

OTTER CREEK MINE, PERMIT ID: C2012018 Exhibit 314C Appendix B

Groundwater Flow Model Development, Calibration, and Mine Dewatering Simulation

Table 6-1. Steady State Sensitivity Analysis Results.

Calibration Target ID	1.) Calibrated Model			2.) Coal K increased 2 times		3.) Coal K decreased 2 times		4.) GHB Upper Bounds		5.) GHB Lower Bounds		6.) Aquitard K x 10		7.) Aquitard K ÷10		8.) Aquitard K x 2		9.) Aquitard K ÷ 2		10.) River Conductance x 4		11.) River Conductance/ 4		Notes:
	Observed Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)	Computed Head (feet)	Residual Head (feet)			
7409	3212.00	3212.14	-0.14	3199.20	12.80	3235.68	-23.68	3219.82	-7.82	3198.11	13.89	3205.68	6.32	3214.68	-2.68	3210.42	1.58	3213.39	-1.39	3014.78	-2.78	3015.27	-3.27	1.) Results of calibrated steady state model
7421	3153.00	3147.09	5.91	3140.47	12.53	3164.45	-11.45	3150.83	2.17	3137.27	15.73	3143.01	9.99	3148.98	4.02	3145.86	7.14	3148.01	4.99	3014.54	-0.54	3015.17	-1.17	2.) Results of steady state simulation where coal K was increased by two times the calibrated values
7569	3012.00	3013.45	-1.45	3014.11	-2.11	3013.05	-1.05	3013.48	-1.48	3013.37	-1.37	3013.45	-1.45	3013.47	-1.47	3013.44	-1.44	3013.46	-1.46	3029.48	-3.53	3028.57	-2.62	3.) Results of steady state simulation where coal K was decreased by two times the calibrated values
7573	3014.00	3013.31	0.69	3013.95	0.05	3012.91	1.09	3013.34	0.66	3013.23	0.77	3013.30	0.70	3013.32	0.68	3013.30	0.70	3013.31	0.69	3102.24	-2.01	3092.73	7.50	4.) Results of steady state simulation where GHB C = 0.035 ft ² /ft/day for north and south boundaries; GHB C = 0.1 for east boundary.
7574	3017.34	3013.88	3.46	3014.53	2.81	3013.48	3.86	3013.91	3.43	3013.81	3.53	3013.87	3.47	3013.89	3.45	3013.87	3.47	3013.89	3.45	3048.41	-2.96	3044.68	0.78	
100472	3086.50	3069.38	17.12	3061.83	24.67	3083.55	2.95	3070.36	16.14	3067.41	19.09	3070.01	16.49	3069.83	16.67	3069.21	17.29	3069.58	16.92	3074.54	-3.10	3073.23	-1.79	5.) Results of steady state simulation where GHB C = 0.00035 ft ² /ft/day for all boundaries
100476	3059.00	3071.66	-12.66	3064.10	-5.10	3084.56	-25.56	3072.68	-13.68	3069.57	-10.57	3071.53	-12.53	3072.10	-13.10	3071.44	-12.44	3071.86	-12.86	2968.39	1.11	2981.90	-12.39	6.) Results of steady state simulation where Layer 5 and Layer 7 K = 2.83 x 10 ⁻⁶ ft/day
100492	3045.00	3071.91	-26.91	3066.65	-21.65	3079.78	-34.78	3073.69	-28.69	3065.03	-20.03	3153.44	-108.44	3019.80	25.20	3099.79	-54.79	3048.16	-3.16	2967.47	3.60	2980.13	-9.06	7.) Results of steady state simulation where Layer 5 and Layer 7 K = 2.83 x 10 ⁻⁷ ft/day
103164	3140.00	3135.45	4.55	3130.13	9.87	3142.04	-2.04	3137.27	2.73	3132.25	7.75	3166.01	-26.01	3097.39	42.61	3151.12	-11.12	3119.39	20.61	2997.36	1.97	3004.71	-5.39	8.) Results of steady state simulation where Layer 5 and Layer 7 K = 5.66 x 10 ⁻⁶ ft/day
172987	2956.00	2956.28	-0.28	2956.29	-0.29	2956.27	-0.27	2956.28	-0.28	2956.27	-0.27	2956.28	-0.28	2956.28	-0.28	2956.28	-0.28	2956.28	-0.28	3003.12	1.53	3008.89	-4.24	9.) Results of steady state simulation where Layer 5 and Layer 7 K = 1.4 x 10 ⁻⁶ ft/day
