Gorge 2nd Tunnel

Appendix N: Sample Input and Output, and Calculation, from PTURB Model

for 18-ft diameter tunnel, with Link 3 connection
and station flow of 7,440 cfs

Prepared by:

JACOBS ASSOCIATES
Engineers/Consultants

Jacobs Associates
1109 First Avenue, Suite 501
Seattle, WA 98101

NAME OF SYSTEM FILE : g7440c8.TXT 11-04-2009 15:06

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TYPE OF UNITS : Code (Length - Diameter -  Discharge -  Velocity   -  Friction)
                 1   ( Feet  -  Feet    -   cfs      -   ft/sec    -  Darcy)
                 2   ( Feet  -  Inch    -   cfs      -   ft/sec    -  Darcy)
                 3   ( Meter -  Meter   -   cms      -   m/sec     -  Darcy)
UNITS Code : 1
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LIQUID DENSITY (lbm/cu ft)	BAROMETRIC PRESSURE (psia)	GRAVITATIONAL CONSTANT (g) ft/sec2
62.40	14.70	32.17

NODES :

NODE NAME (Col 5,	BOUNDARY CONDITION 17)	Z PIPE ELEVATION (Feet)	X LATERAL COORDINATE (Feet)	Y LATERAL COORDINATE (Feet)	RESERVOIR ELEVATION (Feet)
URES	RES	807.2	0.0	0.0	875.00
ELBOW1	ELBOW	762.8	0.0	0.0	
JUNCT1	JUNCT	753.4	0.0	0.0	
JUNCT2	JUNCT	743.6	0.0	0.0	
JUNCT3	JUNCT	733.9	0.0	0.0	
JUNCT4	JUNCT	724.2	0.0	0.0	
JUNCT5	JUNCT	714.4	0.0	0.0	
JUNCT6	JUNCT	709.2	0.0	0.0	
JUNCT7	JUNCT	673.5	0.0	0.0	
JUNCT8	JUNCT	637.8	0.0	0.0	
JUNCT9	JUNCT	602.1	0.0	0.0	
JUNCT10	JUNCT	566.4	0.0	0.0	
JUNCT11	JUNCT	566.4	0.0	0.0	
JUNCT12	JUNCT	722.0	0.0	0.0	
JUNCT13	JUNCT	691.0	0.0	0.0	
JUNCT14	JUNCT	660.0	0.0	0.0	
JUNCT15	JUNCT	629.0	0.0	0.0	
JUNCT16	JUNCT	598.0	0.0	0.0	
JUNCT17	JUNCT	567.0	0.0	0.0	
JUNCT18	JUNCT	536.0	0.0	0.0	
JUNCT19	JUNCT	505.0	0.0	0.0	
STANK	SGTANK	544.0	0.0	0.0	
MAINWYEE	JUNCT	537.4	0.0	0.0	
3WYEE	JUNCT	529.0	0.0	0.0	
U24-1	JUNCT	508.0	0.0	0.0	
U24-2	JUNCT	507.0	0.0	0.0	
U24-3	JUNCT	500.0	0.0	0.0	
U24-4	JUNCT	497.0	0.0	0.0	
U24-5	JUNCT	497.0	0.0	0.0	
VAL24	VALVE	497.0	0.0	0.0	
UNIT24	TURBINE	497.0	0.0	0.0	495.00
U21-1	JUNCT	497.0	0.0	0.0	
U21-2	JUNCT	497.0	0.0	0.0	
VAL21	VALVE	497.0	0.0	0.0	
UNIT21	TURBINE	500.0	0.0	0.0	495.00
2WYEE	JUNCT	525.0	0.0	0.0	
U22-1	JUNCT	497.0	0.0	0.0	
U22-2	JUNCT	497.0	0.0	0.0	
VAL22	VALVE	497.0	0.0	0.0	
UNIT22	TURBINE	500.0	0.0	0.0	495.00
1WYEE	JUNCT	520.0	0.0	0.0	
U23-1	JUNCT	497.0	0.0	0.0	
U23-2	JUNCT	497.0	0.0	0.0	

VAL23	VALVE	497.0	0.0	0.0	
UNIT23	TURBINE	500.0	0.0	0.0	495.00
VAL28	VALVE	500.0	0.0	0.0	
VAL27	VALVE	500.0	0.0	0.0	
VAL26	VALVE	500.0	0.0	0.0	

END OF NODES :

PIPES :

PIPE NAME	NODEA	NODEB	PIPE LENGTH	PIPE DIAMETER	FRICTION COEFFICIENT	INITIAL FLOW	WAVE SPEED
(Col 3,	12,	21)	(Feet)	(Feet)	Darcy f	(cfs)	(ft/sec)
P1	URES	ELBOW1	122.00	20.0000	.0415	7523.37	4200.0
P2	ELBOW1	JUNCT1	288.00	19.5600	.0146	7523.52	4200.0
P3	JUNCT1	JUNCT2	740.60	19.5600	.0163	4556.75	4200.0
P4	JUNCT2	JUNCT3	1028.60	19.5600	.0105	4559.15	4200.0
P5	JUNCT3	JUNCT4	1028.60	19.5600	.0105	4558.44	4200.0
P6	JUNCT4	JUNCT5	1028.60	19.5600	.0105	4559.21	4200.0
P7	JUNCT5	JUNCT6	1028.60	19.5600	.0105	4558.53	4200.0
P8	JUNCT6	JUNCT7	1028.60	19.5600	.0105	4558.37	4200.0
P9	JUNCT7	JUNCT8	1028.60	19.5600	.0105	4559.15	4200.0
P10	JUNCT8	JUNCT9	1028.60	19.5600	.0105	4558.73	4200.0
P11	JUNCT9	JUNCT10	1028.60	19.5600	.0105	4558.75	4200.0
P12	JUNCT10	JUNCT11	1028.60	19.5600	.0105	4558.49	4200.0
P13	JUNCT11	STANK	1028.60	19.5600	.0105	4557.88	4200.0
P14	STANK	MAINWYEE	510.00	19.5600	.0145	4558.02	4200.0
P15	MAINWYEE	3WYEE	250.00	19.5600	.0177	3936.62	4200.0
P16	MAINWYEE	U24-1	170.00	18.0000	.1150	3590.83	4200.0
P17	U24-1	U24-2	170.70	18.0000	.0110	3590.92	4200.0
P18	U24-2	U24-3	67.70	18.0000	.0220	3591.03	4200.0
P19	U24-3	U24-4	198.60	15.5000	.0195	3591.08	4400.0
P20A	U24-4	VAL24	31.00	15.0000	.0210	3591.13	4400.0
P20B	VAL24	U24-5	20.00	15.0000	.0115	3591.18	4400.0
P20C	U24-5	UNIT24	20.00	12.5000	.0115	3591.24	4400.0
P21	3WYEE	U21-1	390.00	11.2500	.0191	1350.55	4400.0
P22A	U21-1	VAL21	20.00	10.0000	.0340	1350.53	4400.0
P22B	VAL21	U21-2	20.00	10.0000	.0120	1350.52	4400.0
P22C	U21-2	UNIT21	20.00	10.0000	.0120	1350.42	4400.0
P23	3WYEE	2WYEE	58.90	16.5000	.0620	2586.23	4200.0
P24	2WYEE	U22-1	330.00	11.2500	.0175	1334.34	4200.0
P25A	U22-1	VAL22	20.00	10.0000	.0250	1334.36	4400.0
P25B	VAL22	U22-2	20.00	10.0000	.0120	1334.36	4400.0
P25C	U22-2	UNIT22	20.00	10.0000	.0120	1334.28	4400.0
P26	2WYEE	1WYEE	79.70	11.2500	.0300	1251.93	4200.0
P27	1WYEE	U23-1	275.00	11.2500	.0115	1251.87	4400.0
P28A	U23-1	VAL23	20.00	10.0000	.0220	1251.91	4400.0
P28B	VAL23	U23-2	20.00	10.0000	.0115	1251.91	4400.0
P28C	U23-2	UNIT23	20.00	10.0000	.0115	1251.82	4400.0
P29	JUNCT1	JUNCT12	1375.00	18.0000	.0391	2969.21	4000.0
P30	JUNCT12	JUNCT13	1375.00	18.0000	.0148	2970.08	4000.0
P31	JUNCT13	JUNCT14	1375.00	18.0000	.0148	2970.10	4000.0
P32	JUNCT14	JUNCT15	1375.00	18.0000	.0148	2971.17	4000.0
P33	JUNCT15	JUNCT16	1375.00	18.0000	.0148	2970.22	4000.0
P34	JUNCT16	JUNCT17	1375.00	18.0000	.0148	2969.95	4000.0
P35	JUNCT17	JUNCT18	1375.00	18.0000	.0148	2969.67	4000.0
P36	JUNCT18	JUNCT19	975.00	18.0000	.0148	2969.18	4000.0
P37	JUNCT19	MAINWYEE	85.00	18.0000	.1350	-2968.94	4000.0
P38	U21-2	VAL28	20.00	3.0000	.0221	.09	4400.0
P39	U22-2	VAL27	20.00	3.0000	.0221	.09	4400.0
P40	U23-2	VAL26	20.00	3.0000	.0221	.09	4400.0

