--	--	--	1.2	--	--
MW-62	120	90.35	-75.7	less-open	31	339	326	236	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	0.4	--	--	--	--	--	--
MW-62	121	90.72	-76.0	less-open	56	331	318	228	2	NW	291-335	44	1.8E-05	5.0E-02	0.4	--	0.9	--	--	--	--
MW-62	122	90.84	-76.2	less-open	53	2	349	259	6	N	336-21	45	1.8E-05	5.0E-02	0.1	--	--	--	--	--	4.4
MW-62	123	91.04	-76.4	less-open	65	108	95	5	3	E	70-115	45	1.8E-05	5.0E-02	0.2	--	--	2.4	--	--	--
MW-62	124	91.09	-76.4	less-open	50	296	283	193	4	W	245-290	45	1.8E-05	5.0E-02	0.0	--	--	--	1.1	--	--
MW-62	125	91.75	-77.1	less-open	56	355	342	252	6	N	336-21	45	1.8E-05	5.0E-02	0.7	--	--	--	--	--	0.9
MW-62	126	92.53	-77.8	less-open	52	325	312	222	2	NW	291-335	44	1.8E-05	5.0E-02	0.8	--	1.8	--	--	--	--
MW-62	127	92.68	-78.0	less-open	48	320	307	217	2	NW	291-335	44	1.8E-05	5.0E-02	0.2	--	0.2	--	--	--	--
MW-62	128	93	-78.3	less-open	54	357	344	254	6	N	336-21	45	1.8E-05	5.0E-02	0.3	--	--	--	--	--	1.3
MW-62	129	93.47	-78.8	less-open	65	330	317	227	2	NW	291-335	44	1.8E-05	5.0E-02	0.5	--	0.8	--	--	--	--
MW-62	130	93.59	-78.9	less-open	54	357	344	254	6	N	336-21	45	1.8E-05	5.0E-02	0.1	--	--	--	--	--	0.6
MW-62	131	93.7	-79.0	less-open	54	304	291	201	2	NW	291-335	44	1.8E-05	5.0E-02	0.1	--	0.2	--	--	--	--
MW-62	132	94.19	-79.5	less-open	44	327	314	224	2	NW	291-335	44	1.8E-05	5.0E-02	0.5	--	0.5	--	--	--	--
MW-62	133	94.46	-79.8	less-open	43	322	309	219	2	NW	291-335	44	1.8E-05	5.0E-02	0.3	--	0.3	--	--	--	--
MW-62	134	94.65	-80.0	less-open	47	319	306	216	2	NW	291-335	44	1.8E-05	5.0E-02	0.2	--	0.2	--	--	--	--
MW-62	135	95.09	-80.4	less-open	49	321	308	218	2	NW	291-335	44	1.8E-05	5.0E-02	0.4	--	0.4	--	--	--	--
MW-62	136	95.91	-81.2	less-open	48	329	316	226	2	NW	291-335	44	1.8E-05	5.0E-02	0.8	--	0.8	--	--	--	--
MW-62	137	97.76	-83.1	less-open	48	278	265	175	4	W	245-290	45	2.1E-05	6.0E-02	1.9	--	--	--	--	6.7	--
MW-62	138	99.14	-84.5	less-open	62	105	92	2	3	E	70-115	45	2.1E-05	6.0E-02	1.4	--	--	8.1	--	--	--
MW-62	139	99.17	-84.5	less-open	44	308	295	205	2	NW	291-335	44	2.1E-05	6.0E-02	0.0	--	3.3	--	--	--	--
MW-62	140	99.61	-84.9	less-open	62	305	292	202	2	NW	291-335	44	2.1E-05	6.0E-02	0.4	--	0.4	--	--	--	--
MW-62	141	100.51	-85.8	less-open	41	312	299	209	2	NW	291-335	44	2.1E-05	6.0E-02	0.9	--	0.9	--	--	--	--
MW-62	142	100.78	-86.1	less-open	56	357	344	254	6	N	336-21	45	2.1E-05	6.0E-02	0.3	--	--	--	--	--	7.2
MW-62	143	100.97	-86.3	less-open	25	345	332	242	NSR	NSR	NSR	NSR	2.1E-05	6.0E-02	0.2	--	--	--	--	--	--
MW-62	144	103.47	-88.8	less-open	64	116	103	13	3	E	70-115	45	2.1E-05	6.0E-02	2.5	--	--	4.3	--	--	--
MW-62	145	103.57	-88.9	less-open	62	115	102	12	3	E	70-115	45	2.1E-05	6.0E-02	0.1	--	--	0.1	--	--	--
MW-62	146	103.72	-89.0	less-open	40	316	303	213	2	NW	291-335	44	2.1E-05	6.0E-02	0.2	--	3.2	--	--	--	--
MW-62	147	104.45	-89.8	less-open	63	87	74	344	3	E	70-115	45	2.1E-05	6.0E-02	0.7	--	--	0.9	--	--	--
MW-62	148	105.87	-91.2	less-open	61	304	291	201	2	NW	291-335	44	2.1E-05	6.0E-02	1.4	--	2.2	--	--	--	--
MW-62	149	106.43	-91.7	less-open	59	114	101	11	3	E	70-115	45	2.1E-05	6.0E-02	0.6	--	--	2.0	--	--	--
MW-62	150	106.86	-92.2	less-open	56	283	270	180	4	W	245-290	45	2.7E-05	7.6E-02	0.4	--	--	--	9.1	--	--
MW-62	151	107.54	-92.9	less-open	53	30	17	287	6	N	336-21	45	2.7E-05	7.6E-02	0.7	--	--	--	--	--	6.8
MW-62	152	108.05	-93.4	less-open	57	30	17	287	6	N	336-21	45	2.7E-05	7.6E-02	0.5	--	--	--	--	--	0.5
MW-62	153	108.86	-94.2	less-open	50	252	239	149	NSR	NSR	NSR	NSR	2.7E-05	7.6E-02	0.8	--	--	--	--	--	--
MW-62	154	109.21	-94.5	less-open	46	303	290	200	4	W	245-290	45	2.7E-05	7.6E-02	0.3	--	--	--	2.3	--	--
MW-62	155	110.54	-95.9	less-open	36	307	294	204	2	NW	291-335	44	2.7E-05	7.6E-02	1.3	--	4.7	--	--	--	--
MW-62	156	110.77	-96.1	less-open	42	311	298	208	2	NW	291-335	44	2.7E-05	7.6E-02	0.2	--	0.2	--	--	--	--
MW-62	157	111.1	-96.4	less-open	63	110	97	7	3	E	70-115	45	2.7E-05	7.6E-02	0.3	--	--	4.7	--	--	--
MW-62	158	111.23	-96.5	less-open	36	293	280	190	4	W	245-290	45	2.7E-05	7.6E-02	0.1	--	--	--	2.0	--	--
MW-62	159	111.82	-97.1	less-open	66	108	95	5	3	E	70-115	45	2.7E-05	7.6E-02	0.6	--	--	0.7	--	--	--



APPENDIX Q  
FRACTURE FLOW MODEL DATABASE  
Indian Point  
Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-62	160	113.15	-98.5	less-open	38	315	302	212	2	NW	291-335	44	2.7E-05	7.6E-02	1.3	--	2.4	--	--	--	--	--
MW-62	161	113.3	-98.6	less-open	40	306	293	203	2	NW	291-335	44	2.7E-05	7.6E-02	0.1	--	0.1	--	--	--	--	--
MW-62	162	114.7	-100.0	less-open	37	312	299	209	2	NW	291-335	44	2.7E-05	7.6E-02	1.4	--	1.4	--	--	--	--	--
MW-62	163	115.95	-101.3	less-open	43	1	348	258	6	N	336-21	45	2.7E-05	7.6E-02	1.3	--	--	--	--	--	--	7.9
MW-62	164	116.56	-101.9	less-open	52	360	347	257	6	N	336-21	45	7.9E-05	2.2E-01	0.6	--	--	--	--	--	--	0.6
MW-62	165	116.74	-102.1	less-open	66	111	98	8	3	E	70-115	45	7.9E-05	2.2E-01	0.2	--	--	4.9	--	--	--	--
MW-62	166	117.49	-102.8	less-open	50	337	324	234	2	NW	291-335	44	7.9E-05	2.2E-01	0.8	--	2.8	--	--	--	--	--
MW-62	167	117.73	-103.0	less-open	48	317	304	214	2	NW	291-335	44	7.9E-05	2.2E-01	0.2	--	0.2	--	--	--	--	--
MW-62	168	117.99	-103.3	less-open	45	50	37	307	NSR	NSR	NSR	NSR	7.9E-05	2.2E-01	0.3	--	--	--	--	--	--	--
MW-62	169	118.14	-103.5	less-open	66	111	98	8	3	E	70-115	45	7.9E-05	2.2E-01	0.2	--	--	1.4	--	--	--	--
MW-62	170	118.98	-104.3	less-open	64	97	84	354	3	E	70-115	45	7.9E-05	2.2E-01	0.8	--	--	0.8	--	--	--	--
MW-62	171	119.33	-104.6	less-open	43	303	290	200	4	W	245-290	45	7.9E-05	2.2E-01	0.3	--	--	--	8.1	--	--	--
MW-62	172	119.88	-105.2	less-open	61	116	103	13	3	E	70-115	45	7.9E-05	2.2E-01	0.5	--	--	0.9	--	--	--	--
MW-62	173	120.41	-105.7	less-open	50	296	283	193	4	W	245-290	45	7.9E-05	2.2E-01	0.5	--	--	--	1.1	--	--	--
MW-62	174	120.65	-106.0	less-open	64	109	96	6	3	E	70-115	45	7.9E-05	2.2E-01	0.2	--	--	0.8	--	--	--	--
MW-62	175	120.66	-106.0	less-open	33	329	316	226	NSR	NSR	NSR	NSR	7.9E-05	2.2E-01	0.0	--	--	--	--	--	--	--
MW-62	176	120.98	-106.3	less-open	66	102	89	359	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	0.3	--	--	--	--
MW-62	177	120.99	-106.3	less-open	38	3	350	260	6	N	336-21	45	7.9E-05	2.2E-01	0.0	--	--	--	--	--	--	4.4
MW-62	178	121.36	-106.7	less-open	47	315	302	212	2	NW	291-335	44	7.9E-05	2.2E-01	0.4	--	3.6	--	--	--	--	--
MW-62	179	121.64	-107.0	less-open	43	310	297	207	2	NW	291-335	44	7.9E-05	2.2E-01	0.3	--	0.3	--	--	--	--	--
MW-62	180	122.18	-107.5	less-open	39	296	283	193	4	W	245-290	45	7.9E-05	2.2E-01	0.5	--	--	--	1.8	--	--	--
MW-62	181	122.6	-107.9	less-open	49	341	328	238	2	NW	291-335	44	7.9E-05	2.2E-01	0.4	--	1.0	--	--	--	--	--
MW-62	182	122.89	-108.2	less-open	68	295	282	192	4	W	245-290	45	7.9E-05	2.2E-01	0.3	--	--	--	0.7	--	--	--
MW-62	183	123.41	-108.7	less-open	57	325	312	222	2	NW	291-335	44	7.9E-05	2.2E-01	0.5	--	0.8	--	--	--	--	--
MW-62	184	123.8	-109.1	less-open	76	312	299	209	2	NW	291-335	44	7.9E-05	2.2E-01	0.4	--	0.4	--	--	--	--	--
MW-62	185	123.86	-109.2	less-open	59	127	114	24	3	E	70-115	45	7.9E-05	2.2E-01	0.1	--	--	2.9	--	--	--	--
MW-62	186	124.75	-110.1	less-open	60	296	283	193	4	W	245-290	45	7.9E-05	2.2E-01	0.9	--	--	--	1.9	--	--	--
MW-62	187	124.92	-110.2	less-open	61	52	39	309	NSR	NSR	NSR	NSR	7.9E-05	2.2E-01	0.2	--	--	--	--	--	--	--
MW-62	188	128.82	-114.1	less-open	68	61	48	318	NSR	NSR	NSR	NSR	7.9E-05	2.2E-01	3.9	--	--	--	--	--	--	--
MW-62	189	129.8	-115.1	less-open	70	351	338	248	6	N	336-21	45	7.9E-05	2.2E-01	1.0	--	--	--	--	--	--	8.8
MW-62	190	130.28	-115.6	less-open	33	281	268	178	NSR	NSR	NSR	NSR	7.9E-05	2.2E-01	0.5	--	--	--	--	--	--	--
MW-62	191	130.56	-115.9	less-open	60	121	108	18	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	6.7	--	--	--	--
MW-62	192	130.85	-116.2	less-open	56	116	103	13	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	0.3	--	--	--	--
MW-62	193	131	-116.3	less-open	38	281	268	178	4	W	245-290	45	7.9E-05	2.2E-01	0.2	--	--	--	6.3	--	--	--
MW-62	194	132.23	-117.5	less-open	67	101	88	358	3	E	70-115	45	7.9E-05	2.2E-01	1.2	--	--	1.4	--	--	--	--
MW-62	195	132.57	-117.9	less-open	64	109	96	6	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	0.3	--	--	--	--
MW-62	196	132.85	-118.2	less-open	62	119	106	16	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	0.3	--	--	--	--
MW-62	197	133.13	-118.4	less-open	68	92	79	349	3	E	70-115	45	7.9E-05	2.2E-01	0.3	--	--	0.3	--	--	--	--
MW-62	198	134.06	-119.4	less-open	63	119	106	16	3	E	70-115	45	7.9E-05	2.2E-01	0.9	--	--	0.9	--	--	--	--
MW-62	199	134.32	-119.6	less-open	62	118	105	15	3	E	70-115	45	8.5E-05	2.4E-01	0.3	--	--	0.3	--	--	--	--
MW-62	200	134.65	-120.0	less-open	58	106	93	3	3	E	70-115	45	8.5E-05	2.4E-01	0.3	--	--	0.3	--	--	--	--
MW-62	201	135.19	-120.5	less-open	65	114	101	11	3	E	70-115	45	8.5E-05	2.4E-01	0.5	--	--	0.5	--	--	--	--
MW-62	202	135.39	-120.7	less-open	61	126	113	23	3	E	70-115	45	8.5E-05	2.4E-01	0.2	--	--	0.2	--	--	--	--
MW-62	203	135.64	-121.0	less-open	63	115	102	12	3	E	70-115	45	8.5E-05	2.4E-01	0.3	--	--	0.3	--	--	--	--
MW-62	204	135.84	-121.2	less-open	66	109	96	6	3	E	70-115	45	8.5E-05	2.4E-01	0.2	--	--	0.2	--	--	--	--
MW-62	205	136.54	-121.9	less-open	64	105	92	2	3	E	70-115	45	8.5E-05	2.4E-01	0.7	--	--	0.7	--	--	--	--
MW-62	206	137.03	-122.3	less-open	62	300	287	197	4	W	245-290	45	8.5E-05	2.4E-01	1.5	--	--	--	6.0	--	--	--
MW-62	207	138.54	-123.9	less-open	70	316	303	213	2	NW	291-335	44	8.5E-05	2.4E-01	0.5	--	14.7	--	--	--	--	--
MW-62	208	139.01	-124.3	less-open	69	100	87	357	3	E	70-115	45	8.5E-05	2.4E-01	0.5	--	--	2.5	--	--	--	--
MW-62	209	139.21	-124.5	less-open	71	93	80	350	3	E	70-115	45	8.5E-05	2.4E-01	0.2	--	--	0.2	--	--	--	--
MW-62	210	139.63	-124.9	less-open	63	117	104	14	3	E	70-115	45	8.5E-05	2.4E-01	0.4	--	--	0.4	--	--	--	--
MW-62	211	140.52	-125.8	less-open	51	326	313	223	2	NW	291-335	44	8.5E-05	2.4E-01	0.9	--	2.0	--	--	--	--	--
MW-62	212	140.76	-126.1	less-open	72	105	92	2	3	E	70-115	45	8.5E-05	2.4E-01	0.2	--	--	1.1	--	--	--	--
MW-62	213	143.61	-128.9	less-open	11	332	319	229	NSR	NSR	NSR	NSR	8.5E-05	2.4E-01	2.9	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-62	214	144.4	-129.7	less-open	56	329	316	226	2	NW	291-335	44	8.5E-05	2.4E-01	0.8	--	3.9	--	--	--	--	--
MW-62	215	144.91	-130.2	less-open	64	111	98	8	3	E	70-115	45	8.5E-05	2.4E-01	0.5	--	--	4.2	--	--	--	--
MW-62	216	145.54	-130.9	less-open	33	340	327	237	NSR	NSR	NSR	NSR	8.5E-05	2.4E-01	0.6	--	--	--	--	--	--	--
MW-62	217	148.71	-134.0	less-open	70	105	92	2	3	E	70-115	45	3.2E-05	9.1E-02	3.2	--	--	3.8	--	--	--	--
MW-62	218	149.95	-135.3	less-open	64	333	320	230	2	NW	291-335	44	3.2E-05	9.1E-02	1.2	--	5.5	--	--	--	--	--
MW-62	219	150.24	-135.6	less-open	69	102	89	359	3	E	70-115	45	3.2E-05	9.1E-02	0.3	--	--	1.5	--	--	--	--
MW-62	220	150.7	-136.0	less-open	27	190	177	87	NSR	NSR	NSR	NSR	3.2E-05	9.1E-02	0.5	--	--	--	--	--	--	--
MW-62	221	150.74	-136.1	less-open	70	207	194	104	5	S	166-200	34	3.2E-05	9.1E-02	0.0	--	--	--	--	78.7	--	--
MW-62	222	151.03	-136.3	less-open	70	83	70	340	3	E	70-115	45	3.2E-05	9.1E-02	0.3	--	--	0.8	--	--	--	--
MW-62	223	151.24	-136.6	less-open	66	83	70	340	3	E	70-115	45	3.2E-05	9.1E-02	0.2	--	--	0.2	--	--	--	--
MW-62	224	152.27	-137.6	less-open	58	339	326	236	2	NW	291-335	44	3.2E-05	9.1E-02	1.0	--	2.3	--	--	--	--	--
MW-62	225	152.42	-137.7	less-open	59	337	324	234	2	NW	291-335	44	3.2E-05	9.1E-02	0.1	--	0.1	--	--	--	--	--
MW-62	226	153.24	-138.6	less-open	24	240	227	137	NSR	NSR	NSR	NSR	3.2E-05	9.1E-02	0.8	--	--	--	--	--	--	--
MW-62	227	153.31	-138.6	less-open	34	254	241	151	NSR	NSR	NSR	NSR	3.2E-05	9.1E-02	0.1	--	--	--	--	--	--	--
MW-62	228	153.75	-139.1	less-open	51	341	328	238	2	NW	291-335	44	3.2E-05	9.1E-02	0.4	--	1.3	--	--	--	--	--
MW-62	229	153.89	-139.2	less-open	56	339	326	236	2	NW	291-335	44	3.2E-05	9.1E-02	0.1	--	0.1	--	--	--	--	--
MW-62	230	155.3	-140.6	less-open	54	343	330	240	2	NW	291-335	44	3.2E-05	9.1E-02	1.4	--	1.4	--	--	--	--	--
MW-62	231	156.87	-142.2	less-open	48	329	316	226	2	NW	291-335	44	1.5E-05	4.2E-02	1.6	--	1.6	--	--	--	--	--
MW-62	232	158.23	-143.5	less-open	34	334	321	231	NSR	NSR	NSR	NSR	1.5E-05	4.2E-02	1.4	--	--	--	--	--	--	--
MW-62	233	158.38	-143.7	less-open	47	333	320	230	2	NW	291-335	44	1.5E-05	4.2E-02	0.2	--	1.5	--	--	--	--	--
MW-62	234	159.03	-144.3	less-open	55	322	309	219	2	NW	291-335	44	1.5E-05	4.2E-02	0.7	--	0.7	--	--	--	--	--
MW-62	235	159.32	-144.6	open	39	322	309	219	2	NW	291-335	44	1.5E-05	4.2E-02	0.3	--	0.3	--	--	--	--	--
MW-62	236	159.7	-145.0	less-open	49	332	319	229	2	NW	291-335	44	1.5E-05	4.2E-02	0.4	--	0.4	--	--	--	--	--
MW-62	237	159.78	-145.1	less-open	47	326	313	223	2	NW	291-335	44	1.5E-05	4.2E-02	0.1	--	0.1	--	--	--	--	--
MW-62	238	160.5	-145.8	less-open	47	332	319	229	2	NW	291-335	44	1.5E-05	4.2E-02	0.7	--	0.7	--	--	--	--	--
MW-62	239	160.51	-145.8	less-open	61	116	103	13	3	E	70-115	45	1.5E-05	4.2E-02	0.0	--	--	9.3	--	--	--	--
MW-62	240	160.8	-146.1	less-open	64	105	92	2	3	E	70-115	45	1.5E-05	4.2E-02	0.3	--	--	0.3	--	--	--	--
MW-62	241	161.15	-146.5	less-open	45	320	307	217	2	NW	291-335	44	1.5E-05	4.2E-02	0.3	--	0.7	--	--	--	--	--
MW-62	242	161.56	-146.9	less-open	49	315	302	212	2	NW	291-335	44	1.5E-05	4.2E-02	0.4	--	0.4	--	--	--	--	--
MW-62	243	161.69	-147.0	less-open	45	326	313	223	2	NW	291-335	44	1.5E-05	4.2E-02	0.1	--	0.1	--	--	--	--	--
MW-62	244	161.93	-147.2	less-open	50	321	308	218	2	NW	291-335	44	1.5E-05	4.2E-02	0.2	--	0.2	--	--	--	--	--
MW-62	245	162.2	-147.5	less-open	46	324	311	221	2	NW	291-335	44	1.5E-05	4.2E-02	0.3	--	0.3	--	--	--	--	--
MW-62	246	162.37	-147.7	less-open	45	322	309	219	2	NW	291-335	44	1.5E-05	4.2E-02	0.2	--	0.2	--	--	--	--	--
MW-62	247	163.38	-148.7	less-open	46	84	71	341	3	E	70-115	45	1.5E-05	4.2E-02	1.0	--	--	2.6	--	--	--	--
MW-62	248	163.87	-149.2	less-open	21	26	13	283	NSR	NSR	NSR	NSR	1.5E-05	4.2E-02	0.5	--	--	--	--	--	--	--
MW-62	249	164.07	-149.4	less-open	70	102	89	359	3	E	70-115	45	1.5E-05	4.2E-02	0.2	--	--	0.7	--	--	--	--
MW-62	250	164.41	-149.7	less-open	72	99	86	356	3	E	70-115	45	1.5E-05	4.2E-02	0.3	--	--	0.3	--	--	--	--
MW-62	251	165.42	-150.7	less-open	48	360	347	257	6	N	336-21	45	1.5E-05	4.2E-02	1.0	--	--	--	--	--	--	35.6
MW-62	252	165.44	-150.8	less-open	35	285	272	182	4	W	245-290	45	1.5E-05	4.2E-02	0.0	--	--	--	28.4	--	--	--
MW-62	253	166.03	-151.3	less-open	47	343	330	240	2	NW	291-335	44	1.5E-05	4.2E-02	0.6	--	3.7	--	--	--	--	--
MW-62	254	168.12	-153.4	less-open	49	6	353	263	6	N	336-21	45	1.2E-04	3.4E-01	2.1	--	--	--	--	--	--	2.7
MW-62	255	168.67	-154.0	less-open	16	31	18	288	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.5	--	--	--	--	--	--	--
MW-62	256	169.28	-154.6	less-open	58	28	15	285	6	N	336-21	45	1.2E-04	3.4E-01	0.6	--	--	--	--	--	--	1.2
MW-62	257	169.37	-154.7	less-open	51	333	320	230	2	NW	291-335	44	1.2E-04	3.4E-01	0.1	--	3.3	--	--	--	--	--
MW-62	258	169.67	-155.0	less-open	43	44	31	301	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.3	--	--	--	--	--	--	--
MW-62	259	170.28	-155.6	less-open	68	44	31	301	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.6	--	--	--	--	--	--	--
MW-62	260	170.37	-155.7	less-open	35	57	44	314	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.1	--	--	--	--	--	--	--
MW-62	261	170.77	-156.1	less-open	27	34	21	291	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.4	--	--	--	--	--	--	--
MW-62	262	171.24	-156.6	less-open	35	66	53	323	NSR	NSR	NSR	NSR	1.2E-04	3.4E-01	0.5	--	--	--	--	--	--	--
MW-62	263	171.73	-157.0	less-open	57	342	329	239	2	NW	291-335	44	1.2E-04	3.4E-01	0.5	--	2.4	--	--	--	--	--
MW-62	264	172.57	-157.9	less-open	56	335	322	232	2	NW	291-335	44	1.2E-04	3.4E-01	0.8	--	0.8	--	--	--	--	--
MW-62	265	173.46	-158.8	less-open	54	10	357	267	6	N	336-21	45	1.2E-04	3.4E-01	0.9	--	--	--	--	--	--	4.2
MW-62	266	173.99	-159.3	less-open	59	324	311	221	2	NW	291-335	44	1.2E-04	3.4E-01	0.5	--	1.4	--	--	--	--	--
MW-62	267	174.16	-159.5	less-open	52	338	325	235	2	NW	291-335	44	1.2E-04	3.4E-01	0.2	--	0.2	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-62	268	174.49	-159.8	less-open	49	335	322	232	2	NW	291-335	44	1.2E-04	3.4E-01	0.3	--	0.3	--	--	--	--	--
MW-62	269	174.83	-160.1	less-open	59	311	298	208	2	NW	291-335	44	1.2E-04	3.4E-01	0.3	--	0.3	--	--	--	--	--
MW-62	270	175.71	-161.0	less-open	66	333	320	230	2	NW	291-335	44	1.2E-04	3.4E-01	0.9	--	0.9	--	--	--	--	--
MW-62	271	175.84	-161.2	less-open	71	93	80	350	3	E	70-115	45	2.6E-04	7.2E-01	0.1	--	--	11.4	--	--	--	--
MW-62	272	179.07	-164.4	less-open	68	96	83	353	3	E	70-115	45	2.6E-04	7.2E-01	3.2	--	--	3.2	--	--	--	--
MW-62	273	179.24	-164.6	less-open	71	97	84	354	3	E	70-115	45	2.6E-04	7.2E-01	0.2	--	--	0.2	--	--	--	--
MW-62	274	179.92	-165.2	less-open	71	330	317	227	2	NW	291-335	44	2.6E-04	7.2E-01	0.7	--	4.2	--	--	--	--	--
MW-62	275	181.48	-166.8	less-open	62	249	236	146	NSR	NSR	NSR	NSR	2.6E-04	7.2E-01	1.6	--	--	--	--	--	--	--
MW-62	276	182.32	-167.6	less-open	42	12	359	269	6	N	336-21	45	2.6E-04	7.2E-01	0.8	--	--	--	--	--	--	8.9
MW-62	277	184.03	-169.3	less-open	68	151	138	48	1	SE	116-165	49	2.6E-04	7.2E-01	1.7	112.6	--	--	--	--	--	--
MW-62	278	184.23	-169.5	less-open	71	322	309	219	2	NW	291-335	44	2.6E-04	7.2E-01	0.2	--	4.3	--	--	--	--	--
MW-62	279	184.42	-169.7	less-open	45	308	295	205	2	NW	291-335	44	2.6E-04	7.2E-01	0.2	--	0.2	--	--	--	--	--
MW-62	280	185.34	-170.7	less-open	59	249	236	146	NSR	NSR	NSR	NSR	2.6E-04	7.2E-01	0.9	--	--	--	--	--	--	--
MW-62	281	185.79	-171.1	less-open	31	349	336	246	NSR	NSR	NSR	NSR	2.6E-04	7.2E-01	0.4	--	--	--	--	--	--	--
MW-62	282	186.81	-172.1	less-open	46	76	63	333	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	1.0	--	--	--	--	--	--	--
MW-62	283	188.54	-173.9	less-open	39	303	290	200	4	W	245-290	45	1.3E-04	3.7E-01	1.7	--	--	--	23.1	--	--	--
MW-62	284	188.89	-174.2	less-open	47	318	305	215	2	NW	291-335	44	1.3E-04	3.7E-01	0.3	--	4.5	--	--	--	--	--
MW-62	285	189.81	-175.1	less-open	73	298	285	195	4	W	245-290	45	1.3E-04	3.7E-01	0.9	--	--	--	1.3	--	--	--
MW-62	286	190.68	-176.0	less-open	14	32	19	289	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.9	--	--	--	--	--	--	--
MW-62	287	190.91	-176.2	less-open	22	347	334	244	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.2	--	--	--	--	--	--	--
MW-62	288	193.29	-178.6	less-open	77	297	284	194	4	W	245-290	45	1.3E-04	3.7E-01	2.4	--	--	--	3.5	--	--	--
MW-62	289	193.65	-179.0	less-open	42	295	282	192	4	W	245-290	45	1.3E-04	3.7E-01	0.4	--	--	--	0.4	--	--	--
MW-62	290	195.42	-180.7	less-open	16	302	289	199	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	1.8	--	--	--	--	--	--	--
MW-62	291	195.91	-181.2	less-open	16	332	319	229	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.5	--	--	--	--	--	--	--
MW-62	292	196.37	-181.7	less-open	49	333	320	230	2	NW	291-335	44	1.3E-04	3.7E-01	0.5	--	7.5	--	--	--	--	--
MW-62	293	196.49	-181.8	less-open	72	99	86	356	3	E	70-115	45	1.3E-04	3.7E-01	0.1	--	--	17.3	--	--	--	--
MW-62	294	196.68	-182.0	less-open	76	131	118	28	1	SE	116-165	49	1.3E-04	3.7E-01	0.2	12.7	--	--	--	--	--	--
MW-62	295	196.71	-182.0	less-open	53	128	115	25	3	E	70-115	45	1.3E-04	3.7E-01	0.0	--	--	0.2	--	--	--	--
MW-62	296	197.12	-182.4	less-open	41	58	45	315	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.4	--	--	--	--	--	--	--
MW-62	297	197.2	-182.5	less-open	38	45	32	302	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.1	--	--	--	--	--	--	--
MW-62	298	197.32	-182.6	less-open	66	127	114	24	3	E	70-115	45	1.3E-04	3.7E-01	0.1	--	--	0.6	--	--	--	--
MW-62	299	197.34	-182.7	less-open	68	130	117	27	1	SE	116-165	49	1.3E-04	3.7E-01	0.0	0.7	--	--	--	--	--	--
MW-62	300	197.67	-183.0	less-open	70	113	100	10	3	E	70-115	45	1.3E-04	3.7E-01	0.3	--	--	0.3	--	--	--	--
MW-62	301	198.24	-183.6	less-open	32	13	0	270	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.6	--	--	--	--	--	--	--
MW-62	302	198.71	-184.0	less-open	88	20	7	277	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.5	--	--	--	--	--	--	--
MW-62	303	199.02	-184.3	less-open	87	12	359	269	NSR	NSR	NSR	NSR	1.3E-04	3.7E-01	0.3	--	--	--	--	--	--	--
MW-63	1	36.98	-22.8	less-open	56	87	74	344	3	E	70-115	45	2.5E-04	7.0E-01	NA	--	--	37.0	--	--	--	--
MW-63	2	37.28	-23.1	less-open	49	84	71	341	3	E	70-115	45	2.5E-04	7.0E-01	0.3	--	--	0.3	--	--	--	--
MW-63	3	37.41	-23.2	less-open	40	282	269	179	4	W	245-290	45	2.5E-04	7.0E-01	0.1	--	--	--	37.4	--	--	--
MW-63	4	37.44	-23.3	less-open	49	87	74	344	3	E	70-115	45	2.5E-04	7.0E-01	0.0	--	--	0.2	--	--	--	--
MW-63	5	37.46	-23.3	less-open	57	65	52	322	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.0	--	--	--	--	--	--	--
MW-63	6	37.49	-23.3	less-open	43	257	244	154	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.0	--	--	--	--	--	--	--
MW-63	7	38.08	-23.9	less-open	57	79	66	336	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.6	--	--	--	--	--	--	--
MW-63	8	38.33	-24.2	less-open	27	266	253	163	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.3	--	--	--	--	--	--	--
MW-63	9	39.01	-24.8	less-open	76	144	131	41	1	SE	116-165	49	2.5E-04	7.0E-01	0.7	39.0	--	--	--	--	--	--
MW-63	10	39.69	-25.5	less-open	75	147	134	44	1	SE	116-165	49	2.5E-04	7.0E-01	0.7	0.7	--	--	--	--	--	--
MW-63	11	40.12	-25.9	less-open	24	283	270	180	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.4	--	--	--	--	--	--	--
MW-63	12	40.53	-26.4	less-open	43	194	181	91	5	S	166-200	34	2.5E-04	7.0E-01	0.4	--	--	--	--	40.5	--	--
MW-63	13	40.90	-26.7	less-open	26	276	263	173	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.4	--	--	--	--	--	--	--
MW-63	14	41.22	-27.0	less-open	21	275	262	172	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.3	--	--	--	--	--	--	--
MW-63	15	41.31	-27.1	less-open	67	249	236	146	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.1	--	--	--	--	--	--	--
MW-63	16	41.47	-27.3	less-open	50	236	223	133	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.2	--	--	--	--	--	--	--
MW-63	17	41.76	-27.6	less-open	55	213	200	110	5	S	166-200	34	2.5E-04	7.0E-01	0.3	--	--	--	--	1.2	--	--
MW-63	18	42.53	-28.4	less-open	14	288	275	185	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.8	--	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-63	19	42.80	-28.6	less-open	15	260	267	177	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.3	--	--	--	--	--	--
MW-63	20	42.89	-28.7	less-open	16	308	295	205	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.1	--	--	--	--	--	--
MW-63	21	43.10	-28.9	less-open	54	84	71	341	3	E	70-115	45	2.5E-04	7.0E-01	0.2	--	--	5.7	--	--	--
MW-63	22	43.17	-29.0	less-open	64	241	228	138	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.1	--	--	--	--	--	--
MW-63	23	43.31	-29.1	less-open	42	100	87	357	3	E	70-115	45	2.5E-04	7.0E-01	0.1	--	--	0.2	--	--	--
MW-63	24	43.78	-29.6	less-open	44	90	77	347	3	E	70-115	45	2.5E-04	7.0E-01	0.5	--	--	0.5	--	--	--
MW-63	25	44.27	-30.1	less-open	60	89	76	346	3	E	70-115	45	2.5E-04	7.0E-01	0.5	--	--	0.5	--	--	--
MW-63	26	44.45	-30.3	less-open	64	269	256	166	4	W	245-290	45	2.5E-04	7.0E-01	0.2	--	--	--	7.0	--	--
MW-63	27	44.57	-30.4	less-open	80	110	97	7	3	E	70-115	45	2.5E-04	7.0E-01	0.1	--	--	0.3	--	--	--
MW-63	28	45.14	-31.0	less-open	58	316	303	213	2	NW	291-335	44	2.5E-04	7.0E-01	0.6	--	45.1	--	--	--	--
MW-63	29	45.20	-31.0	less-open	23	7	354	264	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.1	--	--	--	--	--	--
MW-63	30	45.59	-31.4	less-open	58	83	70	340	3	E	70-115	45	2.5E-04	7.0E-01	0.4	--	--	1.0	--	--	--
MW-63	31	45.69	-31.5	less-open	42	278	265	175	4	W	245-290	45	2.5E-04	7.0E-01	0.1	--	--	--	1.2	--	--
MW-63	32	45.75	-31.6	less-open	39	280	267	177	4	W	245-290	45	2.5E-04	7.0E-01	0.1	--	--	--	0.1	--	--
MW-63	33	45.78	-31.6	less-open	39	97	84	354	3	E	70-115	45	2.5E-04	7.0E-01	0.0	--	--	0.2	--	--	--
MW-63	34	45.78	-31.6	less-open	58	97	84	354	3	E	70-115	45	2.5E-04	7.0E-01	0.0	--	--	0.0	--	--	--
MW-63	35	45.98	-31.8	less-open	50	103	90	0	3	E	70-115	45	2.5E-04	7.0E-01	0.2	--	--	0.2	--	--	--
MW-63	36	46.30	-32.1	less-open	55	89	76	346	3	E	70-115	45	2.5E-04	7.0E-01	0.3	--	--	0.3	--	--	--
MW-63	37	46.55	-32.4	less-open	33	306	293	203	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.3	--	--	--	--	--	--
MW-63	38	46.59	-32.4	less-open	50	82	69	339	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.0	--	--	--	--	--	--
MW-63	39	46.68	-32.5	less-open	57	98	85	355	3	E	70-115	45	2.5E-04	7.0E-01	0.1	--	--	0.4	--	--	--
MW-63	40	46.87	-32.7	less-open	69	90	77	347	3	E	70-115	45	2.5E-04	7.0E-01	0.2	--	--	0.2	--	--	--
MW-63	41	47.12	-32.9	less-open	39	279	266	176	4	W	245-290	45	2.5E-04	7.0E-01	0.3	--	--	--	1.4	--	--
MW-63	42	47.48	-33.3	less-open	43	268	255	165	4	W	245-290	45	2.5E-04	7.0E-01	0.4	--	--	--	0.4	--	--
MW-63	43	48.32	-34.1	less-open	46	260	247	157	4	W	245-290	45	2.5E-04	7.0E-01	0.8	--	--	--	0.8	--	--
MW-63	44	48.34	-34.2	less-open	64	109	96	6	3	E	70-115	45	2.5E-04	7.0E-01	0.0	--	--	1.5	--	--	--
MW-63	45	48.43	-34.3	less-open	48	192	179	89	5	S	166-200	34	2.5E-04	7.0E-01	0.1	--	--	--	--	6.7	--
MW-63	46	48.72	-34.5	less-open	42	269	256	166	4	W	245-290	45	2.5E-04	7.0E-01	0.3	--	--	--	0.4	--	--
MW-63	47	48.95	-34.8	less-open	43	290	277	187	4	W	245-290	45	2.5E-04	7.0E-01	0.2	--	--	--	0.2	--	--
MW-63	48	49.01	-34.8	less-open	61	94	81	351	3	E	70-115	45	2.5E-04	7.0E-01	0.1	--	--	0.7	--	--	--
MW-63	49	49.41	-35.2	less-open	31	311	298	208	NSR	NSR	NSR	NSR	2.5E-04	7.0E-01	0.4	--	--	--	--	--	--
MW-63	50	49.95	-35.8	less-open	36	290	277	187	4	W	245-290	45	2.5E-04	7.0E-01	0.5	--	--	--	1.0	--	--
MW-63	51	50.33	-36.2	less-open	44	279	266	176	4	W	245-290	45	2.5E-04	7.0E-01	0.4	--	--	--	0.4	--	--
MW-63	52	50.51	-36.3	less-open	57	90	77	347	3	E	70-115	45	2.5E-04	7.0E-01	0.2	--	--	1.5	--	--	--
MW-63	53	50.55	-36.4	less-open	38	307	294	204	2	NW	291-335	44	2.5E-04	7.0E-01	0.0	--	5.4	--	--	--	--
MW-63	54	50.74	-36.6	less-open	34	320	307	217	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.2	--	--	--	--
MW-63	55	50.97	-36.8	less-open	54	87	74	344	3	E	70-115	45	3.1E-04	8.7E-01	0.2	--	--	0.5	--	--	--
MW-63	56	51.04	-36.9	less-open	52	97	84	354	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.1	--	--	--
MW-63	57	51.17	-37.0	less-open	63	253	240	150	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.1	--	--	--	--	--	--
MW-63	58	51.25	-37.1	less-open	35	86	73	343	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.2	--	--	--
MW-63	59	51.56	-37.4	less-open	79	149	136	46	1	SE	116-165	49	3.1E-04	8.7E-01	0.3	11.9	--	--	--	--	--
MW-63	60	51.93	-37.8	open	43	316	303	213	2	NW	291-335	44	3.1E-04	8.7E-01	0.4	--	1.2	--	--	--	--
MW-63	61	52.11	-37.9	less-open	33	307	294	204	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.2	--	--	--	--	--	--
MW-63	62	52.27	-38.1	less-open	40	326	313	223	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.3	--	--	--	--
MW-63	63	52.43	-38.3	open	47	319	306	216	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.2	--	--	--	--
MW-63	64	52.62	-38.4	less-open	37	302	289	199	4	W	245-290	45	3.1E-04	8.7E-01	0.2	--	--	--	2.3	--	--
MW-63	65	52.69	-38.5	less-open	42	102	89	359	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	1.4	--	--	--
MW-63	66	52.81	-38.6	less-open	45	103	90	360	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.1	--	--	--
MW-63	67	52.92	-38.7	less-open	51	265	252	162	4	W	245-290	45	3.1E-04	8.7E-01	0.1	--	--	--	0.3	--	--
MW-63	68	53.56	-39.4	less-open	67	102	89	359	3	E	70-115	45	3.1E-04	8.7E-01	0.6	--	--	0.8	--	--	--
MW-63	69	53.59	-39.4	less-open	42	301	288	198	4	W	245-290	45	3.1E-04	8.7E-01	0.0	--	--	--	0.7	--	--
MW-63	70	53.70	-39.5	less-open	52	54	41	311	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.1	--	--	--	--	--	--
MW-63	71	53.77	-39.6	less-open	42	113	100	10	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.2	--	--	--
MW-63	72	54.09	-39.9	less-open	42	312	299	209	2	NW	291-335	44	3.1E-04	8.7E-01	0.3	--	1.7	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
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Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-63	73	54.16	-40.0	less-open	39	103	90	360	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.4	--	--	--
MW-63	74	54.50	-40.3	less-open	55	251	238	148	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.3	--	--	--	--	--	--
MW-63	75	54.70	-40.5	less-open	47	310	297	207	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.6	--	--	--	--
MW-63	76	54.79	-40.6	less-open	45	299	286	196	4	W	245-290	45	3.1E-04	8.7E-01	0.1	--	--	--	1.2	--	--
MW-63	77	54.91	-40.7	open	49	296	283	193	4	W	245-290	45	3.1E-04	8.7E-01	0.1	--	--	--	0.1	--	--
MW-63	78	55.11	-40.9	less-open	42	81	68	338	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.2	--	--	--	--	--	--
MW-63	79	55.51	-41.3	less-open	40	105	92	2	3	E	70-115	45	3.1E-04	8.7E-01	0.4	--	--	1.4	--	--	--
MW-63	80	55.67	-41.5	less-open	42	299	286	196	4	W	245-290	45	3.1E-04	8.7E-01	0.2	--	--	--	0.8	--	--
MW-63	81	55.73	-41.6	less-open	45	107	94	4	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.2	--	--	--
MW-63	82	56.01	-41.8	less-open	47	291	278	188	4	W	245-290	45	3.1E-04	8.7E-01	0.3	--	--	--	0.3	--	--
MW-63	83	56.38	-42.2	less-open	47	302	289	199	4	W	245-290	45	3.1E-04	8.7E-01	0.4	--	--	--	0.4	--	--
MW-63	84	56.39	-42.2	less-open	41	89	76	346	3	E	70-115	45	3.1E-04	8.7E-01	0.0	--	--	0.7	--	--	--
MW-63	85	56.64	-42.5	less-open	62	308	295	205	2	NW	291-335	44	3.1E-04	8.7E-01	0.3	--	1.9	--	--	--	--
MW-63	86	57.19	-43.0	less-open	48	97	84	354	3	E	70-115	45	3.1E-04	8.7E-01	0.5	--	--	0.8	--	--	--
MW-63	87	57.25	-43.1	less-open	53	308	295	205	2	NW	291-335	44	3.1E-04	8.7E-01	0.1	--	0.6	--	--	--	--
MW-63	88	57.36	-43.2	less-open	56	308	295	205	2	NW	291-335	44	3.1E-04	8.7E-01	0.1	--	0.1	--	--	--	--
MW-63	89	57.49	-43.3	less-open	52	316	303	213	2	NW	291-335	44	3.1E-04	8.7E-01	0.1	--	0.1	--	--	--	--
MW-63	90	57.61	-43.4	less-open	53	315	302	212	2	NW	291-335	44	3.1E-04	8.7E-01	0.1	--	0.1	--	--	--	--
MW-63	91	57.80	-43.6	less-open	48	315	302	212	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.2	--	--	--	--
MW-63	92	57.96	-43.8	less-open	48	307	294	204	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.2	--	--	--	--
MW-63	93	58.41	-44.2	less-open	64	145	132	42	1	SE	116-165	49	3.1E-04	8.7E-01	0.4	6.8	--	--	--	--	--
MW-63	94	58.49	-44.3	less-open	33	273	260	170	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.1	--	--	--	--	--	--
MW-63	95	58.58	-44.4	less-open	52	101	88	358	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	1.4	--	--	--
MW-63	96	58.76	-44.6	less-open	47	92	79	349	3	E	70-115	45	3.1E-04	8.7E-01	0.2	--	--	0.2	--	--	--
MW-63	97	58.95	-44.8	less-open	47	301	288	198	4	W	245-290	45	3.1E-04	8.7E-01	0.2	--	--	--	2.6	--	--
MW-63	98	59.22	-45.0	less-open	33	79	66	336	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.3	--	--	--	--	--	--
MW-63	99	59.48	-45.3	less-open	43	97	84	354	3	E	70-115	45	3.1E-04	8.7E-01	0.3	--	--	0.7	--	--	--
MW-63	100	59.92	-45.7	less-open	36	94	81	351	3	E	70-115	45	3.1E-04	8.7E-01	0.4	--	--	0.4	--	--	--
MW-63	101	60.26	-46.1	less-open	40	295	282	192	4	W	245-290	45	3.1E-04	8.7E-01	0.3	--	--	--	1.3	--	--
MW-63	102	60.37	-46.2	less-open	54	78	65	335	NSR	NSR	NSR	NSR	3.1E-04	8.7E-01	0.1	--	--	--	--	--	--
MW-63	103	60.43	-46.3	less-open	37	306	293	203	2	NW	291-335	44	3.1E-04	8.7E-01	0.1	--	2.5	--	--	--	--
MW-63	104	60.49	-46.3	less-open	53	103	90	360	3	E	70-115	45	3.1E-04	8.7E-01	0.1	--	--	0.6	--	--	--
MW-63	105	60.72	-46.5	less-open	69	325	312	222	2	NW	291-335	44	3.1E-04	8.7E-01	0.2	--	0.3	--	--	--	--
MW-63	106	60.95	-46.8	less-open	46	115	102	12	3	E	70-115	45	1.0E-04	2.9E-01	0.2	--	--	0.5	--	--	--
MW-63	107	61.39	-47.2	less-open	53	109	96	6	3	E	70-115	45	1.0E-04	2.9E-01	0.4	--	--	0.4	--	--	--
MW-63	108	61.54	-47.4	less-open	75	319	306	216	2	NW	291-335	44	1.0E-04	2.9E-01	0.1	--	0.8	--	--	--	--
MW-63	109	62.55	-48.4	less-open	46	127	114	24	3	E	70-115	45	1.0E-04	2.9E-01	1.0	--	--	1.2	--	--	--
MW-63	110	62.98	-48.8	less-open	72	123	110	20	3	E	70-115	45	1.0E-04	2.9E-01	0.4	--	--	0.4	--	--	--
MW-63	111	63.26	-49.1	less-open	45	295	282	192	4	W	245-290	45	1.0E-04	2.9E-01	0.3	--	--	--	3.0	--	--
MW-63	112	63.59	-49.4	less-open	31	258	245	155	NSR	NSR	NSR	NSR	1.0E-04	2.9E-01	0.3	--	--	--	--	--	--
MW-63	113	63.82	-49.6	less-open	59	104	91	1	3	E	70-115	45	1.0E-04	2.9E-01	0.2	--	--	0.8	--	--	--
MW-63	114	64.23	-50.1	less-open	36	265	252	162	4	W	245-290	45	1.0E-04	2.9E-01	0.4	--	--	--	1.0	--	--
MW-63	115	64.33	-50.2	less-open	65	98	85	355	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.5	--	--	--
MW-63	116	64.42	-50.2	less-open	64	93	80	350	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	117	64.84	-50.7	less-open	55	92	79	349	3	E	70-115	45	1.0E-04	2.9E-01	0.4	--	--	0.4	--	--	--
MW-63	118	64.89	-50.7	less-open	23	128	115	25	NSR	NSR	NSR	NSR	1.0E-04	2.9E-01	0.0	--	--	--	--	--	--
MW-63	119	65	-50.8	less-open	56	98	85	355	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.2	--	--	--
MW-63	120	65.14	-51.0	less-open	45	92	79	349	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	121	65.6	-51.4	less-open	42	96	83	353	3	E	70-115	45	1.0E-04	2.9E-01	0.5	--	--	0.5	--	--	--
MW-63	122	65.92	-51.7	less-open	52	86	73	343	3	E	70-115	45	1.0E-04	2.9E-01	0.3	--	--	0.3	--	--	--
MW-63	123	66.05	-51.9	less-open	57	89	76	346	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	124	66.19	-52.0	less-open	45	96	83	353	3	E	70-115	45	1.0E-04	2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	125	66.2	-52.0	less-open	63	251	238	148	NSR	NSR	NSR	NSR	1.0E-04	2.9E-01	0.0	--	--	--	--	--	--
MW-63	126	66.22	-52.0	less-open	80	298	285	195	4	W	245-290	45	1.0E-04	2.9E-01	0.0	--	--	--	2.0	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)			Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day	1		2	3	4	5	6	
MW-63	127	66.3	-52.1	less-open	42	99	86	356	3	E	70-115	45	1.0E-04		2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	128	66.5	-52.3	less-open	24	324	311	221	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.2	--	--	--	--	--	--
MW-63	129	66.66	-52.5	less-open	40	324	311	221	2	NW	291-335	44	1.0E-04		2.9E-01	0.2	--	5.1	--	--	--	--
MW-63	130	66.83	-52.7	less-open	29	309	296	206	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.2	--	--	--	--	--	--
MW-63	131	66.99	-52.8	less-open	43	83	70	340	3	E	70-115	45	1.0E-04		2.9E-01	0.2	--	--	0.7	--	--	--
MW-63	132	67.12	-52.9	less-open	58	91	78	348	3	E	70-115	45	1.0E-04		2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	133	67.21	-53.0	less-open	43	87	74	344	3	E	70-115	45	1.0E-04		2.9E-01	0.1	--	--	0.1	--	--	--
MW-63	134	67.28	-53.1	less-open	49	290	277	187	4	W	245-290	45	1.0E-04		2.9E-01	0.1	--	--	--	1.1	--	--
MW-63	135	67.52	-53.3	less-open	51	329	316	226	2	NW	291-335	44	1.0E-04		2.9E-01	0.2	--	0.9	--	--	--	--
MW-63	136	67.74	-53.6	less-open	43	80	67	337	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.2	--	--	--	--	--	--
MW-63	137	67.88	-53.7	less-open	30	91	78	348	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.1	--	--	--	--	--	--
MW-63	138	68.18	-54.0	less-open	33	260	247	157	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.3	--	--	--	--	--	--
MW-63	139	68.53	-54.4	less-open	70	292	279	189	4	W	245-290	45	1.0E-04		2.9E-01	0.3	--	--	--	1.3	--	--
MW-63	140	68.55	-54.4	less-open	48	307	294	204	2	NW	291-335	44	1.0E-04		2.9E-01	0.0	--	1.0	--	--	--	--
MW-63	141	68.67	-54.5	less-open	30	82	69	339	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.1	--	--	--	--	--	--
MW-63	142	68.97	-54.8	less-open	68	294	281	191	4	W	245-290	45	1.0E-04		2.9E-01	0.3	--	--	--	0.4	--	--
MW-63	143	69.27	-55.1	less-open	31	336	323	233	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.3	--	--	--	--	--	--
MW-63	144	69.42	-55.2	less-open	24	111	98	8	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.2	--	--	--	--	--	--
MW-63	145	69.72	-55.5	less-open	46	101	88	358	3	E	70-115	45	1.0E-04		2.9E-01	0.3	--	--	2.5	--	--	--
MW-63	146	69.95	-55.8	less-open	28	281	268	178	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.2	--	--	--	--	--	--
MW-63	147	70.03	-55.9	less-open	30	97	84	354	NSR	NSR	NSR	NSR	1.0E-04		2.9E-01	0.1	--	--	--	--	--	--
MW-63	148	70.4	-56.2	less-open	59	90	77	347	3	E	70-115	45	1.0E-04		2.9E-01	0.4	--	--	0.7	--	--	--
MW-63	149	70.95	-56.8	less-open	50	102	89	359	3	E	70-115	45	1.5E-04		4.3E-01	0.5	--	--	0.5	--	--	--
MW-63	150	70.97	-56.8	less-open	32	291	278	188	NSR	NSR	NSR	NSR	1.5E-04		4.3E-01	0.0	--	--	--	--	--	--
MW-63	151	71.99	-57.8	less-open	50	100	87	357	3	E	70-115	45	1.5E-04		4.3E-01	1.0	--	--	1.0	--	--	--
MW-63	152	72.15	-58.0	less-open	81	341	328	238	NSR	NSR	NSR	NSR	1.5E-04		4.3E-01	0.2	--	--	--	--	--	--
MW-63	153	72.32	-58.1	less-open	55	89	76	346	3	E	70-115	45	1.5E-04		4.3E-01	0.2	--	--	0.3	--	--	--
MW-63	154	72.65	-58.5	less-open	52	102	89	359	3	E	70-115	45	1.5E-04		4.3E-01	0.3	--	--	0.3	--	--	--
MW-63	155	72.67	-58.5	less-open	31	270	257	167	NSR	NSR	NSR	NSR	1.5E-04		4.3E-01	0.0	--	--	--	--	--	--
MW-63	156	72.92	-58.7	less-open	39	95	82	352	3	E	70-115	45	1.5E-04		4.3E-01	0.3	--	--	0.3	--	--	--
MW-63	157	73.31	-59.1	less-open	53	105	92	2	3	E	70-115	45	1.5E-04		4.3E-01	0.4	--	--	0.4	--	--	--
MW-63	158	73.32	-59.1	less-open	44	324	311	221	2	NW	291-335	44	1.5E-04		4.3E-01	0.0	--	--	4.8	--	--	--
MW-63	159	73.53	-59.4	less-open	51	66	53	323	NSR	NSR	NSR	NSR	1.5E-04		4.3E-01	0.2	--	--	--	--	--	--
MW-63	160	73.79	-59.6	less-open	41	93	80	350	3	E	70-115	45	1.5E-04		4.3E-01	0.3	--	--	0.5	--	--	--
MW-63	161	74.28	-60.1	less-open	51	107	94	4	3	E	70-115	45	1.5E-04		4.3E-01	0.5	--	--	0.5	--	--	--
MW-63	162	74.37	-60.2	less-open	47	101	88	358	3	E	70-115	45	1.5E-04		4.3E-01	0.1	--	--	0.1	--	--	--
MW-63	163	74.6	-60.4	less-open	68	314	301	211	2	NW	291-335	44	1.5E-04		4.3E-01	0.2	--	1.3	--	--	--	--
MW-63	164	75.33	-61.2	less-open	42	97	84	354	3	E	70-115	45	1.5E-04		4.3E-01	0.7	--	--	1.0	--	--	--
MW-63	165	75.36	-61.2	less-open	63	211	198	108	5	S	166-200	34	1.5E-04		4.3E-01	0.0	--	--	--	--	26.9	--
MW-63	166	75.46	-61.3	less-open	40	111	98	8	3	E	70-115	45	1.5E-04		4.3E-01	0.1	--	--	0.1	--	--	--
MW-63	167	75.57	-61.4	less-open	38	123	110	20	3	E	70-115	45	1.5E-04		4.3E-01	0.1	--	--	0.1	--	--	--
MW-63	168	75.79	-61.6	less-open	51	101	88	358	3	E	70-115	45	1.5E-04		4.3E-01	0.2	--	--	0.2	--	--	--
MW-63	169	76.21	-62.0	less-open	45	101	88	358	3	E	70-115	45	1.5E-04		4.3E-01	0.4	--	--	0.4	--	--	--
MW-63	170	76.33	-62.2	less-open	46	106	93	3	3	E	70-115	45	1.5E-04		4.3E-01	0.1	--	--	0.1	--	--	--
MW-63	171	76.96	-62.8	less-open	47	96	83	353	3	E	70-115	45	1.5E-04		4.3E-01	0.6	--	--	0.6	--	--	--
MW-63	172	77.13	-63.0	less-open	60	90	77	347	3	E	70-115	45	1.5E-04		4.3E-01	0.2	--	--	0.2	--	--	--
MW-63	173	77.65	-63.5	less-open	45	100	87	357	3	E	70-115	45	1.5E-04		4.3E-01	0.5	--	--	0.5	--	--	--
MW-63	174	77.88	-63.7	less-open	51	79	66	336	NSR	NSR	NSR	NSR	1.5E-04		4.3E-01	0.2	--	--	--	--	--	--
MW-63	175	78.05	-63.9	less-open	63	320	307	217	2	NW	291-335	44	1.5E-04		4.3E-01	0.2	--	3.5	--	--	--	--
MW-63	176	78.07	-63.9	less-open	51	105	92	2	3	E	70-115	45	1.5E-04		4.3E-01	0.0	--	--	0.4	--	--	--
MW-63	177	78.58	-64.4	less-open	33	246	233	143	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	0.5	--	--	--	--	--	--
MW-63	178	78.69	-64.5	less-open	32	256	243	153	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	0.1	--	--	--	--	--	--
MW-63	179	78.79	-64.6	less-open	34	245	232	142	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	0.1	--	--	--	--	--	--
MW-63	180	78.95	-64.8	less-open	37	250	237	147	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	0.2	--	--	--	--	--	--



