

APPENDIX K

EW-2 INSTALLATION AND COMMISSION

PUMPED WELL - DRAWDOWN DATA

Pumped Well No.: EW2

Project No.: 2012 Project Name: Hwy. 96

Date: 10/21/05 Type of Test: Step Test No. 1

CRA Supervisor: Brian Sandberg Pump Setting: 1286gpm amsl

Screened Interval: 123' to 133' Pumping Rate (Q): 10 gpm

Aquifer Thickness: _____ Datum Point: Ground Datum Point Elevation: ~936.5 amsl

Static Water Level: 42.85' Confined Unconfined

Day	Time		Elapsed Time (min.)	Water Level	Drawdown	Q	Remarks
	Hr.	Min.					
			0				Static 42.85
12	12	11	0	42.85	—		Start Pumping
	12	16	5	63.42	20.57	10	
	12	21	10	67.68	24.83		
	12	26	15	68.74	25.89		
	12	31	20	69.05	26.20		
	12	36	25	69.20	26.35		
	12	41	30	69.22	26.37		
	12	46	35	69.27	26.42		
	12	51	40	69.30	26.45		
	12	56	45	69.34	26.49		
	13	01	50	69.38	26.53		
	13	06	55	69.42	26.57		
	13	11	60	69.45	26.60		
							$26.6/1925 = 0.0138$
	13	16	5	81.64	38.79	20	Q = 20 gpm
	13	21	10	84.27	41.42		
	13	26	15	85.01	42.16		
	13	31	20	85.23	42.38		
	13	36	25	85.36	42.51		
	13	41	30	85.41	42.56		
	13	46	35	85.49	42.64		

PUMPED WELL - DRAWDOWN DATA

Pumped Well No.: EW2

Project No.: 2012 Project Name: Hwy 96
 Date: 10/21/05 Type of Test: Step Test No. 2 and 3
 CRA Supervisor: Brian Sandberg Pump Setting: _____ amsl
 Screened Interval: 123' to 133' Pumping Rate (Q): 20 & 30 gpm
 Aquifer Thickness: _____ Datum Point: GROUND Datum Point Elevation: 2936.5 amsl
 Static Water Level: 42.85' Confined Unconfined

Day	Time		Elapsed Time (min.)	Water Level	Drawdown	Q	Remarks
	Hr.	Min.					
	13	51	40	85.54	42.69	20	
	13	56	45	85.61	42.76		
	14	01	—	—	—		W.C. on 16D & 16B
	14	06	55	85.60	42.75		
	14	11	60	85.60	42.75	↓	$42.7 / 3850 = 0.011$
	14	16	5	98.91	56.06	30	Q = 30 gpm
	14	22	10	101.60	58.75		
	14	26	15	102.31	59.46		
	14	31	20	102.56	59.71		
	14	36	25	102.71	59.86		
	14	41	30	102.78	59.93		
	14	46	35	102.77	59.92		$60.2 / 5775 = 0.0104$
	14	51	40	102.81	59.96		
	14	56	45	102.83	60.03		
	15	01	50	102.97	60.12		1503 Pump shutoff 1min
	15	06	55	98.28	—		1510 " " " 0.5 min
	15	11	60	101.64	—	↓	END STEP TEST

TABLE 1

**EW-2 SPECIFIC CAPACITY VALUES
HIGHWAY 96 DUMP SITE
WHITE BEAR TOWNSHIP, MINNESOTA**

Step Test No. 1	$\frac{10 \text{ gpm}}{26.6 \text{ ft.}}$	=	0.38	$\frac{\text{gpm}}{\text{ft.}}$
Step Test No. 2	$\frac{20 \text{ gpm}}{42.75 \text{ ft.}}$	=	0.47	$\frac{\text{gpm}}{\text{ft.}}$
Step Test No. 3	$\frac{30 \text{ gpm}}{60.12 \text{ ft.}}$	=	0.50	$\frac{\text{gpm}}{\text{ft.}}$

Note:

Specific capacity = pumping rate (Q)/drawdown (dh)

TABLE 2

GROUNDWATER MONITORING SUMMARY
 HIGHWAY 96 DUMP SITE
 WHITE BEAR TOWNSHIP, MINNESOTA

	<i>TOC Elev. (ft. AMSL)</i>	<i>Pre-Test Elev. (ft. AMSL)</i>	<i>Step Test #1 (ft. AMSL)</i>	<i>Step Test #2 (ft. AMSL)</i>	<i>Step Test #3 (ft. AMSL)</i>	<i>Total Change in Elevation (ft.)</i>
MW- 4D	940.48	895.58	895.55	895.4	895.2	0.38
MW- 8B	940.91	895.46	895.12	894.87	894.59	0.87
MW- 10D	935.94	903.61	903.61	NM	903.6	0.01
MW- 10B	936.64	895.49	895.24	895.04	894.81	0.68
MW- 16D	940.7	896.38	NM	896.2	NM	0.18
MW- 16B	940.71	895.84	NM	895.45	NM	0.39

Note:

ft. AMSL - Elevation in feet above mean sea level

TABLE 3

**EW-2 WATER QUALITY SAMPLING SUMMARY
HIGHWAY 96 DUMP SITE
WHITE BEAR TOWNSHIP, MINNESOTA**

<i>Sample ID</i>	<i>Analytical Parameters</i>
W-051021-SI-200 (Step Test No. 1)	pH, TSS, COD
W-051021-SI-201 (Step Test No. 2)	pH, TSS, COD
W-051021-SI-202 (Step Test No. 3)	pH, TSS, COD, VOCs, and chloride

Notes:

TSS - total suspended solids

COD - chemical oxygen demand

VOCs - volatile organic compounds

TABLE 4
EW-2 ANALYTICAL RESULTS
HIGHWAY 96 DUMP SITE
WHITE BEAR TOWNSHIP, MINNESOTA

	<i>W-051021-SI-200</i>	<i>W-051021-SI-201</i>	<i>W-051021-SI-202</i>
<u>pH</u>	7.38	7.41	7.48
<u>TSS</u>	15 mg/L	15 mg/L	14 mg/L
<u>COD</u>	43 mg/L	28 mg/L	24 mg/L
<u>Chloride</u>	NA	NA	14.3 mg/L
<u>VOCs</u>	NA	NA	
vinyl chloride			1.6 µg/L
cis-1,2-dichloroethene			2.4 µg/L
dichlorodifluoromethane			1.9 µg/L
dichlorofluoromethane			4.5 µg/L
1,1-dichloroethane			4.8 µg/L
1,2-dichloroethane			0.32 J µg/L
toluene			0.13 J µg/L

Notes:

J - estimated value

NA - not analyzed

TABLE 5

EW-2 START-UP MONITORING SCHEDULE
 HIGHWAY 96 DUMP SITE
 WHITE BEAR TOWNSHIP, MINNESOTA

<i>Well</i>	<i>Day 1</i>	<i>Day 2 through 5</i>	<i>Day 6 through Day 30</i>
EW-1	hourly *	daily	weekly
EW-1A	hourly *	daily	weekly
EW-2	hourly *	daily	weekly
MW-1D	hourly *	daily	weekly
MW-4D	hourly *	daily	weekly
MW-8B	hourly *	daily	weekly
MW-10D	hourly *	daily	weekly
MW-10B	hourly *	daily	weekly
MW-11D	hourly *	daily	weekly
MW-12D	hourly *	daily	weekly
MW-12B	hourly *	daily	weekly
MW-16D	hourly *	daily	weekly
MW-16B	hourly *	daily	weekly

Notes:

* hourly measurements for the first six hours of operation