END OF PIPES :

VALVES : 7

NODE	VALVE FILE	TYPE OF VALVE OR MOTION	VALVE IN PIPE	VALVE DIAMETER (Feet)	HEAD LOSS COEFFICIENT (K)	
VAL21	BFLY	SINGLE STEP	P22A	10.0000	0.400	F
VAL22	BFLY	SINGLE STEP	P25A	10.0000	0.400	F
VAL23	BFLY	SINGLE STEP	P28A	10.0000	0.400	F
VAL24	BFLY	SINGLE STEP	P20A	15.0000	0.400	F
VAL28	HOWELL	SINGLE STEP	P38	2.5000	1.380	F
VAL27	HOWELL	SINGLE STEP	P39	2.5000	1.380	F
VAL26	HOWELL	SINGLE STEP	P40	2.5000	1.380	F

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SINGLE STEP VALVES : 7

NODE	VALVE OPENING INITIAL (Percentage)	VALVE OPENING FINAL (Percentage)	VALVE MOTION INITIAL (Seconds)	VALVE MOTION FINAL (Seconds)	DOWNSTREAM(In Line) OUTSIDE(Dump) HGL(ft)
VAL21	100.00	100.00	0.00	0.00	0.0
VAL22	100.00	100.00	0.00	0.00	0.0
VAL23	100.00	100.00	0.00	0.00	0.0
VAL24	100.00	100.00	0.00	0.00	0.0
VAL28	0.01	65.00	3.00	10.00	500.0
VAL27	0.01	65.00	3.00	10.00	500.0
VAL26	0.01	65.00	3.00	10.00	500.0

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TWO STEP VALVES : 0

NODE	VALVE OPENING INITIAL (Percentage)	VALVE OPENING MIDDLE (Percentage)	VALVE OPENING FINAL (Percentage)	VALVE MOTION INITIAL (Seconds)	VALVE MOTION MIDDLE (Seconds)	VALVE MOTION FINAL (Seconds)	DOWNSTREAM(In Line) OUTSIDE(Dump) HGL(ft)
NAME	100.00	20.00	10.00	4.00	6.00	20.00	0.0

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TWO MOTION VALVES : 0

NODE	VALVE OPENING INITIAL (Percentage)	VALVE OPENING MIDDLE (Percentage)	VALVE OPENING FINAL (Percentage)	VALVE MOTION INITIAL (Seconds)	VALVE MOTION SECOND (Seconds)	VALVE MOTION THIRD (Seconds)	VALVE MOTION FINAL (Seconds)	DOWNSTREAM or OUTSIDE HGL(ft)
NAME	100.00	40.00	10.00	2.00	6.00	10.00	20.00	0.0

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PRESSURE RELIEF VALVES : 0

NODE	VALVE MOTION TO OPEN (Seconds)	VALVE MOTION OPEN (Seconds)	VALVE MOTION TO CLOSE (Seconds)	SET POINT TO OPEN p(psig)	DOWNSTREAM (If Closed) HGL(ft)	OUTSIDE (If Dump) HGL(ft)
NAME	1.00	20.00	10.00	180.0	0.0	497.0

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PUMPS : 0

NODE	SUCTION PIPE	PUMP FILE	HEAD (Feet)	RATED FLOW (cfs)	PUMP SPEED (rpm)	QUANTITIES EFF. (%)	WR2 (lb-ft2)
NAME	PNAME	RADIAL	250.0	20.000	1200.0	85.0	400.0

NODE	OPERATING	PUMP TIMES	VARIABLE	PLOT	PLOT

	MODE	TRIP	START or RESTART	RAMP UP	SPEED PUMP (rpm)	SPEED (T or F)	TORQUE (T or F)
NAME	TRIP	20.00	0.00	0.00	1200.0	F	F

OPEN SURGE TANKS : 1

NODE	TANK DIAMETER (Feet)	ORIFICE DIAMETER (Feet)	ORIFICE Cd OUT OF TANK	ORIFICE Cd INTO TANK	SEGMENTED TANK (Y or N)	WEIR OVERFLOW (Y or N)
STANK	20.500	18.000	0.900	0.680	Y	N

NODE	SECOND DIAMETER (Feet)	THIRD DIAMETER (Feet)	FIRST ELEVATION (Feet)	SECOND ELEVATION (Feet)	PLOT OF LEVEL (T or F)
STANK	57.500	57.500	763.00	960.00	T

ACCUMULATORS : 0

NODE	GEOMETRY OF TANK (TYPE)	DIAMETER OF TANK (Feet)	LENGTH OF TANK (Feet)	INITIAL GAS VOLUME (% OF TOTAL)	ELEVATION OF TANK BOTTOM (Feet)
NAME	SPHERE	38.00	0.00	50.00	500.0

NODE	CUTOFF VOLUME (<100%)	ORIFICE DIAMETER (Feet)	ORIFICE Cd OUT OF TANK	ORIFICE Cd INTO TANK	PLOT OF GAS VOLUME (T or F)	PLOT OF LIQUID LEVEL (T or F)
NAME	95.0	60.000	0.900	0.700	F	F

TURBINES : 4

TURBINE CHARACTERISTICS

NODE	FILE (.TUR)	FULL GATE	STEPUP FACTOR	WR-SQUARED OF RUNNER	INERTIA TIME CONSTANT
UNIT21	VOITH2	140.00	1.000	5126880.0	8.725
UNIT22	VOITH2	140.00	1.000	5126880.0	8.725
UNIT23	VOITH2	140.00	1.000	5126880.0	8.725
UNIT24	VOITH2	140.00	1.000	42000000.0	8.725

TURBINE QUANTITIES AT REFERENCE VALUE

NODE	DIAMETER OF RUNNER	SPEED (rpm) OF RUNNER	HEAD OF RUNNER	FLOW OF RUNNER	POWER OF RUNNER	EFFICIENCY OF RUNNER
UNIT21	7.450	257.0	233.3	-1042.700	26192.300	94.9
UNIT22	7.450	257.0	227.1	-1042.700	26192.000	94.9
UNIT23	7.450	257.0	233.3	-1042.700	26192.300	94.9
UNIT24	11.800	163.7	237.5	-2639.100	67475.800	94.9