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day			1	2	3	4	5	6
MW-63	181	79.4	-65.2	less-open	49	232	219	129	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.5	--	--	--	--	--	--
MW-63	182	79.44	-65.3	less-open	49	309	296	206	2	NW	291-335	44	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.0	--	1.4	--	--	--	--
MW-63	183	79.54	-65.4	less-open	55	101	88	358	3	E	70-115	45	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.1	--	--	1.5	--	--	--
MW-63	184	79.89	-65.7	less-open	63	219	206	116	NSR	NSR	NSR	NSR	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.3	--	--	--	--	--	--
MW-63	185	80.26	-66.1	less-open	50	128	115	25	3	E	70-115	45	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.4	--	--	0.7	--	--	--
MW-63	186	80.52	-66.3	less-open	53	99	86	356	3	E	70-115	45	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.3	--	--	0.3	--	--	--
MW-63	187	80.58	-66.4	less-open	72	336	323	233	2	NW	291-335	44	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.1	--	1.1	--	--	--	--
MW-63	188	80.75	-66.6	less-open	36	194	181	91	5	S	166-200	34	1.5E-04	6.5E-04	4.3E-01	1.9E+00	0.2	--	--	--	--	5.4	--
MW-63	189	81.68	-67.5	less-open	78	333	320	230	2	NW	291-335	44	6.5E-04			1.9E+00	0.9	--	1.1	--	--	--	--
MW-63	190	83.34	-69.2	less-open	36	161	148	58	1	SE	116-165	49	6.5E-04			1.9E+00	1.7	24.9	--	--	--	--	--
MW-63	191	84.36	-70.2	less-open	45	148	135	45	1	SE	116-165	49	6.5E-04			1.9E+00	1.0	1.0	--	--	--	--	--
MW-63	192	84.37	-70.2	less-open	70	307	294	204	2	NW	291-335	44	6.5E-04			1.9E+00	0.0	--	2.7	--	--	--	--
MW-63	193	84.46	-70.3	less-open	64	332	319	229	2	NW	291-335	44	6.5E-04			1.9E+00	0.1	--	0.1	--	--	--	--
MW-63	194	84.95	-70.8	less-open	45	94	81	351	3	E	70-115	45	6.5E-04			1.9E+00	0.5	--	--	4.4	--	--	--
MW-63	195	85.13	-71.0	less-open	16	158	145	55	NSR	NSR	NSR	NSR	6.5E-04			1.9E+00	0.2	--	--	--	--	--	--
MW-63	196	85.31	-71.1	less-open	36	202	189	99	5	S	166-200	34	6.5E-04			1.9E+00	0.2	--	--	--	--	4.6	--
MW-63	197	85.45	-71.3	less-open	20	316	303	213	NSR	NSR	NSR	NSR	6.5E-04			1.9E+00	0.1	--	--	--	--	--	--
MW-63	198	85.69	-71.5	less-open	10	213	200	110	NSR	NSR	NSR	NSR	6.5E-04			1.9E+00	0.2	--	--	--	--	--	--
MW-63	199	86.14	-72.0	less-open	78	150	137	47	1	SE	116-165	49	6.5E-04			1.9E+00	0.5	1.8	--	--	--	--	--
MW-63	200	86.31	-72.1	less-open	35	262	249	159	4	W	245-290	45	6.5E-04			1.9E+00	0.2	--	--	--	17.3	--	--
MW-63	201	86.98	-72.8	less-open	63	90	77	347	3	E	70-115	45	6.5E-04			1.9E+00	0.7	--	--	2.0	--	--	--
MW-63	202	87.16	-73.0	open	47	265	252	162	4	W	245-290	45	6.5E-04			1.9E+00	0.2	--	--	--	0.8	--	--
MW-63	203	87.19	-73.0	less-open	57	96	83	353	3	E	70-115	45	6.5E-04			1.9E+00	0.0	--	--	0.2	--	--	--
MW-63	204	87.64	-73.5	open	80	159	146	56	1	SE	116-165	49	6.5E-04			1.9E+00	0.5	1.5	--	--	--	--	--
MW-63	205	87.85	-73.7	less-open	36	312	299	209	2	NW	291-335	44	6.5E-04			1.9E+00	0.2	--	3.4	--	--	--	--
MW-63	206	88.37	-74.2	open	75	164	151	61	1	SE	116-165	49	6.5E-04			1.9E+00	0.5	0.7	--	--	--	--	--
MW-63	207	89.71	-75.5	open	74	140	127	37	1	SE	116-165	49	3.9E-04			1.1E+00	1.3	1.3	--	--	--	--	--
MW-63	208	89.86	-75.7	open	73	166	153	63	1	SE	116-165	49	3.9E-04			1.1E+00	0.2	0.2	--	--	--	--	--
MW-63	209	90.21	-76.0	less-open	35	162	149	59	1	SE	116-165	49	3.9E-04			1.1E+00	0.3	0.3	--	--	--	--	--
MW-63	210	90.56	-76.4	less-open	58	169	156	66	1	SE	116-165	49	3.9E-04			1.1E+00	0.4	0.4	--	--	--	--	--
MW-63	211	90.67	-76.5	less-open	45	155	142	52	1	SE	116-165	49	3.9E-04			1.1E+00	0.1	0.1	--	--	--	--	--
MW-63	212	91.76	-77.6	less-open	80	340	327	237	2	NW	291-335	44	3.9E-04			1.1E+00	1.1	--	3.9	--	--	--	--
MW-63	213	91.76	-77.6	open	66	135	122	32	1	SE	116-165	49	3.9E-04			1.1E+00	0.0	1.1	--	--	--	--	--
MW-63	214	92.43	-78.3	open	66	148	135	45	1	SE	116-165	49	3.9E-04			1.1E+00	0.7	0.7	--	--	--	--	--
MW-63	215	92.49	-78.3	open	60	345	332	242	2	NW	291-335	44	3.9E-04			1.1E+00	0.1	--	0.7	--	--	--	--
MW-63	216	92.88	-78.7	open	61	130	117	27	1	SE	116-165	49	3.9E-04			1.1E+00	0.4	0.4	--	--	--	--	--
MW-63	217	93.11	-78.9	open	62	179	166	76	5	S	166-200	34	3.9E-04			1.1E+00	0.2	--	--	--	--	7.8	--
MW-63	218	93.72	-79.5	less-open	70	168	155	65	1	SE	116-165	49	3.9E-04			1.1E+00	0.6	0.8	--	--	--	--	--
MW-63	219	94.16	-80.0	less-open	69	165	152	62	1	SE	116-165	49	3.9E-04			1.1E+00	0.4	0.4	--	--	--	--	--
MW-63	220	94.84	-80.7	open	52	140	127	37	1	SE	116-165	49	3.9E-04			1.1E+00	0.7	0.7	--	--	--	--	--
MW-63	221	95	-80.8	open	82	290	277	187	NSR	NSR	NSR	NSR	3.9E-04			1.1E+00	0.2	--	--	--	--	--	--
MW-63	222	95.17	-81.0	less-open	70	154	141	51	1	SE	116-165	49	3.9E-04			1.1E+00	0.2	0.3	--	--	--	--	--
MW-63	223	95.45	-81.3	less-open	68	152	139	49	1	SE	116-165	49	3.9E-04			1.1E+00	0.3	0.3	--	--	--	--	--
MW-63	224	96.8	-82.6	open	82	125	112	22	NSR	NSR	NSR	NSR	3.9E-04			1.1E+00	1.3	--	--	--	--	--	--
MW-63	225	97.09	-82.9	open	44	2	349	259	6	N	336-21	45	3.9E-04			1.1E+00	0.3	--	--	--	--	--	97.1
MW-63	226	97.49	-83.3	open	44	315	302	212	2	NW	291-335	44	3.9E-04			1.1E+00	0.4	--	5.0	--	--	--	--
MW-63	227	97.71	-83.5	less-open	50	301	288	198	4	W	245-290	45	3.9E-04			1.1E+00	0.2	--	--	--	10.6	--	--
MW-63	228	98.09	-83.9	less-open	40	307	294	204	2	NW	291-335	44	3.2E-05			9.0E-02	0.4	--	0.6	--	--	--	--
MW-63	229	98.31	-84.1	less-open	34	291	278	188	NSR	NSR	NSR	NSR	3.2E-05			9.0E-02	0.2	--	--	--	--	--	--
MW-63	230	98.51	-84.3	less-open	80	331	318	228	2	NW	291-335	44	3.2E-05			9.0E-02	0.2	--	0.4	--	--	--	--
MW-63	231	98.53	-84.4	less-open	34	286	273	183	NSR	NSR	NSR	NSR	3.2E-05			9.0E-02	0.0	NSR	--	--	--	--	--
MW-63	232	98.7	-84.5	less-open	48	246	233	143	NSR	NSR	NSR	NSR	3.2E-05			9.0E-02	0.2	--	--	--	--	--	--
MW-63	233	99.03	-84.9	less-open	29	242	229	139	NSR	NSR	NSR	NSR	3.2E-05			9.0E-02	0.3	--	--	--	--	--	--
MW-63	234	99.19	-85.0	less-open	76	162	149	59	1	SE	116-165	49	3.2E-05			9.0E-02	0.2	3.7	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-63	235	99.4	-85.2	less-open	49	248	235	145	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.2	--	--	--	--	--	--
MW-63	236	99.65	-85.5	less-open	32	306	293	203	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.3	--	--	--	--	--	--
MW-63	237	99.83	-85.7	less-open	26	270	257	167	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.2	--	--	--	--	--	--
MW-63	238	100.14	-86.0	less-open	37	255	242	152	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.3	--	--	--	--	--	--
MW-63	239	100.31	-86.1	less-open	42	97	84	354	3	E	70-115	45	3.2E-05	9.0E-02	0.2	--	--	13.1	--	--	--
MW-63	240	100.84	-86.7	less-open	29	260	247	157	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.5	--	--	--	--	--	--
MW-63	241	100.93	-86.8	less-open	65	155	142	52	1	SE	116-165	49	3.2E-05	9.0E-02	0.1	1.7	--	--	--	--	--
MW-63	242	101.62	-87.4	less-open	77	324	311	221	2	NW	291-335	44	3.2E-05	9.0E-02	0.7	--	3.1	--	--	--	--
MW-63	243	101.8	-87.6	less-open	45	316	303	213	2	NW	291-335	44	3.2E-05	9.0E-02	0.2	--	0.2	--	--	--	--
MW-63	244	102.05	-87.9	less-open	47	312	299	209	2	NW	291-335	44	3.2E-05	9.0E-02	0.3	--	0.3	--	--	--	--
MW-63	245	102.34	-88.2	less-open	29	275	262	172	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.3	--	--	--	--	--	--
MW-63	246	102.95	-88.8	less-open	51	195	182	92	5	S	166-200	34	3.2E-05	9.0E-02	0.6	--	--	--	--	9.8	--
MW-63	247	103.65	-89.5	less-open	60	154	141	51	1	SE	116-165	49	3.2E-05	9.0E-02	0.7	2.7	--	--	--	--	--
MW-63	248	103.7	-89.5	less-open	35	262	249	159	4	W	245-290	45	3.2E-05	9.0E-02	0.0	--	--	--	6.0	--	--
MW-63	249	104.08	-89.9	less-open	49	110	97	7	3	E	70-115	45	3.2E-05	9.0E-02	0.4	--	--	3.8	--	--	--
MW-63	250	104.64	-90.5	less-open	31	254	241	151	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.6	--	--	--	--	--	--
MW-63	251	104.73	-90.6	less-open	37	243	230	140	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.1	--	--	--	--	--	--
MW-63	252	105.1	-90.9	less-open	69	68	55	325	NSR	NSR	NSR	NSR	3.2E-05	9.0E-02	0.4	--	--	--	--	--	--
MW-63	253	105.45	-91.3	less-open	54	98	85	355	3	E	70-115	45	3.2E-05	9.0E-02	0.4	--	--	1.4	--	--	--
MW-63	254	106.07	-91.9	less-open	46	312	299	209	2	NW	291-335	44	3.2E-05	9.0E-02	0.6	--	4.0	--	--	--	--
MW-63	255	107.43	-93.3	less-open	44	306	293	203	2	NW	291-335	44	3.2E-05	9.0E-02	1.4	--	1.4	--	--	--	--
MW-63	256	108.01	-93.8	less-open	37	279	266	176	4	W	245-290	45	3.2E-05	9.0E-02	0.6	--	--	--	4.3	--	--
MW-63	257	110.53	-96.4	less-open	52	319	306	216	2	NW	291-335	44	3.5E-04	1.0E+00	2.5	--	3.1	--	--	--	--
MW-63	258	110.61	-96.4	less-open	45	320	307	217	2	NW	291-335	44	3.5E-04	1.0E+00	0.1	--	0.1	--	--	--	--
MW-63	259	110.67	-96.5	less-open	52	320	307	217	2	NW	291-335	44	3.5E-04	1.0E+00	0.1	--	0.1	--	--	--	--
MW-63	260	112.57	-98.4	less-open	33	263	250	160	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	1.9	--	--	--	--	--	--
MW-63	261	113.73	-99.6	less-open	58	344	331	241	2	NW	291-335	44	3.5E-04	1.0E+00	1.2	--	3.1	--	--	--	--
MW-63	262	113.74	-99.6	less-open	32	252	239	149	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.0	--	--	--	--	--	--
MW-63	263	114.13	-100.0	less-open	32	351	338	248	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.4	--	--	--	--	--	--
MW-63	264	114.32	-100.1	less-open	65	137	124	34	1	SE	116-165	49	3.5E-04	1.0E+00	0.2	10.7	--	--	--	--	--
MW-63	265	114.53	-100.4	less-open	27	274	261	171	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.2	--	--	--	--	--	--
MW-63	266	115.43	-101.3	less-open	30	253	240	150	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.9	--	--	--	--	--	--
MW-63	267	115.87	-101.7	less-open	63	96	83	353	3	E	70-115	45	3.5E-04	1.0E+00	0.4	--	--	10.4	--	--	--
MW-63	268	116.6	-102.4	less-open	65	140	127	37	1	SE	116-165	49	3.5E-04	1.0E+00	0.7	2.3	--	--	--	--	--
MW-63	269	117.6	-103.4	less-open	61	146	133	43	1	SE	116-165	49	3.5E-04	1.0E+00	1.0	1.0	--	--	--	--	--
MW-63	270	117.85	-103.7	less-open	62	161	148	58	1	SE	116-165	49	3.5E-04	1.0E+00	0.3	0.3	--	--	--	--	--
MW-63	271	117.87	-103.7	less-open	32	258	245	155	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.0	--	--	--	--	--	--
MW-63	272	118.6	-104.4	less-open	43	216	203	113	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.7	--	--	--	--	--	--
MW-63	273	119.11	-104.9	less-open	32	289	276	186	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.5	--	--	--	--	--	--
MW-63	274	119.37	-105.2	less-open	60	122	109	19	3	E	70-115	45	3.5E-04	1.0E+00	0.3	--	--	3.5	--	--	--
MW-63	275	119.84	-105.7	less-open	33	315	302	212	NSR	NSR	NSR	NSR	3.5E-04	1.0E+00	0.5	--	--	--	--	--	--
MW-63	276	120.11	-105.9	less-open	72	97	84	354	3	E	70-115	45	TNP	TNP	0.3	--	--	0.7	--	--	--
MW-63	277	120.27	-106.1	less-open	36	312	299	209	2	NW	291-335	44	TNP	TNP	0.2	--	6.5	--	--	--	--
MW-63	278	120.71	-106.5	less-open	37	316	303	213	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-63	279	120.99	-106.8	less-open	29	314	301	211	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-63	280	121.06	-106.9	less-open	58	115	102	12	3	E	70-115	45	TNP	TNP	0.1	--	--	1.0	--	--	--
MW-63	281	121.37	-107.2	less-open	38	326	313	223	2	NW	291-335	44	TNP	TNP	0.3	--	0.7	--	--	--	--
MW-63	282	121.59	-107.4	less-open	66	137	124	34	1	SE	116-165	49	TNP	TNP	0.2	3.7	--	--	--	--	--
MW-63	283	121.83	-107.7	less-open	55	293	280	190	4	W	245-290	45	TNP	TNP	0.2	--	--	--	13.8	--	--
MW-63	284	122.97	-108.8	less-open	65	316	303	213	2	NW	291-335	44	1.1E-04	3.0E-01	1.1	--	1.6	--	--	--	--
MW-63	285	124.04	-109.9	open	38	327	314	224	2	NW	291-335	44	1.1E-04	3.0E-01	1.1	--	1.1	--	--	--	--
MW-63	286	124.44	-110.3	less-open	66	105	92	2	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	3.4	--	--	--
MW-63	287	124.75	-110.6	less-open	48	298	285	195	4	W	245-290	45	1.1E-04	3.0E-01	0.3	--	--	--	2.9	--	--
MW-63	288	124.99	-110.8	less-open	63	104	91	1	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.5	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6
MW-63	289	125.24	-111.1	less-open	60	120	107	17	3	E	70-115	45	1.1E-04	3.0E-01	0.3	--	--	0.3	--	--	--
MW-63	290	125.45	-111.3	less-open	61	122	109	19	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-63	291	125.58	-111.4	less-open	62	104	91	1	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	--	0.1	--	--	--
MW-63	292	125.71	-111.5	less-open	66	115	102	12	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	--	0.1	--	--	--
MW-63	293	126	-111.8	less-open	53	128	115	25	3	E	70-115	45	1.1E-04	3.0E-01	0.3	--	--	0.3	--	--	--
MW-63	294	126.38	-112.2	less-open	60	114	101	11	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	0.4	--	--	--
MW-63	295	126.62	-112.4	less-open	57	123	110	20	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-63	296	126.73	-112.6	less-open	55	118	105	15	3	E	70-115	45	1.1E-04	3.0E-01	0.1	--	--	0.1	--	--	--
MW-63	297	126.89	-112.7	less-open	65	123	110	20	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-63	298	127.06	-112.9	less-open	50	94	81	351	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.2	--	--	--
MW-63	299	127.44	-113.3	less-open	55	122	109	19	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	0.4	--	--	--
MW-63	300	127.49	-113.3	less-open	82	339	326	236	NSR	NSR	NSR	NSR	1.1E-04	3.0E-01	0.0	--	--	--	--	--	--
MW-63	301	127.69	-113.5	less-open	61	139	126	36	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	6.1	--	--	--	--	--
MW-63	302	127.88	-113.7	less-open	54	135	122	32	1	SE	116-165	49	1.1E-04	3.0E-01	0.2	0.2	--	--	--	--	--
MW-63	303	128.15	-114.0	less-open	57	137	124	34	1	SE	116-165	49	1.1E-04	3.0E-01	0.3	0.3	--	--	--	--	--
MW-63	304	128.55	-114.4	less-open	60	136	123	33	1	SE	116-165	49	1.1E-04	3.0E-01	0.4	0.4	--	--	--	--	--
MW-63	305	129.15	-115.0	less-open	55	108	95	5	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	1.7	--	--	--
MW-63	306	129.73	-115.6	less-open	55	113	100	10	3	E	70-115	45	1.1E-04	3.0E-01	0.6	--	--	0.6	--	--	--
MW-63	307	130.1	-115.9	less-open	47	116	103	13	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	0.4	--	--	--
MW-63	308	130.27	-116.1	less-open	66	283	270	180	4	W	245-290	45	1.1E-04	3.0E-01	0.2	--	--	--	5.5	--	--
MW-63	309	130.51	-116.3	less-open	57	117	104	14	3	E	70-115	45	1.1E-04	3.0E-01	0.2	--	--	0.4	--	--	--
MW-63	310	131.23	-117.1	less-open	60	301	288	198	4	W	245-290	45	1.1E-04	3.0E-01	0.7	--	--	--	1.0	--	--
MW-63	311	131.66	-117.5	less-open	59	120	107	17	3	E	70-115	45	1.1E-04	3.0E-01	0.4	--	--	1.2	--	--	--
MW-63	312	133.15	-119.0	less-open	59	106	93	3	3	E	70-115	45	1.1E-04	3.0E-01	1.5	--	--	1.5	--	--	--
MW-63	313	133.36	-119.2	less-open	75	103	90	360	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-63	314	133.38	-119.2	less-open	59	104	91	1	3	E	70-115	45	TNP	TNP	0.0	--	--	0.0	--	--	--
MW-63	315	133.91	-119.7	less-open	61	105	92	2	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-63	316	134.06	-119.9	less-open	61	110	97	7	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-63	317	134.3	-120.1	less-open	58	112	99	9	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-63	318	134.37	-120.2	less-open	83	346	333	243	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-63	319	134.45	-120.3	less-open	58	111	98	8	3	E	70-115	45	TNP	TNP	0.1	--	--	0.1	--	--	--
MW-63	320	134.82	-120.6	less-open	55	104	91	1	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-63	321	136.59	-122.4	less-open	36	294	281	191	4	W	245-290	45	TNP	TNP	1.8	--	--	--	5.4	--	--
MW-63	322	136.77	-122.6	less-open	60	108	95	5	3	E	70-115	45	TNP	TNP	0.2	--	--	2.0	--	--	--
MW-63	323	137.48	-123.3	less-open	60	117	104	14	3	E	70-115	45	TNP	TNP	0.7	--	--	0.7	--	--	--
MW-63	324	137.51	-123.3	less-open	36	215	202	112	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-63	325	137.98	-123.8	less-open	59	115	102	12	3	E	70-115	45	TNP	TNP	0.5	--	--	0.5	--	--	--
MW-63	326	138.02	-123.8	less-open	41	339	326	236	2	NW	291-335	44	TNP	TNP	0.0	--	14.0	--	--	--	--
MW-63	327	138.11	-123.9	less-open	50	329	316	226	2	NW	291-335	44	TNP	TNP	0.1	--	0.1	--	--	--	--
MW-63	328	138.2	-124.0	less-open	54	116	103	13	3	E	70-115	45	TNP	TNP	0.1	--	--	0.2	--	--	--
MW-63	329	138.37	-124.2	less-open	58	117	104	14	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-63	330	139.52	-125.3	less-open	49	127	114	24	3	E	70-115	45	TNP	TNP	1.2	--	--	1.2	--	--	--
MW-63	331	139.96	-125.8	less-open	61	105	92	2	3	E	70-115	45	TNP	TNP	0.4	--	--	0.4	--	--	--
MW-63	332	140.22	-126.0	less-open	39	256	243	153	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-63	333	140.73	-126.6	less-open	12	278	265	175	NSR	NSR	NSR	NSR	TNP	TNP	0.5	--	--	--	--	--	--
MW-63	334	140.76	-126.6	less-open	15	274	261	171	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--
MW-63	335	142.05	-127.9	less-open	20	282	269	179	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--
MW-63	336	142.92	-128.7	less-open	30	350	337	247	NSR	NSR	NSR	NSR	TNP	TNP	0.9	--	--	--	--	--	--
MW-63	337	143.3	-129.1	less-open	31	316	303	213	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-63	338	143.73	-129.6	less-open	40	82	69	339	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-63	339	144.08	-129.9	less-open	60	120	107	17	3	E	70-115	45	TNP	TNP	0.4	--	--	4.1	--	--	--
MW-63	340	144.36	-130.2	less-open	51	107	94	4	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-63	341	144.94	-130.8	less-open	38	261	248	158	4	W	245-290	45	1.5E-05	4.4E-02	0.6	--	--	--	8.3	--	--
MW-63	342	146.06	-131.9	less-open	42	255	242	152	NSR	NSR	NSR	NSR	1.5E-05	4.4E-02	1.1	--	--	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-63	343	146.07	-131.9	less-open	65	124	111	21	3	E	70-115	45	1.5E-05	4.4E-02	0.0	--	--	1.7	--	--	--
MW-63	344	146.92	-132.7	less-open	61	116	103	13	3	E	70-115	45	1.5E-05	4.4E-02	0.8	--	--	0.8	--	--	--
MW-63	345	147.26	-133.1	less-open	51	320	307	217	2	NW	291-335	44	1.5E-05	4.4E-02	0.3	--	9.1	--	--	--	--
MW-63	346	147.83	-133.7	less-open	55	125	112	22	3	E	70-115	45	1.5E-05	4.4E-02	0.6	--	--	0.9	--	--	--
MW-63	347	148.14	-134.0	less-open	61	112	99	9	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	348	148.47	-134.3	less-open	66	331	318	228	2	NW	291-335	44	1.5E-05	4.4E-02	0.3	--	1.2	--	--	--	--
MW-63	349	148.77	-134.6	less-open	58	116	103	13	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.6	--	--	--
MW-63	350	149.09	-134.9	less-open	60	115	102	12	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	351	149.22	-135.0	less-open	65	106	93	3	3	E	70-115	45	1.5E-05	4.4E-02	0.1	--	--	0.1	--	--	--
MW-63	352	149.64	-135.5	less-open	60	116	103	13	3	E	70-115	45	1.5E-05	4.4E-02	0.4	--	--	0.4	--	--	--
MW-63	353	150.34	-136.2	less-open	60	107	94	4	3	E	70-115	45	1.5E-05	4.4E-02	0.7	--	--	0.7	--	--	--
MW-63	354	151.25	-137.1	less-open	59	110	97	7	3	E	70-115	45	1.5E-05	4.4E-02	0.9	--	--	0.9	--	--	--
MW-63	355	151.37	-137.2	less-open	58	112	99	9	3	E	70-115	45	1.5E-05	4.4E-02	0.1	--	--	0.1	--	--	--
MW-63	356	151.64	-137.5	less-open	58	123	110	20	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	357	151.91	-137.7	less-open	39	112	99	9	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	358	152.17	-138.0	less-open	61	99	86	356	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	359	153.02	-138.8	less-open	52	334	321	231	2	NW	291-335	44	1.5E-05	4.4E-02	0.9	--	4.6	--	--	--	--
MW-63	360	153.16	-139.0	less-open	61	117	104	14	3	E	70-115	45	1.5E-05	4.4E-02	0.1	--	--	1.0	--	--	--
MW-63	361	153.47	-139.3	less-open	64	122	109	19	3	E	70-115	45	1.5E-05	4.4E-02	0.3	--	--	0.3	--	--	--
MW-63	362	153.66	-139.5	less-open	65	119	106	16	3	E	70-115	45	1.5E-05	4.4E-02	0.2	--	--	0.2	--	--	--
MW-63	363	154.4	-140.2	less-open	60	130	117	27	1	SE	116-165	49	1.5E-05	4.4E-02	0.7	25.9	--	--	--	--	--
MW-63	364	154.4	-140.2	less-open	43	354	341	251	6	N	336-21	45	1.5E-05	4.4E-02	0.0	--	--	--	--	--	57.3
MW-63	365	154.62	-140.4	less-open	57	127	114	24	3	E	70-115	45	1.5E-05	4.4E-02	0.2	--	--	1.0	--	--	--
MW-63	366	154.76	-140.6	less-open	68	104	91	1	3	E	70-115	45	1.5E-05	4.4E-02	0.1	--	--	0.1	--	--	--
MW-63	367	154.85	-140.7	less-open	66	125	112	22	3	E	70-115	45	1.6E-04	4.6E-01	0.1	--	--	0.1	--	--	--
MW-63	368	155.01	-140.8	less-open	53	103	90	0	3	E	70-115	45	1.6E-04	4.6E-01	0.2	--	--	0.2	--	--	--
MW-63	369	155.09	-140.9	less-open	51	344	331	241	2	NW	291-335	44	1.6E-04	4.6E-01	0.1	--	2.1	--	--	--	--
MW-63	370	155.2	-141.0	less-open	57	116	103	13	3	E	70-115	45	1.6E-04	4.6E-01	0.1	--	--	0.2	--	--	--
MW-63	371	156.03	-141.9	less-open	43	351	338	248	6	N	336-21	45	1.6E-04	4.6E-01	0.8	--	--	--	--	--	1.6
MW-63	372	156.69	-142.5	less-open	48	349	336	246	6	N	336-21	45	1.6E-04	4.6E-01	0.7	--	--	--	--	--	0.7
MW-63	373	156.85	-142.7	less-open	40	337	324	234	2	NW	291-335	44	1.6E-04	4.6E-01	0.2	--	1.8	--	--	--	--
MW-63	374	157.09	-142.9	less-open	53	352	339	249	6	N	336-21	45	1.6E-04	4.6E-01	0.2	--	--	--	--	--	0.4
MW-63	375	157.62	-143.4	less-open	54	343	330	240	2	NW	291-335	44	1.6E-04	4.6E-01	0.5	--	0.8	--	--	--	--
MW-63	376	158.24	-144.1	less-open	58	132	119	29	1	SE	116-165	49	1.6E-04	4.6E-01	0.6	3.8	--	--	--	--	--
MW-63	377	159.36	-145.2	less-open	29	294	281	191	NSR	NSR	NSR	NSR	1.6E-04	4.6E-01	1.1	--	--	--	--	--	--
MW-63	378	159.67	-145.5	less-open	59	132	119	29	1	SE	116-165	49	1.6E-04	4.6E-01	0.3	1.4	--	--	--	--	--
MW-63	379	160.18	-146.0	less-open	57	124	111	21	3	E	70-115	45	1.6E-04	4.6E-01	0.5	--	--	5.0	--	--	--
MW-63	380	160.22	-146.0	less-open	53	343	330	240	2	NW	291-335	44	1.6E-04	4.6E-01	0.0	--	2.6	--	--	--	--
MW-63	381	161.54	-147.4	less-open	55	128	115	25	3	E	70-115	45	1.6E-04	4.6E-01	1.3	--	--	1.4	--	--	--
MW-63	382	161.7	-147.5	less-open	57	124	111	21	3	E	70-115	45	1.6E-04	4.6E-01	0.2	--	--	0.2	--	--	--
MW-63	383	161.93	-147.8	less-open	44	142	129	39	1	SE	116-165	49	1.6E-04	4.6E-01	0.2	2.3	--	--	--	--	--
MW-63	384	162.15	-148.0	less-open	67	108	95	5	3	E	70-115	45	1.6E-04	4.6E-01	0.2	--	--	0.5	--	--	--
MW-63	385	162.68	-148.5	less-open	47	350	337	247	6	N	336-21	45	1.6E-04	4.6E-01	0.5	--	--	--	--	--	5.6
MW-63	386	162.69	-148.5	less-open	66	124	111	21	3	E	70-115	45	1.6E-04	4.6E-01	0.0	--	--	0.5	--	--	--
MW-63	387	162.94	-148.8	less-open	62	325	312	222	2	NW	291-335	44	1.6E-04	4.6E-01	0.3	--	2.7	--	--	--	--
MW-63	388	163.26	-149.1	less-open	43	342	329	239	2	NW	291-335	44	1.6E-04	4.6E-01	0.3	--	0.3	--	--	--	--
MW-63	389	163.49	-149.3	less-open	55	351	338	248	6	N	336-21	45	1.6E-04	4.6E-01	0.2	--	--	--	--	--	0.8
MW-63	390	163.86	-149.7	less-open	41	333	320	230	2	NW	291-335	44	1.6E-04	4.6E-01	0.4	--	0.6	--	--	--	--
MW-63	391	163.98	-149.8	less-open	45	306	293	203	2	NW	291-335	44	1.6E-04	4.6E-01	0.1	--	0.1	--	--	--	--
MW-63	392	164.13	-150.0	less-open	59	141	128	38	1	SE	116-165	49	1.6E-04	4.6E-01	0.2	2.2	--	--	--	--	--
MW-63	393	164.37	-150.2	less-open	40	342	329	239	2	NW	291-335	44	1.6E-04	4.6E-01	0.2	--	0.4	--	--	--	--
MW-63	394	164.6	-150.4	less-open	54	123	110	20	3	E	70-115	45	1.6E-04	4.6E-01	0.2	--	--	1.9	--	--	--
MW-63	395	164.95	-150.8	less-open	50	140	127	37	1	SE	116-165	49	1.4E-04	3.9E-01	0.3	0.8	--	--	--	--	--
MW-63	396	165.21	-151.0	less-open	49	132	119	29	1	SE	116-165	49	1.4E-04	3.9E-01	0.3	0.3	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint/ Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-63	397	165.45	-151.3	less-open	54	145	132	42	1	SE	116-165	49	1.4E-04	3.9E-01	0.2	0.2	--	--	--	--	--	--
MW-63	398	166.06	-151.9	less-open	51	82	69	339	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.6	--	--	--	--	--	--	--
MW-63	399	166.6	-152.4	less-open	56	70	57	327	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.5	--	--	--	--	--	--	--
MW-63	400	166.98	-152.8	less-open	68	108	95	5	3	E	70-115	45	1.4E-04	3.9E-01	0.4	--	--	2.4	--	--	--	--
MW-63	401	168.52	-154.3	less-open	64	137	124	34	1	SE	116-165	49	1.4E-04	3.9E-01	1.5	3.1	--	--	--	--	--	--
MW-63	402	168.82	-154.6	less-open	34	237	224	134	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.3	--	--	--	--	--	--	--
MW-63	403	168.92	-154.7	less-open	71	133	120	30	1	SE	116-165	49	1.4E-04	3.9E-01	0.1	0.4	--	--	--	--	--	--
MW-63	404	169.65	-155.5	less-open	27	279	266	176	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.7	--	--	--	--	--	--	--
MW-63	405	170.45	-156.3	less-open	64	108	95	5	3	E	70-115	45	1.4E-04	3.9E-01	0.8	--	--	3.5	--	--	--	--
MW-63	406	170.84	-156.7	less-open	61	93	80	350	3	E	70-115	45	1.4E-04	3.9E-01	0.4	--	--	0.4	--	--	--	--
MW-63	407	171.09	-156.9	less-open	54	129	116	26	1	SE	116-165	49	1.4E-04	3.9E-01	0.3	2.2	--	--	--	--	--	--
MW-63	408	171.39	-157.2	less-open	61	108	95	5	3	E	70-115	45	1.4E-04	3.9E-01	0.3	--	--	0.5	--	--	--	--
MW-63	409	171.76	-157.6	less-open	61	288	275	185	4	W	245-290	45	1.4E-04	3.9E-01	0.4	--	--	--	26.8	--	--	--
MW-63	410	171.98	-157.8	less-open	24	263	250	160	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.2	--	--	--	--	--	--	--
MW-63	411	172.56	-158.4	less-open	28	295	282	192	NSR	NSR	NSR	NSR	1.4E-04	3.9E-01	0.6	--	--	--	--	--	--	--
MW-63	412	173.05	-158.9	less-open	35	352	339	249	6	N	336-21	45	1.4E-04	3.9E-01	0.5	--	--	--	--	--	--	9.6
MW-63	413	173.74	-159.6	less-open	69	112	99	9	3	E	70-115	45	1.4E-04	3.9E-01	0.7	--	--	2.4	--	--	--	--
MW-63	414	174.05	-159.9	less-open	57	129	116	26	1	SE	116-165	49	1.4E-04	3.9E-01	0.3	3.0	--	--	--	--	--	--
MW-63	415	174.76	-160.6	less-open	39	27	14	284	6	N	336-21	45	1.4E-04	3.9E-01	0.7	--	--	--	--	--	--	1.7
MW-63	416	175.57	-161.4	less-open	40	24	11	281	6	N	336-21	45	TNP	TNP	0.8	--	--	--	--	--	--	0.8
MW-63	417	175.65	-161.5	less-open	60	278	265	175	4	W	245-290	45	TNP	TNP	0.1	--	--	--	3.9	--	--	--
MW-63	418	175.77	-161.6	less-open	62	315	302	212	2	NW	291-335	44	TNP	TNP	0.1	--	11.4	--	--	--	--	--
MW-63	419	175.94	-161.8	less-open	52	347	334	244	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--	--
MW-63	420	177.35	-163.2	less-open	33	9	356	266	NSR	NSR	NSR	NSR	TNP	TNP	1.4	--	--	--	--	--	--	--
MW-63	421	177.47	-163.3	less-open	32	320	307	217	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-63	422	177.81	-163.6	less-open	62	350	337	247	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	--	2.2
MW-63	423	178.29	-164.1	less-open	62	319	306	216	2	NW	291-335	44	TNP	TNP	0.5	--	2.3	--	--	--	--	--
MW-63	424	179.02	-164.8	less-open	61	107	94	4	3	E	70-115	45	TNP	TNP	0.7	--	--	5.3	--	--	--	--
MW-63	425	179.24	-165.1	less-open	61	99	86	356	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--	--
MW-63	426	180.05	-165.9	less-open	32	244	231	141	NSR	NSR	NSR	NSR	TNP	TNP	0.8	--	--	--	--	--	--	--
MW-63	427	181.5	-167.3	less-open	16	317	304	214	NSR	NSR	NSR	NSR	TNP	TNP	1.4	--	--	--	--	--	--	--
MW-63	428	181.94	-167.8	less-open	45	50	37	307	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--	--
MW-63	429	182.03	-167.9	less-open	35	245	232	142	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	--
MW-63	430	182.65	-168.5	less-open	68	94	81	351	3	E	70-115	45	TNP	TNP	0.6	--	--	3.4	--	--	--	--
MW-63	431	182.87	-168.7	less-open	44	260	247	157	4	W	245-290	45	TNP	TNP	0.2	--	--	--	7.2	--	--	--
MW-63	432	182.98	-168.8	less-open	75	356	343	253	6	N	336-21	45	TNP	TNP	0.1	--	--	--	--	--	--	5.2
MW-63	433	183.9	-169.7	less-open	66	344	331	241	2	NW	291-335	44	TNP	TNP	0.9	--	5.6	--	--	--	--	--
MW-63	434	184.13	-170.0	less-open	76	260	247	157	4	W	245-290	45	TNP	TNP	0.2	--	--	--	1.3	--	--	--
MW-63	435	184.15	-170.0	less-open	68	347	334	244	2	NW	291-335	44	TNP	TNP	0.0	--	0.3	--	--	--	--	--
MW-63	436	185.77	-171.6	less-open	40	319	306	216	2	NW	291-335	44	5.0E-04	1.4E+00	1.6	--	1.6	--	--	--	--	--
MW-63	437	186.13	-172.0	less-open	42	74	61	331	NSR	NSR	NSR	NSR	5.0E-04	1.4E+00	0.4	--	--	--	--	--	--	--
MW-63	438	186.35	-172.2	less-open	45	227	214	124	NSR	NSR	NSR	NSR	5.0E-04	1.4E+00	0.2	--	--	--	--	--	--	--
MW-63	439	186.96	-172.8	less-open	59	119	106	16	3	E	70-115	45	5.0E-04	1.4E+00	0.6	--	--	4.3	--	--	--	--
MW-63	440	187.67	-173.5	less-open	67	101	88	358	3	E	70-115	45	5.0E-04	1.4E+00	0.7	--	--	0.7	--	--	--	--
MW-63	441	188.52	-174.3	less-open	65	110	97	7	3	E	70-115	45	5.0E-04	1.4E+00	0.9	--	--	0.9	--	--	--	--
MW-63	442	189.02	-174.8	less-open	53	114	101	11	3	E	70-115	45	5.0E-04	1.4E+00	0.5	--	--	0.5	--	--	--	--
MW-63	443	189.31	-175.1	less-open	34	70	57	327	NSR	NSR	NSR	NSR	5.0E-04	1.4E+00	0.3	--	--	--	--	--	--	--
MW-63	444	189.7	-175.5	less-open	35	57	44	314	NSR	NSR	NSR	NSR	5.0E-04	1.4E+00	0.4	--	--	--	--	--	--	--
MW-63	445	190.61	-176.4	less-open	79	342	329	239	2	NW	291-335	44	5.0E-04	1.4E+00	0.9	--	4.8	--	--	--	--	--
MW-63	446	191.63	-177.5	less-open	89	349	336	246	NSR	NSR	NSR	NSR	5.0E-04	1.4E+00	1.0	--	--	--	--	--	--	--
MW-65	1	38.18	31.5	less-open	21	237	224	134	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	NA	--	--	--	--	--	--	--
MW-65	2	38.34	31.4	less-open	47	146	133	43	1	SE	116-165	49	7.1E-05	2.0E-01	0.2	38.3	--	--	--	--	--	--
MW-65	3	38.86	30.9	less-open	60	147	134	44	1	SE	116-165	49	7.1E-05	2.0E-01	0.5	0.5	--	--	--	--	--	--
MW-65	4	38.99	30.7	less-open	83	331	318	228	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.1	--	--	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
Indian Point  
Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	'Elevation' <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>9</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-65	5	40.82	28.9	less-open	70	352	339	249	6	N	336-21	45	7.1E-05	2.0E-01	1.8	--	--	--	--	--	40.8
MW-65	6	41.03	28.7	less-open	67	354	341	251	6	N	336-21	45	7.1E-05	2.0E-01	0.2	--	--	--	--	--	0.2
MW-65	7	42.35	27.4	less-open	80	297	284	194	4	W	245-290	45	7.1E-05	2.0E-01	1.3	--	--	--	42.4	--	--
MW-65	8	42.51	27.2	less-open	47	140	127	37	1	SE	116-165	49	7.1E-05	2.0E-01	0.2	3.7	--	--	--	--	--
MW-65	9	42.70	27.0	less-open	32	138	125	35	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.2	--	--	--	--	--	--
MW-65	10	42.90	26.8	less-open	36	124	111	21	3	E	70-115	45	7.1E-05	2.0E-01	0.2	--	--	42.9	--	--	--
MW-65	11	43.19	26.5	less-open	27	163	150	60	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.3	--	--	--	--	--	--
MW-65	12	43.47	26.3	less-open	69	291	278	188	4	W	245-290	45	7.1E-05	2.0E-01	0.3	--	--	--	1.1	--	--
MW-65	13	43.73	26.0	less-open	47	145	132	42	1	SE	116-165	49	7.1E-05	2.0E-01	0.3	1.2	--	--	--	--	--
MW-65	14	44.15	25.6	less-open	43	130	117	27	1	SE	116-165	49	7.1E-05	2.0E-01	0.4	0.4	--	--	--	--	--
MW-65	15	44.65	25.1	open	32	126	113	23	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.5	--	--	--	--	--	--
MW-65	16	45.01	24.7	less-open	44	152	139	49	1	SE	116-165	49	7.1E-05	2.0E-01	0.4	0.9	--	--	--	--	--
MW-65	17	45.10	24.6	less-open	21	130	117	27	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.1	--	--	--	--	--	--
MW-65	18	45.34	24.4	less-open	83	177	164	74	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.2	--	--	--	--	--	--
MW-65	19	45.58	24.1	less-open	47	145	132	42	1	SE	116-165	49	7.1E-05	2.0E-01	0.2	0.6	--	--	--	--	--
MW-65	20	46.63	23.1	less-open	42	133	120	30	1	SE	116-165	49	7.1E-05	2.0E-01	1.1	1.1	--	--	--	--	--
MW-65	21	46.90	22.8	less-open	39	146	133	43	1	SE	116-165	49	7.1E-05	2.0E-01	0.3	0.3	--	--	--	--	--
MW-65	22	47.13	22.6	less-open	50	160	147	57	1	SE	116-165	49	7.1E-05	2.0E-01	0.2	0.2	--	--	--	--	--
MW-65	23	47.61	22.1	less-open	83	175	162	72	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.5	--	--	--	--	--	--
MW-65	24	48.46	21.3	less-open	40	133	120	30	1	SE	116-165	49	7.1E-05	2.0E-01	0.9	1.3	--	--	--	--	--
MW-65	25	51.70	18.0	less-open	46	133	120	30	1	SE	116-165	49	TNP	TNP	3.2	3.2	--	--	--	--	--
MW-65	26	52.01	17.7	less-open	45	147	134	44	1	SE	116-165	49	TNP	TNP	0.3	0.3	--	--	--	--	--
MW-65	27	52.15	17.6	less-open	31	187	174	84	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-65	28	52.34	17.4	less-open	78	351	338	248	6	N	336-21	45	TNP	TNP	0.2	--	--	--	--	--	11.3
MW-65	29	53.61	16.1	less-open	44	132	119	29	1	SE	116-165	49	TNP	TNP	1.3	1.6	--	--	--	--	--
MW-65	30	55.55	14.2	less-open	52	127	114	24	3	E	70-115	45	TNP	TNP	1.9	--	--	12.7	--	--	--
MW-65	31	56.32	13.4	less-open	78	310	297	207	2	NW	291-335	44	TNP	TNP	0.8	--	56.3	--	--	--	--
MW-65	32	56.64	13.1	less-open	52	137	124	34	1	SE	116-165	49	TNP	TNP	0.3	3.0	--	--	--	--	--
MW-65	33	58.01	11.7	less-open	55	102	89	359	3	E	70-115	45	TNP	TNP	1.4	--	--	2.5	--	--	--
MW-65	34	59.26	10.5	less-open	47	75	62	332	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--
MW-65	35	60.32	9.4	less-open	28	233	220	130	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--
MW-65	36	61.57	8.2	less-open	19	248	235	145	NSR	NSR	NSR	NSR	TNP	TNP	1.3	--	--	--	--	--	--
MW-65	37	64.21	5.5	less-open	54	286	273	183	4	W	245-290	45	TNP	TNP	2.6	--	--	--	20.7	--	--
MW-65	38	65.18	4.5	less-open	20	190	177	87	NSR	NSR	NSR	NSR	TNP	TNP	1.0	--	--	--	--	--	--
MW-65	39	66.22	3.5	less-open	24	293	280	190	NSR	NSR	NSR	NSR	TNP	TNP	1.0	--	--	--	--	--	--
MW-65	40	66.66	3.1	less-open	36	80	67	337	NSR	NSR	NSR	NSR	TNP	TNP	0.4	--	--	--	--	--	--
MW-65	41	68.54	1.2	less-open	78	182	169	79	5	S	166-200	34	TNP	TNP	1.9	--	--	--	--	68.5	--
MW-65	42	69.51	0.2	less-open	36	90	77	347	3	E	70-115	45	TNP	TNP	1.0	--	--	11.5	--	--	--
MW-65	43	70.58	-0.9	less-open	29	68	55	325	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--
MW-65	44	70.89	-1.2	less-open	30	82	69	339	NSR	NSR	NSR	NSR	TNP	TNP	0.3	--	--	--	--	--	--
MW-65	45	71.09	-1.4	less-open	41	46	33	303	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-65	46	71.56	-1.8	less-open	38	294	281	191	4	W	245-290	45	TNP	TNP	0.5	--	--	--	7.4	--	--
MW-65	47	71.92	-2.2	less-open	63	344	331	241	2	NW	291-335	44	TNP	TNP	0.4	--	15.6	--	--	--	--
MW-65	48	78.01	-8.3	less-open	77	109	96	6	3	E	70-115	45	TNP	TNP	6.1	--	--	8.5	--	--	--
MW-65	49	79.38	-9.7	less-open	32	276	263	173	NSR	NSR	NSR	NSR	TNP	TNP	1.4	--	--	--	--	--	--
MW-66	1	38.15	-24.1	open	23	355	342	252	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	NA	--	--	--	--	--	--
MW-66	2	38.35	-24.3	open	28	336	323	233	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	0.2	--	--	--	--	--	--
MW-66	3	39.06	-25.0	less-open	13	308	295	205	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	0.7	--	--	--	--	--	--
MW-66	4	39.83	-25.8	open	30	332	319	229	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	0.8	--	--	--	--	--	--
MW-66	5	40.18	-26.2	less-open	20	281	268	178	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	0.4	--	--	--	--	--	--
MW-66	6	40.40	-26.4	less-open	63	181	168	78	5	S	166-200	34	5.6E-04	1.6E+00	0.2	--	--	--	--	40.4	--
MW-66	7	40.52	-26.5	less-open	16	328	315	225	NSR	NSR	NSR	NSR	5.6E-04	1.6E+00	0.1	--	--	--	--	--	--
MW-66	8	41.46	-27.4	less-open	42	309	296	206	2	NW	291-335	44	5.6E-04	1.6E+00	0.9	--	41.5	--	--	--	--
MW-66	9	41.79	-27.8	less-open	77	198	185	95	5	S	166-200	34	5.6E-04	1.6E+00	0.3	--	--	--	--	1.4	--