175228	3120.00	3137.68	-17.68	3132.33	-12.33	3144.42	-24.42	3139.66	-19.66	3134.21	-14.21	3168.57	-48.57	3098.21	21.79	3153.94	-33.94	3121.01	-1.01	3043.08	-4.72	3036.89	1.48	10.) Results of steady state simulation where River conductance = 10 ft ² /day/ft
176635	3075.00	3052.68	22.32	3050.75	24.25	3055.47	19.53	3053.31	21.69	3050.39	24.61	3104.90	-29.90	3053.32	21.68	3064.45	10.55	3049.40	25.60	3065.44	-0.19	3067.03	-1.78	11.) Results of steady state simulation where River conductance = 0.625 ft ² /day/ft
183560	3024.40	3026.15	-1.75	3026.15	-1.75	3026.16	-1.76	3026.15	-1.75	3026.15	-1.75	3026.15	-1.75	3026.15	-1.75	3026.15	-1.75	3026.15	-1.75	3019.39	0.47	3018.89	0.97	
187111	2935.00	2933.31	1.69	2933.31	1.69	2933.30	1.70	2933.31	1.69	2933.31	1.69	2933.31	1.69	2933.31	1.69	2933.31	1.69	2933.31	1.69	2928.15	-2.92	2934.36	-9.13	
204774	3049.00	3037.38	11.62	3033.37	15.63	3043.36	5.64	3038.66	10.34	3032.49	16.51	3090.08	-41.08	2998.81	50.19	3057.25	-8.25	3019.98	29.02	3136.19	1.67	3139.19	-1.33	
224810	3172.00	3187.18	-15.18	3179.74	-7.74	3197.72	-25.72	3190.67	-18.67	3180.41	-8.41	3285.20	-113.20	3126.63	45.37	3218.81	-46.81	3159.90	12.10	3136.90	4.96	3139.92	1.94	
A1	3025.95	3028.80	-2.85	3029.64	-3.69	3028.30	-2.35	3028.83	-2.88	3028.72	-2.77	3028.79	-2.84	3028.82	-2.87	3028.79	-2.84	3028.81	-2.86	3136.49	3.87	3139.53	0.83	
A3	3100.23	3099.39	0.84	3099.59	0.64	3099.17	1.07	3099.55	0.68	3099.16	1.07	3099.30	0.93	3099.44	0.79	3099.36	0.87	3099.42	0.81	3137.33	-1.57	3140.31	-4.55	
A4	3166.83	3157.43	9.40	3149.96	16.87	3160.73	6.10	3159.37	7.46	3154.16	12.66	3155.94	10.89	3158.00	8.83	3156.98	9.84	3157.78	9.05	3135.71	-3.57	3138.69	-6.55	
A5	3131.25	3121.59	9.66	3113.47	17.78	3139.76	-8.51	3124.05	7.20	3114.38	16.87	3118.57	12.68	3123.04	8.21	3120.65	10.60	3122.30	8.95	3212.26	-0.26	3212.36	-0.36	
A6	3045.45	3046.15	-0.70	3046.48	-1.03	3045.95	-0.50	3046.17	-0.72	3046.10	-0.65	3046.14	-0.69	3046.16	-0.71	3046.15	-0.69	3046.16	-0.71	3147.64	5.36	3147.02	5.98	
A7	3071.44	3075.07	-3.63	3075.42	-3.98	3074.86	-3.42	3075.12	-3.68	3075.01	-3.56	3075.05	-3.61	3075.09	-3.65	3075.06	-3.62	3075.08	-3.64	3014.71	2.63	3015.76	1.58	
AVF1-1	2969.51	2972.76	-3.25	2972.99	-3.48	2972.58	-3.07	2972.77	-3.27	2972.71	-3.21	2972.77	-3.26	2972.76	-3.26	2972.75	-3.25	2972.76	-3.25	3069.35	17.15	3070.34	16.16	
AVF1-3	2971.07	2971.37	-0.30	2971.68	-0.61	2971.13	-0.05	2971.39	-0.32	2971.32	-0.24	2971.38	-0.31	2971.38	-0.31	2971.36	-0.29	2971.37	-0.30	3071.59	-12.59	3072.55	-13.55	
AVF2-4	2999.33	2999.66	-0.33	2999.67	-0.65	2999.45	-0.13	2999.68	-0.35	2999.61	-0.28	2999.65	-0.33	2999.67	-0.34	2999.65	-0.33	2999.66	-0.34	3071.98	-26.94	3071.94	-26.94	
AVF2-6	3004.65	3004.79	-0.14	3005.35	-0.70	3004.43	0.22	3004.83	-0.18	3004.69	-0.04	3004.77	-0.12	3004.81	-0.16	3004.78	-0.13	3004.80	-0.15	3135.60	4.40	3135.19	4.81	
AVF3-4	3038.37	3038.63	-0.27	3039.56	-1.19	3038.08	0.29	3038.67	-0.30	3038.54	-0.18	3038.62	-0.26	3038.65	-0.29	3038.62	-0.26	3038.64	-0.28	2956.28	-0.28	2956.26	-0.26	
AVF4-1	3065.25	3067.12	-1.87	3067.34	-2.10	3066.98	-1.73	3067.14	-1.90	3067.07	-1.83	3067.10	-1.86	3067.13	-1.88	3067.11	-1.86	3067.12	-1.88	3137.83	-17.83	3137.41	-17.4	