TURBINE CHARACTERISTICS

NODE	MACHINE MODE	TRIP (T/F)	TRIP TIME	QSTEADY (T/F)	FLOW MODE	INITIAL VALUES GATE	SPEED RATIO	POWER
UNIT21	REJECTING	F	2.00	F	GATE	108.900	-1.000	112000.000
UNIT22	REJECTING	F	2.00	F	GATE	105.500	-1.000	112000.000
UNIT23	REJECTING	F	2.00	F	GATE	99.600	-1.000	112000.000
UNIT24	REJECTING	F	2.00	F	GATE	117.600	-1.000	112000.000

SERVOMOTOR MOTION

NODE	TIME1 (START)	RATE1	TIME2	RATE2	TIME3	RATE3	TIME4
UNIT21	2.400	- 8.29	8.00	-2.00	40.00	.00	.00
UNIT22	2.400	- 7.95	8.00	-3.00	40.00	.00	.00
UNIT23	2.400	- 8.55	8.00	-1.79	40.00	.00	.00
UNIT24	2.400	- 6.80	8.00	-0.75	40.00	.00	.00

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SERVOMOTOR TYPE AND PLOTS

NODE	ISERVO CODE	SERVO FILE	PLOT SPEED	PLOT TORQUE	PLOT GATE	PLOT SERVO
UNIT21	3	STRAIGHT	F	F	T	T
UNIT22	3	STRAIGHT	F	F	T	T
UNIT23	3	STRAIGHT	F	F	T	T
UNIT24	3	STRAIGHT	F	F	T	T

END OF BOUNDARY CONDITION DATA :

HEAD AND FLOW PLOTS :

HEAD: Pipe Names are Left Justified and Pipe Sections are Right Justified

PIPE: (Col 33,43,53,63,73):	0	0	0	0	0
SECTION(Col 33,43,53,63,73):	0	0	0	0	0
PIPE: (Col 33,43,53,63,73):	0	0	0	0	0
SECTION(Col 33,43,53,63,73):	0	0	0	0	0

FLOW: Pipe Names are Left Justified and Pipe Sections are Right Justified

PIPE: (Col 33,43,53,63,73):	P20C	P22C	P25C	P28C	0
SECTION(Col 33,43,53,63,73):	1	1	1	1	0
PIPE: (Col 33,43,53,63,73):	0	0	0	0	0
SECTION(Col 33,43,53,63,73):	0	0	0	0	0

NAME OF OUTPUT FILE : g7440c8.OUT 11-04-2009 15:06

PRINTED TIME HISTORY

T = .000 URES 875.0 Intake Level

NODE	PIPE	ELEVATION	HEAD	PRESSURE	DISCHARGE	VELOCITY	
URES	P1	807.2	875.0	29.380	7523.373	23.948	
ELBOW1	P1	762.8	872.7	47.642	7523.373	23.948	
ELBOW1	P2	762.8	868.8	45.953	7523.514	25.038	
JUNCT1	P2	753.4	866.8	49.119	7523.514	25.038	
JUNCT1	P3	753.4	866.8	49.119	4556.748	15.164	
JUNCT2	P3	743.6	864.5	52.410	4556.748	15.164	
JUNCT2	P4	743.6	864.5	52.410	4559.154	15.172	
JUNCT3	P4	733.9	862.6	55.757	4559.154	15.172	
JUNCT3	P5	733.9	862.6	55.757	4558.441	15.170	
JUNCT4	P5	724.2	860.6	59.105	4558.441	15.170	
JUNCT4	P6	724.2	860.6	59.105	4559.207	15.173	
JUNCT5	P6	714.4	858.6	62.495	4559.207	15.173	
JUNCT5	P7	714.4	858.6	62.495	4558.530	15.170	
JUNCT6	P7	709.2	856.6	63.893	4558.530	15.170	
JUNCT6	P8	709.2	856.6	63.893	4558.370	15.170	
JUNCT7	P8	673.5	854.7	78.507	4558.370	15.170	
JUNCT7	P9	673.5	854.7	78.507	4559.149	15.172	
JUNCT8	P9	637.8	852.7	93.121	4559.149	15.172	
JUNCT8	P10	637.8	852.7	93.121	4558.731	15.171	
JUNCT9	P10	602.1	850.7	107.735	4558.731	15.171	
JUNCT9	P11	602.1	850.7	107.735	4558.753	15.171	
JUNCT10	P11	566.4	848.7	122.349	4558.753	15.171	
JUNCT10	P12	566.4	848.7	122.349	4558.493	15.170	
JUNCT11	P12	566.4	846.8	121.493	4558.493	15.170	
JUNCT11	P13	566.4	846.8	121.493	4557.885	15.168	
STANK	P13	722.0	844.8	53.211	4557.885	15.168	844.8
STANK	P14	722.0	844.8	53.211	4558.021	15.169	
MAINWYEE	P14	691.0	843.4	66.058	4558.021	15.169	
MAINWYEE	P15	691.0	843.4	66.058	3936.622	13.101	
3WYEE	P15	660.0	842.8	79.230	3936.622	13.101	
MAINWYEE	P16	691.0	843.4	66.058	3590.828	14.111	
U24-1	P16	629.0	840.1	91.468	3590.828	14.111	
U24-1	P17	629.0	840.1	91.468	3590.915	14.111	
U24-2	P17	598.0	839.8	104.762	3590.915	14.111	
U24-2	P18	598.0	839.8	104.762	3591.032	14.112	
U24-3	P18	567.0	839.5	118.084	3591.032	14.112	
U24-3	P19	567.0	839.5	118.084	3591.077	19.031	
U24-4	P19	536.0	838.1	130.908	3591.077	19.031	
U24-4	P20A	536.0	838.1	130.908	3591.130	20.322	
VAL24	P20A	505.0	837.8	144.221	3591.130	20.322	1.000
VAL24	P20B	505.0	835.2	143.108	3591.178	20.322	
U24-5	P20B	544.0	835.2	126.165	3591.178	20.322	
U24-5	P20C	544.0	835.2	126.165	3591.240	29.264	
UNIT24	P20C	537.4	834.9	128.919	3591.240	29.264	
3WYEE	P21	660.0	842.8	79.230	1350.554	13.587	
U21-1	P21	529.0	840.9	135.173	1350.554	13.587	
U21-1	P22A	529.0	840.9	135.173	1350.529	17.195	
VAL21	P22A	508.0	840.6	144.138	1350.529	17.195	1.000
VAL21	P22B	508.0	838.8	143.342	1350.523	17.195	
U21-2	P22B	507.0	838.7	143.727	1350.523	17.195	
U21-2	P22C	507.0	838.7	143.727	1350.421	17.194	