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)								
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6			
MW-66	10	41.81	-27.8	less-open	76	167	154	64	1	SE	116-165	49	5.6E-04		1.6E+00	0.0	41.8	--	--	--	--	--		
MW-66	11	41.98	-28.0	less-open	33	315	302	212	NSR	NSR	NSR	NSR	5.6E-04		1.6E+00	0.2	--	--	--	--	--			
MW-66	12	42.17	-28.1	less-open	30	281	268	178	NSR	NSR	NSR	NSR	5.6E-04		1.6E+00	0.2	--	--	--	--	--			
MW-66	13	43.15	-29.1	open	23	5	352	262	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	1.0	--	--	--	--	--		
MW-66	14	43.27	-29.2	less-open	76	185	172	82	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.1	--	--	--	--	1.5		
MW-66	15	43.75	-29.7	open	62	190	177	87	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.5	--	--	--	--	0.5		
MW-66	16	44.00	-30.0	open	66	191	178	88	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.3	--	--	--	--	0.3		
MW-66	17	44.19	-30.2	less-open	66	186	173	83	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.2	--	--	--	--	0.2		
MW-66	18	44.82	-30.8	less-open	70	213	200	110	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.6	--	--	--	--	0.6		
MW-66	19	44.86	-30.8	less-open	37	202	189	99	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.0	--	--	--	--	0.0		
MW-66	20	45.88	-31.9	less-open	31	149	136	46	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	1.0	--	--	--	--	--		
MW-66	21	46.24	-32.2	less-open	56	322	309	219	2	NW	291-335	44	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.4	--	4.8	--	--	--	--	
MW-66	22	46.27	-32.2	less-open	33	233	220	130	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.0	--	--	--	--	--		
MW-66	23	46.59	-32.6	less-open	42	291	278	188	4	W	245-290	45	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.3	--	--	--	46.6	--		
MW-66	24	46.97	-32.9	less-open	37	132	119	29	1	SE	116-165	49	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.4	5.2	--	--	--	--	--	
MW-66	25	47.38	-33.4	less-open	33	159	146	56	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.4	--	--	--	--	--		
MW-66	26	47.44	-33.4	less-open	30	153	140	50	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.1	--	--	--	--	--		
MW-66	27	47.68	-33.7	less-open	38	339	326	236	2	NW	291-335	44	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.2	--	1.4	--	--	--	--	
MW-66	28	47.96	-33.9	open	55	325	312	222	2	NW	291-335	44	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.3	--	0.3	--	--	--	--	
MW-66	29	48.39	-34.4	less-open	82	178	165	75	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.4	--	--	--	--	--		
MW-66	30	48.54	-34.5	less-open	78	21	8	278	6	N	336-21	45	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.1	--	--	--	--	48.5		
MW-66	31	49.07	-35.0	less-open	32	185	172	82	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.5	--	--	--	--	--		
MW-66	32	49.67	-35.6	less-open	19	146	133	43	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.6	--	--	--	--	--		
MW-66	33	49.78	-35.8	open	43	191	178	88	5	S	166-200	34	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.1	--	--	--	--	4.9		
MW-66	34	50.32	-36.3	less-open	34	346	333	243	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.5	--	--	--	--	--		
MW-66	35	50.61	-36.6	open	25	341	328	238	NSR	NSR	NSR	NSR	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.3	--	--	--	--	--		
MW-66	36	51.15	-37.1	less-open	77	134	121	31	1	SE	116-165	49	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.5	4.2	--	--	--	--		
MW-66	37	51.34	-37.3	less-open	49	132	119	29	1	SE	116-165	49	5.6E-04	3.2E-05	1.6E+00	9.0E-02	0.2	0.2	--	--	--	--	--	
MW-66	38	52.95	-38.9	less-open	57	122	109	19	3	E	70-115	45	3.2E-05	3.2E-05	9.0E-02	9.0E-02	1.6	--	--	53.0	--	--	--	
MW-66	39	53.58	-39.6	less-open	48	111	98	8	3	E	70-115	45	TNP		TNP		0.6	--	--	0.6	--	--	--	
MW-66	40	53.68	-39.7	open	70	225	212	122	NSR	NSR	NSR	NSR	TNP		TNP		0.1	--	--	--	--	--	--	
MW-66	41	54.66	-40.6	less-open	29	346	333	243	NSR	NSR	NSR	NSR	TNP		TNP		1.0	--	--	--	--	--	--	
MW-66	42	54.99	-41.0	less-open	34	288	275	185	4	W	245-290	45	TNP		TNP		0.3	--	--	--	8.4	--	--	
MW-66	43	56.72	-42.7	less-open	52	324	311	221	2	NW	291-335	44	TNP		TNP		1.7	--	8.8	--	--	--	--	
MW-66	44	57.44	-43.4	less-open	77	96	83	353	3	E	70-115	45	TNP		TNP		0.7	--	--	3.9	--	--	--	
MW-66	45	58.45	-44.4	less-open	82	87	74	344	NSR	NSR	NSR	NSR	TNP		TNP		1.0	--	--	--	--	--	--	
MW-66	46	59.46	-45.4	less-open	83	91	78	348	NSR	NSR	NSR	NSR	TNP		TNP		1.0	--	--	--	--	--	--	
MW-66	47	59.75	-45.7	less-open	74	245	232	142	NSR	NSR	NSR	NSR	TNP		TNP		0.3	--	--	--	--	--	--	
MW-66	48	61.20	-47.2	less-open	29	317	304	214	NSR	NSR	NSR	NSR	TNP		TNP		1.5	--	--	--	--	--	--	
MW-66	49	61.56	-47.5	less-open	25	289	276	186	NSR	NSR	NSR	NSR	TNP		TNP		0.4	--	--	--	--	--	--	
MW-66	50	63.81	-49.8	less-open	54	209	196	106	5	S	166-200	34	1.4E-05		4.0E-02		2.3	--	--	--	--	14.0	--	
MW-66	51	64.52	-50.5	less-open	45	118	105	15	3	E	70-115	45	1.4E-05		4.0E-02		0.7	--	--	7.1	--	--	--	
MW-66	52	65.84	-51.8	less-open	50	128	115	25	3	E	70-115	45	1.4E-05		4.0E-02		1.3	--	--	1.3	--	--	--	
MW-66	53	66.17	-52.1	less-open	28	99	86	356	NSR	NSR	NSR	NSR	1.4E-05		4.0E-02		0.3	--	--	--	--	--	--	
MW-66	54	66.20	-52.2	less-open	70	259	246	156	4	W	245-290	45	1.4E-05		4.0E-02		0.0	--	--	--	11.2	--	--	
MW-66	55	66.39	-52.4	less-open	38	134	121	31	1	SE	116-165	49	1.4E-05		4.0E-02		0.2	15.1	--	--	--	--	--	--
MW-66	56	69.24	-55.2	less-open	57	191	178	88	5	S	166-200	34	1.4E-05		4.0E-02		2.8	--	--	--	--	5.4	--	
MW-66	57	70.05	-56.0	less-open	45	117	104	14	3	E	70-115	45	1.4E-05		4.0E-02		0.8	--	--	4.2	--	--	--	
MW-66	58	71.3	-57.3	less-open	82	271	258	168	NSR	NSR	NSR	NSR	1.4E-05		4.0E-02		1.3	--	--	--	--	--	--	
MW-66	59	72.28	-58.3	less-open	28	85	72	342	NSR	NSR	NSR	NSR	1.4E-05		4.0E-02		1.0	--	--	--	--	--	--	
MW-66	60	73.02	-59.0	less-open	77	270	257	167	4	W	245-290	45	1.4E-05		4.0E-02		0.7	--	--	--	6.8	--	--	
MW-66	61	74.39	-60.4	less-open	30	347	334	244	NSR	NSR	NSR	NSR	TNP		TNP		1.4	--	--	--	--	--	--	
MW-66	62	74.85	-60.8	less-open	74	178	165	75	1	SE	116-165	49	TNP		TNP		0.5	8.5	--	--	--	--	--	
MW-66	63	75.92	-61.9	less-open	82	190	177	87	NSR	NSR	NSR	NSR	TNP		TNP		1.1	--	--	--	--	--	--	

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-66	64	81.78	-67.8	less-open	40	124	111	21	3	E	70-115	45	TNP		TNP	5.9	--	--	11.7	--	--	--
MW-66	65	82.61	-68.6	less-open	80	356	343	253	6	N	336-21	45	TNP		TNP	0.8	--	--	--	--	--	34.1
MW-66	66	84.24	-70.2	less-open	41	194	181	91	5	S	166-200	34	6.4E-05	1.8E-01		1.6	--	--	--	--	15.0	--
MW-66	67	85.01	-71.0	less-open	79	177	164	74	1	SE	116-165	49	6.4E-05	1.8E-01		0.8	10.2	--	--	--	--	--
MW-66	68	85.30	-71.3	less-open	81	178	165	75	1	SE	116-165	49	6.4E-05	1.8E-01		0.3	0.3	--	--	--	--	--
MW-66	69	86.06	-72.0	less-open	55	186	173	83	5	S	166-200	34	6.4E-05	1.8E-01		0.8	--	--	--	--	1.8	--
MW-66	70	86.61	-72.6	less-open	58	193	180	90	5	S	166-200	34	6.4E-05	1.8E-01		0.5	--	--	--	--	0.5	--
MW-66	71	87.23	-73.2	less-open	67	174	161	71	1	SE	116-165	49	6.4E-05	1.8E-01		0.6	1.9	--	--	--	--	--
MW-66	72	87.92	-73.9	less-open	66	189	176	86	5	S	166-200	34	6.4E-05	1.8E-01		0.7	--	--	--	--	1.3	--
MW-66	73	88.08	-74.1	less-open	73	177	164	74	1	SE	116-165	49	6.4E-05	1.8E-01		0.2	0.8	--	--	--	--	--
MW-66	74	88.59	-74.6	less-open	80	190	177	87	5	S	166-200	34	6.4E-05	1.8E-01		0.5	--	--	--	--	0.7	--
MW-66	75	89.39	-75.4	less-open	78	157	144	54	1	SE	116-165	49	6.4E-05	1.8E-01		0.8	1.3	--	--	--	--	--
MW-66	76	89.59	-75.6	less-open	82	165	152	62	NSR	NSR	NSR	NSR	6.4E-05	1.8E-01		0.2	--	--	--	--	--	--
MW-66	77	90.41	-76.4	less-open	77	170	157	67	1	SE	116-165	49	6.4E-05	1.8E-01		0.8	1.0	--	--	--	--	--
MW-66	78	90.69	-76.7	less-open	71	152	139	49	1	SE	116-165	49	6.4E-05	1.8E-01		0.3	0.3	--	--	--	--	--
MW-66	79	90.97	-76.9	less-open	77	168	155	65	1	SE	116-165	49	6.4E-05	1.8E-01		0.3	0.3	--	--	--	--	--
MW-66	80	92.04	-78.0	less-open	85	163	150	60	NSR	NSR	NSR	NSR	6.4E-05	1.8E-01		1.1	--	--	--	--	--	--
MW-66	81	93.29	-79.3	less-open	82	170	157	67	NSR	NSR	NSR	NSR	6.4E-05	1.8E-01		1.3	--	--	--	--	--	--
MW-66	82	94.19	-80.2	less-open	84	170	157	67	NSR	NSR	NSR	NSR	TNP	TNP		0.9	--	--	--	--	--	--
MW-66	83	94.86	-80.8	less-open	27	163	150	60	NSR	NSR	NSR	NSR	TNP	TNP		0.7	--	--	--	--	--	--
MW-66	84	95.13	-81.1	less-open	42	161	148	58	1	SE	116-165	49	TNP	TNP		0.3	4.2	--	--	--	--	--
MW-66	85	96.44	-82.4	less-open	79	180	167	77	5	S	166-200	34	TNP	TNP		1.3	--	--	--	--	7.8	--
MW-66	86	96.45	-82.4	less-open	16	52	39	309	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02		0.0	--	--	--	--	--	--
MW-66	87	100.43	-86.4	less-open	60	292	279	189	4	W	245-290	45	1.8E-05	5.0E-02		4.0	--	--	--	27.4	--	--
MW-66	88	100.92	-86.9	less-open	79	180	167	77	5	S	166-200	34	1.8E-05	5.0E-02		0.5	--	--	--	--	4.5	--
MW-66	89	101.1	-87.1	less-open	56	112	99	9	3	E	70-115	45	1.8E-05	5.0E-02		0.2	--	--	19.3	--	--	--
MW-66	90	101.87	-87.8	less-open	63	322	309	219	2	NW	291-335	44	1.8E-05	5.0E-02		0.8	--	45.2	--	--	--	--
MW-66	91	101.92	-87.9	less-open	76	175	162	72	1	SE	116-165	49	1.8E-05	5.0E-02		0.0	6.8	--	--	--	--	--
MW-66	92	103.15	-89.1	less-open	43	131	118	28	1	SE	116-165	49	1.8E-05	5.0E-02		1.2	1.2	--	--	--	--	--
MW-66	93	103.49	-89.5	less-open	51	128	115	25	3	E	70-115	45	1.8E-05	5.0E-02		0.3	--	--	2.4	--	--	--
MW-66	94	104.35	-90.3	less-open	36	338	325	235	2	NW	291-335	44	1.8E-05	5.0E-02		0.9	--	2.5	--	--	--	--
MW-66	95	108.02	-94.0	less-open	79	179	166	76	5	S	166-200	34	TNP	TNP		3.7	--	--	--	--	7.1	--
MW-66	96	108.03	-94.0	less-open	39	5	352	262	6	N	336-21	45	TNP	TNP		0.0	--	--	--	--	--	25.4
MW-66	97	109.47	-95.4	less-open	42	189	176	86	5	S	166-200	34	5.2E-04	1.5E+00		1.4	--	--	--	--	1.5	--
MW-66	98	110.60	-96.6	less-open	70	30	17	287	6	N	336-21	45	5.2E-04	1.5E+00		1.1	--	--	--	--	--	2.6
MW-66	99	111.91	-97.9	less-open	54	215	202	112	NSR	NSR	NSR	NSR	5.2E-04	1.5E+00		1.3	--	--	--	--	--	--
MW-66	100	112.63	-98.6	less-open	66	349	336	246	6	N	336-21	45	5.2E-04	1.5E+00		0.7	--	--	--	--	--	2.0
MW-66	101	112.76	-98.7	less-open	62	352	339	249	6	N	336-21	45	5.2E-04	1.5E+00		0.1	--	--	--	--	--	0.1
MW-66	102	112.80	-98.8	less-open	47	73	60	330	NSR	NSR	NSR	NSR	5.2E-04	1.5E+00		0.0	--	--	--	--	--	--
MW-66	103	113.18	-99.2	less-open	78	171	158	68	1	SE	116-165	49	5.2E-04	1.5E+00		0.4	10.0	--	--	--	--	--
MW-66	104	113.89	-99.9	less-open	72	191	178	88	5	S	166-200	34	5.2E-04	1.5E+00		0.7	--	--	--	--	4.4	--
MW-66	105	114.01	-100.0	less-open	75	188	175	85	5	S	166-200	34	5.2E-04	1.5E+00		0.1	--	--	--	--	0.1	--
MW-66	106	114.77	-100.7	less-open	86	172	159	69	NSR	NSR	NSR	NSR	5.2E-04	1.5E+00		0.8	--	--	--	--	--	--
MW-66	107	115.82	-101.8	less-open	75	183	170	80	5	S	166-200	34	5.2E-04	1.5E+00		1.1	--	--	--	--	1.8	--
MW-66	108	116.06	-102.0	less-open	76	184	171	81	5	S	166-200	34	5.2E-04	1.5E+00		0.2	--	--	--	--	0.2	--
MW-66	109	116.66	-102.6	less-open	79	180	167	77	5	S	166-200	34	5.2E-04	1.5E+00		0.6	--	--	--	--	0.6	--
MW-66	110	117.61	-103.6	open	31	305	292	202	NSR	NSR	NSR	NSR	5.2E-04	1.5E+00		1.0	--	--	--	--	--	--
MW-66	111	117.88	-103.9	less-open	38	336	323	233	2	NW	291-335	44	5.2E-04	1.5E+00		0.3	--	13.5	--	--	--	--
MW-66	112	118.17	-104.1	less-open	50	217	204	114	NSR	NSR	NSR	NSR	5.2E-04	1.5E+00		0.3	--	--	--	--	--	--
MW-66	113	119.53	-105.5	less-open	62	233	220	130	NSR	NSR	NSR	NSR	TNP	TNP		1.4	--	--	--	--	--	--
MW-66	114	120.57	-106.5	less-open	57	354	341	251	6	N	336-21	45	TNP	TNP		1.0	--	--	--	--	--	7.8
MW-66	115	121.42	-107.4	less-open	59	334	321	231	2	NW	291-335	44	TNP	TNP		0.9	--	3.5	--	--	--	--
MW-66	116	122.12	-108.1	less-open	40	190	177	87	5	S	166-200	34	TNP	TNP		0.7	--	--	--	--	5.5	--
MW-66	117	122.97	-108.9	less-open	52	209	196	106	5	S	166-200	34	TNP	TNP		0.8	--	--	--	--	0.8	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-66	118	123.23	-109.2	less-open	58	355	342	252	6	N	336-21	45	TNP	TNP	0.3	--	--	--	--	--	2.7
MW-66	119	126.72	-112.7	less-open	36	356	343	253	6	N	336-21	45	TNP	TNP	3.5	--	--	--	--	--	3.5
MW-66	120	127.43	-113.4	less-open	51	351	338	248	6	N	336-21	45	TNP	TNP	0.7	--	--	--	--	--	0.7
MW-66	121	127.94	-113.9	less-open	40	344	331	241	2	NW	291-335	44	TNP	TNP	0.5	--	6.5	--	--	--	--
MW-66	122	128.25	-114.2	less-open	40	339	326	236	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-66	123	129.69	-115.7	less-open	56	341	328	238	2	NW	291-335	44	TNP	TNP	1.4	--	1.4	--	--	--	--
MW-66	124	130.05	-116.0	less-open	61	334	321	231	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-66	125	130.16	-116.1	less-open	53	205	192	102	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	7.2	--
MW-66	126	130.62	-116.6	less-open	46	280	267	177	4	W	245-290	45	TNP	TNP	0.5	--	--	--	30.2	--	--
MW-66	127	130.97	-116.9	less-open	39	213	200	110	5	S	166-200	34	3.2E-04	9.0E-01	0.3	--	--	--	--	0.8	--
MW-66	128	131.21	-117.2	less-open	43	282	269	179	4	W	245-290	45	3.2E-04	9.0E-01	0.2	--	--	--	0.6	--	--
MW-66	129	131.38	-117.4	less-open	46	204	191	101	5	S	166-200	34	3.2E-04	9.0E-01	0.2	--	--	--	--	0.4	--
MW-66	130	131.84	-117.8	less-open	52	204	191	101	5	S	166-200	34	3.2E-04	9.0E-01	0.5	--	--	--	--	0.5	--
MW-66	131	131.88	-117.9	less-open	76	352	339	249	6	N	336-21	45	3.2E-04	9.0E-01	0.0	--	--	--	--	--	4.4
MW-66	132	132.13	-118.1	less-open	53	210	197	107	5	S	166-200	34	3.2E-04	9.0E-01	0.3	--	--	--	--	0.3	--
MW-66	133	132.66	-118.6	less-open	45	342	329	239	2	NW	291-335	44	3.2E-04	9.0E-01	0.5	--	2.6	--	--	--	--
MW-66	134	132.69	-118.7	less-open	77	16	3	273	6	N	336-21	45	3.2E-04	9.0E-01	0.0	--	--	--	--	--	0.8
MW-66	135	132.77	-118.7	less-open	43	326	313	223	2	NW	291-335	44	3.2E-04	9.0E-01	0.1	--	0.1	--	--	--	--
MW-66	136	132.88	-118.9	less-open	42	330	317	227	2	NW	291-335	44	3.2E-04	9.0E-01	0.1	--	0.1	--	--	--	--
MW-66	137	133.42	-119.4	less-open	29	339	326	236	NSR	NSR	NSR	NSR	3.2E-04	9.0E-01	0.5	--	--	--	--	--	--
MW-66	138	133.81	-119.8	less-open	59	312	299	209	2	NW	291-335	44	3.2E-04	9.0E-01	0.4	--	0.9	--	--	--	--
MW-66	139	133.85	-119.8	less-open	60	10	357	267	6	N	336-21	45	3.2E-04	9.0E-01	0.0	--	--	--	--	--	1.2
MW-66	140	134.61	-120.6	less-open	75	95	82	352	3	E	70-115	45	3.2E-04	9.0E-01	0.8	--	--	31.1	--	--	--
MW-66	141	134.76	-120.7	less-open	37	206	193	103	5	S	166-200	34	3.2E-04	9.0E-01	0.1	--	--	--	--	2.6	--
MW-66	142	135.04	-121.0	less-open	37	302	289	199	4	W	245-290	45	3.2E-04	9.0E-01	0.3	--	--	--	3.8	--	--
MW-66	143	135.47	-121.4	less-open	52	334	321	231	2	NW	291-335	44	3.2E-04	9.0E-01	0.4	--	1.7	--	--	--	--
MW-66	144	135.71	-121.7	less-open	41	327	314	224	2	NW	291-335	44	3.2E-04	9.0E-01	0.2	--	0.2	--	--	--	--
MW-66	145	135.87	-121.8	less-open	45	287	274	184	4	W	245-290	45	3.2E-04	9.0E-01	0.2	--	--	--	0.8	--	--
MW-66	146	135.88	-121.9	less-open	54	158	145	55	1	SE	116-165	49	3.2E-04	9.0E-01	0.0	22.7	--	--	--	--	--
MW-66	147	136.39	-122.4	less-open	52	328	315	225	2	NW	291-335	44	3.2E-04	9.0E-01	0.5	--	0.7	--	--	--	--
MW-66	148	136.64	-122.6	less-open	35	313	300	210	2	NW	291-335	44	3.2E-04	9.0E-01	0.3	--	0.3	--	--	--	--
MW-66	149	136.82	-122.8	less-open	44	301	288	198	4	W	245-290	45	3.2E-04	9.0E-01	0.2	--	--	--	0.9	--	--
MW-66	150	137.43	-123.4	less-open	41	297	284	194	4	W	245-290	45	3.2E-04	9.0E-01	0.6	--	--	--	0.6	--	--
MW-66	151	137.5	-123.5	less-open	36	292	279	189	4	W	245-290	45	3.2E-04	9.0E-01	0.1	--	--	--	0.1	--	--
MW-66	152	137.55	-123.5	less-open	21	258	245	155	NSR	NSR	NSR	NSR	3.2E-04	9.0E-01	0.1	--	--	--	--	--	--
MW-66	153	137.68	-123.7	less-open	64	171	158	68	1	SE	116-165	49	3.2E-04	9.0E-01	0.1	1.8	--	--	--	--	--
MW-66	154	137.79	-123.8	less-open	37	297	284	194	4	W	245-290	45	3.2E-04	9.0E-01	0.1	--	--	--	0.3	--	--
MW-66	155	138.22	-124.2	less-open	49	325	312	222	2	NW	291-335	44	3.2E-04	9.0E-01	0.4	--	1.6	--	--	--	--
MW-66	156	138.45	-124.4	less-open	52	337	324	234	2	NW	291-335	44	3.2E-04	9.0E-01	0.2	--	0.2	--	--	--	--
MW-66	157	138.71	-124.7	less-open	31	185	172	82	NSR	NSR	NSR	NSR	3.2E-04	9.0E-01	0.3	--	--	--	--	--	--
MW-66	158	138.98	-125.0	less-open	45	200	187	97	5	S	166-200	34	3.2E-04	9.0E-01	0.3	--	--	--	--	4.2	--
MW-66	159	139.16	-125.1	less-open	42	213	200	110	5	S	166-200	34	3.2E-04	9.0E-01	0.2	--	--	--	--	0.2	--
MW-66	160	139.36	-125.3	less-open	44	167	154	64	1	SE	116-165	49	3.2E-04	9.0E-01	0.2	1.7	--	--	--	--	--
MW-66	161	139.86	-125.8	less-open	68	308	295	205	2	NW	291-335	44	3.2E-04	9.0E-01	0.5	--	1.4	--	--	--	--
MW-66	162	139.96	-125.9	less-open	57	205	192	102	5	S	166-200	34	3.2E-04	9.0E-01	0.1	--	--	--	--	0.8	--
MW-66	163	140.9	-126.9	less-open	73	312	299	209	2	NW	291-335	44	3.2E-04	9.0E-01	0.9	--	1.0	--	--	--	--
MW-66	164	141.11	-127.1	less-open	23	337	324	234	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--
MW-66	165	141.74	-127.7	less-open	36	303	290	200	4	W	245-290	45	TNP	TNP	0.6	--	--	--	4.0	--	--
MW-66	166	141.86	-127.8	less-open	55	109	96	6	3	E	70-115	45	TNP	TNP	0.1	--	--	7.3	--	--	--
MW-66	167	141.88	-127.9	less-open	40	284	271	181	4	W	245-290	45	TNP	TNP	0.0	--	--	--	0.1	--	--
MW-66	168	142.72	-128.7	less-open	58	124	111	21	3	E	70-115	45	2.5E-05	7.0E-02	0.8	--	--	0.9	--	--	--
MW-66	169	143.02	-129.0	less-open	62	321	308	218	2	NW	291-335	44	2.5E-05	7.0E-02	0.3	--	2.1	--	--	--	--
MW-66	170	143.5	-129.5	less-open	59	241	228	138	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.5	--	--	--	--	--	--
MW-66	171	143.56	-129.5	less-open	75	304	291	201	2	NW	291-335	44	2.5E-05	7.0E-02	0.1	--	0.5	--	--	--	--