UNIT21	P22C	500.0	838.6	146.713	1350.421	17.194	
3WYEE	P23	660.0	842.8	79.230	2586.229	12.095	
2WYEE	P23	497.0	842.3	149.645	2586.229	12.095	
2WYEE	P24	497.0	842.3	149.645	1334.344	13.424	
U22-1	P24	497.0	840.9	149.022	1334.344	13.424	
U22-1	P25A	497.0	840.9	149.022	1334.361	16.990	
VAL22	P25A	497.0	840.7	148.925	1334.361	16.990	1.000
VAL22	P25B	497.0	838.9	148.148	1334.365	16.990	
U22-2	P25B	497.0	838.8	148.101	1334.365	16.990	
U22-2	P25C	497.0	838.8	148.101	1334.277	16.989	
UNIT22	P25C	497.0	838.7	148.054	1334.277	16.989	
2WYEE	P26	497.0	842.3	149.645	1251.929	12.595	
1WYEE	P26	497.0	841.8	149.418	1251.929	12.595	
1WYEE	P27	497.0	841.8	149.418	1251.866	12.594	
U23-1	P27	497.0	841.1	149.118	1251.866	12.594	
U23-1	P28A	497.0	841.1	149.118	1251.905	15.940	
VAL23	P28A	500.0	840.9	147.743	1251.905	15.940	1.000
VAL23	P28B	500.0	839.4	147.058	1251.911	15.940	
U23-2	P28B	525.0	839.3	136.186	1251.911	15.940	
U23-2	P28C	525.0	839.3	136.186	1251.821	15.939	
UNIT23	P28C	497.0	839.2	148.279	1251.821	15.939	
JUNCT1	P29	753.4	866.8	49.119	2969.207	11.668	
JUNCT12	P29	497.0	860.4	157.487	2969.207	11.668	
JUNCT12	P30	497.0	860.4	157.487	2970.081	11.672	
JUNCT13	P30	497.0	858.0	156.450	2970.081	11.672	
JUNCT13	P31	497.0	858.0	156.450	2970.104	11.672	
JUNCT14	P31	500.0	855.6	154.112	2970.104	11.672	
JUNCT14	P32	500.0	855.6	154.112	2971.167	11.676	
JUNCT15	P32	520.0	853.2	144.408	2971.167	11.676	
JUNCT15	P33	520.0	853.2	144.408	2970.218	11.672	
JUNCT16	P33	497.0	850.9	153.337	2970.218	11.672	
JUNCT16	P34	497.0	850.9	153.337	2969.954	11.671	
JUNCT17	P34	497.0	848.5	152.300	2969.954	11.671	
JUNCT17	P35	497.0	848.5	152.300	2969.670	11.670	
JUNCT18	P35	497.0	846.1	151.263	2969.670	11.670	
JUNCT18	P36	497.0	846.1	151.263	2969.183	11.668	
JUNCT19	P36	500.0	844.4	149.228	2969.183	11.668	
MAINWYEE	P37	691.0	843.4	66.058	-2968.936	-11.667	
JUNCT19	P37	500.0	844.8	149.409	-2968.936	-11.667	
U21-2	P38	507.0	838.7	143.727	.095	.013	
VAL28	P38	500.0	838.7	146.760	.095	.013	.000
VAL28	P38	500.0 Water Level					
U22-2	P39	497.0	838.8	148.101	.093	.013	
VAL27	P39	500.0	838.8	146.801	.093	.013	.000
VAL27	P39	500.0 Water Level					
U23-2	P40	525.0	839.3	136.186	.094	.013	
VAL26	P40	500.0	839.3	147.019	.094	.013	.000
VAL26	P40	500.0 Water Level					

T = 15.003 URES 875.0 Intake Level

URES	P1	807.2	875.0	29.380	7222.410	22.990
ELBOW1	P1	762.8	873.3	47.884	7222.291	22.989
ELBOW1	P2	762.8	869.7	46.327	7222.290	24.035
JUNCT1	P2	753.4	868.5	49.889	7222.316	24.035
JUNCT1	P3	753.4	868.5	49.889	4478.279	14.903
JUNCT2	P3	743.6	867.8	53.828	4478.953	14.906
JUNCT2	P4	743.6	867.8	53.828	4478.953	14.906
JUNCT3	P4	733.9	867.5	57.909	4480.625	14.911
JUNCT3	P5	733.9	867.5	57.909	4480.625	14.911
JUNCT4	P5	724.2	867.5	62.104	4481.832	14.915
JUNCT4	P6	724.2	867.5	62.104	4481.832	14.915
JUNCT5	P6	714.4	865.5	65.461	4487.376	14.934

JUNCT5	P7	714.4	865.5	65.461	4487.376	14.934	
JUNCT6	P7	709.2	863.6	66.911	4489.888	14.942	
JUNCT6	P8	709.2	863.6	66.911	4489.887	14.942	
JUNCT7	P8	673.5	865.5	83.204	4483.842	14.922	
JUNCT7	P9	673.5	865.5	83.204	4483.842	14.922	
JUNCT8	P9	637.8	865.7	98.736	4483.872	14.922	
JUNCT8	P10	637.8	865.7	98.736	4483.871	14.922	
JUNCT9	P10	602.1	867.2	114.864	4480.602	14.911	
JUNCT9	P11	602.1	867.2	114.864	4480.602	14.911	
JUNCT10	P11	566.4	866.0	129.824	4477.682	14.901	
JUNCT10	P12	566.4	866.0	129.824	4477.682	14.901	
JUNCT11	P12	566.4	865.1	129.417	4477.064	14.899	
JUNCT11	P13	566.4	865.1	129.417	4477.064	14.899	
STANK	P13	722.0	864.2	61.611	4476.635	14.898	856.9
STANK	P14	722.0	864.2	61.611	720.992	2.399	
MAINWYEE	P14	691.0	869.5	77.370	720.480	2.398	
MAINWYEE	P15	691.0	869.5	77.370	2040.296	6.790	
3WYEE	P15	660.0	871.6	91.705	2040.210	6.790	
MAINWYEE	P16	691.0	869.5	77.370	1438.701	5.654	
U24-1	P16	629.0	869.7	104.282	1438.623	5.653	
U24-1	P17	629.0	869.7	104.282	1438.623	5.653	
U24-2	P17	598.0	870.2	117.952	1438.450	5.653	
U24-2	P18	598.0	870.2	117.952	1438.450	5.653	
U24-3	P18	567.0	870.4	131.469	1438.464	5.653	
U24-3	P19	567.0	870.4	131.469	1438.464	7.623	
U24-4	P19	536.0	871.2	145.245	1438.403	7.623	
U24-4	P20A	536.0	871.2	145.245	1438.403	8.140	
VAL24	P20A	505.0	871.3	158.725	1438.396	8.140	1.000
VAL24	P20B	505.0	870.9	158.546	1438.396	8.140	
U24-5	P20B	544.0	870.9	141.676	1438.391	8.140	
U24-5	P20C	544.0	870.9	141.676	1438.391	11.721	
UNIT24	P20C	537.4	871.1	144.607	1438.408	11.721	
3WYEE	P21	660.0	871.6	91.705	737.006	7.414	
U21-1	P21	529.0	874.1	149.531	736.924	7.414	
U21-1	P22A	529.0	874.1	149.531	736.924	9.383	
VAL21	P22A	508.0	874.2	158.670	736.914	9.383	1.000
VAL21	P22B	508.0	873.6	158.433	736.914	9.383	
U21-2	P22B	507.0	873.8	158.935	736.913	9.383	
U21-2	P22C	507.0	873.8	158.935	213.539	2.719	
UNIT21	P22C	500.0	874.0	162.060	213.541	2.719	
3WYEE	P23	660.0	871.6	91.705	1303.204	6.095	
2WYEE	P23	497.0	872.0	162.512	1303.129	6.094	
2WYEE	P24	497.0	872.0	162.512	638.251	6.421	
U22-1	P24	497.0	876.0	164.229	638.239	6.421	
U22-1	P25A	497.0	876.0	164.229	638.239	8.126	
VAL22	P25A	497.0	876.3	164.358	638.245	8.126	1.000
VAL22	P25B	497.0	875.9	164.180	638.245	8.126	
U22-2	P25B	497.0	876.2	164.316	638.250	8.126	
U22-2	P25C	497.0	876.2	164.316	113.178	1.441	
UNIT22	P25C	497.0	876.5	164.456	113.174	1.441	
2WYEE	P26	497.0	872.0	162.512	664.878	6.689	
1WYEE	P26	497.0	872.4	162.689	664.868	6.689	
1WYEE	P27	497.0	872.4	162.689	664.868	6.689	
U23-1	P27	497.0	874.2	163.455	664.835	6.688	
U23-1	P28A	497.0	874.2	163.455	664.835	8.465	
VAL23	P28A	500.0	874.4	162.218	664.841	8.465	1.000
VAL23	P28B	500.0	873.9	162.025	664.841	8.465	
U23-2	P28B	525.0	874.1	151.263	664.845	8.465	
U23-2	P28C	525.0	874.1	151.263	141.264	1.799	
UNIT23	P28C	497.0	874.2	163.470	141.258	1.799	
JUNCT1	P29	753.4	868.5	49.889	2744.038	10.783	
JUNCT12	P29	497.0	865.0	159.474	2744.693	10.786	
JUNCT12	P30	497.0	865.0	159.474	2744.694	10.786	