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-66	172	143.58	-129.6	less-open	56	316	303	213	2	NW	291-335	44	2.5E-05	7.0E-02	0.0	--	0.0	--	--	--	--	--
MW-66	173	144.04	-130.0	less-open	56	115	102	12	3	E	70-115	45	2.5E-05	7.0E-02	0.5	--	--	1.3	--	--	--	--
MW-66	174	144.76	-130.7	less-open	63	114	101	11	3	E	70-115	45	2.5E-05	7.0E-02	0.7	--	--	0.7	--	--	--	--
MW-66	175	144.85	-130.8	less-open	44	298	285	195	4	W	245-290	45	2.5E-05	7.0E-02	0.1	--	--	--	3.0	--	--	--
MW-66	176	145.44	-131.4	less-open	54	311	298	208	2	NW	291-335	44	2.5E-05	7.0E-02	0.6	--	1.9	--	--	--	--	--
MW-66	177	145.44	-131.4	less-open	49	123	110	20	3	E	70-115	45	2.5E-05	7.0E-02	0.0	--	--	0.7	--	--	--	--
MW-66	178	146.66	-132.6	less-open	55	337	324	234	2	NW	291-335	44	2.5E-05	7.0E-02	1.2	--	1.2	--	--	--	--	--
MW-66	179	146.93	-132.9	less-open	49	329	316	226	2	NW	291-335	44	2.5E-05	7.0E-02	0.3	--	0.3	--	--	--	--	--
MW-66	180	147.24	-133.2	less-open	42	159	146	56	1	SE	116-165	49	2.5E-05	7.0E-02	0.3	7.9	--	--	--	--	--	--
MW-66	181	148.77	-134.7	less-open	71	109	96	6	3	E	70-115	45	2.5E-05	7.0E-02	1.5	--	--	3.3	--	--	--	--
MW-66	182	148.99	-135.0	less-open	56	102	89	359	3	E	70-115	45	2.5E-05	7.0E-02	0.2	--	--	0.2	--	--	--	--
MW-66	183	149.16	-135.1	less-open	57	108	95	5	3	E	70-115	45	2.5E-05	7.0E-02	0.2	--	--	0.2	--	--	--	--
MW-66	184	149.3	-135.3	less-open	52	102	89	359	3	E	70-115	45	2.5E-05	7.0E-02	0.1	--	--	0.1	--	--	--	--
MW-66	185	150.56	-136.5	less-open	61	123	110	20	3	E	70-115	45	2.5E-05	7.0E-02	1.3	--	--	1.3	--	--	--	--
MW-66	186	150.78	-136.8	less-open	51	103	90	360	3	E	70-115	45	2.5E-05	7.0E-02	0.2	--	--	0.2	--	--	--	--
MW-66	187	151.33	-137.3	less-open	70	230	217	127	NSR	NSR	NSR	NSR	2.5E-05	7.0E-02	0.6	--	--	--	--	--	--	--
MW-66	188	152.83	-138.8	less-open	38	143	130	40	1	SE	116-165	49	4.9E-05	1.4E-01	1.5	5.6	--	--	--	--	--	--
MW-66	189	154.53	-140.5	less-open	57	115	102	12	3	E	70-115	45	4.9E-05	1.4E-01	1.7	--	--	3.8	--	--	--	--
MW-66	190	155.03	-141.0	less-open	63	109	96	6	3	E	70-115	45	4.9E-05	1.4E-01	0.5	--	--	0.5	--	--	--	--
MW-66	191	155.39	-141.4	less-open	66	107	94	4	3	E	70-115	45	4.9E-05	1.4E-01	0.4	--	--	0.4	--	--	--	--
MW-66	192	155.81	-141.8	less-open	63	112	99	9	3	E	70-115	45	4.9E-05	1.4E-01	0.4	--	--	0.4	--	--	--	--
MW-66	193	156.19	-142.2	less-open	25	300	287	197	NSR	NSR	NSR	NSR	4.9E-05	1.4E-01	0.4	--	--	--	--	--	--	--
MW-66	194	156.45	-142.4	less-open	30	332	319	229	NSR	NSR	NSR	NSR	4.9E-05	1.4E-01	0.3	--	--	--	--	--	--	--
MW-66	195	157.03	-143.0	less-open	56	120	107	17	3	E	70-115	45	4.9E-05	1.4E-01	0.6	--	--	1.2	--	--	--	--
MW-66	196	157.16	-143.1	less-open	35	322	309	219	2	NW	291-335	44	4.9E-05	1.4E-01	0.1	--	10.2	--	--	--	--	--
MW-66	197	157.75	-143.7	less-open	54	356	343	253	6	N	336-21	45	4.9E-05	1.4E-01	0.6	--	--	--	--	--	23.9	--
MW-66	198	158.47	-144.4	less-open	55	144	131	41	1	SE	116-165	49	4.9E-05	1.4E-01	0.7	5.6	--	--	--	--	--	--
MW-66	199	158.7	-144.7	less-open	58	350	337	247	6	N	336-21	45	4.9E-05	1.4E-01	0.2	--	--	--	--	--	0.9	--
MW-66	200	159.02	-145.0	less-open	42	329	316	226	2	NW	291-335	44	4.9E-05	1.4E-01	0.3	--	1.9	--	--	--	--	--
MW-66	201	159.95	-145.9	less-open	50	344	331	241	2	NW	291-335	44	4.9E-05	1.4E-01	0.9	--	0.9	--	--	--	--	--
MW-66	202	159.95	-145.9	less-open	44	109	96	6	3	E	70-115	45	4.9E-05	1.4E-01	0.0	--	--	2.9	--	--	--	--
MW-66	203	160.58	-146.6	less-open	50	213	200	110	5	S	166-200	34	4.9E-05	1.4E-01	0.6	--	--	--	--	20.6	--	--
MW-66	204	161.16	-147.1	less-open	36	288	275	185	4	W	245-290	45	4.9E-05	1.4E-01	0.6	--	--	--	16.3	--	--	--
MW-66	205	161.73	-147.7	less-open	30	300	287	197	NSR	NSR	NSR	NSR	4.9E-05	1.4E-01	0.6	--	--	--	--	--	--	--
MW-66	206	163.11	-149.1	less-open	44	104	91	1	3	E	70-115	45	6.0E-05	1.7E-01	1.4	--	--	3.2	--	--	--	--
MW-66	207	163.45	-149.4	less-open	41	108	95	5	3	E	70-115	45	6.0E-05	1.7E-01	0.3	--	--	0.3	--	--	--	--
MW-66	208	163.89	-149.9	less-open	42	353	340	250	6	N	336-21	45	6.0E-05	1.7E-01	0.4	--	--	--	--	--	5.2	--
MW-66	209	164.15	-150.1	less-open	68	104	91	1	3	E	70-115	45	6.0E-05	1.7E-01	0.3	--	--	0.7	--	--	--	--
MW-66	210	164.26	-150.2	less-open	58	108	95	5	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	0.1	--	--	--	--
MW-66	211	164.37	-150.3	less-open	60	109	96	6	3	E	70-115	45	6.0E-05	1.7E-01	0.1	--	--	0.1	--	--	--	--
MW-66	212	164.61	-150.6	less-open	54	350	337	247	6	N	336-21	45	6.0E-05	1.7E-01	0.2	--	--	--	--	--	0.7	--
MW-66	213	164.67	-150.6	less-open	47	348	335	245	2	NW	291-335	44	6.0E-05	1.7E-01	0.1	--	4.7	--	--	--	--	--
MW-66	214	165.88	-151.9	less-open	44	317	304	214	2	NW	291-335	44	6.0E-05	1.7E-01	1.2	--	1.2	--	--	--	--	--
MW-66	215	166.51	-152.5	less-open	81	168	155	65	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.6	--	--	--	--	--	--	--
MW-66	216	166.53	-152.5	less-open	43	322	309	219	2	NW	291-335	44	6.0E-05	1.7E-01	0.0	--	0.7	--	--	--	--	--
MW-66	217	167.67	-153.6	less-open	37	327	314	224	2	NW	291-335	44	6.0E-05	1.7E-01	1.1	--	1.1	--	--	--	--	6.3
MW-66	218	167.79	-153.8	less-open	42	313	300	210	2	NW	291-335	44	6.0E-05	1.7E-01	0.1	--	0.1	--	--	--	--	--
MW-66	219	167.81	-153.8	less-open	71	202	189	99	5	S	166-200	34	6.0E-05	1.7E-01	0.0	--	--	--	--	7.2	--	--
MW-66	220	168.7	-154.7	less-open	72	230	217	127	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.9	--	--	--	--	--	--	--
MW-66	221	169.15	-155.1	less-open	63	219	206	116	NSR	NSR	NSR	NSR	6.0E-05	1.7E-01	0.5	--	--	--	--	--	--	--
MW-66	222	170.67	-156.6	less-open	52	335	322	232	2	NW	291-335	44	6.0E-05	1.7E-01	1.5	--	2.9	--	--	--	--	--
MW-66	223	170.94	-156.9	less-open	57	9	356	266	6	N	336-21	45	6.0E-05	1.7E-01	0.3	--	--	--	--	--	--	6.3
MW-66	224	171.24	-157.2	less-open	60	318	305	215	2	NW	291-335	44	6.0E-05	1.7E-01	0.3	--	0.6	--	--	--	--	--
MW-66	225	173.63	-159.6	less-open	51	344	331	241	2	NW	291-335	44	7.4E-05	2.1E-01	2.4	--	2.4	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-66	226	174.63	-160.6	less-open	45	322	309	219	2	NW	291-335	44	7.4E-05		2.1E-01	1.0	--	1.0	--	--	--	--	--
MW-66	227	175.1	-161.1	less-open	70	44	31	301	NSR	NSR	NSR	NSR	7.4E-05		2.1E-01	0.5	--	--	--	--	--	--	--
MW-66	228	175.73	-161.7	less-open	52	325	312	222	2	NW	291-335	44	7.4E-05		2.1E-01	0.6	--	1.1	--	--	--	--	--
MW-66	229	175.98	-162.0	less-open	61	101	88	358	3	E	70-115	45	7.4E-05		2.1E-01	0.3	--	--	11.6	--	--	--	--
MW-66	230	176.02	-162.0	less-open	38	283	270	180	4	W	245-290	45	7.4E-05		2.1E-01	0.0	--	--	--	14.9	--	--	--
MW-66	231	176.57	-162.5	less-open	57	102	89	359	3	E	70-115	45	7.4E-05		2.1E-01	0.5	--	--	0.6	--	--	--	--
MW-66	232	177.31	-163.3	less-open	60	332	319	229	2	NW	291-335	44	7.4E-05		2.1E-01	0.7	--	1.6	--	--	--	--	--
MW-66	233	178.31	-164.3	less-open	50	323	310	220	2	NW	291-335	44	7.4E-05		2.1E-01	1.0	--	1.0	--	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6		
MW-66	234	179.3	-165.3	less-open	41	326	313	223	2	NW	291-335	44	7.4E-05		2.1E-01	1.0	--	1.0	--	--	--	--	--
MW-66	235	179.86	-165.8	less-open	60	132	119	29	1	SE	116-165	49	7.4E-05		2.1E-01	0.6	21.4	--	--	--	--	--	--
MW-66	236	180.13	-166.1	less-open	42	308	295	205	2	NW	291-335	44	7.4E-05		2.1E-01	0.3	--	0.8	--	--	--	--	--
MW-66	237	180.66	-166.6	less-open	60	125	112	22	3	E	70-115	45	7.4E-05		2.1E-01	0.5	--	--	4.1	--	--	--	--
MW-66	238	180.83	-166.8	less-open	58	333	320	230	2	NW	291-335	44	7.4E-05		2.1E-01	0.2	--	0.7	--	--	--	--	--
MW-66	239	180.88	-166.9	less-open	56	126	113	23	3	E	70-115	45	7.4E-05		2.1E-01	0.0	--	--	0.2	--	--	--	--
MW-66	240	183	-169.0	less-open	76	185	172	82	5	S	166-200	34	1.5E-04		4.2E-01	2.1	--	--	--	--	15.2	--	
MW-66	241	184.01	-170.0	less-open	46	296	283	193	4	W	245-290	45	1.5E-04		4.2E-01	1.0	--	--	--	8.0	--	--	--
MW-66	242	184.85	-170.8	less-open	42	126	113	23	3	E	70-115	45	1.5E-04		4.2E-01	0.8	--	--	4.0	--	--	--	--
MW-66	243	187.41	-173.4	less-open	43	302	289	199	4	W	245-290	45	1.5E-04		4.2E-01	2.6	--	--	--	3.4	--	--	--
MW-66	244	187.94	-173.9	less-open	53	303	290	200	4	W	245-290	45	1.5E-04		4.2E-01	0.5	--	--	--	0.5	--	--	--
MW-66	245	189.36	-175.3	less-open	77	332	319	229	2	NW	291-335	44	1.5E-04		4.2E-01	1.4	--	8.5	--	--	--	--	--
MW-66	246	189.65	-175.6	less-open	33	287	274	184	NSR	NSR	NSR	NSR	1.5E-04		4.2E-01	0.3	--	--	--	--	--	--	--
MW-66	247	190.39	-176.4	less-open	38	128	115	25	3	E	70-115	45	1.5E-04		4.2E-01	0.7	--	--	5.5	--	--	--	--
MW-66	248	190.45	-176.4	less-open	48	328	315	225	2	NW	291-335	44	1.5E-04		4.2E-01	0.1	--	1.1	--	--	--	--	--
MW-66	249	190.72	-176.7	less-open	45	339	326	236	2	NW	291-335	44	1.5E-04		4.2E-01	0.3	--	0.3	--	--	--	--	--
MW-66	250	191.53	-177.5	less-open	30	290	277	187	NSR	NSR	NSR	NSR	1.5E-04		4.2E-01	0.8	--	--	--	--	--	--	--
MW-66	251	195.62	-181.6	less-open	74	63	50	320	NSR	NSR	NSR	NSR	1.5E-04		4.2E-01	4.1	--	--	--	--	--	--	--
MW-66	252	197.85	-183.8	less-open	52	124	111	21	3	E	70-115	45	1.5E-04		4.2E-01	2.2	--	--	7.5	--	--	--	--
MW-66	253	198.36	-184.3	less-open	89	309	296	206	NSR	NSR	NSR	NSR	1.5E-04		4.2E-01	0.5	--	--	--	--	--	--	--
MW-66	254	198.79	-184.8	less-open	87	312	299	209	NSR	NSR	NSR	NSR	1.5E-04		4.2E-01	0.4	--	--	--	--	--	--	--
RW-1	1	62.72	10.0	less-open	84	291	278	188	NSR	NSR	NSR	NSR	TNP		TNP	NA	--	--	--	--	--	--	--
RW-1	2	63.12	9.6	less-open	69	276	263	173	4	W	245-290	45	TNP		TNP	0.4	--	--	--	63.1	--	--	--
RW-1	3	63.22	9.5	less-open	46	117	104	14	3	E	70-115	45	TNP		TNP	0.1	--	--	63.2	--	--	--	--
RW-1	4	65.31	7.4	less-open	36	117	104	14	3	E	70-115	45	TNP		TNP	2.1	--	--	2.1	--	--	--	--
RW-1	5	65.50	7.2	less-open	72	306	293	203	2	NW	291-335	44	TNP		TNP	0.2	--	65.5	--	--	--	--	--
RW-1	6	65.87	6.8	less-open	44	206	193	103	5	S	166-200	34	TNP		TNP	0.4	--	--	--	--	65.9	--	--
RW-1	7	73.89	-1.2	open	78	327	314	224	2	NW	291-335	44	TNP		TNP	8.0	--	8.4	--	--	--	--	--
RW-1	8	75.33	-2.6	less-open	26	75	62	332	NSR	NSR	NSR	NSR	TNP		TNP	1.4	--	--	--	--	--	--	--
RW-1	9	79.44	-6.8	less-open	28	124	111	21	NSR	NSR	NSR	NSR	TNP		TNP	4.1	--	--	--	--	--	--	--
RW-1	10	81.07	-8.4	less-open	60	248	235	145	NSR	NSR	NSR	NSR	TNP		TNP	1.6	--	--	--	--	--	--	--
RW-1	11	83.58	-10.9	less-open	40	102	89	359	3	E	70-115	45	TNP		TNP	2.5	--	--	18.3	--	--	--	--
RW-1	12	83.71	-11.0	less-open	42	112	99	9	3	E	70-115	45	TNP		TNP	0.1	--	--	0.1	--	--	--	--
RW-1	13	83.82	-11.1	less-open	43	101	88	358	3	E	70-115	45	TNP		TNP	0.1	--	--	0.1	--	--	--	--
RW-1	14	84.06	-11.4	less-open	43	209	196	106	5	S	166-200	34	TNP		TNP	0.2	--	--	--	--	18.2	--	--
RW-1	15	87.09	-14.4	less-open	35	164	151	61	1	SE	116-165	49	TNP		TNP	3.0	87.1	--	--	--	--	--	--
RW-1	16	87.31	-14.6	less-open	30	312	299	209	NSR	NSR	NSR	NSR	TNP		TNP	0.2	--	--	--	--	--	--	--
RW-1	17	97.98	-25.3	less-open	38	184	171	81	5	S	166-200	34	TNP		TNP	10.7	--	--	--	--	13.9	--	--
RW-1	18	100.46	-27.8	less-open	30	120	107	17	NSR	NSR	NSR	NSR	TNP		TNP	2.5	--	--	--	--	--	--	--
RW-1	19	100.84	-28.2	less-open	50	329	316	226	2	NW	291-335	44	TNP		TNP	0.4	--	27.0	--	--	--	--	--
RW-1	20	103.13	-30.4	less-open	51	195	182	92	5	S	166-200	34	TNP		TNP	2.3	--	--	--	--	5.1	--	--
RW-1	21	111.58	-38.9	less-open	49	289	276	186	4	W	245-290	45	TNP		TNP	8.5	--	--	--	48.5	--	--	--
RW-1	22	111.82	-39.1	less-open	43	141	128	38	1	SE	116-165	49	TNP		TNP	0.2	24.7	--	--	--	--	--	--
RW-1	23	114.91	-42.2	less-open	55	147	134	44	1	SE	116-165	49	TNP		TNP	3.1	3.1	--	--	--	--	--	--
RW-1	24	116.19	-43.5	open	54	156	143	53	1	SE	116-165	49	TNP		TNP	1.3	1.3	--	--	--	--	--	--
RW-1	25	117.18	-44.5	less-open	61	116	103	13	3	E	70-115	45	TNP		TNP	1.0	--	--	33.4	--	--	--	--
RW-1	26	119.45	-46.8	less-open	45	127	114	24	3	E	70-115	45	TNP		TNP	2.3	--	--	2.3	--	--	--	--
RW-1	27	120.34	-47.7	less-open	34	116	103	13	3	E	70-115	45	TNP		TNP	0.9	--	--	0.9	--	--	--	--
RW-1	28	124.07	-51.4	less-open	32	229	216	126	NSR	NSR	NSR	NSR	TNP		TNP	3.7	--	--	--	--	--	--	--
RW-1	29	127.11	-54.4	less-open	87	153	140	50	NSR	NSR	NSR	NSR	TNP		TNP	3.0	--	--	--	--	--	--	--
RW-1	30	127.16	-54.5	less-open	45	183	170	80	5	S	166-200	34	TNP		TNP	0.0	--	--	--	--	24.0	--	--
RW-1	31	129.71	-57.0	less-open	47	303	290	200	4	W	245-290	45	TNP		TNP	2.6	--	--	--	18.1	--	--	--
RW-1	32	134.61	-61.9	less-open	48	278	265	175	4	W	245-290	45	TNP		TNP	4.9	--	--	--	4.9	--	--	--
RW-1	33	135.67	-63.0	less-open	49	260	247	157	4	W	245-290	45	TNP		TNP	1.1	--	--	--	1.1	--	--	--



**APPENDIX Q**  
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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day			1	2	3	4	5	6	
RW-1	34	136.95	-64.3	less-open	41	319	306	216	2	NW	291-335	44	TNP		TNP		1.3	--	36.1	--	--	--	--	--
RW-1	35	137.89	-65.2	less-open	45	290	277	187	4	W	245-290	45	TNP		TNP		0.9	--	--	--	2.2	--	--	
RW-1	36	138.51	-65.8	less-open	43	292	279	189	4	W	245-290	45	TNP		TNP		0.6	--	--	--	0.6	--	--	
RW-1	37	138.64	-66.0	less-open	43	285	272	182	4	W	245-290	45	TNP		TNP		0.1	--	--	--	0.1	--	--	
RW-1	38	139.11	-66.4	less-open	28	270	257	167	NSR	NSR	NSR	NSR	TNP		TNP		0.5	--	--	--	--	--	--	
MW-67	1	32.54	-18.5	less-open	60	251	238	148	NSR	NSR	NSR	NSR	3.1E-04	1.8E-05	8.9E-01	5.0E-02	NA	--	--	--	--	--	--	
MW-67	2	33.17	-19.1	less-open	72	347	334	244	2	NW	291-335	44	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.6	--	33.2	--	--	--	--	
MW-67	3	33.71	-19.7	open	73	310	297	207	2	NW	291-335	44	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.5	--	0.5	--	--	--	--	
MW-67	4	33.80	-19.8	less-open	53	297	284	194	4	W	245-290	45	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.1	--	--	--	33.8	--	--	
MW-67	5	34.14	-20.1	less-open	71	188	175	85	5	S	166-200	34	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.3	--	--	--	--	34.1	--	
MW-67	6	34.32	-20.3	less-open	73	190	177	87	5	S	166-200	34	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.2	--	--	--	--	0.2	--	
MW-67	7	34.76	-20.7	less-open	52	273	260	170	4	W	245-290	45	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.4	--	--	--	1.0	--	--	
MW-67	8	34.77	-20.7	less-open	74	82	69	339	NSR	NSR	NSR	NSR	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.0	--	--	--	--	--	--	
MW-67	9	35.05	-21.0	less-open	20	20	7	277	NSR	NSR	NSR	NSR	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.3	--	--	--	--	--	--	
MW-67	10	35.09	-21.1	less-open	62	171	158	68	1	SE	116-165	49	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.0	35.1	--	--	--	--	--	
MW-67	11	35.15	-21.1	less-open	47	282	269	179	4	W	245-290	45	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.1	--	--	--	0.4	--	--	
MW-67	12	35.29	-21.3	less-open	71	192	179	89	5	S	166-200	34	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.1	--	--	--	--	1.0	--	
MW-67	13	35.74	-21.7	open	28	292	279	189	NSR	NSR	NSR	NSR	3.1E-04	1.8E-05	8.9E-01	5.0E-02	0.5	--	--	--	--	--	--	
MW-67	14	37.07	-23.0	less-open	69	319	306	216	2	NW	291-335	44		1.8E-05		5.0E-02	1.3	--	3.4	--	--	--	--	
MW-67	15	37.13	-23.1	less-open	47	284	271	181	4	W	245-290	45		1.8E-05		5.0E-02	0.1	--	--	--	2.0	--	--	
MW-67	16	37.13	-23.1	less-open	30	292	279	189	NSR	NSR	NSR	NSR		1.8E-05		5.0E-02	0.0	--	--	--	--	--	--	
MW-67	17	37.59	-23.6	less-open	44	69	56	326	NSR	NSR	NSR	NSR		1.8E-05		5.0E-02	0.5	--	--	--	--	--	--	
MW-67	18	37.60	-23.6	less-open	51	274	261	171	4	W	245-290	45		1.8E-05		5.0E-02	0.0	--	--	--	0.5	--	--	
MW-67	19	38.06	-24.0	less-open	51	138	125	35	1	SE	116-165	49		1.8E-05		5.0E-02	0.5	3.0	--	--	--	--	--	
MW-67	20	38.27	-24.2	less-open	55	256	243	153	NSR	NSR	NSR	NSR		1.8E-05		5.0E-02	0.2	--	--	--	--	--	--	
MW-67	21	38.75	-24.7	less-open	33	257	244	154	NSR	NSR	NSR	NSR		1.8E-05		5.0E-02	0.5	--	--	--	--	--	--	
MW-67	22	39.27	-25.2	less-open	46	207	194	104	5	S	166-200	34		1.8E-05		5.0E-02	0.5	--	--	--	4.0	--	--	
MW-67	23	40.58	-26.6	open	44	310	297	207	2	NW	291-335	44	7.1E-06	1.8E-05	2.0E-02	5.0E-02	1.3	--	3.5	--	--	--	--	
MW-67	24	41.15	-27.1	less-open	23	167	154	64	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.6	--	--	--	--	--	--	
MW-67	25	41.29	-27.3	open	71	205	192	102	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	--	--	--	2.0	--	--	
MW-67	26	41.52	-27.5	less-open	41	161	148	58	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.2	3.5	--	--	--	--	--	
MW-67	27	41.59	-27.6	less-open	40	316	303	213	2	NW	291-335	44	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	--	1.0	--	--	--	--	
MW-67	28	41.74	-27.7	less-open	65	172	159	69	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	0.2	--	--	--	--	--	
MW-67	29	41.75	-27.7	less-open	76	213	200	110	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.0	--	--	--	--	0.5	--	
MW-67	30	42.03	-28.0	less-open	72	208	195	105	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.3	--	--	--	--	0.3	--	
MW-67	31	42.31	-28.3	less-open	53	245	232	142	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.3	--	--	--	--	--	--	
MW-67	32	42.43	-28.4	less-open	69	140	127	37	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	0.7	--	--	--	--	--	
MW-67	33	42.57	-28.5	less-open	46	241	228	138	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	--	--	--	--	--	--	

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day			1	2	3	4	5	6	
MW-67	34	42.57	-28.5	less-open	67	320	307	217	2	NW	291-335	44	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.0	--	1.0	--	--	--	--	--
MW-67	35	42.66	-28.6	less-open	31	225	212	122	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	--	--	--	--	--	--	
MW-67	36	43.12	-29.1	open	37	275	262	172	4	W	245-290	45	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.5	--	--	--	5.5	--	--	
MW-67	37	43.58	-29.6	less-open	39	232	219	129	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.5	--	--	--	--	--	--	
MW-67	38	43.72	-29.7	less-open	60	165	152	62	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	1.3	--	--	--	--	--	
MW-67	39	43.89	-29.9	less-open	78	180	167	77	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.2	--	--	--	--	1.9	--	
MW-67	40	44.33	-30.3	less-open	34	245	232	142	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.4	--	--	--	--	--	--	
MW-67	41	44.38	-30.4	less-open	44	150	137	47	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	0.7	--	--	--	--	--	
MW-67	42	44.60	-30.6	less-open	78	232	219	129	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.2	--	--	--	--	--	--	
MW-67	43	44.90	-30.9	less-open	24	281	268	178	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.3	--	--	--	--	--	--	
MW-67	44	45.77	-31.7	less-open	28	135	122	32	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.9	--	--	--	--	--	--	
MW-67	45	46.53	-32.5	less-open	70	123	110	20	3	E	70-115	45	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.8	--	--	46.5	--	--	--	
MW-67	46	46.56	-32.5	less-open	68	145	132	42	1	SE	116-165	49	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.0	2.2	--	--	--	--	--	
MW-67	47	48.20	-34.2	less-open	69	202	189	99	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	1.6	--	--	--	--	4.3	--	
MW-67	48	48.63	-34.6	less-open	66	208	195	105	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.4	--	--	--	--	0.4	--	
MW-67	49	48.75	-34.7	less-open	66	201	188	98	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.1	--	--	--	--	0.1	--	
MW-67	50	49.00	-35.0	less-open	64	221	208	118	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.3	--	--	--	--	--	--	
MW-67	51	49.23	-35.2	less-open	69	330	317	227	2	NW	291-335	44	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.2	--	6.7	--	--	--	--	
MW-67	52	49.27	-35.2	less-open	62	202	189	99	5	S	166-200	34	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.0	--	--	--	--	0.5	--	
MW-67	53	50.13	-36.1	open	24	11	358	268	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.9	--	--	--	--	--	--	
MW-67	54	50.58	-36.6	less-open	20	93	80	350	NSR	NSR	NSR	NSR	7.1E-06	1.8E-05	2.0E-02	5.0E-02	0.4	--	--	--	--	--	--	
MW-67	55	52.47	-38.4	less-open	62	115	102	12	3	E	70-115	45	7.1E-06	1.8E-05	2.0E-02	5.0E-02	1.9	--	--	5.9	--	--	--	
MW-67	56	53.59	-39.6	less-open	58	123	110	20	3	E	70-115	45	7.1E-06	1.8E-05	2.0E-02	5.0E-02	1.1	--	--	1.1	--	--	--	
MW-67	57	54.25	-40.2	less-open	47	154	141	51	1	SE	116-165	49	TNP	TNP	TNP	TNP	0.7	7.7	--	--	--	--	--	
MW-67	58	54.77	-40.7	less-open	30	180	167	77	NSR	NSR	NSR	NSR	TNP	TNP	TNP	TNP	0.5	--	--	--	--	--	--	
MW-67	59	56.60	-42.6	less-open	65	332	319	229	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	1.8	--	7.4	--	--	--	--	
MW-67	60	58.73	-44.7	less-open	45	315	302	212	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	2.1	--	2.1	--	--	--	--	
MW-67	61	58.90	-44.9	less-open	48	228	215	125	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.2	--	--	--	--	--	--	
MW-67	62	61.26	-47.2	less-open	59	178	165	75	1	SE	116-165	49	1.8E-05	5.0E-02	5.0E-02	5.0E-02	2.4	7.0	--	--	--	--	--	
MW-67	63	62.04	-48.0	less-open	46	224	211	121	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.8	--	--	--	--	--	--	
MW-67	64	62.21	-48.2	less-open	39	230	217	127	NSR	NSR	NSR	NSR	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.2	--	--	--	--	--	--	
MW-67	65	64.34	-50.3	less-open	45	304	291	201	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	2.1	--	5.6	--	--	--	--	
MW-67	66	65.20	-51.2	less-open	46	139	126	36	1	SE	116-165	49	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.9	3.9	--	--	--	--	--	
MW-67	67	66.52	-52.5	less-open	46	125	112	22	3	E	70-115	45	1.8E-05	5.0E-02	5.0E-02	5.0E-02	1.3	--	--	12.9	--	--	--	
MW-67	68	67.47	-53.4	less-open	75	332	319	229	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	1.0	--	3.1	--	--	--	--	
MW-67	69	67.64	-53.6	less-open	63	341	328	238	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.2	--	0.2	--	--	--	--	
MW-67	70	67.90	-53.9	less-open	57	322	309	219	2	NW	291-335	44	1.8E-05	5.0E-02	5.0E-02	5.0E-02	0.3	--	0.3	--	--	--	--	
MW-67	71	69.65	-55.6	less-open	74	112	99	9	3	E	70-115	45	1.8E-05	5.0E-02	5.0E-02	5.0E-02	1.8	--	--	3.1	--	--	--	
MW-67	72	70.77	-56.7	less-open	56	343	330	240	2	NW	291-335	44	TNP	TNP	TNP	TNP	1.1	--	2.9	--	--	--	--	
MW-67	73	71.36	-57.3	less-open	53	136	123	33	1	SE	116-165	49	TNP	TNP	TNP	TNP	0.6	6.2	--	--	--	--	--	
MW-67	74	71.96	-57.9	less-open	54	319	306	216	2	NW	291-335	44	TNP	TNP	TNP	TNP	0.6	--	1.2	--	--	--	--	
MW-67	75	73.58	-59.6	less-open	69	338	325	235	2	NW	291-335	44	TNP	TNP	TNP	TNP	1.6	--	1.6	--	--	--	--	
MW-67	76	73.71	-59.7	less-open	62	322	309	219	2	NW	291-335	44	TNP	TNP	TNP	TNP	0.1	--	0.1	--	--	--	--	
MW-67	77	73.92	-59.9	less-open	56	137	124	34	1	SE	116-165	49	TNP	TNP	TNP	TNP	0.2	2.6	--	--	--	--	--	
MW-67	78	74.74	-60.7	less-open	62	122	109	19	3	E	70-115	45	TNP	TNP	TNP	TNP	0.8	--	--	5.1	--	--	--	
MW-67	79	76.06	-62.0	less-open	68	333	320	230	2	NW	291-335	44	TNP	TNP	TNP	TNP	1.3	--	2.4	--	--	--	--	
MW-67	80	76.24	-62.2	less-open	67	125	112	22	3	E	70-115	45	TNP	TNP	TNP	TNP	0.2	--	--	1.5	--	--	--	
MW-67	81	77.54	-63.5	less-open	63	325	312	222	2	NW	291-335	44	TNP	TNP	TNP	TNP	1.3	--	1.5	--	--	--	--	
MW-67	82	77.77	-63.7	less-open	66	332	319	229	2	NW	291-335	44	TNP	TNP	TNP	TNP	0.2	--	0.2	--	--	--	--	
MW-67	83	77.93	-63.9	less-open	78	204	191	101	5	S	166-200	34	TNP	TNP	TNP	TNP	0.2	--	--	--	--	28.7	--	
MW-67	84	78.82	-64.8	less-open	62	108	95	5	3	E	70-115	45	TNP	TNP	TNP	TNP	0.9	--	--	2.6	--	--	--	
MW-67	85	79.05	-65.0	less-open	62	115	102	12	3	E	70-115	45	TNP	TNP	TNP	TNP	0.2	--	--	0.2	--	--	--	
MW-67	86	79.72	-65.7	less-open	69	327	314	224	2	NW	291-335	44	TNP	TNP	TNP	TNP	0.7	--	2.0	--	--	--	--	
MW-67	87	81.25	-67.2	less-open	77	31	18	288	6	N	336-21	45	TNP	TNP	TNP	TNP	1.5	--	--	--	--	--	81.3	

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	f/day		1	2	3	4	5	6	
MW-67	88	81.72	-67.7	less-open	35	344	331	241	2	NW	291-335	44	TNP	TNP	0.5	--	2.0	--	--	--	--	--
MW-67	89	82.67	-68.6	less-open	76	341	328	238	2	NW	291-335	44	9.5E-05	2.7E-01	1.0	--	1.0	--	--	--	--	--
MW-67	90	83.25	-69.2	less-open	69	116	103	13	3	E	70-115	45	9.5E-05	2.7E-01	0.6	--	--	4.2	--	--	--	--
MW-67	91	84.12	-70.1	less-open	68	123	110	20	3	E	70-115	45	9.5E-05	2.7E-01	0.9	--	--	0.9	--	--	--	--
MW-67	92	84.73	-70.7	less-open	74	107	94	4	3	E	70-115	45	9.5E-05	2.7E-01	0.6	--	--	0.6	--	--	--	--
MW-67	93	85.10	-71.1	less-open	25	101	88	358	NSR	NSR	NSR	NSR	9.5E-05	2.7E-01	0.4	--	--	--	--	--	--	--
MW-67	94	85.17	-71.1	less-open	71	121	108	18	3	E	70-115	45	9.5E-05	2.7E-01	0.1	--	--	0.4	--	--	--	--
MW-67	95	85.39	-71.4	less-open	78	186	173	83	5	S	166-200	34	9.5E-05	2.7E-01	0.2	--	--	--	--	--	7.5	--
MW-67	96	86.26	-72.2	less-open	57	323	310	220	2	NW	291-335	44	9.5E-05	2.7E-01	0.9	--	3.6	--	--	--	--	--
MW-67	97	87.30	-73.3	less-open	71	185	172	82	5	S	166-200	34	9.5E-05	2.7E-01	1.0	--	--	--	--	--	1.9	--
MW-67	98	88.14	-74.1	less-open	69	328	315	225	2	NW	291-335	44	9.5E-05	2.7E-01	0.8	--	1.9	--	--	--	--	--
MW-67	99	88.17	-74.1	less-open	73	131	118	28	1	SE	116-165	49	9.5E-05	2.7E-01	0.0	14.3	--	--	--	--	--	--
MW-67	100	89.61	-75.6	less-open	58	329	316	226	2	NW	291-335	44	9.5E-05	2.7E-01	1.4	--	1.5	--	--	--	--	--
MW-67	101	91.21	-77.2	less-open	63	335	322	232	2	NW	291-335	44	9.5E-05	2.7E-01	1.6	--	1.6	--	--	--	--	--
MW-67	102	93.22	-79.2	less-open	50	260	247	157	4	W	245-290	45	9.5E-05	2.7E-01	2.0	--	--	--	50.1	--	--	--
MW-67	103	94.34	-80.3	less-open	66	239	226	136	NSR	NSR	NSR	NSR	9.5E-05	2.7E-01	1.1	--	--	--	--	--	--	--
MW-67	104	94.67	-80.6	less-open	72	222	209	119	NSR	NSR	NSR	NSR	9.5E-05	2.7E-01	0.3	--	--	--	--	--	--	--
MW-67	105	94.94	-80.9	less-open	75	211	198	108	5	S	166-200	34	9.5E-05	2.7E-01	0.3	--	--	--	--	7.6	--	--
MW-67	106	95.82	-81.8	less-open	78	108	95	5	3	E	70-115	45	9.5E-05	2.7E-01	0.9	--	--	10.7	--	--	--	--
MW-67	107	97.07	-83.0	less-open	62	94	81	351	3	E	70-115	45	TNP	TNP	1.3	--	--	1.3	--	--	--	--
MW-67	108	97.72	-83.7	less-open	80	179	166	76	5	S	166-200	34	TNP	TNP	0.7	--	--	--	--	2.8	--	--
MW-67	109	97.86	-83.8	less-open	79	193	180	90	5	S	166-200	34	TNP	TNP	0.1	--	--	--	--	0.1	--	--
MW-67	110	98.1	-84.1	less-open	62	343	330	240	2	NW	291-335	44	3.4E-04	9.6E-01	0.2	--	6.9	--	--	--	--	--
MW-67	111	99.51	-85.5	less-open	35	39	26	296	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	1.4	--	--	--	--	--	--	--
MW-67	112	99.54	-85.5	less-open	75	182	169	79	5	S	166-200	34	3.4E-04	9.6E-01	0.0	--	--	--	--	1.7	--	--
MW-67	113	100.58	-86.6	less-open	24	5	352	262	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	1.0	--	--	--	--	--	--	--
MW-67	114	101.27	-87.2	less-open	35	8	355	265	6	N	336-21	45	3.4E-04	9.6E-01	0.7	--	--	--	--	--	20.0	--
MW-67	115	101.78	-87.8	less-open	48	228	215	125	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.5	--	--	--	--	--	--	--
MW-67	116	102.46	-88.4	less-open	41	196	183	93	5	S	166-200	34	3.4E-04	9.6E-01	0.7	--	--	--	--	2.9	--	--
MW-67	117	102.47	-88.4	less-open	70	346	333	243	2	NW	291-335	44	3.4E-04	9.6E-01	0.0	--	4.4	--	--	--	--	--
MW-67	118	102.85	-88.8	less-open	26	201	188	98	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.4	--	--	--	--	--	--	--
MW-67	119	103.38	-89.4	less-open	51	118	105	15	3	E	70-115	45	3.4E-04	9.6E-01	0.5	--	--	6.3	--	--	--	--
MW-67	120	103.47	-89.4	less-open	46	131	118	28	1	SE	116-165	49	3.4E-04	9.6E-01	0.1	15.3	--	--	--	--	--	--
MW-67	121	103.75	-89.7	less-open	74	351	338	248	6	N	336-21	45	3.4E-04	9.6E-01	0.3	--	--	--	--	--	2.5	--
MW-67	122	104.23	-90.2	less-open	46	165	152	62	1	SE	116-165	49	3.4E-04	9.6E-01	0.5	0.8	--	--	--	--	--	--
MW-67	123	104.59	-90.6	less-open	61	216	203	113	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.4	--	--	--	--	--	--	--
MW-67	124	104.68	-90.7	less-open	66	347	334	244	2	NW	291-335	44	3.4E-04	9.6E-01	0.1	--	2.2	--	--	--	--	--
MW-67	125	105.26	-91.2	less-open	56	353	340	250	6	N	336-21	45	3.4E-04	9.6E-01	0.6	--	--	--	--	--	1.5	--
MW-67	126	105.27	-91.2	less-open	74	344	331	241	2	NW	291-335	44	3.4E-04	9.6E-01	0.0	--	0.6	--	--	--	--	--
MW-67	127	106.01	-92.0	less-open	72	323	310	220	2	NW	291-335	44	3.4E-04	9.6E-01	0.7	--	0.7	--	--	--	--	--
MW-67	128	106.13	-92.1	open	53	244	231	141	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.1	--	--	--	--	--	--	--
MW-67	129	106.46	-92.4	less-open	77	119	106	16	3	E	70-115	45	3.4E-04	9.6E-01	0.3	--	--	3.1	--	--	--	--
MW-67	130	106.69	-92.7	less-open	82	184	171	81	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.2	--	--	--	--	--	--	--
MW-67	131	107.03	-93.0	less-open	71	335	322	232	2	NW	291-335	44	3.4E-04	9.6E-01	0.3	--	1.0	--	--	--	--	--
MW-67	132	107.18	-93.2	less-open	64	124	111	21	3	E	70-115	45	3.4E-04	9.6E-01	0.2	--	--	0.7	--	--	--	--
MW-67	133	107.4	-93.4	less-open	70	337	324	234	2	NW	291-335	44	3.4E-04	9.6E-01	0.2	--	0.4	--	--	--	--	--
MW-67	134	107.62	-93.6	less-open	57	210	197	107	5	S	166-200	34	3.4E-04	9.6E-01	0.2	--	--	--	--	5.2	--	--
MW-67	135	108.31	-94.3	open	65	351	338	248	6	N	336-21	45	3.4E-04	9.6E-01	0.7	--	--	--	--	--	--	3.1
MW-67	136	108.36	-94.3	less-open	30	192	179	89	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.0	--	--	--	--	--	--	--
MW-67	137	108.48	-94.5	less-open	44	208	195	105	5	S	166-200	34	3.4E-04	9.6E-01	0.1	--	--	--	--	0.9	--	--
MW-67	138	109	-95.0	less-open	27	173	160	70	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.5	--	--	--	--	--	--	--
MW-67	139	109.37	-95.3	less-open	66	352	339	249	6	N	336-21	45	3.4E-04	9.6E-01	0.4	--	--	--	--	--	1.1	--
MW-67	140	109.55	-95.5	less-open	35	121	108	18	3	E	70-115	45	3.4E-04	9.6E-01	0.2	--	--	2.4	--	--	--	--
MW-67	141	109.72	-95.7	less-open	68	118	105	15	3	E	70-115	45	3.4E-04	9.6E-01	0.2	--	--	0.2	--	--	--	--