JUNCT13	P30	497.0	865.7	159.790	2745.253	10.788	
JUNCT13	P31	497.0	865.7	159.790	2745.254	10.788	
JUNCT14	P31	500.0	868.3	159.618	2743.333	10.781	
JUNCT14	P32	500.0	868.3	159.618	2743.333	10.781	
JUNCT15	P32	520.0	870.3	151.807	2744.893	10.787	
JUNCT15	P33	520.0	870.3	151.807	2744.893	10.787	
JUNCT16	P33	497.0	869.6	161.466	2752.498	10.817	
JUNCT16	P34	497.0	869.6	161.466	2752.498	10.817	
JUNCT17	P34	497.0	871.3	162.205	2757.137	10.835	
JUNCT17	P35	497.0	871.3	162.205	2757.137	10.835	
JUNCT18	P35	497.0	871.1	162.131	2758.339	10.840	
JUNCT18	P36	497.0	871.1	162.131	2758.339	10.840	
JUNCT19	P36	500.0	870.5	160.565	2758.575	10.841	
MAINWYEE	P37	691.0	869.5	77.370	-2758.517	-10.840	
JUNCT19	P37	500.0	870.5	160.565	-2758.576	-10.841	
U21-2	P38	507.0	873.8	158.935	523.375	74.042	
VAL28	P38	500.0	861.2	156.516	523.374	74.042	.822
VAL28	P38	500.0 Water Level					
U22-2	P39	497.0	876.2	164.316	525.072	74.283	
VAL27	P39	500.0	863.5	157.532	525.071	74.282	.822
VAL27	P39	500.0 Water Level					
U23-2	P40	525.0	874.1	151.263	523.581	74.072	
VAL26	P40	500.0	861.5	156.638	523.580	74.071	.822
VAL26	P40	500.0 Water Level					

T = 30.002 URES 875.0 Intake Level

URES	P1	807.2	875.0	29.380	6577.850	20.938	
ELBOW1	P1	762.8	874.0	48.191	6577.687	20.937	
ELBOW1	P2	762.8	871.0	46.900	6577.686	21.890	
JUNCT1	P2	753.4	871.1	51.021	6577.092	21.888	
JUNCT1	P3	753.4	871.1	51.021	4136.355	13.765	
JUNCT2	P3	743.6	871.6	55.483	4134.665	13.760	
JUNCT2	P4	743.6	871.6	55.483	4134.666	13.760	
JUNCT3	P4	733.9	873.3	60.420	4132.285	13.752	
JUNCT3	P5	733.9	873.3	60.420	4132.285	13.752	
JUNCT4	P5	724.2	875.2	65.425	4129.752	13.743	
JUNCT4	P6	724.2	875.2	65.425	4129.752	13.743	
JUNCT5	P6	714.4	877.1	70.498	4127.760	13.737	
JUNCT5	P7	714.4	877.1	70.498	4127.760	13.737	
JUNCT6	P7	709.2	878.5	73.380	4125.131	13.728	
JUNCT6	P8	709.2	878.5	73.380	4125.131	13.728	
JUNCT7	P8	673.5	879.9	89.443	4123.687	13.723	
JUNCT7	P9	673.5	879.9	89.443	4123.686	13.723	
JUNCT8	P9	637.8	881.2	105.480	4122.972	13.721	
JUNCT8	P10	637.8	881.2	105.480	4122.972	13.721	
JUNCT9	P10	602.1	881.5	121.093	4124.224	13.725	
JUNCT9	P11	602.1	881.5	121.093	4124.224	13.725	
JUNCT10	P11	566.4	882.9	137.156	4124.880	13.727	
JUNCT10	P12	566.4	882.9	137.156	4124.880	13.727	
JUNCT11	P12	566.4	885.1	138.124	4123.704	13.723	
JUNCT11	P13	566.4	885.1	138.124	4123.704	13.723	
STANK	P13	722.0	888.7	72.238	4122.383	13.719	880.3
STANK	P14	722.0	888.7	72.238	97.572	.325	
MAINWYEE	P14	691.0	889.7	86.105	97.489	.324	
MAINWYEE	P15	691.0	889.7	86.105	1601.830	5.331	
3WYEE	P15	660.0	889.6	99.485	1601.716	5.330	
MAINWYEE	P16	691.0	889.7	86.105	923.019	3.627	
U24-1	P16	629.0	890.2	113.188	923.109	3.628	
U24-1	P17	629.0	890.2	113.188	923.109	3.628	
U24-2	P17	598.0	890.8	126.881	923.218	3.628	
U24-2	P18	598.0	890.8	126.881	923.218	3.628	
U24-3	P18	567.0	891.0	140.386	923.163	3.628	