APPENDIX Q  
FRACTURE FLOW MODEL DATABASE  
Indian Point  
Buchanan, New York

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Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6	
MW-67	142	110.42	-96.4	less-open	6	29	16	286	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.7	--	--	--	--	--	--	
MW-67	143	110.53	-96.5	less-open	9	49	36	306	NSR	NSR	NSR	NSR	3.4E-04	9.6E-01	0.1	--	--	--	--	--	--	
MW-67	144	112.27	-98.2	less-open	76	354	341	251	6	N	336-21	45	3.4E-04	9.6E-01	1.7	--	--	--	--	--	2.9	
MW-67	145	112.28	-98.3	less-open	66	312	299	209	2	NW	291-335	44	3.4E-04	9.6E-01	0.0	--	4.9	--	--	--	--	
MW-67	146	112.68	-98.7	less-open	71	350	337	247	6	N	336-21	45	3.4E-04	9.6E-01	0.4	--	--	--	--	--	0.4	
MW-67	147	112.99	-99.0	less-open	72	346	333	243	2	NW	291-335	44	3.4E-04	9.6E-01	0.3	--	0.7	--	--	--	--	
MW-67	148	113.18	-99.2	less-open	67	343	330	240	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--	
MW-67	149	113.24	-99.2	less-open	41	216	203	113	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--	
MW-67	150	114.56	-100.5	less-open	62	348	335	245	2	NW	291-335	44	TNP	TNP	1.3	--	1.4	--	--	--	--	
MW-67	151	115.13	-101.1	less-open	32	155	142	52	NSR	NSR	NSR	NSR	TNP	TNP	0.6	--	--	--	--	--	--	
MW-67	152	115.27	-101.2	less-open	64	334	321	231	2	NW	291-335	44	TNP	TNP	0.1	--	0.7	--	--	--	--	
MW-67	153	115.99	-102.0	less-open	52	140	127	37	1	SE	116-165	49	TNP	TNP	0.7	11.8	--	--	--	--	--	
MW-67	154	116.04	-102.0	less-open	63	305	292	202	2	NW	291-335	44	TNP	TNP	0.1	--	0.8	--	--	--	--	
MW-67	155	116.04	-102.0	less-open	62	342	329	239	2	NW	291-335	44	TNP	TNP	0.0	--	0.0	--	--	--	--	
MW-67	156	116.8	-102.8	less-open	56	332	319	229	2	NW	291-335	44	TNP	TNP	0.8	--	0.8	--	--	--	--	
MW-67	157	117.03	-103.0	less-open	47	334	321	231	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	0.2	--	--	--	--	
MW-67	158	117.2	-103.2	less-open	38	323	310	220	2	NW	291-335	44	7.1E-05	2.0E-01	0.2	--	0.2	--	--	--	--	
MW-67	159	118.85	-104.8	less-open	58	315	302	212	2	NW	291-335	44	7.1E-05	2.0E-01	1.6	--	1.6	--	--	--	--	
MW-67	160	120.13	-106.1	less-open	52	325	312	222	2	NW	291-335	44	7.1E-05	2.0E-01	1.3	--	1.3	--	--	--	--	
MW-67	161	120.85	-106.8	less-open	64	76	63	333	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.7	--	--	--	--	--	--	
MW-67	162	121.48	-107.5	less-open	65	75	62	332	NSR	NSR	NSR	NSR	7.1E-05	2.0E-01	0.6	--	--	--	--	--	--	
MW-67	163	121.97	-107.9	less-open	64	105	92	2	3	E	70-115	45	7.1E-05	2.0E-01	0.5	--	--	12.3	--	--	--	
MW-67	164	122.32	-108.3	less-open	81	354	341	251	6	N	336-21	45	7.1E-05	2.0E-01	0.3	--	--	--	--	--	9.6	
MW-67	165	122.56	-108.5	less-open	75	211	198	108	5	S	166-200	34	7.1E-05	2.0E-01	0.2	--	--	--	--	14.1	--	
MW-67	166	122.97	-108.9	less-open	74	109	96	6	3	E	70-115	45	7.1E-05	2.0E-01	0.4	--	--	1.0	--	--	--	
MW-67	167	123.33	-109.3	less-open	52	359	346	256	6	N	336-21	45	7.1E-05	2.0E-01	0.4	--	--	--	--	--	1.0	
MW-67	168	124.1	-110.1	less-open	48	315	302	212	2	NW	291-335	44	7.1E-05	2.0E-01	0.8	--	4.0	--	--	--	--	
MW-67	169	124.52	-110.5	less-open	73	188	175	85	5	S	166-200	34	7.1E-05	2.0E-01	0.4	--	--	--	--	2.0	--	
MW-67	170	124.66	-110.6	less-open	64	303	290	200	4	W	245-290	45	7.1E-05	2.0E-01	0.1	--	--	--	31.4	--	--	
MW-67	171	125.41	-111.4	less-open	38	306	293	203	2	NW	291-335	44	7.1E-05	2.0E-01	0.8	--	1.3	--	--	--	--	
MW-67	172	125.5	-111.5	less-open	41	309	296	206	2	NW	291-335	44	7.1E-05	2.0E-01	0.1	--	0.1	--	--	--	--	
MW-67	173	125.64	-111.6	less-open	38	169	156	66	1	SE	116-165	49	7.1E-05	2.0E-01	0.1	9.7	--	--	--	--	--	
MW-67	174	125.86	-111.8	less-open	65	106	93	3	3	E	70-115	45	7.1E-05	2.0E-01	0.2	--	--	2.9	--	--	--	
MW-67	175	127.43	-113.4	less-open	40	350	337	247	6	N	336-21	45	7.1E-05	2.0E-01	1.6	--	--	--	--	--	4.1	
MW-67	176	128.1	-114.1	less-open	70	225	212	122	NSR	NSR	NSR	NSR	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.7	--	--	--	--	--
MW-67	177	130.01	-116.0	less-open	31	341	328	238	NSR	NSR	NSR	NSR	7.1E-05	1.2E-04	2.0E-01	3.4E-01	1.9	--	--	--	--	--
MW-67	178	130.59	-116.6	less-open	70	178	165	75	1	SE	116-165	49	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.6	5.0	--	--	--	--
MW-67	179	130.71	-116.7	less-open	37	317	304	214	2	NW	291-335	44	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.1	--	5.2	--	--	--
MW-67	180	130.83	-116.8	less-open	71	177	164	74	1	SE	116-165	49	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.1	0.2	--	--	--	--
MW-67	181	131.18	-117.2	less-open	76	168	155	65	1	SE	116-165	49	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.3	0.3	--	--	--	--
MW-67	182	131.76	-117.7	less-open	69	183	170	80	5	S	166-200	34	7.1E-05	1.2E-04	2.0E-01	3.4E-01	0.6	--	--	--	7.2	--
MW-67	183	133.27	-119.2	less-open	71	174	161	71	1	SE	116-165	49	1.9E-04	1.2E-04	5.3E-01	3.4E-01	1.5	2.1	--	--	--	--
MW-67	184	134.59	-120.6	less-open	37	17	4	274	6	N	336-21	45	1.9E-04	1.2E-04	5.3E-01	3.4E-01	1.3	--	--	--	--	7.2
MW-67	185	135.11	-121.1	less-open	75	177	164	74	1	SE	116-165	49	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.5	1.8	--	--	--	--
MW-67	186	135.36	-121.3	less-open	35	346	333	243	2	NW	291-335	44	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.3	--	4.7	--	--	--
MW-67	187	136.09	-122.1	less-open	74	183	170	80	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.7	--	--	--	--	4.3
MW-67	188	136.51	-122.5	less-open	74	176	163	73	1	SE	116-165	49	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.4	1.4	--	--	--	--
MW-67	189	136.6	-122.6	less-open	47	334	321	231	2	NW	291-335	44	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.1	--	1.2	--	--	--
MW-67	190	136.83	-122.8	less-open	70	192	179	89	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.2	--	--	--	--	0.7
MW-67	191	137.64	-123.6	less-open	70	185	172	82	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.8	--	--	--	--	0.8
MW-67	192	137.85	-123.8	less-open	68	184	171	81	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.2	--	--	--	--	0.2
MW-67	193	138.38	-124.4	less-open	67	244	231	141	NSR	NSR	NSR	NSR	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.5	--	--	--	--	--
MW-67	194	138.95	-124.9	less-open	57	240	227	137	NSR	NSR	NSR	NSR	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.6	--	--	--	--	--
MW-67	195	140.07	-126.0	less-open	71	170	157	67	1	SE	116-165	49	1.9E-04	1.2E-04	5.3E-01	3.4E-01	1.1	3.6	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (K)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day			1	2	3	4	5	6
MW-67	196	140.49	-126.5	less-open	14	204	191	101	NSR	NSR	NSR	NSR	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.4	--	--	--	--	--	--
MW-67	197	140.99	-127.0	less-open	48	197	184	94	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.5	--	--	--	--	3.1	--
MW-67	198	141.34	-127.3	less-open	45	204	191	101	5	S	166-200	34	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.3	--	--	--	--	0.3	--
MW-67	199	141.81	-127.8	less-open	64	10	357	267	6	N	336-21	45	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.5	--	--	--	--	--	7.2
MW-67	200	142.07	-128.0	less-open	49	113	100	10	3	E	70-115	45	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.3	--	--	16.2	--	--	--
MW-67	201	142.37	-128.3	less-open	80	3	350	260	6	N	336-21	45	1.9E-04	1.2E-04	5.3E-01	3.4E-01	0.3	--	--	--	--	--	0.6
MW-67	202	143.37	-129.3	less-open	81	357	344	254	6	N	336-21	45	1.9E-04		5.3E-01		1.0	--	--	--	--	--	1.0
MW-67	203	144.77	-130.7	less-open	52	345	332	242	2	NW	291-335	44	1.9E-04		5.3E-01		1.4	--	8.2	--	--	--	--
MW-67	204	145.31	-131.3	less-open	49	340	327	237	2	NW	291-335	44	1.9E-04		5.3E-01		0.5	--	0.5	--	--	--	--
MW-67	205	146.19	-132.2	less-open	74	337	324	234	2	NW	291-335	44	TNP		TNP		0.9	--	0.9	--	--	--	--
MW-67	206	147.42	-133.4	less-open	51	135	122	32	1	SE	116-165	49	TNP		TNP		1.2	7.3	--	--	--	--	--
MW-67	207	148.03	-134.0	less-open	52	135	122	32	1	SE	116-165	49	TNP		TNP		0.6	0.6	--	--	--	--	--
MW-67	208	148.44	-134.4	less-open	55	117	104	14	3	E	70-115	45	TNP		TNP		0.4	--	--	6.4	--	--	--
MW-67	209	148.94	-134.9	less-open	47	134	121	31	1	SE	116-165	49	TNP		TNP		0.5	0.9	--	--	--	--	--
MW-67	210	149.37	-135.3	less-open	45	108	95	5	3	E	70-115	45	TNP		TNP		0.4	--	--	0.9	--	--	--
MW-67	211	149.49	-135.5	less-open	41	320	307	217	2	NW	291-335	44	TNP		TNP		0.1	--	3.3	--	--	--	--
MW-67	212	149.57	-135.5	less-open	48	141	128	38	1	SE	116-165	49	TNP		TNP		0.1	0.6	--	--	--	--	--
MW-67	213	149.82	-135.8	less-open	57	126	113	23	3	E	70-115	45	TNP		TNP		0.3	--	--	0.4	--	--	--
MW-67	214	150.44	-136.4	less-open	49	306	293	203	2	NW	291-335	44	TNP		TNP		0.6	--	0.9	--	--	--	--
MW-67	215	150.84	-136.8	less-open	47	187	174	84	5	S	166-200	34	TNP		TNP		0.4	--	--	--	--	9.5	--
MW-67	216	154.45	-140.4	less-open	43	340	327	237	2	NW	291-335	44	4.9E-05		1.4E-01		3.6	--	4.0	--	--	--	--
MW-67	217	156.42	-142.4	less-open	35	191	178	88	5	S	166-200	34	4.9E-05		1.4E-01		2.0	--	--	--	--	5.6	--
MW-67	218	156.77	-142.7	less-open	55	176	163	73	1	SE	116-165	49	4.9E-05		1.4E-01		0.4	7.2	--	--	--	--	--
MW-67	219	157.68	-143.7	less-open	73	1	348	258	6	N	336-21	45	4.9E-05		1.4E-01		0.9	--	--	--	--	--	14.3
MW-67	220	158.63	-144.6	less-open	54	188	175	85	5	S	166-200	34	4.9E-05		1.4E-01		0.9	--	--	--	--	2.2	--
MW-67	221	158.92	-144.9	less-open	72	347	334	244	2	NW	291-335	44	4.9E-05		1.4E-01		0.3	--	4.5	--	--	--	--
MW-67	222	159.12	-145.1	less-open	39	226	213	123	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.2	--	--	--	--	--	--
MW-67	223	159.52	-145.5	less-open	58	211	198	108	5	S	166-200	34	4.9E-05		1.4E-01		0.4	--	--	--	--	0.9	--
MW-67	224	159.79	-145.8	less-open	27	268	255	165	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.3	--	--	--	--	--	--
MW-67	225	159.92	-145.9	less-open	27	254	241	151	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.1	--	--	--	--	--	--
MW-67	226	160.54	-146.5	less-open	57	123	110	20	3	E	70-115	45	4.9E-05		1.4E-01		0.6	--	--	10.7	--	--	--
MW-67	227	160.83	-146.8	less-open	59	109	96	6	3	E	70-115	45	4.9E-05		1.4E-01		0.3	--	--	0.3	--	--	--
MW-67	228	160.83	-146.8	less-open	78	182	169	79	5	S	166-200	34	4.9E-05		1.4E-01		0.0	--	--	--	--	1.3	--
MW-67	229	160.83	-146.8	less-open	29	292	279	189	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.0	--	--	--	--	--	--
MW-67	230	160.97	-146.9	less-open	67	193	180	90	5	S	166-200	34	4.9E-05		1.4E-01		0.1	--	--	--	--	0.1	--
MW-67	231	161.46	-147.4	less-open	54	199	186	96	5	S	166-200	34	4.9E-05		1.4E-01		0.5	--	--	--	--	0.5	--
MW-67	232	161.73	-147.7	less-open	64	198	185	95	5	S	166-200	34	4.9E-05		1.4E-01		0.3	--	--	--	--	0.3	--
MW-67	233	161.82	-147.8	less-open	58	219	206	116	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.1	--	--	--	--	--	--
MW-67	234	161.99	-148.0	less-open	68	129	116	26	1	SE	116-165	49	4.9E-05		1.4E-01		0.2	5.2	--	--	--	--	--
MW-67	235	162.3	-148.3	less-open	58	109	96	6	3	E	70-115	45	4.9E-05		1.4E-01		0.3	--	--	1.5	--	--	--
MW-67	236	163.27	-149.2	less-open	77	172	159	69	1	SE	116-165	49	4.9E-05		1.4E-01		1.0	1.3	--	--	--	--	--
MW-67	237	163.87	-149.8	less-open	27	339	326	236	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.6	--	--	--	--	--	--
MW-67	238	164.42	-150.4	less-open	24	172	159	69	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		0.5	--	--	--	--	--	--
MW-67	239	165.78	-151.8	less-open	31	169	156	66	NSR	NSR	NSR	NSR	4.9E-05		1.4E-01		1.4	--	--	--	--	--	--
MW-67	240	166.02	-152.0	less-open	61	284	271	181	4	W	245-290	45	TNP		TNP		0.2	--	--	--	41.4	--	--
MW-67	241	166.38	-152.4	less-open	56	3	350	260	6	N	336-21	45	TNP		TNP		0.4	--	--	--	--	--	8.7
MW-67	242	166.47	-152.4	less-open	49	180	167	77	5	S	166-200	34	TNP		TNP		0.1	--	--	--	--	4.7	--
MW-67	243	167.12	-153.1	less-open	53	225	212	122	NSR	NSR	NSR	NSR	TNP		TNP		0.7	--	--	--	--	--	--
MW-67	244	167.9	-153.9	less-open	58	171	158	68	1	SE	116-165	49	TNP		TNP		0.8	4.6	--	--	--	--	--
MW-67	245	168.36	-154.3	less-open	46	233	220	130	NSR	NSR	NSR	NSR	TNP		TNP		0.5	--	--	--	--	--	--
MW-67	246	168.86	-154.8	less-open	36	9	356	266	6	N	336-21	45	TNP		TNP		0.5	--	--	--	--	--	2.5
MW-67	247	170.74	-156.7	less-open	75	347	334	244	2	NW	291-335	44	5.6E-05		1.6E-01		1.9	--	11.8	--	--	--	--
MW-67	248	171.11	-157.1	less-open	26	291	278	188	NSR	NSR	NSR	NSR	5.6E-05		1.6E-01		0.4	--	--	--	--	--	--
MW-67	249	173.3	-159.3	less-open	70	312	299	209	2	NW	291-335	44	5.6E-05		1.6E-01		2.2	--	2.6	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
MW-67	250	173.37	-159.3	less-open	69	99	86	356	3	E	70-115	45	5.6E-05	1.6E-01	0.1	--	--	11.1	--	--	--
MW-67	251	174.02	-160.0	less-open	68	292	279	189	4	W	245-290	45	5.6E-05	1.6E-01	0.7	--	--	--	8.0	--	--
MW-67	252	174.84	-160.8	less-open	70	289	276	186	4	W	245-290	45	5.6E-05	1.6E-01	0.8	--	--	--	0.8	--	--
MW-67	253	175.07	-161.0	less-open	46	2	349	259	6	N	336-21	45	5.6E-05	1.6E-01	0.2	--	--	--	--	--	6.2
MW-67	254	175.4	-161.4	less-open	66	97	84	354	3	E	70-115	45	5.6E-05	1.6E-01	0.3	--	--	2.0	--	--	--
MW-67	255	175.8	-161.8	less-open	65	98	85	355	3	E	70-115	45	5.6E-05	1.6E-01	0.4	--	--	0.4	--	--	--
MW-67	256	176.32	-162.3	less-open	79	286	273	183	4	W	245-290	45	5.6E-05	1.6E-01	0.5	--	--	--	1.5	--	--
MW-67	257	176.37	-162.3	less-open	49	105	92	2	3	E	70-115	45	5.6E-05	1.6E-01	0.1	--	--	0.6	--	--	--
MW-67	258	176.71	-162.7	less-open	52	99	86	356	3	E	70-115	45	5.6E-05	1.6E-01	0.3	--	--	0.3	--	--	--
MW-67	259	176.75	-162.7	less-open	56	297	284	194	4	W	245-290	45	5.6E-05	1.6E-01	0.0	--	--	--	0.4	--	--
MW-67	260	177.1	-163.1	less-open	83	299	286	196	NSR	NSR	NSR	NSR	5.6E-05	1.6E-01	0.3	--	--	--	--	--	--
MW-67	261	178.98	-165.0	less-open	27	130	117	27	NSR	NSR	NSR	NSR	5.6E-05	1.6E-01	1.9	--	--	--	--	--	--
MW-67	262	179.14	-165.1	less-open	24	205	192	102	NSR	NSR	NSR	NSR	5.6E-05	1.6E-01	0.2	--	--	--	--	--	--
MW-67	263	179.62	-165.6	less-open	60	129	116	26	1	SE	116-165	49	5.6E-05	1.6E-01	0.5	11.7	--	--	--	--	--
MW-67	264	180.05	-166.0	less-open	65	110	97	7	3	E	70-115	45	5.6E-05	1.6E-01	0.4	--	--	3.3	--	--	--
MW-67	265	180.14	-166.1	less-open	65	113	100	10	3	E	70-115	45	5.6E-05	1.6E-01	0.1	--	--	0.1	--	--	--
MW-67	266	180.98	-167.0	less-open	61	101	88	358	3	E	70-115	45	5.6E-05	1.6E-01	0.8	--	--	0.8	--	--	--
MW-67	267	181.27	-167.2	less-open	35	104	91	1	3	E	70-115	45	5.6E-05	1.6E-01	0.3	--	--	0.3	--	--	--
MW-67	268	181.47	-167.4	less-open	73	116	103	13	3	E	70-115	45	5.6E-05	1.6E-01	0.2	--	--	0.2	--	--	--
MW-67	269	182.81	-168.8	less-open	58	314	301	211	2	NW	291-335	44	5.6E-05	1.6E-01	1.3	--	9.5	--	--	--	--
MW-67	270	183.4	-169.4	less-open	76	324	311	221	2	NW	291-335	44	5.6E-05	1.6E-01	0.6	--	0.6	--	--	--	--
MW-67	271	184.36	-170.3	less-open	64	294	281	191	4	W	245-290	45	5.6E-05	1.6E-01	1.0	--	--	--	7.6	--	--
MW-67	272	184.66	-170.6	less-open	75	332	319	229	2	NW	291-335	44	5.6E-05	1.6E-01	0.3	--	1.3	--	--	--	--
MW-67	273	186.3	-172.3	less-open	59	329	316	226	2	NW	291-335	44	TNP	TNP	1.6	--	1.6	--	--	--	--
MW-67	274	187.1	-173.1	less-open	70	111	98	8	3	E	70-115	45	TNP	TNP	0.8	--	--	5.6	--	--	--
MW-67	275	187.45	-173.4	less-open	54	323	310	220	2	NW	291-335	44	TNP	TNP	0.3	--	1.1	--	--	--	--
MW-67	276	188.04	-174.0	less-open	39	326	313	223	2	NW	291-335	44	TNP	TNP	0.6	--	0.6	--	--	--	--
MW-67	277	188.4	-174.4	less-open	43	146	133	43	1	SE	116-165	49	TNP	TNP	0.4	8.8	--	--	--	--	--
MW-67	278	188.51	-174.5	less-open	33	326	313	223	NSR	NSR	NSR	NSR	TNP	TNP	0.1	--	--	--	--	--	--
MW-67	279	188.78	-174.8	less-open	67	94	81	351	3	E	70-115	45	TNP	TNP	0.3	--	--	1.7	--	--	--
MW-67	280	190.61	-176.6	less-open	71	129	116	26	1	SE	116-165	49	TNP	TNP	1.8	2.2	--	--	--	--	--
MW-67	281	190.63	-176.6	less-open	65	124	111	21	3	E	70-115	45	TNP	TNP	0.0	--	--	1.8	--	--	--
MW-67	282	190.83	-176.8	less-open	70	348	335	245	2	NW	291-335	44	TNP	TNP	0.2	--	2.8	--	--	--	--
MW-67	283	191.14	-177.1	less-open	44	305	292	202	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-67	284	192.68	-178.7	less-open	50	115	102	12	3	E	70-115	45	TNP	TNP	1.5	--	--	2.1	--	--	--
MW-67	285	192.71	-178.7	less-open	54	301	288	198	4	W	245-290	45	TNP	TNP	0.0	--	--	--	8.3	--	--
MW-67	286	193	-179.0	less-open	53	109	96	6	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-67	287	193.18	-179.2	less-open	62	127	114	24	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-67	288	193.4	-179.4	less-open	66	112	99	9	3	E	70-115	45	TNP	TNP	0.2	--	--	0.2	--	--	--
MW-67	289	193.67	-179.6	less-open	67	103	90	360	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-67	290	193.98	-180.0	less-open	61	101	88	358	3	E	70-115	45	TNP	TNP	0.3	--	--	0.3	--	--	--
MW-67	291	194.33	-180.3	less-open	64	330	317	227	2	NW	291-335	44	TNP	TNP	0.4	--	3.2	--	--	--	--
MW-67	292	194.84	-180.8	less-open	64	107	94	4	3	E	70-115	45	TNP	TNP	0.5	--	--	0.9	--	--	--
MW-67	293	195.16	-181.1	less-open	68	298	285	195	4	W	245-290	45	TNP	TNP	0.3	--	--	2.4	--	--	--
MW-67	294	195.27	-181.2	less-open	61	107	94	4	3	E	70-115	45	TNP	TNP	0.1	--	--	0.4	--	--	--
MW-67	295	196.97	-182.9	less-open	42	336	323	233	2	NW	291-335	44	TNP	TNP	1.7	--	2.6	--	--	--	--
MW-67	296	197.37	-183.3	less-open	52	335	322	232	2	NW	291-335	44	TNP	TNP	0.4	--	0.4	--	--	--	--
MW-67	297	197.93	-183.9	less-open	66	5	352	262	6	N	336-21	45	TNP	TNP	0.6	--	--	--	--	--	22.9
MW-67	298	198.49	-184.5	less-open	67	327	314	224	2	NW	291-335	44	TNP	TNP	0.6	--	1.1	--	--	--	--
MW-67	299	198.82	-184.8	less-open	59	346	333	243	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-67	300	198.99	-185.0	less-open	55	324	311	221	2	NW	291-335	44	TNP	TNP	0.2	--	0.2	--	--	--	--
MW-67	301	199.33	-185.3	less-open	57	307	294	204	2	NW	291-335	44	TNP	TNP	0.3	--	0.3	--	--	--	--
MW-67	302	201.26	-187.2	less-open	44	331	318	228	2	NW	291-335	44	1.0E-04	2.9E-01	1.9	--	1.9	--	--	--	--
MW-67	303	203.52	-189.5	less-open	66	342	329	239	2	NW	291-335	44	1.0E-04	2.9E-01	2.3	--	2.3	--	--	--	--



**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>			Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)							
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day	1	2	3	4	5	6	
MW-67	304	203.65	-189.6	less-open	68	330	317	227	2	NW	291-335	44	1.0E-04	2.9E-01	0.1	--	0.1	--	--	--	--	--
MW-67	305	204.51	-190.5	less-open	42	326	313	223	2	NW	291-335	44	1.0E-04	2.9E-01	0.9	--	0.9	--	--	--	--	--
MW-67	306	206.48	-192.5	less-open	60	342	329	239	2	NW	291-335	44	1.0E-04	2.9E-01	2.0	--	2.0	--	--	--	--	--
MW-67	307	206.88	-192.9	less-open	55	331	318	228	2	NW	291-335	44	1.0E-04	2.9E-01	0.4	--	0.4	--	--	--	--	--
MW-67	308	207.55	-193.5	less-open	29	317	304	214	NSR	NSR	NSR	NSR	1.0E-04	2.9E-01	0.7	--	--	--	--	--	--	--
MW-67	309	207.72	-193.7	less-open	46	315	302	212	2	NW	291-335	44	1.0E-04	2.9E-01	0.2	--	0.8	--	--	--	--	--
MW-67	310	207.83	-193.8	less-open	40	7	354	264	6	N	336-21	45	1.0E-04	2.9E-01	0.1	--	--	--	--	--	--	9.9
MW-67	311	208.58	-194.6	less-open	40	349	336	246	6	N	336-21	45	1.0E-04	2.9E-01	0.8	--	--	--	--	--	--	0.8
MW-67	312	208.71	-194.7	less-open	38	349	336	246	6	N	336-21	45	1.0E-04	2.9E-01	0.1	--	--	--	--	--	--	0.1
MW-67	313	209.24	-195.2	less-open	61	334	321	231	2	NW	291-335	44	1.0E-04	2.9E-01	0.5	--	1.5	--	--	--	--	--
MW-67	314	212.04	-198.0	less-open	73	226	213	123	NSR	NSR	NSR	NSR	1.0E-04	2.9E-01	2.8	--	--	--	--	--	--	--
MW-67	315	212.81	-198.8	less-open	59	140	127	37	1	SE	116-165	49	1.0E-04	2.9E-01	0.8	22.2	--	--	--	--	--	--
MW-67	316	213.09	-199.1	less-open	61	340	327	237	2	NW	291-335	44	1.0E-04	2.9E-01	0.3	--	3.8	--	--	--	--	--
MW-67	317	213.27	-199.2	less-open	63	335	322	232	2	NW	291-335	44	1.0E-04	2.9E-01	0.2	--	0.2	--	--	--	--	--
MW-67	318	213.5	-199.5	less-open	55	343	330	240	2	NW	291-335	44	1.0E-04	2.9E-01	0.2	--	0.2	--	--	--	--	--
MW-67	319	214	-200.0	less-open	48	352	339	249	6	N	336-21	45	1.0E-04	2.9E-01	0.5	--	--	--	--	--	--	5.3
MW-67	320	214.28	-200.3	less-open	55	341	328	238	2	NW	291-335	44	1.0E-04	2.9E-01	0.3	--	0.8	--	--	--	--	--
MW-67	321	214.77	-200.7	less-open	55	5	352	262	6	N	336-21	45	1.0E-04	2.9E-01	0.5	--	--	--	--	--	--	0.8
MW-67	322	216.96	-202.9	less-open	67	10	357	267	6	N	336-21	45	3.5E-04	9.8E-01	2.2	--	--	--	--	--	--	2.2
MW-67	323	218	-204.0	less-open	69	322	309	219	2	NW	291-335	44	3.5E-04	9.8E-01	1.0	--	3.7	--	--	--	--	--
MW-67	324	218.57	-204.5	less-open	68	343	330	240	2	NW	291-335	44	3.5E-04	9.8E-01	0.6	--	0.6	--	--	--	--	--
MW-67	325	219.58	-205.6	less-open	53	224	211	121	NSR	NSR	NSR	NSR	3.5E-04	9.8E-01	1.0	--	--	--	--	--	--	--
MW-67	326	220.28	-206.3	less-open	59	338	325	235	2	NW	291-335	44	3.5E-04	9.8E-01	0.7	--	1.7	--	--	--	--	--
MW-67	327	220.41	-206.4	less-open	61	329	316	226	2	NW	291-335	44	3.5E-04	9.8E-01	0.1	--	0.1	--	--	--	--	--
MW-67	328	220.7	-206.7	less-open	56	325	312	222	2	NW	291-335	44	3.5E-04	9.8E-01	0.3	--	0.3	--	--	--	--	--
MW-67	329	221.23	-207.2	less-open	55	324	311	221	2	NW	291-335	44	3.5E-04	9.8E-01	0.5	--	0.5	--	--	--	--	--
MW-67	330	221.64	-207.6	open	42	321	308	218	2	NW	291-335	44	3.5E-04	9.8E-01	0.4	--	0.4	--	--	--	--	--
MW-67	331	222.15	-208.1	less-open	38	330	317	227	2	NW	291-335	44	3.5E-04	9.8E-01	0.5	--	0.5	--	--	--	--	--
MW-67	332	222.83	-208.8	less-open	49	312	299	209	2	NW	291-335	44	3.5E-04	9.8E-01	0.7	--	0.7	--	--	--	--	--
MW-67	333	222.94	-208.9	less-open	49	330	317	227	2	NW	291-335	44	3.5E-04	9.8E-01	0.1	--	0.1	--	--	--	--	--
MW-67	334	222.99	-209.0	less-open	47	314	301	211	2	NW	291-335	44	3.5E-04	9.8E-01	0.1	--	0.1	--	--	--	--	--
MW-67	335	223.16	-209.1	less-open	9	257	244	154	NSR	NSR	NSR	NSR	3.5E-04	9.8E-01	0.2	--	--	--	--	--	--	--
MW-67	336	223.71	-209.7	less-open	65	336	323	233	2	NW	291-335	44	3.5E-04	9.8E-01	0.6	--	0.7	--	--	--	--	--
MW-67	337	224.72	-210.7	less-open	32	25	12	282	NSR	NSR	NSR	NSR	3.5E-04	9.8E-01	1.0	--	--	--	--	--	--	--
MW-67	338	225.59	-211.6	less-open	54	128	115	25	3	E	70-115	45	3.5E-04	9.8E-01	0.9	--	--	30.3	--	--	--	--
MW-67	339	226.14	-212.1	less-open	61	190	177	87	5	S	166-200	34	3.5E-04	9.8E-01	0.5	--	--	--	--	59.7	--	--
MW-67	340	226.28	-212.3	less-open	46	107	94	4	3	E	70-115	45	3.5E-04	9.8E-01	0.1	--	--	0.7	--	--	--	--
MW-67	341	226.77	-212.7	less-open	27	118	105	15	NSR	NSR	NSR	NSR	3.5E-04	9.8E-01	0.5	--	--	--	--	--	--	--
MW-67	342	226.85	-212.8	less-open	36	305	292	202	2	NW	291-335	44	3.5E-04	9.8E-01	0.1	--	3.1	--	--	--	--	--
MW-67	343	227.02	-213.0	less-open	57	119	106	16	3	E	70-115	45	3.5E-04	9.8E-01	0.2	--	--	0.7	--	--	--	--
MW-67	344	227.78	-213.8	less-open	68	162	149	59	1	SE	116-165	49	3.5E-04	9.8E-01	0.8	15.0	--	--	--	--	--	--
MW-67	345	227.9	-213.9	less-open	40	130	117	27	1	SE	116-165	49	3.5E-04	9.8E-01	0.1	0.1	--	--	--	--	--	--
MW-67	346	228.61	-214.6	less-open	67	222	209	119	NSR	NSR	NSR	NSR	3.5E-04	9.8E-01	0.7	--	--	--	--	--	--	--
MW-67	347	229.48	-215.5	less-open	48	120	107	17	3	E	70-115	45	3.5E-04	9.8E-01	0.9	--	--	2.5	--	--	--	--
MW-67	348	230.58	-216.6	less-open	81	238	225	135	NSR	NSR	NSR	NSR	TNP	TNP	1.1	--	--	--	--	--	--	--
MW-67	349	230.6	-216.6	less-open	61	161	148	58	1	SE	116-165	49	TNP	TNP	0.0	2.7	--	--	--	--	--	--
MW-67	350	231.31	-217.3	less-open	71	257	244	154	NSR	NSR	NSR	NSR	TNP	TNP	0.7	--	--	--	--	--	--	--
MW-67	351	231.35	-217.3	less-open	30	307	294	204	NSR	NSR	NSR	NSR	TNP	TNP	0.0	--	--	--	--	--	--	--
MW-67	352	231.55	-217.5	less-open	32	193	180	90	NSR	NSR	NSR	NSR	TNP	TNP	0.2	--	--	--	--	--	--	--
MW-67	353	233.46	-219.4	less-open	50	103	90	360	3	E	70-115	45	TNP	TNP	1.9	--	--	4.0	--	--	--	--
MW-67	354	233.57	-219.5	less-open	58	330	317	227	2	NW	291-335	44	TNP	TNP	0.1	--	6.7	--	--	--	--	--
MW-67	355	234.85	-220.8	less-open	60	125	112	22	3	E	70-115	45	1.6E-04	4.5E-01	1.3	--	--	1.4	--	--	--	--
MW-67	356	235.75	-221.7	less-open	46	127	114	24	3	E	70-115	45	1.6E-04	4.5E-01	0.9	--	--	0.9	--	--	--	--
MW-67	357	235.96	-221.9	less-open	65	352	339	249	6	N	336-21	45	1.6E-04	4.5E-01	0.2	--	--	--	--	--	--	19.0