U24-3	P19	567.0	891.0	140.386	923.163	4.892	
U24-4	P19	536.0	891.4	154.026	923.276	4.893	
U24-4	P20A	536.0	891.4	154.026	923.276	5.225	
VAL24	P20A	505.0	891.5	167.472	923.267	5.225	1.000
VAL24	P20B	505.0	891.3	167.399	923.267	5.225	
U24-5	P20B	544.0	891.3	150.515	923.267	5.225	
U24-5	P20C	544.0	891.3	150.515	923.267	7.523	
UNIT24	P20C	537.4	891.4	153.407	923.229	7.523	
3WYEE	P21	660.0	889.6	99.485	533.890	5.371	
U21-1	P21	529.0	889.1	156.025	533.554	5.368	
U21-1	P22A	529.0	889.1	156.025	533.554	6.793	
VAL21	P22A	508.0	889.0	165.106	533.522	6.793	1.000
VAL21	P22B	508.0	888.7	164.982	533.522	6.793	
U21-2	P22B	507.0	888.7	165.401	533.553	6.793	
U21-2	P22C	507.0	888.7	165.401	.032	.000	
UNIT21	P22C	500.0	888.7	168.458	.000	.000	
3WYEE	P23	660.0	889.6	99.485	1067.826	4.994	
2WYEE	P23	497.0	889.5	170.067	1067.715	4.993	
2WYEE	P24	497.0	889.5	170.067	533.878	5.371	
U22-1	P24	497.0	889.1	169.899	533.541	5.368	
U22-1	P25A	497.0	889.1	169.899	533.541	6.793	
VAL22	P25A	497.0	889.1	169.902	533.515	6.793	1.000
VAL22	P25B	497.0	888.8	169.777	533.515	6.793	
U22-2	P25B	497.0	888.8	169.789	533.525	6.793	
U22-2	P25C	497.0	888.8	169.789	.019	.000	
UNIT22	P25C	497.0	888.7	169.731	.000	.000	
2WYEE	P26	497.0	889.5	170.067	533.837	5.370	
1WYEE	P26	497.0	889.3	170.015	533.755	5.370	
1WYEE	P27	497.0	889.3	170.015	533.755	5.370	
U23-1	P27	497.0	889.0	169.882	533.547	5.368	
U23-1	P28A	497.0	889.0	169.882	533.547	6.793	
VAL23	P28A	500.0	889.0	168.588	533.505	6.793	1.000
VAL23	P28B	500.0	888.8	168.464	533.504	6.793	
U23-2	P28B	525.0	888.8	157.653	533.510	6.793	
U23-2	P28C	525.0	888.8	157.653	.002	.000	
UNIT23	P28C	497.0	888.7	169.742	.000	.000	
JUNCT1	P29	753.4	871.1	51.021	2440.738	9.591	
JUNCT12	P29	497.0	871.8	162.402	2438.557	9.583	
JUNCT12	P30	497.0	871.8	162.402	2438.557	9.583	
JUNCT13	P30	497.0	875.1	163.855	2436.492	9.575	
JUNCT13	P31	497.0	875.1	163.855	2436.492	9.575	
JUNCT14	P31	500.0	878.0	163.809	2433.716	9.564	
JUNCT14	P32	500.0	878.0	163.809	2433.716	9.564	
JUNCT15	P32	520.0	881.4	156.616	2431.815	9.556	
JUNCT15	P33	520.0	881.4	156.616	2431.815	9.556	
JUNCT16	P33	497.0	884.8	168.044	2429.422	9.547	
JUNCT16	P34	497.0	884.8	168.044	2429.422	9.547	
JUNCT17	P34	497.0	888.3	169.585	2426.026	9.534	
JUNCT17	P35	497.0	888.3	169.585	2426.026	9.534	
JUNCT18	P35	497.0	890.1	170.361	2424.741	9.529	
JUNCT18	P36	497.0	890.1	170.361	2424.741	9.529	
JUNCT19	P36	500.0	890.5	169.231	2427.221	9.538	
MAINWYEE	P37	691.0	889.7	86.105	-2427.361	-9.539	
JUNCT19	P37	500.0	890.5	169.231	-2427.222	-9.538	
U21-2	P38	507.0	888.7	165.401	533.521	75.478	
VAL28	P38	500.0	875.3	162.645	533.523	75.478	.822
VAL28	P38	500.0 Water Level					
U22-2	P39	497.0	888.8	169.789	533.506	75.476	
VAL27	P39	500.0	875.3	162.633	533.504	75.475	.822
VAL27	P39	500.0 Water Level					
U23-2	P40	525.0	888.8	157.653	533.508	75.476	
VAL26	P40	500.0	875.3	162.635	533.507	75.476	.822
VAL26	P40	500.0 Water Level					

T = 45.002 URES 875.0 Intake Level

URES	P1	807.2	875.0	29.380	5565.161	17.714	
ELBOW1	P1	762.8	874.6	48.429	5565.175	17.715	
ELBOW1	P2	762.8	872.4	47.505	5565.174	18.520	
JUNCT1	P2	753.4	873.2	51.929	5565.143	18.520	
JUNCT1	P3	753.4	873.2	51.929	3573.881	11.894	
JUNCT2	P3	743.6	874.6	56.764	3573.677	11.893	
JUNCT2	P4	743.6	874.6	56.764	3573.677	11.893	
JUNCT3	P4	733.9	877.0	62.023	3573.392	11.892	
JUNCT3	P5	733.9	877.0	62.023	3573.392	11.892	
JUNCT4	P5	724.2	879.7	67.402	3573.743	11.893	
JUNCT4	P6	724.2	879.7	67.402	3573.742	11.893	
JUNCT5	P6	714.4	882.3	72.742	3573.891	11.894	
JUNCT5	P7	714.4	882.3	72.742	3573.891	11.894	
JUNCT6	P7	709.2	885.2	76.249	3573.940	11.894	
JUNCT6	P8	709.2	885.2	76.249	3573.939	11.894	
JUNCT7	P8	673.5	888.5	93.183	3574.480	11.896	
JUNCT7	P9	673.5	888.5	93.183	3574.480	11.896	
JUNCT8	P9	637.8	892.7	110.440	3575.765	11.900	
JUNCT8	P10	637.8	892.7	110.440	3575.765	11.900	
JUNCT9	P10	602.1	897.0	127.807	3577.555	11.906	
JUNCT9	P11	602.1	897.0	127.807	3577.555	11.906	
JUNCT10	P11	566.4	901.3	145.133	3578.656	11.909	
JUNCT10	P12	566.4	901.3	145.133	3578.655	11.909	
JUNCT11	P12	566.4	904.6	146.549	3577.808	11.907	
JUNCT11	P13	566.4	904.6	146.549	3577.808	11.907	
STANK	P13	722.0	907.1	80.208	3576.736	11.903	901.7
STANK	P14	722.0	907.1	80.208	356.589	1.187	
MAINWYEE	P14	691.0	904.3	92.431	356.650	1.187	
MAINWYEE	P15	691.0	904.3	92.431	1631.440	5.429	
3WYEE	P15	660.0	904.2	105.827	1631.527	5.430	
MAINWYEE	P16	691.0	904.3	92.431	712.718	2.801	
U24-1	P16	629.0	904.0	119.183	712.759	2.801	
U24-1	P17	629.0	904.0	119.183	712.759	2.801	
U24-2	P17	598.0	903.9	132.553	712.744	2.801	
U24-2	P18	598.0	903.9	132.553	712.744	2.801	
U24-3	P18	567.0	903.8	145.956	712.738	2.801	
U24-3	P19	567.0	903.8	145.956	712.738	3.777	
U24-4	P19	536.0	903.6	159.274	712.742	3.777	
U24-4	P20A	536.0	903.6	159.274	712.742	4.033	
VAL24	P20A	505.0	903.5	172.693	712.738	4.033	1.000
VAL24	P20B	505.0	903.4	172.649	712.738	4.033	
U24-5	P20B	544.0	903.4	155.735	712.737	4.033	
U24-5	P20C	544.0	903.4	155.735	712.737	5.808	
UNIT24	P20C	537.4	903.3	158.571	712.752	5.808	
3WYEE	P21	660.0	904.2	105.827	543.814	5.471	
U21-1	P21	529.0	903.9	162.464	543.842	5.471	
U21-1	P22A	529.0	903.9	162.464	543.842	6.924	
VAL21	P22A	508.0	903.9	171.541	543.827	6.924	1.000
VAL21	P22B	508.0	903.6	171.411	543.827	6.924	
U21-2	P22B	507.0	903.5	171.824	543.815	6.924	
U21-2	P22C	507.0	903.5	171.824	-.008	.000	
UNIT21	P22C	500.0	903.5	174.855	.000	.000	
3WYEE	P23	660.0	904.2	105.827	1087.714	5.087	
2WYEE	P23	497.0	904.1	176.422	1087.632	5.087	
2WYEE	P24	497.0	904.1	176.422	543.819	5.471	
U22-1	P24	497.0	903.9	176.322	543.817	5.471	
U22-1	P25A	497.0	903.9	176.322	543.818	6.924	
VAL22	P25A	497.0	903.8	176.294	543.822	6.924	1.000
VAL22	P25B	497.0	903.5	176.165	543.822	6.924	
U22-2	P25B	497.0	903.5	176.159	543.816	6.924	

U22-2	P25C	497.0	903.5	176.159	-.004	.000	
UNIT22	P25C	497.0	903.5	176.168	.000	.000	
2WYEE	P26	497.0	904.1	176.422	543.813	5.471	
1WYEE	P26	497.0	904.0	176.372	543.818	5.471	
1WYEE	P27	497.0	904.0	176.372	543.818	5.471	
U23-1	P27	497.0	903.9	176.320	543.836	5.471	
U23-1	P28A	497.0	903.9	176.320	543.836	6.924	
VAL23	P28A	500.0	903.9	175.007	543.826	6.924	1.000
VAL23	P28B	500.0	903.6	174.878	543.826	6.924	
U23-2	P28B	525.0	903.5	164.034	543.815	6.924	
U23-2	P28C	525.0	903.5	164.034	-.014	.000	
UNIT23	P28C	497.0	903.5	176.164	.000	.000	
JUNCT1	P29	753.4	873.2	51.929	1991.262	7.825	
JUNCT12	P29	497.0	875.9	164.172	1991.224	7.825	
JUNCT12	P30	497.0	875.9	164.172	1991.223	7.825	
JUNCT13	P30	497.0	880.1	166.019	1991.170	7.825	
JUNCT13	P31	497.0	880.1	166.019	1991.170	7.825	
JUNCT14	P31	500.0	883.9	166.354	1989.864	7.820	
JUNCT14	P32	500.0	883.9	166.354	1989.865	7.820	
JUNCT15	P32	520.0	887.8	159.397	1989.787	7.819	
JUNCT15	P33	520.0	887.8	159.397	1989.787	7.819	
JUNCT16	P33	497.0	891.5	170.971	1989.697	7.819	
JUNCT16	P34	497.0	891.5	170.971	1989.697	7.819	
JUNCT17	P34	497.0	894.7	172.353	1987.821	7.812	
JUNCT17	P35	497.0	894.7	172.353	1987.821	7.812	
JUNCT18	P35	497.0	899.9	174.573	1987.239	7.809	
JUNCT18	P36	497.0	899.9	174.573	1987.239	7.809	
JUNCT19	P36	500.0	904.4	175.247	1987.469	7.810	
MAINWYEE	P37	691.0	904.3	92.431	-1987.509	-7.810	
JUNCT19	P37	500.0	904.4	175.247	-1987.469	-7.810	
U21-2	P38	507.0	903.5	171.824	543.822	76.935	
VAL28	P38	500.0	890.0	168.984	543.821	76.935	.822
VAL28	P38	500.0 Water Level					
U22-2	P39	497.0	903.5	176.159	543.820	76.935	
VAL27	P39	500.0	890.0	168.982	543.817	76.934	.822
VAL27	P39	500.0 Water Level					
U23-2	P40	525.0	903.5	164.034	543.829	76.936	
VAL26	P40	500.0	890.0	168.987	543.826	76.936	.822
VAL26	P40	500.0 Water Level					

T = 60.001 URES 875.0 Intake Level

URES	P1	807.2	875.0	29.380	4390.506	13.975
ELBOW1	P1	762.8	875.3	48.738	4390.554	13.976
ELBOW1	P2	762.8	873.9	48.162	4390.553	14.611
JUNCT1	P2	753.4	875.9	53.090	4390.539	14.611
JUNCT1	P3	753.4	875.9	53.090	2913.169	9.695
JUNCT2	P3	743.6	878.8	58.600	2914.075	9.698
JUNCT2	P4	743.6	878.8	58.600	2914.075	9.698
JUNCT3	P4	733.9	883.3	64.759	2915.309	9.702
JUNCT3	P5	733.9	883.3	64.759	2915.309	9.702
JUNCT4	P5	724.2	888.1	71.033	2917.806	9.710
JUNCT4	P6	724.2	888.1	71.033	2917.806	9.710
JUNCT5	P6	714.4	892.7	77.262	2920.325	9.719
JUNCT5	P7	714.4	892.7	77.262	2920.325	9.719
JUNCT6	P7	709.2	896.8	81.284	2921.943	9.724
JUNCT6	P8	709.2	896.8	81.284	2921.943	9.724
JUNCT7	P8	673.5	900.2	98.258	2921.863	9.724
JUNCT7	P9	673.5	900.2	98.258	2921.863	9.724
JUNCT8	P9	637.8	903.5	115.120	2921.290	9.722
JUNCT8	P10	637.8	903.5	115.120	2921.290	9.722
JUNCT9	P10	602.1	906.8	132.016	2920.616	9.720
JUNCT9	P11	602.1	906.8	132.016	2920.616	9.720

JUNCT10	P11	566.4	910.4	149.058	2920.427	9.719	
JUNCT10	P12	566.4	910.4	149.058	2920.427	9.719	
JUNCT11	P12	566.4	914.4	150.787	2920.198	9.718	
JUNCT11	P13	566.4	914.4	150.787	2920.198	9.718	
STANK	P13	722.0	918.6	85.183	2919.799	9.717	916.6
STANK	P14	722.0	918.6	85.183	975.818	3.247	
MAINWYEE	P14	691.0	916.6	97.757	975.517	3.246	
MAINWYEE	P15	691.0	916.6	97.757	1656.045	5.511	
3WYEE	P15	660.0	916.4	111.125	1655.911	5.511	
MAINWYEE	P16	691.0	916.6	97.757	794.362	3.122	
U24-1	P16	629.0	916.4	124.521	794.271	3.121	
U24-1	P17	629.0	916.4	124.521	794.271	3.121	
U24-2	P17	598.0	916.3	137.916	794.232	3.121	
U24-2	P18	598.0	916.3	137.916	794.232	3.121	
U24-3	P18	567.0	916.2	151.334	794.240	3.121	
U24-3	P19	567.0	916.2	151.334	794.239	4.209	
U24-4	P19	536.0	916.1	164.695	794.193	4.209	
U24-4	P20A	536.0	916.1	164.695	794.193	4.494	
VAL24	P20A	505.0	916.0	178.114	794.191	4.494	1.000
VAL24	P20B	505.0	915.9	178.059	794.191	4.494	
U24-5	P20B	544.0	915.9	161.156	794.187	4.494	
U24-5	P20C	544.0	915.9	161.156	794.187	6.472	
UNIT24	P20C	537.4	915.9	163.999	794.181	6.472	
3WYEE	P21	660.0	916.4	111.125	551.954	5.553	
U21-1	P21	529.0	916.1	167.727	551.932	5.553	
U21-1	P22A	529.0	916.1	167.727	551.932	7.027	
VAL21	P22A	508.0	916.0	176.803	551.931	7.027	1.000
VAL21	P22B	508.0	915.7	176.670	551.931	7.027	
U21-2	P22B	507.0	915.7	177.102	551.933	7.027	
U21-2	P22C	507.0	915.7	177.102	.002	.000	
UNIT21	P22C	500.0	915.7	180.146	.000	.000	
3WYEE	P23	660.0	916.4	111.125	1103.957	5.163	
2WYEE	P23	497.0	916.4	181.719	1103.932	5.163	
2WYEE	P24	497.0	916.4	181.719	551.969	5.553	
U22-1	P24	497.0	916.0	181.586	551.915	5.552	
U22-1	P25A	497.0	916.0	181.586	551.915	7.027	
VAL22	P25A	497.0	916.0	181.578	551.918	7.027	1.000
VAL22	P25B	497.0	915.7	181.445	551.918	7.027	
U22-2	P25B	497.0	915.7	181.428	551.942	7.028	
U22-2	P25C	497.0	915.7	181.428	.013	.000	
UNIT22	P25C	497.0	915.7	181.428	.000	.000	
2WYEE	P26	497.0	916.4	181.719	551.963	5.553	
1WYEE	P26	497.0	916.2	181.667	551.986	5.553	
1WYEE	P27	497.0	916.2	181.667	551.986	5.553	
U23-1	P27	497.0	916.1	181.592	551.932	5.553	
U23-1	P28A	497.0	916.1	181.592	551.932	7.027	
VAL23	P28A	500.0	916.1	180.288	551.928	7.027	1.000
VAL23	P28B	500.0	915.7	180.155	551.928	7.027	
U23-2	P28B	525.0	915.7	169.299	551.938	7.027	
U23-2	P28C	525.0	915.7	169.299	.003	.000	
UNIT23	P28C	497.0	915.7	181.421	.000	.000	
JUNCT1	P29	753.4	875.9	53.090	1477.371	5.806	
JUNCT12	P29	497.0	881.2	166.467	1477.714	5.807	
JUNCT12	P30	497.0	881.2	166.467	1477.714	5.807	
JUNCT13	P30	497.0	886.9	168.968	1477.690	5.807	
JUNCT13	P31	497.0	886.9	168.968	1477.690	5.807	
JUNCT14	P31	500.0	891.9	169.832	1476.532	5.802	
JUNCT14	P32	500.0	891.9	169.832	1476.532	5.802	
JUNCT15	P32	520.0	897.1	163.421	1475.763	5.799	
JUNCT15	P33	520.0	897.1	163.421	1475.763	5.799	
JUNCT16	P33	497.0	902.7	175.801	1475.906	5.800	
JUNCT16	P34	497.0	902.7	175.801	1475.906	5.800	
JUNCT17	P34	497.0	908.1	178.150	1475.736	5.799	