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)			Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day	1		2	3	4	5	6	
MW-67	358	236.92	-222.9	less-open	19	282	269	179	NSR	NSR	NSR	NSR	1.6E-04	4.5E-01	1.0	--	--	--	--	--	--	
MW-67	359	237.66	-223.6	less-open	56	117	104	14	3	E	70-115	45	1.6E-04	4.5E-01	0.7	--	--	1.9	--	--	--	
MW-67	360	238	-224.0	less-open	50	118	105	15	3	E	70-115	45	1.6E-04	4.5E-01	0.3	--	--	0.3	--	--	--	
MW-67	361	238.46	-224.4	less-open	43	295	282	192	4	W	245-290	45	1.6E-04	4.5E-01	0.5	--	--	--	43.3	--	--	
MW-67	362	239.9	-225.9	less-open	61	342	329	239	2	NW	291-335	44	1.6E-04	4.5E-01	1.4	--	6.3	--	--	--	--	
MW-67	363	240.35	-226.3	less-open	74	26	13	283	6	N	336-21	45	1.6E-04	4.5E-01	0.4	--	--	--	--	--	4.4	
MW-67	364	244.22	-230.2	less-open	49	140	127	37	1	SE	116-165	49	1.6E-04	4.5E-01	3.9	13.6	--	--	--	--	--	
MW-67	365	244.39	-230.4	less-open	72	332	319	229	2	NW	291-335	44	1.6E-04	4.5E-01	0.2	--	4.5	--	--	--	--	
MW-67	366	244.72	-230.7	less-open	30	43	30	300	NSR	NSR	NSR	NSR	1.6E-04	4.5E-01	0.3	--	--	--	--	--	--	
MW-67	367	244.86	-230.8	less-open	30	299	286	196	NSR	NSR	NSR	NSR	1.6E-04	4.5E-01	0.1	--	--	--	--	--	--	
MW-67	368	245.15	-231.1	less-open	43	121	108	18	3	E	70-115	45	1.6E-04	4.5E-01	0.3	--	--	7.2	--	--	--	
MW-67	369	245.4	-231.4	less-open	52	125	112	22	3	E	70-115	45	1.6E-04	4.5E-01	0.3	--	--	0.3	--	--	--	
MW-67	370	245.69	-231.7	less-open	53	114	101	11	3	E	70-115	45	1.6E-04	4.5E-01	0.3	--	--	0.3	--	--	--	
MW-67	371	245.9	-231.9	less-open	52	119	106	16	3	E	70-115	45	1.6E-04	4.5E-01	0.2	--	--	0.2	--	--	--	
MW-67	372	246.03	-232.0	less-open	52	119	106	16	3	E	70-115	45	1.6E-04	4.5E-01	0.1	--	--	0.1	--	--	--	
MW-67	373	246.62	-232.6	less-open	56	122	109	19	3	E	70-115	45	1.6E-04	4.5E-01	0.6	--	--	0.6	--	--	--	
MW-67	374	247.7	-233.7	less-open	67	329	316	226	2	NW	291-335	44	1.6E-04	4.5E-01	1.1	--	3.3	--	--	--	--	
MW-67	375	248.07	-234.0	less-open	42	112	99	9	3	E	70-115	45	TNP	TNP	0.4	--	--	1.4	--	--	--	
MW-67	376	249.33	-235.3	less-open	59	339	326	236	2	NW	291-335	44	TNP	TNP	1.3	--	1.6	--	--	--	--	
MW-67	377	250.03	-236.0	less-open	57	338	325	235	2	NW	291-335	44	7.4E-04	2.1E+00	0.7	--	0.7	--	--	--	--	
MW-67	378	250.1	-236.1	less-open	58	340	327	237	2	NW	291-335	44	7.4E-04	2.1E+00	0.1	--	0.1	--	--	--	--	
MW-67	379	250.31	-236.3	less-open	52	341	328	238	2	NW	291-335	44	7.4E-04	2.1E+00	0.2	--	0.2	--	--	--	--	
MW-67	380	250.61	-236.6	less-open	62	356	343	253	6	N	336-21	45	7.4E-04	2.1E+00	0.3	--	--	--	--	--	10.3	
MW-67	381	250.79	-236.8	less-open	51	334	321	231	2	NW	291-335	44	7.4E-04	2.1E+00	0.2	--	0.5	--	--	--	--	
MW-67	382	250.97	-236.9	less-open	60	348	335	245	2	NW	291-335	44	7.4E-04	2.1E+00	0.2	--	0.2	--	--	--	--	
MW-67	383	251.21	-237.2	less-open	57	347	334	244	2	NW	291-335	44	7.4E-04	2.1E+00	0.2	--	0.2	--	--	--	--	
MW-67	384	252.2	-238.2	less-open	62	356	343	253	6	N	336-21	45	7.4E-04	2.1E+00	1.0	--	--	--	--	--	1.6	
MW-67	385	252.28	-238.3	less-open	59	5	352	262	6	N	336-21	45	7.4E-04	2.1E+00	0.1	--	--	--	--	--	0.1	
MW-67	386	252.51	-238.5	less-open	45	109	96	6	3	E	70-115	45	7.4E-04	2.1E+00	0.2	--	--	4.4	--	--	--	
MW-67	387	252.56	-238.5	less-open	52	116	103	13	3	E	70-115	45	7.4E-04	2.1E+00	0.1	--	--	0.1	--	--	--	
MW-67	388	252.88	-238.9	less-open	33	325	312	222	NSR	NSR	NSR	NSR	7.4E-04	2.1E+00	0.3	--	--	--	--	--	--	
MW-67	389	253.2	-239.2	less-open	54	345	332	242	2	NW	291-335	44	7.4E-04	2.1E+00	0.3	--	2.0	--	--	--	--	
MW-67	390	253.58	-239.6	less-open	54	350	337	247	6	N	336-21	45	7.4E-04	2.1E+00	0.4	--	--	--	--	--	1.3	
MW-67	391	253.7	-239.7	less-open	43	108	95	5	3	E	70-115	45	7.4E-04	2.1E+00	0.1	--	--	1.1	--	--	--	
MW-67	392	253.96	-239.9	less-open	40	95	82	352	3	E	70-115	45	7.4E-04	2.1E+00	0.3	--	--	0.3	--	--	--	
MW-67	393	254.18	-240.2	less-open	39	190	177	87	5	S	166-200	34	7.4E-04	2.1E+00	0.2	--	--	--	--	28.0	--	
MW-67	394	254.33	-240.3	less-open	32	107	94	4	NSR	NSR	NSR	NSR	7.4E-04	2.1E+00	0.2	--	--	--	--	--	--	
MW-67	395	254.4	-240.4	less-open	59	295	282	192	4	W	245-290	45	7.4E-04	2.1E+00	0.1	--	--	--	15.9	--	--	
MW-67	396	254.55	-240.5	less-open	50	285	272	182	4	W	245-290	45	7.4E-04	2.1E+00	0.2	--	--	--	0.2	--	--	
MW-67	397	254.61	-240.6	less-open	37	107	94	4	3	E	70-115	45	7.4E-04	2.1E+00	0.1	--	--	0.7	--	--	--	
MW-67	398	254.96	-240.9	less-open	28	110	97	7	NSR	NSR	NSR	NSR	7.4E-04	2.1E+00	0.3	--	--	--	--	--	--	
MW-67	399	255.2	-241.2	less-open	40	100	87	357	3	E	70-115	45	7.4E-04	2.1E+00	0.2	--	--	0.6	--	--	--	
MW-67	400	255.24	-241.2	less-open	69	344	331	241	2	NW	291-335	44	7.4E-04	2.1E+00	0.0	--	2.0	--	--	--	--	
MW-67	401	255.56	-241.5	less-open	68	352	339	249	6	N	336-21	45	7.4E-04	2.1E+00	0.3	--	--	--	--	--	2.0	
MW-67	402	256.09	-242.1	less-open	42	105	92	2	3	E	70-115	45	7.4E-04	2.1E+00	0.5	--	--	0.9	--	--	--	
MW-67	403	257.1	-243.1	less-open	46	112	99	9	3	E	70-115	45	7.4E-04	2.1E+00	1.0	--	--	1.0	--	--	--	
MW-67	404	257.3	-243.3	less-open	77	351	338	248	6	N	336-21	45	7.4E-04	2.1E+00	0.2	--	--	--	--	--	1.7	
MW-67	405	257.44	-243.4	less-open	34	97	84	354	3	E	70-115	45	7.4E-04	2.1E+00	0.1	--	--	0.3	--	--	--	
MW-67	406	258.58	-244.6	less-open	84	189	176	86	NSR	NSR	NSR	NSR	7.4E-04	1.2E-03	2.1E+00	3.4E+00	1.1	--	--	--	--	--
MW-67	407	259.28	-245.3	less-open	62	113	100	10	3	E	70-115	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.7	--	--	1.8	--	--
MW-67	408	259.92	-245.9	less-open	78	355	342	252	6	N	336-21	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.6	--	--	--	--	2.6
MW-67	409	260.82	-246.8	less-open	78	355	342	252	6	N	336-21	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.9	--	--	--	--	0.9
MW-67	410	261.25	-247.2	less-open	80	352	339	249	6	N	336-21	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.4	--	--	--	--	0.4
MW-67	411	261.43	-247.4	less-open	67	110	97	7	3	E	70-115	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.2	--	--	2.2	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		ft/day			1	2	3	4	5	6
MW-67	412	261.58	-247.6	less-open	77	357	344	254	6	N	336-21	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.1	--	--	--	--	--	0.3
MW-67	413	262.6	-248.6	less-open	83	355	342	252	NSR	NSR	NSR	NSR	7.4E-04	1.2E-03	2.1E+00	3.4E+00	1.0	--	--	--	--	--	--
MW-67	414	262.71	-248.7	less-open	35	328	315	225	2	NW	291-335	44	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.1	--	7.5	--	--	--	--
MW-67	415	262.77	-248.7	less-open	29	333	320	230	NSR	NSR	NSR	NSR	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.1	--	--	--	--	--	--
MW-67	416	262.92	-248.9	less-open	28	316	303	213	NSR	NSR	NSR	NSR	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.2	--	--	--	--	--	--
MW-67	417	263.21	-249.2	less-open	46	109	96	6	3	E	70-115	45	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.3	--	--	1.8	--	--	--
MW-67	418	263.55	-249.5	less-open	60	304	291	201	2	NW	291-335	44	7.4E-04	1.2E-03	2.1E+00	3.4E+00	0.3	--	0.8	--	--	--	--
MW-67	419	264.85	-250.8	less-open	51	120	107	17	3	E	70-115	45		1.2E-03		3.4E+00	1.3	--	--	1.6	--	--	--
MW-67	420	265.04	-251.0	less-open	49	116	103	13	3	E	70-115	45		1.2E-03		3.4E+00	0.2	--	--	0.2	--	--	--
MW-67	421	265.3	-251.3	less-open	60	117	104	14	3	E	70-115	45		1.2E-03		3.4E+00	0.3	--	--	0.3	--	--	--
MW-67	422	265.51	-251.5	less-open	79	349	336	246	6	N	336-21	45		1.2E-03		3.4E+00	0.2	--	--	--	--	--	3.9
MW-67	423	265.82	-251.8	less-open	47	116	103	13	3	E	70-115	45		1.2E-03		3.4E+00	0.3	--	--	0.5	--	--	--
MW-67	424	266.2	-252.2	less-open	72	347	334	244	2	NW	291-335	44		1.2E-03		3.4E+00	0.4	--	2.6	--	--	--	--
MW-67	425	266.31	-252.3	less-open	58	322	309	219	2	NW	291-335	44		1.2E-03		3.4E+00	0.1	--	0.1	--	--	--	--
MW-67	426	266.71	-252.7	less-open	60	73	60	330	NSR	NSR	NSR	NSR		1.2E-03		3.4E+00	0.4	--	--	--	--	--	--
MW-67	427	267	-253.0	less-open	62	61	48	318	NSR	NSR	NSR	NSR		1.2E-03		3.4E+00	0.3	--	--	--	--	--	--
MW-67	428	267.69	-253.7	less-open	49	122	109	19	3	E	70-115	45		1.2E-03		3.4E+00	0.7	--	--	1.9	--	--	--
MW-67	429	267.88	-253.9	less-open	76	66	53	323	NSR	NSR	NSR	NSR		1.2E-03		3.4E+00	0.2	--	--	--	--	--	--
MW-67	430	268.32	-254.3	open	62	335	322	232	2	NW	291-335	44		1.2E-03		3.4E+00	0.4	--	2.0	--	--	--	--
MW-67	431	268.48	-254.5	less-open	58	322	309	219	2	NW	291-335	44		1.2E-03		3.4E+00	0.2	--	0.2	--	--	--	--
MW-67	432	268.68	-254.7	less-open	70	331	318	228	2	NW	291-335	44		1.2E-03		3.4E+00	0.2	--	0.2	--	--	--	--
MW-67	433	269.16	-255.1	less-open	67	342	329	239	2	NW	291-335	44		1.2E-03		3.4E+00	0.5	--	0.5	--	--	--	--
MW-67	434	269.28	-255.3	less-open	63	341	328	238	2	NW	291-335	44		1.2E-03		3.4E+00	0.1	--	0.1	--	--	--	--
MW-67	435	269.57	-255.5	less-open	46	121	108	18	3	E	70-115	45		1.2E-03		3.4E+00	0.3	--	--	1.9	--	--	--
MW-67	436	269.91	-255.9	less-open	63	111	98	8	3	E	70-115	45		1.2E-03		3.4E+00	0.3	--	--	0.3	--	--	--
MW-67	437	269.99	-256.0	less-open	75	341	328	238	2	NW	291-335	44		1.2E-03		3.4E+00	0.1	--	0.7	--	--	--	--
MW-67	438	270.34	-256.3	less-open	46	133	120	30	1	SE	116-165	49		1.2E-03		3.4E+00	0.3	26.1	--	--	--	--	--
MW-67	439	270.5	-256.5	less-open	55	322	309	219	2	NW	291-335	44		1.2E-03		3.4E+00	0.2	--	0.5	--	--	--	--
MW-67	440	270.96	-256.9	less-open	25	32	19	289	NSR	NSR	NSR	NSR		1.2E-03		3.4E+00	0.5	--	--	--	--	--	--
MW-67	441	271.77	-257.7	less-open	56	333	320	230	2	NW	291-335	44		1.2E-03		3.4E+00	0.8	--	1.3	--	--	--	--
MW-67	442	272.43	-258.4	less-open	48	120	107	17	3	E	70-115	45	TNP		TNP		0.7	--	--	2.5	--	--	--
MW-67	443	273.19	-259.2	less-open	40	317	304	214	2	NW	291-335	44	TNP		TNP		0.8	--	1.4	--	--	--	--
MW-67	444	274.02	-260.0	less-open	76	173	160	70	1	SE	116-165	49	TNP		TNP		0.8	3.7	--	--	--	--	--
MW-67	445	274.82	-260.8	less-open	44	170	157	67	1	SE	116-165	49	TNP		TNP		0.8	0.8	--	--	--	--	--
MW-67	446	275.32	-261.3	less-open	39	124	111	21	3	E	70-115	45	TNP		TNP		0.5	--	2.9	--	--	--	--
MW-67	447	275.5	-261.5	less-open	53	134	121	31	1	SE	116-165	49	TNP		TNP		0.2	0.7	--	--	--	--	--
MW-67	448	276.26	-262.2	less-open	45	311	298	208	2	NW	291-335	44	TNP		TNP		0.8	--	3.1	--	--	--	--
MW-67	449	276.36	-262.3	less-open	41	310	297	207	2	NW	291-335	44	TNP		TNP		0.1	--	0.1	--	--	--	--
MW-67	450	276.47	-262.4	less-open	52	311	298	208	2	NW	291-335	44	TNP		TNP		0.1	--	0.1	--	--	--	--
MW-67	451	276.75	-262.7	open	38	317	304	214	2	NW	291-335	44	TNP		TNP		0.3	--	0.3	--	--	--	--
MW-67	452	276.89	-262.9	less-open	37	320	307	217	2	NW	291-335	44	TNP		TNP		0.1	--	0.1	--	--	--	--
MW-67	453	277.73	-263.7	less-open	56	182	169	79	5	S	166-200	34	TNP		TNP		0.8	--	--	--	--	23.6	--
MW-67	454	277.99	-264.0	less-open	74	346	333	243	2	NW	291-335	44	TNP		TNP		0.3	--	1.1	--	--	--	--
MW-67	455	278.4	-264.4	less-open	71	347	334	244	2	NW	291-335	44	TNP		TNP		0.4	--	0.4	--	--	--	--
MW-67	456	278.57	-264.5	less-open	20	224	211	121	NSR	NSR	NSR	NSR	TNP		TNP		0.2	--	--	--	--	--	--
MW-67	457	279.91	-265.9	open	42	324	311	221	2	NW	291-335	44	TNP		TNP		1.3	--	1.5	--	--	--	--
MW-67	458	280.01	-266.0	less-open	42	144	131	41	1	SE	116-165	49	TNP		TNP		0.1	4.5	--	--	--	--	--
MW-67	459	280.34	-266.3	less-open	40	134	121	31	1	SE	116-165	49	TNP		TNP		0.3	0.3	--	--	--	--	--
MW-67	460	280.82	-266.8	less-open	47	148	135	45	1	SE	116-165	49	TNP		TNP		0.5	0.5	--	--	--	--	--
MW-67	461	280.95	-266.9	less-open	45	138	125	35	1	SE	116-165	49	TNP		TNP		0.1	0.1	--	--	--	--	--
MW-67	462	281.18	-267.2	less-open	45	142	129	39	1	SE	116-165	49	TNP		TNP		0.2	0.2	--	--	--	--	--
MW-67	463	281.73	-267.7	less-open	44	125	112	22	3	E	70-115	45	TNP		TNP		0.6	--	--	6.4	--	--	--
MW-67	464	282.15	-268.1	less-open	49	331	318	228	2	NW	291-335	44	TNP		TNP		0.4	--	2.2	--	--	--	--
MW-67	465	282.72	-268.7	less-open	66	347	334	244	2	NW	291-335	44	TNP		TNP		0.6	--	0.6	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)			Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)						
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day	1		2	3	4	5	6		
MW-67	466	282.77	-268.7	less-open	36	324	311	221	2	NW	291-335	44	TNP		TNP	0.0	--	0.0	--	--	--	--	--
MW-67	467	282.88	-268.9	less-open	56	126	113	23	3	E	70-115	45	TNP		TNP	0.1	--	--	1.1	--	--	--	--
MW-67	468	283.98	-270.0	less-open	22	289	276	186	NSR	NSR	NSR	NSR	TNP		TNP	1.1	--	--	--	--	--	--	--
MW-67	469	285.37	-271.3	less-open	61	340	327	237	2	NW	291-335	44	1.4E-04		4.1E-01	1.4	--	2.6	--	--	--	--	--
MW-67	470	286.52	-272.5	less-open	68	298	285	195	4	W	245-290	45	1.4E-04		4.1E-01	1.1	--	--	--	32.0	--	--	--
MW-67	471	287.64	-273.6	less-open	25	284	271	181	NSR	NSR	NSR	NSR	1.4E-04		4.1E-01	1.1	--	--	--	--	--	--	--
MW-67	472	287.9	-273.9	less-open	74	297	284	194	4	W	245-290	45	1.4E-04		4.1E-01	0.3	--	--	--	1.4	--	--	--
MW-67	473	288.15	-274.1	less-open	40	140	127	37	1	SE	116-165	49	1.4E-04		4.1E-01	0.3	7.0	--	--	--	--	--	--
MW-67	474	288.23	-274.2	less-open	39	124	111	21	3	E	70-115	45	1.4E-04		4.1E-01	0.1	--	--	5.4	--	--	--	--
MW-67	475	288.23	-274.2	less-open	72	307	294	204	2	NW	291-335	44	1.4E-04		4.1E-01	0.0	--	2.9	--	--	--	--	--
MW-67	476	288.33	-274.3	less-open	42	145	132	42	1	SE	116-165	49	1.4E-04		4.1E-01	0.1	0.2	--	--	--	--	--	--
MW-67	477	288.47	-274.4	less-open	53	128	115	25	3	E	70-115	45	1.4E-04		4.1E-01	0.1	--	--	0.2	--	--	--	--
MW-67	478	288.66	-274.6	less-open	56	112	99	9	3	E	70-115	45	1.4E-04		4.1E-01	0.2	--	--	0.2	--	--	--	--
MW-67	479	290.53	-276.5	less-open	79	304	291	201	2	NW	291-335	44	1.4E-04		4.1E-01	1.9	--	2.3	--	--	--	--	--
MW-67	480	290.72	-276.7	less-open	59	309	296	206	2	NW	291-335	44	1.4E-04		4.1E-01	0.2	--	0.2	--	--	--	--	--
MW-67	481	291.17	-277.1	less-open	46	306	293	203	2	NW	291-335	44	1.4E-04		4.1E-01	0.4	--	0.4	--	--	--	--	--
MW-67	482	291.5	-277.5	less-open	39	314	301	211	2	NW	291-335	44	1.4E-04		4.1E-01	0.3	--	0.3	--	--	--	--	--
MW-67	483	292.38	-278.4	less-open	52	327	314	224	2	NW	291-335	44	1.4E-04		4.1E-01	0.9	--	0.9	--	--	--	--	--
MW-67	484	293.27	-279.2	less-open	76	267	254	164	4	W	245-290	45	1.4E-04		4.1E-01	0.9	--	--	--	5.4	--	--	--
MW-67	485	293.35	-279.3	less-open	44	349	336	246	6	N	336-21	45	1.4E-04		4.1E-01	0.1	--	--	--	--	--	--	27.8
MW-67	486	294.94	-280.9	less-open	34	303	290	200	NSR	NSR	NSR	NSR	1.4E-04		4.1E-01	1.6	--	--	--	--	--	--	--
MW-67	487	295.94	-281.9	less-open	30	287	274	184	NSR	NSR	NSR	NSR	1.4E-04		4.1E-01	1.0	--	--	--	--	--	--	--
MW-67	488	296.75	-282.7	less-open	45	296	283	193	4	W	245-290	45	1.4E-04		4.1E-01	0.8	--	--	--	--	3.5	--	--
MW-67	489	298.89	-284.9	less-open	58	95	82	352	3	E	70-115	45	1.4E-04	3.1E-04	4.1E-01	8.7E-01	2.1	--	--	10.2	--	--	--
MW-67	490	301.24	-287.2	less-open	37	115	102	12	3	E	70-115	45		3.1E-04		8.7E-01	2.4	--	--	2.4	--	--	--
MW-67	491	301.28	-287.3	less-open	46	141	128	38	1	SE	116-165	49		3.1E-04		8.7E-01	0.0	13.0	--	--	--	--	--
MW-67	492	301.53	-287.5	less-open	52	113	100	10	3	E	70-115	45		3.1E-04		8.7E-01	0.3	--	--	0.3	--	--	--
MW-67	493	301.99	-288.0	less-open	65	76	63	333	NSR	NSR	NSR	NSR		3.1E-04		8.7E-01	0.5	--	--	--	--	--	--
MW-67	494	302.53	-288.5	less-open	46	349	336	246	6	N	336-21	45		3.1E-04		8.7E-01	0.5	--	--	--	--	--	9.2
MW-67	495	302.62	-288.6	less-open	51	102	89	359	3	E	70-115	45		3.1E-04		8.7E-01	0.1	--	--	1.1	--	--	--
MW-67	496	302.63	-288.6	less-open	51	339	326	236	2	NW	291-335	44		3.1E-04		8.7E-01	0.0	--	10.3	--	--	--	--
MW-67	497	302.78	-288.8	less-open	30	131	118	28	NSR	NSR	NSR	NSR		3.1E-04		8.7E-01	0.1	--	--	--	--	--	--
MW-67	498	302.89	-288.9	less-open	52	327	314	224	2	NW	291-335	44		3.1E-04		8.7E-01	0.1	--	0.3	--	--	--	--
MW-67	499	302.98	-289.0	less-open	55	326	313	223	2	NW	291-335	44		3.1E-04		8.7E-01	0.1	--	0.1	--	--	--	--
MW-67	500	303.06	-289.0	less-open	56	99	86	356	3	E	70-115	45		3.1E-04		8.7E-01	0.1	--	--	0.4	--	--	--
MW-67	501	303.23	-289.2	less-open	49	106	93	3	3	E	70-115	45		3.1E-04		8.7E-01	0.2	--	--	0.2	--	--	--
MW-67	502	303.36	-289.3	less-open	52	326	313	223	2	NW	291-335	44		3.1E-04		8.7E-01	0.1	--	0.4	--	--	--	--
MW-67	503	303.63	-289.6	less-open	56	333	320	230	2	NW	291-335	44		3.1E-04		8.7E-01	0.3	--	0.3	--	--	--	--
MW-67	504	303.78	-289.8	less-open	35	306	293	203	2	NW	291-335	44		3.1E-04		8.7E-01	0.1	--	0.1	--	--	--	--
MW-67	505	303.96	-289.9	less-open	50	127	114	24	3	E	70-115	45		3.1E-04		8.7E-01	0.2	--	--	0.7	--	--	--
MW-67	506	304.42	-290.4	less-open	24	337	324	234	NSR	NSR	NSR	NSR		3.1E-04		8.7E-01	0.5	--	--	--	--	--	--
MW-67	507	304.43	-290.4	less-open	52	120	107	17	3	E	70-115	45		3.1E-04		8.7E-01	0.0	--	--	0.5	--	--	--
MW-67	508	304.57	-290.5	less-open	48	121	108	18	3	E	70-115	45		3.1E-04		8.7E-01	0.1	--	--	0.1	--	--	--
MW-67	509	304.7	-290.7	less-open	57	101	88	358	3	E	70-115	45		3.1E-04		8.7E-01	0.1	--	--	0.1	--	--	--
MW-67	510	304.75	-290.7	less-open	34	147	134	44	1	SE	116-165	49		3.1E-04		8.7E-01	0.1	3.5	--	--	--	--	--
MW-67	511	304.77	-290.7	less-open	37	324	311	221	2	NW	291-335	44		3.1E-04		8.7E-01	0.0	--	1.0	--	--	--	--
MW-67	512	305.12	-291.1	less-open	48	123	110	20	3	E	70-115	45		3.1E-04		8.7E-01	0.4	--	--	0.4	--	--	--
MW-67	513	305.52	-291.5	less-open	54	331	318	228	2	NW	291-335	44		3.1E-04		8.7E-01	0.4	--	0.8	--	--	--	--
MW-67	514	306.65	-292.6	less-open	51	326	313	223	2	NW	291-335	44		3.1E-04		8.7E-01	1.1	--	1.1	--	--	--	--
MW-67	515	308.35	-294.3	less-open	48	170	157	67	1	SE	116-165	49	8.8E-05	3.1E-04	2.5E-01	8.7E-01	1.7	3.6	--	--	--	--	--
MW-67	516	308.74	-294.7	less-open	53	317	304	214	2	NW	291-335	44	8.8E-05	3.1E-04	2.5E-01	8.7E-01	0.4	--	2.1	--	--	--	--
MW-67	517	308.86	-294.8	less-open	41	110	97	7	3	E	70-115	45	8.8E-05	3.1E-04	2.5E-01	8.7E-01	0.1	--	--	3.7	--	--	--
MW-67	518	309.23	-295.2	less-open	68	338	325	235	2	NW	291-335	44	8.8E-05	3.1E-04	2.5E-01	8.7E-01	0.4	--	0.5	--	--	--	--
MW-67	519	309.64	-295.6	less-open	63	307	294	204	2	NW	291-335	44	8.8E-05	3.1E-04	2.5E-01	8.7E-01	0.4	--	0.4	--	--	--	--

**APPENDIX Q**  
**FRACTURE FLOW MODEL DATABASE**  
 Indian Point  
 Buchanan, New York

Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)				Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s		l/day			1	2	3	4	5	6
MW-67	520	310.28	-296.3	less-open	46	124	111	21	3	E	70-115	45	8.8E-05	3.1E-04	2.5E-01	8.7E-01	0.6	--	--	1.4	--	--	--
MW-67	521	311.91	-297.9	less-open	45	126	113	23	3	E	70-115	45	8.8E-05		2.5E-01		1.6	--	--	1.6	--	--	--
MW-67	522	313.23	-299.2	less-open	44	173	160	70	1	SE	116-165	49	8.8E-05		2.5E-01		1.3	4.9	--	--	--	--	
MW-67	523	313.41	-299.4	less-open	52	194	181	91	5	S	166-200	34	8.8E-05		2.5E-01		0.2	--	--	--	--	35.7	--
MW-67	524	313.81	-299.8	less-open	46	134	121	31	1	SE	116-165	49	8.8E-05		2.5E-01		0.4	0.6	--	--	--	--	--
MW-67	525	315.1	-301.1	less-open	42	179	166	76	5	S	166-200	34	8.8E-05	2.6E-04	2.5E-01	7.4E-01	1.3	--	--	--	--	1.7	--
MW-67	526	315.62	-301.6	less-open	46	156	143	53	1	SE	116-165	49	8.8E-05	2.6E-04	2.5E-01	7.4E-01	0.5	1.8	--	--	--	--	--
MW-67	527	316.36	-302.3	less-open	45	116	103	13	3	E	70-115	45	8.8E-05	2.6E-04	2.5E-01	7.4E-01	0.7	--	--	4.4	--	--	--
MW-67	528	316.66	-302.6	less-open	36	122	109	19	3	E	70-115	45	8.8E-05	2.6E-04	2.5E-01	7.4E-01	0.3	--	--	0.3	--	--	--
MW-67	529	318.2	-304.2	less-open	26	265	252	162	NSR	NSR	NSR	NSR	8.8E-05	2.6E-04	2.5E-01	7.4E-01	1.5	--	--	--	--	--	--
MW-67	530	321.7	-307.7	less-open	75	346	333	243	2	NW	291-335	44	3.4E-04	2.6E-04	9.6E-01	7.4E-01	3.5	--	12.1	--	--	--	--
MW-67	531	322.52	-308.5	less-open	64	326	313	223	2	NW	291-335	44	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.8	--	0.8	--	--	--	--
MW-67	532	324.79	-310.8	less-open	51	355	342	252	6	N	336-21	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	2.3	--	--	--	--	--	22.3
MW-67	533	324.94	-310.9	less-open	45	354	341	251	6	N	336-21	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	--	--	--	--	0.1
MW-67	534	325.2	-311.2	less-open	51	134	121	31	1	SE	116-165	49	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.3	9.6	--	--	--	--	--
MW-67	535	325.83	-311.8	less-open	59	117	104	14	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.6	--	--	9.2	--	--	--
MW-67	536	326.35	-312.3	less-open	42	85	72	342	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.5	--	--	0.5	--	--	--
MW-67	537	326.38	-312.4	less-open	66	96	83	353	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.0	--	--	0.0	--	--	--
MW-67	538	326.7	-312.7	less-open	42	92	79	349	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.3	--	--	0.3	--	--	--
MW-67	539	326.92	-312.9	less-open	61	121	108	18	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.2	--	--	0.2	--	--	--
MW-67	540	327.09	-313.1	less-open	38	134	121	31	1	SE	116-165	49	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.2	1.9	--	--	--	--	--
MW-67	541	327.18	-313.2	less-open	61	342	329	239	2	NW	291-335	44	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	4.7	--	--	--	--
MW-67	542	327.25	-313.2	less-open	57	117	104	14	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	--	0.3	--	--	--
MW-67	543	327.44	-313.4	less-open	39	297	284	194	4	W	245-290	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.2	--	--	--	--	30.7	--
MW-67	544	327.77	-313.7	less-open	40	139	126	36	1	SE	116-165	49	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.3	0.7	--	--	--	--	--
MW-67	545	328.32	-314.3	less-open	41	111	98	8	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.6	--	--	1.1	--	--	--
MW-67	546	328.42	-314.4	less-open	70	95	82	352	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	--	0.1	--	--	--
MW-67	547	328.75	-314.7	less-open	64	119	106	16	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.3	--	--	0.3	--	--	--
MW-67	548	328.95	-314.9	less-open	58	123	110	20	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.2	--	--	0.2	--	--	--
MW-67	549	329.39	-315.4	less-open	51	130	117	27	1	SE	116-165	49	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.4	1.6	--	--	--	--	--
MW-67	550	329.71	-315.7	less-open	48	114	101	11	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.3	--	--	0.8	--	--	--
MW-67	551	329.84	-315.8	less-open	39	114	101	11	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	--	0.1	--	--	--
MW-67	552	329.97	-315.9	less-open	46	117	104	14	3	E	70-115	45	3.4E-04	2.6E-04	9.6E-01	7.4E-01	0.1	--	--	0.1	--	--	--
MW-67	553	332.51	-318.5	less-open	49	338	325	235	2	NW	291-335	44	3.4E-04	4.7E-04	9.6E-01	1.3E+00	2.5	--	5.3	--	--	--	--
MW-67	554	333.59	-319.6	less-open	60	337	324	234	2	NW	291-335	44	3.4E-04	4.7E-04	9.6E-01	1.3E+00	1.1	--	1.1	--	--	--	--
MW-67	555	334.4	-320.4	less-open	50	105	92	2	3	E	70-115	45	3.4E-04	4.7E-04	9.6E-01	1.3E+00	0.8	--	--	4.4	--	--	--
MW-67	556	334.53	-320.5	less-open	39	326	313	223	2	NW	291-335	44	3.4E-04	4.7E-04	9.6E-01	1.3E+00	0.1	--	0.9	--	--	--	--
MW-67	557	335.73	-321.7	less-open	44	67	54	324	NSR	NSR	NSR	NSR	3.4E-04	4.7E-04	9.6E-01	1.3E+00	1.2	--	--	--	--	--	--
MW-67	558	335.82	-321.8	less-open	38	219	206	116	NSR	NSR	NSR	NSR	3.4E-04	4.7E-04	9.6E-01	1.3E+00	0.1	--	--	--	--	--	--
MW-67	559	336.02	-322.0	less-open	33	295	282	192	NSR	NSR	NSR	NSR	3.4E-04	4.7E-04	9.6E-01	1.3E+00	0.2	--	--	--	--	--	--
MW-67	560	336.78	-322.8	less-open	83	287	274	184	NSR	NSR	NSR	NSR	3.4E-04	4.7E-04	9.6E-01	1.3E+00	0.8	--	--	--	--	--	--
MW-67	561	337.91	-323.9	less-open	42	219	206	116	NSR	NSR	NSR	NSR	3.4E-04	4.7E-04	9.6E-01	1.3E+00	1.1	--	--	--	--	--	--

- Notes:
1. Joint/Fracture ID represents a consecutive identification number with depth for an apparent joint of fracture.
  2. Elevations are above NGVD29.
  3. Determined by Advanced Logic Technology based on borehole geophysical analysis (refer to Appendix C for logs).
  4. Corrected dip direction from magnetic north by 13°. The true dip direction azimuth is based on the right hand rule convention, which represents the azimuth of the line within a dipping plane that is 90° from the strike azimuth in clockwise direction.
  5. Joint strike direction azimuth represents the azimuth orientation of intersection between the joint/fracture plane and a horizontal plane using the right hand rule convention.
  6. Site sets represent large scale interpretations of significant joint/fracture sets based on geophysical analysis.

Set numbers correspond to dip direction angle ranges:

Set No.	1	2	3	4	5	6
Dip direction	SE	NW	E	W	S	N
Azimuth range	116-165	291-335	70-115	245-290	166-200	336-21

APPENDIX Q  
 FRACTURE FLOW MODEL DATABASE  
 Indian Point  
 Buchanan, New York

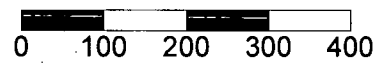
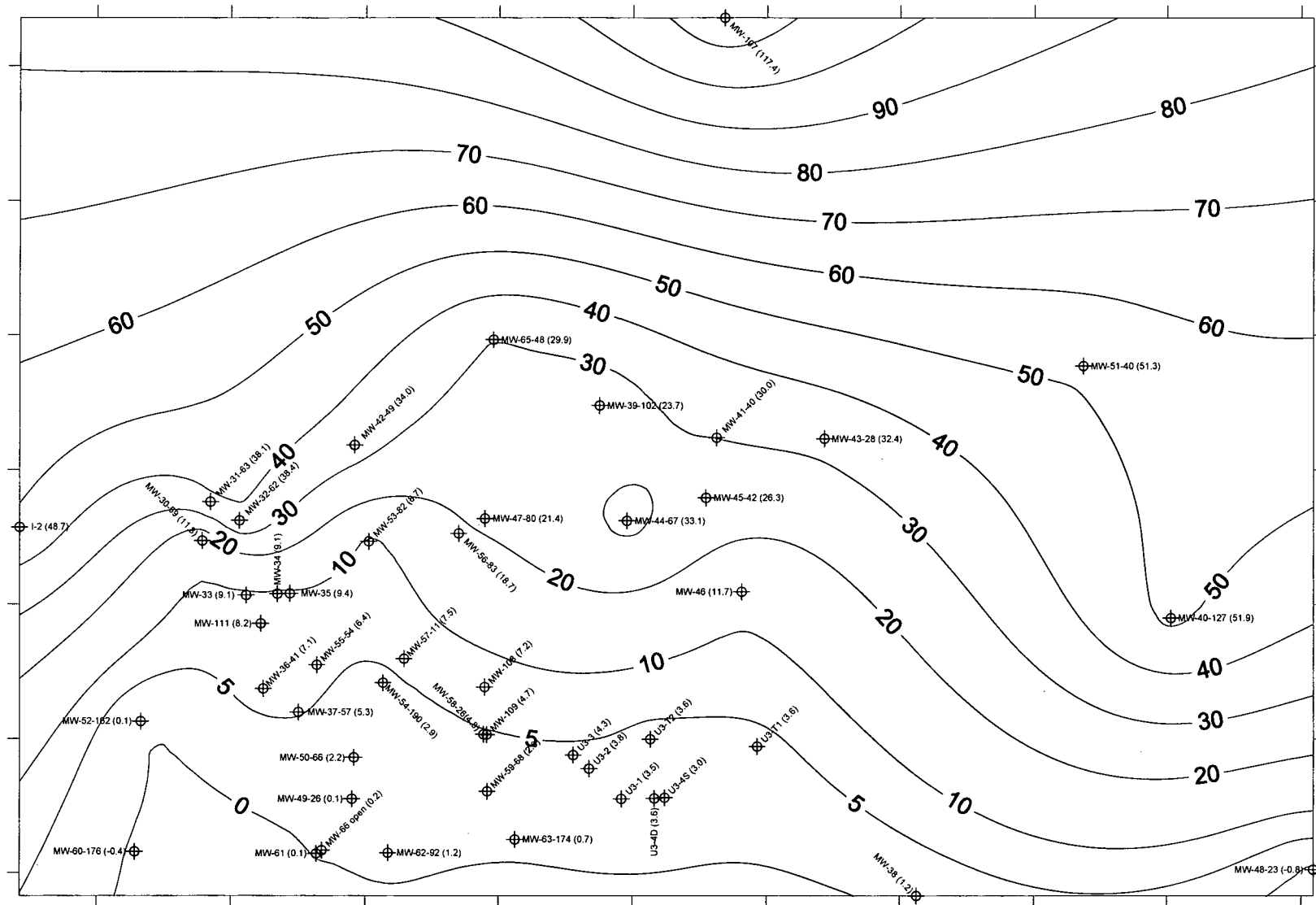
Location	Joint <sup>1</sup> / Fracture ID	Depth from Ground Surface (ft)	Elevation <sup>2</sup> (ft)	Interpreted <sup>3</sup> Planar Feature Category	Dip Angle	Magnetic Dip Direction Azimuth	True Dip <sup>4</sup> Direction Azimuth	Joint <sup>5</sup> Strike Direction Azimuth	Site Sets <sup>6</sup>				Hydraulic Conductivity Test Result <sup>7</sup> (k)		Joint <sup>8</sup> Spacing (ft)	Vertical Set Joint Spacing (ft)					
									Number	Dip Direction	Azimuth Range	Azimuth Delta	cm/s	ft/day		1	2	3	4	5	6
7. Based on GZA's hydraulic conductivity test results. Refer to Appendix G for test methods and detailed calculations.																					
8. Represents the vertical distance between each consecutive joint/fracture along the borehole axis.																					
9. Vertical set joint spacing is the vertical distance between each consecutive joint/fracture within a designated set.																					
10. No Set Recorded.																					
11. Test Not Performed.																					



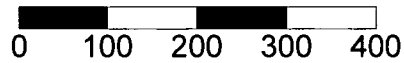
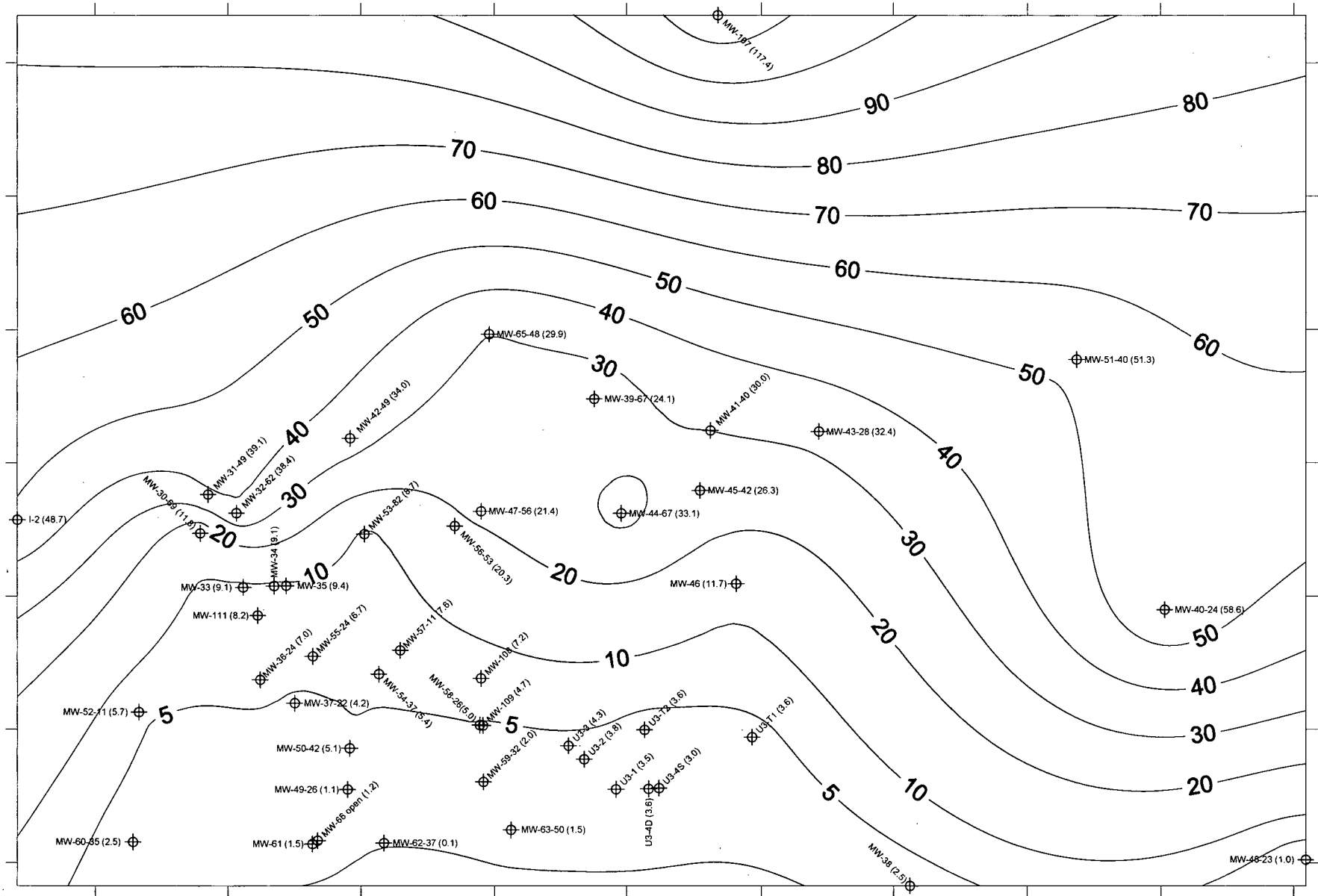
**APPENDIX R**

**GROUNDWATER CONTOUR MAPS**

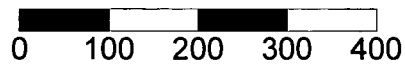
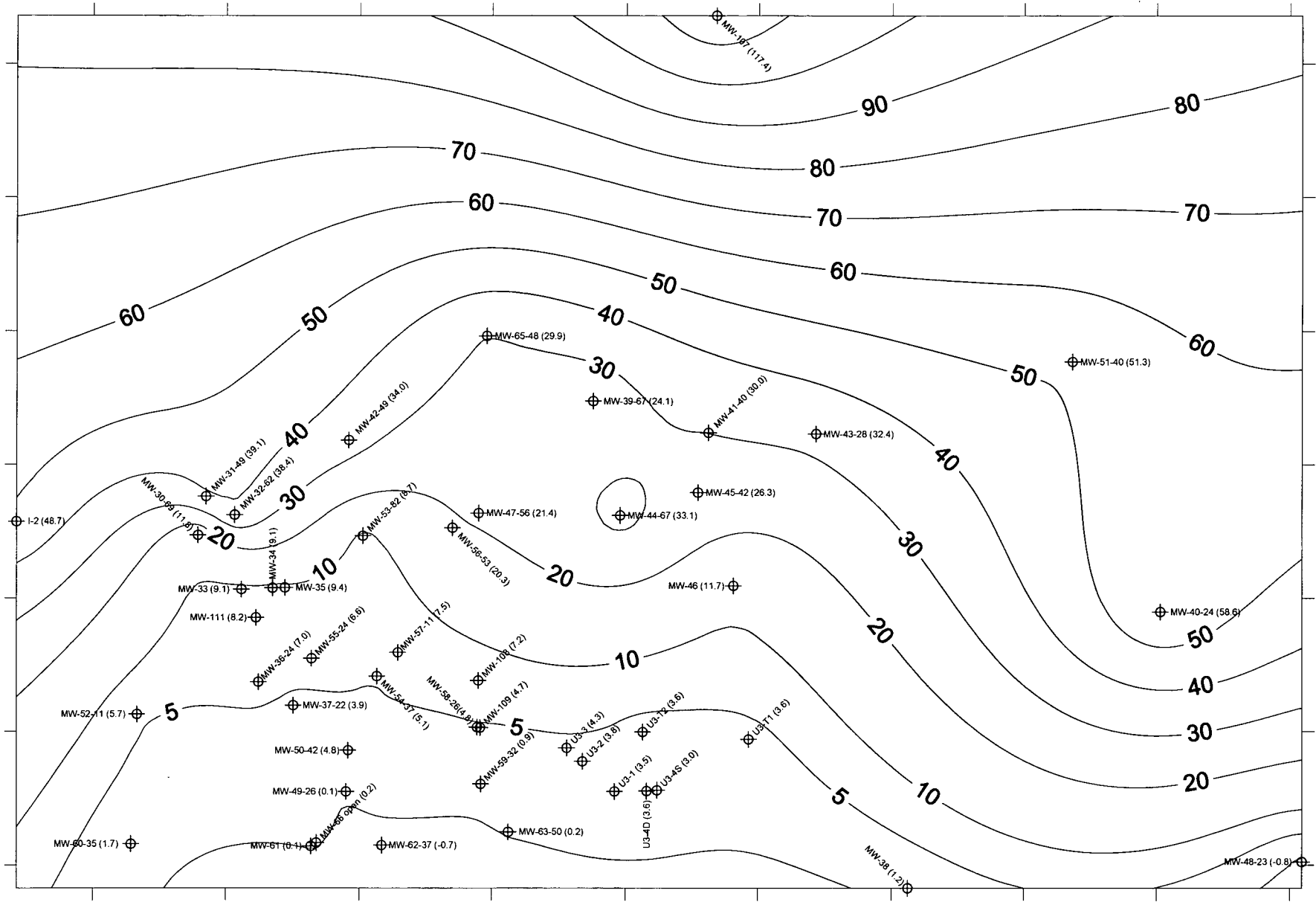
# Dry Season (2/12/07) Groundwater Elevations at Most Impacted Sampling Intervals



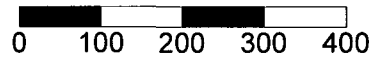
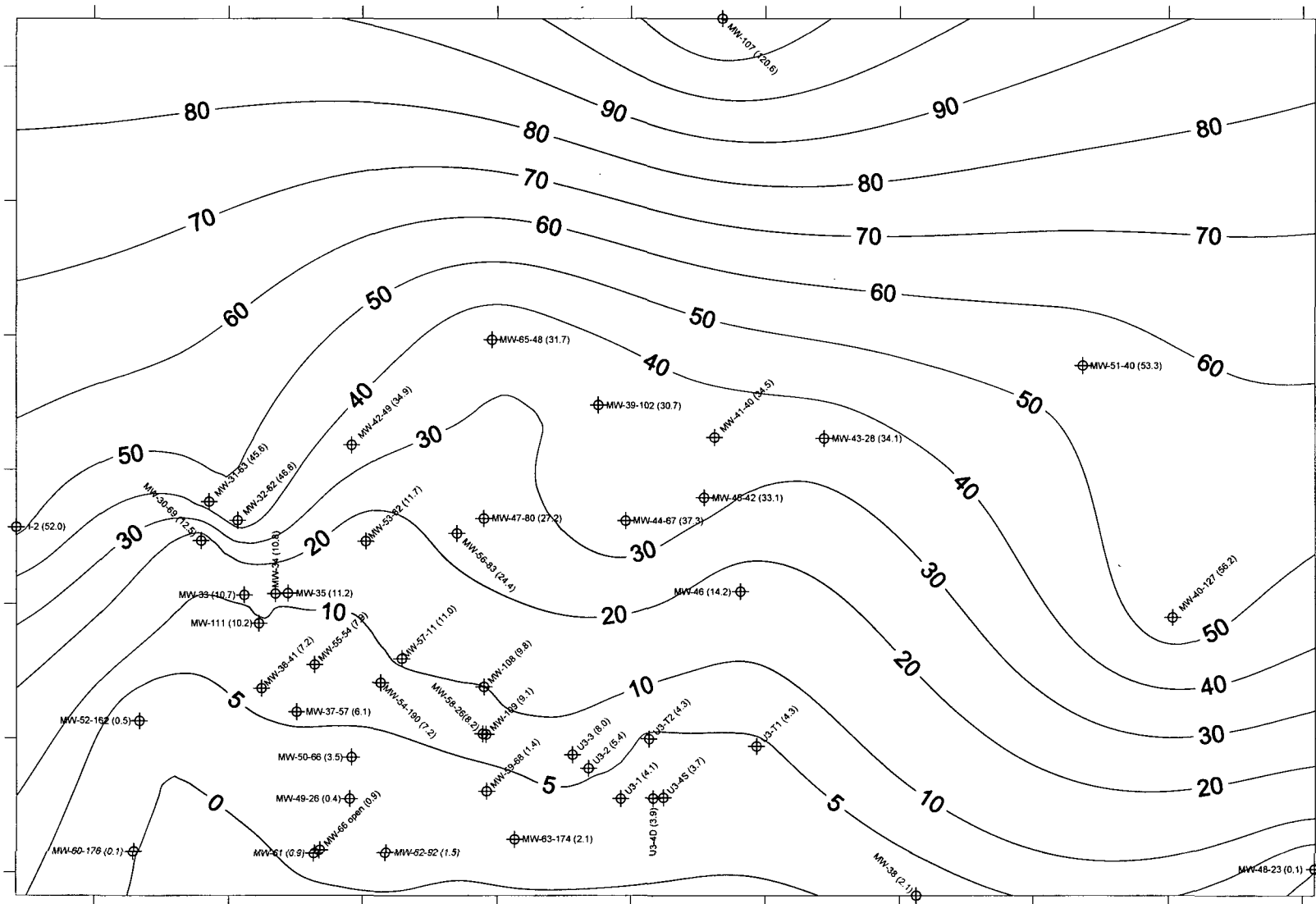
# Dry Season (2/12-17) High Tide



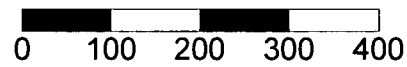
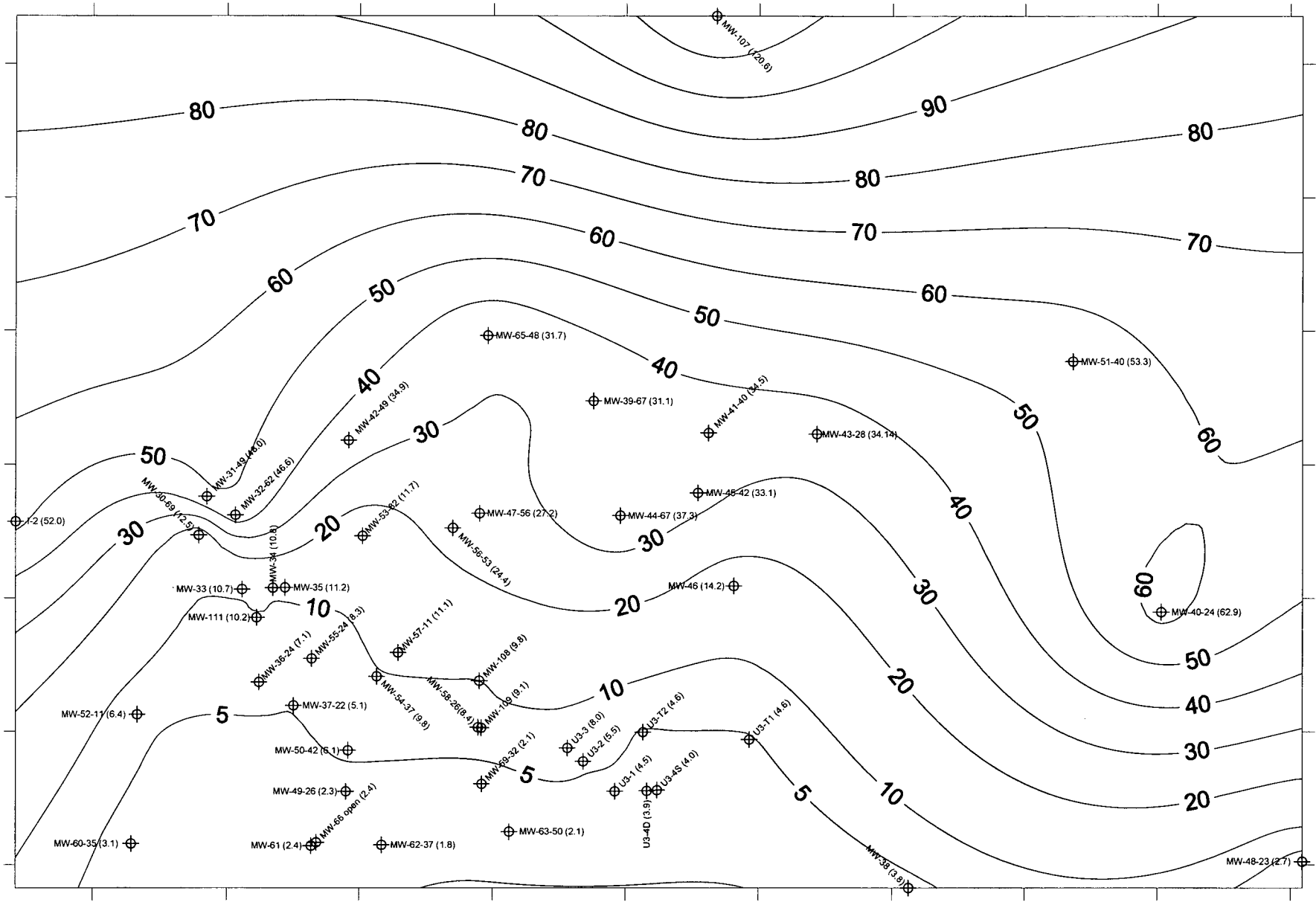
# Dry Season (2/10/07) Low Tide



# Wet Season (3/28/07) Groundwater Elevations at Most Impacted Sampling Intervals

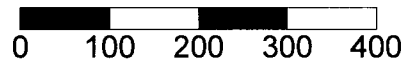
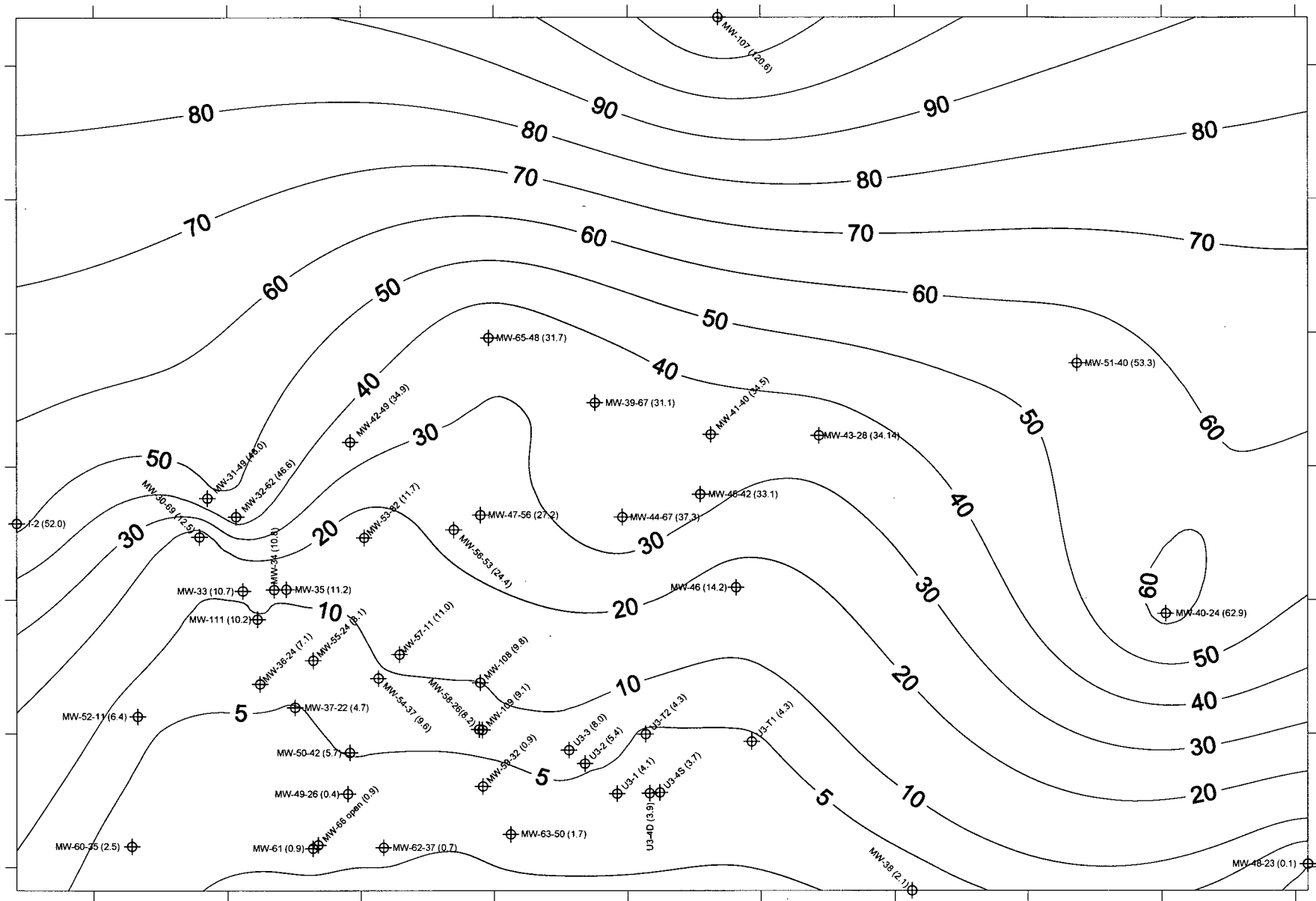


# Wet Season (3/20/07) High Tide





# Wet Season (3/2007) Low Tide



**APPENDIX S**

**RAINFALL MODEL FLUX CALCULATIONS**



Facility Groundwater Flux Calculation

Site Indian Point  
 Job No. 17869.10

Prepared By: MJG  
 Reviewed By: mjb

Parameter Values:

<i>Totals</i>					
Total Catchment Area (ft <sup>2</sup> )		Total Improved Area (ft <sup>2</sup> )	Recharge (ft/yr)	Precipitation (ft/yr)	
3,969,765		1,355,080	0.84	3.02	
<i>Surface Water</i>					
Northern Clean Area Improved (ft <sup>2</sup> )	Unit 2 North Improved Area (ft <sup>2</sup> )	Unit 1/2 Improved Area (ft <sup>2</sup> )	Unit 3 North Improved Area (ft <sup>2</sup> )	Unit 3 South Improved Area (ft <sup>2</sup> )	Southern Clean Zone Improved Area (ft <sup>2</sup> )
0	136,704	350,015	333,716	321,290	213,354
Northern Clean Area Unimproved (ft <sup>2</sup> )	Unit 2 North Unimproved Area (ft <sup>2</sup> )	Unit 1/2 Unimproved Area (ft <sup>2</sup> )	Unit 3 North Unimproved Area (ft <sup>2</sup> )	Unit 3 South Unimproved Area (ft <sup>2</sup> )	Southern Clean Zone Unimproved Area (ft <sup>2</sup> )
111,863	217,667	438,221	323,116	268,862	585,600
Northern Clean Area Catchment (ft <sup>2</sup> )	Unit 2 North Catchment Area (ft <sup>2</sup> )	Unit 1/2 Catchment Area (ft <sup>2</sup> )	Unit 3 North Catchment Area (ft <sup>2</sup> )	Unit 3 South Catchment Area (ft <sup>2</sup> )	Southern Clean Zone Catchment Area (ft <sup>2</sup> )
156,694	354,371	1,136,965	770,550	607,882	943,302



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**Potential Water Received by Storm Drain System**

=(Improved Area) x Precipitation

Northern Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	Southern Clean Zone	Units
0	412,846	1,057,046	1,007,823	970,294	644,331	ft <sup>3</sup> /yr
0	1,131	2,896	2,761	2,658	1,765	ft <sup>3</sup> /day
0.00	5.88	15.04	14.34	13.81	9.17	GPM
0	11,690,498	29,932,207	28,538,375	27,475,679	18,245,408	L/Yr

The total amount of water available to be received by the storm system is computed as the combined area of buildings and paved areas in the catchment multiplied by the annual precipitation rate. Note this conservatively assumes that the amount of water lost to the atmosphere or other sinks after precipitation has fallen on paved or built up surfaces is zero.

6443.30539

**Water Directly Recharged to Aquifer from Precipitation**

=Unimproved Area x Recharge

Northern Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	Southern Clean Zone	Units
93,618	182,165	366,746	270,414	225,010	490,087	ft <sup>3</sup> /yr
256	499	1,005	741	616	1,343	ft <sup>3</sup> /day
1.33	2.59	5.22	3.85	3.20	6.98	GPM
2,650,964	5,158,334	10,385,080	7,657,276	6,371,572	13,877,706	L/Yr

Note that this calculation reflects recharge to the aquifer in non-paved areas. The Recharge value listed above and used in this calculation reflects only that portion of precipitation that actually recharges the aquifer.



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Water Recharged to Aquifer (Direct Recharge Plus Storm Water Leakage Minus Drain Removal)

= (Direct Recharge + X% Water Received by Storm System) - (Y% x Water Removed by Drains)

Total Water Discharged to Aquifer

Upper and Lower Zone	[Northern Clean Area Catchment + (0% Storm Drain Water)]	[Unit 2 North + (50% Storm Drain Water)]-[5gpm]	[Unit 1/2 Area Catchment + (30% Storm Drain Water)]-[7.5 gpm]	[Unit 3 North Area Catchment + (50% Storm Drain Water)]-[7.5gpm]	[Unit 3 South Area + (1% Storm Drain Water)]	[Southern Clean Zone Area + (1% Storm Drain Water)]	Units
		93,618	37,275	156,891	247,357	234,713	499,790
	256	102	430	678	643	1,369	ft <sup>3</sup> /day
	1.33	0.53	2.23	3.52	3.34	7.11	GPM
	2,650,964	1,055,521	4,442,649	7,004,370	6,646,329	14,152,463	L/Yr



Facility Groundwater Flux Calculation

Site Indian Point  
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 Reviewed By: mjb

Groundwater Discharged to Canal

=Water Recharged to Aquifer x X% flowing to Canal

Upper and Lower Zone	Northern Clean Area Catchment x 0%	Unit 2 North x 31.4%	Unit 1/2 Area Catchment 26.6%	Unit 3 North Area Catchment x 58.8%	Unit 3 South Area x73.9%	Southern Clean Zone Area x 0%	Units
	0	11,704	41,733	145,446	173,453	0	ft <sup>3</sup> /yr
	0	32	114	398	475	0	ft <sup>3</sup> /day
	0.00	0.17	0.59	2.07	2.47	0.00	GPM
	0	331,434	1,181,745	4,118,570	4,911,637	0	L/Yr





**Facility Groundwater Flux Calculation**

Site Indian Point  
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**Groundwater Discharged to River**

=Water Recharged to Aquifer x X% flowing to River

Upper and Lower Zone	Northern Clean Area Catchment x 100%	Unit 2 North x 68.6%	Unit 1/2 Area Catchment 73.4%	Unit 3 North Area Catchment x 41.2%	Unit 3 South Area x26.1%	Southern Clean Zone Area x 100%	Units
	93,618	25,571	115,158	101,911	61,260	499,790	ft <sup>3</sup> /yr
	256	70	316	279	168	1,369	ft <sup>3</sup> /day
	1.33	0.36	1.64	1.45	0.87	7.11	GPM
	2,650,964	724,087	3,260,905	2,885,800	1,734,692	14,152,463	L/Yr

**Water Remaining in Storm Drains and Discharged to Canal**

=Storm Drain Water x X% Not Leaking to Groundwater and Not Discharging to River

Northern Clean Area Catchment (0% Storm Drain Water)	Unit 2 North (45% Storm Drain Water)	Unit 1/2 Area Catchment (60% Storm Drain Water)	Unit 3 North Area Catchment (40% Storm Drain Water)	Unit 3 South Area (94% Storm Drain Water)	Southern Clean Zone Area (94% Storm Drain Water)	Units
0	185,781	634,228	403,129	912,077	605,671	ft <sup>3</sup> /yr
0	509	1,738	1,104	2,499	1,659	ft <sup>3</sup> /day
0	2.64	9.03	5.74	12.98	8.62	GPM
0	5,260,724	17,959,324	11,415,350	25,827,138	17,150,684	L/Yr



**Facility Groundwater Flux Calculation**

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Reviewed By: mjb

**Water Remaining in Storm Drains and Discharged to River**

Northern Clean Area Catchment (0% Storm Drain Water)	Unit 2 North (5% Storm Drain Water)	Unit 1/2 Area Catchment (10% Storm Drain Water)	Unit 3 North Area Catchment (10% Storm Drain Water)	Unit 3 South Area (5% Storm Drain Water)	Southern Clean Zone Area (5% Storm Drain Water)	Units
0	20,642	105,705	100,782	48,515	32,217	ft <sup>3</sup> /yr
0	57	290	276	133	88	ft <sup>3</sup> /day
0	0.29	1.50	1.43	0.69	0.46	GPM
0	584,525	2,993,221	2,853,837	1,373,784	912,270	LYr

**Notes:**

The recharge rate used herein, 0.84 ft/yr (10.0 inches/year), is within the range of values discussed in the USGS modeling report<sup>1</sup>. The reported recharge ranged from 3.6 inches/year to 7.5 inches/year for a till to 20 inches per year for coarse grained glacially stratified deposits. A precipitation value of 3.02ft/yr, (a 10 year average measured at the Facility meteorological station) was also used in the computations. The catchment area was defined using an AutoCAD topo map for the Site and surrounding area. The catchment was defined by starting at the area marked "line of water grant" and tracking east, away from the River, to define portions of the land surface contributing water to the selected discharge zone. Calculations assume that run-off or overland flow in unimproved areas of the Site is negligible, there are no changes in storage and the Hudson River is a gaining stream.

1. USGS. Water Use, Ground-Water Recharge and Availability, and Quality of Water in the Greenwich Area, Fairfield County, Connecticut and Westchester County, New York, 2000-2002

## APPENDIX S

### Analytical Groundwater Flow Model (Basic Procedures)

- The IPEC watershed was divided in six areas constituting flow tubes. That is the areas were constructed based on groundwater contours. (See **FIGURE 6.19**)
- The area of each tube was calculated.
- The tubes were divided vertically into shallow (upper 55 feet) and deep (55 to 200 feet), and horizontally at the canal to form four zones in each flow tube. (See following sketch)
- The hydraulic conductivities of the shallow and deep zones were computed as the geometric mean of hydraulic conductivity tests performed in these zones.
- The hydraulic gradient in each zone was computed from shallow and deep piezometric contours. (See **Figures 6.19 and 6.20**)
- Portions of the flow tubes serviced by storm water management systems were identified and an estimated portion of the calculated run-off was added to the estimated areal recharge to account for recharge due to storm water system infiltration.
- The model was calibrated by trial and error. That is, an areal recharge rate was selected from a range of probable values that balanced computed groundwater flows.
- The groundwater flow to the cooling water discharge canal was taken as the difference in the Darcy flows in the stream tubes above (East or upgradient of) and below (West or downgradient of) the canal.