JUNCT17	P35	497.0	908.1	178.150	1475.736	5.799	
JUNCT18	P35	497.0	913.2	180.342	1475.272	5.797	
JUNCT18	P36	497.0	913.2	180.342	1475.272	5.797	
JUNCT19	P36	500.0	916.6	180.529	1474.910	5.796	
MAINWYEE	P37	691.0	916.6	97.757	-1474.891	-5.796	
JUNCT19	P37	500.0	916.6	180.529	-1474.910	-5.796	
U21-2	P38	507.0	915.7	177.102	551.932	78.082	
VAL28	P38	500.0	901.7	174.061	551.930	78.082	.822
VAL28	P38	500.0 Water Level					
U22-2	P39	497.0	915.7	181.428	551.929	78.082	
VAL27	P39	500.0	901.7	174.060	551.929	78.082	.822
VAL27	P39	500.0 Water Level					
U23-2	P40	525.0	915.7	169.299	551.936	78.083	
VAL26	P40	500.0	901.7	174.064	551.935	78.083	.822
VAL26	P40	500.0 Water Level					

MAXIMA AND MINIMA :

PIPE	X/L	NODE	HMAX	HMIN	PMAX	PMIN	TMAX	TMIN
P1	.000	URES	875.00	875.00	29.38	29.38	.000	.000
P1	1.000	ELBOW1	875.58	872.15	48.87	47.38	59.340	2.945
P2	.000	ELBOW1	874.22	868.25	48.28	45.69	59.340	2.945
P2	1.000	JUNCT1	876.37	866.03	53.29	48.81	59.317	.195
P3	.000	JUNCT1	876.37	866.03	53.29	48.81	59.317	.195
P3	1.000	JUNCT2	880.27	861.94	59.22	51.28	59.294	10.561
P4	.000	JUNCT2	880.27	861.94	59.22	51.28	59.294	10.561
P4	1.000	JUNCT3	885.33	860.73	65.62	54.96	59.310	10.305
P5	.000	JUNCT3	885.33	860.73	65.62	54.96	59.310	10.305
P5	1.000	JUNCT4	889.61	859.69	71.68	58.71	59.615	.775
P6	.000	JUNCT4	889.61	859.69	71.68	58.71	59.615	.775
P6	1.000	JUNCT5	893.48	857.80	77.60	62.14	59.669	1.020
P7	.000	JUNCT5	893.48	857.80	77.60	62.14	59.669	1.020
P7	1.000	JUNCT6	896.89	855.90	81.33	63.57	59.944	1.161
P8	.000	JUNCT6	896.89	855.90	81.33	63.57	59.944	1.161
P8	1.000	JUNCT7	900.26	853.90	98.26	78.17	59.997	1.470
P9	.000	JUNCT7	900.26	853.90	98.26	78.17	59.997	1.470
P9	1.000	JUNCT8	904.10	851.88	115.39	92.77	58.657	1.753
P10	.000	JUNCT8	904.10	851.88	115.39	92.77	58.657	1.753
P10	1.000	JUNCT9	907.79	849.84	132.46	107.35	58.599	1.917
P11	.000	JUNCT9	907.79	849.84	132.46	107.35	58.599	1.917
P11	1.000	JUNCT10	911.24	847.83	149.43	121.95	58.760	2.231
P12	.000	JUNCT10	911.24	847.83	149.43	121.95	58.760	2.231
P12	1.000	JUNCT11	914.68	845.87	150.92	121.10	59.153	2.502
P13	.000	JUNCT11	914.68	845.87	150.92	121.10	59.153	2.502
P13	1.000	STANK	918.58	844.79	85.18	53.21	60.001	1.234
P14	.000	STANK	918.58	844.79	85.18	53.21	60.001	1.234
P14	1.000	MAINWYEE	916.59	842.33	97.76	65.58	60.001	.229
P15	.000	MAINWYEE	916.59	842.33	97.76	65.58	60.001	.229
P15	1.000	3WYEE	916.45	841.51	111.13	78.65	59.986	.225
P16	.000	MAINWYEE	916.59	842.33	97.76	65.58	60.001	.229
P16	1.000	U24-1	916.36	838.91	124.52	90.96	59.997	.279
P17	.000	U24-1	916.36	838.91	124.52	90.96	59.997	.279
P17	1.000	U24-2	916.27	838.63	137.92	104.27	59.989	.260
P18	.000	U24-2	916.27	838.63	137.92	104.27	59.989	.260
P18	1.000	U24-3	916.23	838.34	151.33	117.58	60.001	.386
P19	.000	U24-3	916.23	838.34	151.33	117.58	60.001	.386
P19	1.000	U24-4	916.06	836.74	164.69	130.32	60.001	.340
P20A	.000	U24-4	916.06	836.74	164.69	130.32	60.001	.340
P20A	1.000	VAL24	916.55	836.52	178.34	143.66	7.360	.332
P20B	.000	VAL24	915.91	833.95	178.06	142.54	60.001	.332

P20B	1.000	U24-5	917.35	833.79	161.78	125.57	7.356	.328
P20C	.000	U24-5	917.35	833.79	161.78	125.57	7.356	.328
P20C	1.000	UNIT24	919.90	833.75	165.75	128.42	7.352	.008
P21	.000	3WYEE	916.45	841.51	111.13	78.65	59.986	.225
P21	1.000	U21-1	916.09	839.61	167.74	134.60	59.993	.313
P22A	.000	U21-1	916.09	839.61	167.74	134.60	59.993	.313
P22A	1.000	VAL21	916.03	839.15	176.81	143.50	59.989	.210
P22B	.000	VAL21	915.72	837.31	176.68	142.70	59.989	.210
P22B	1.000	U21-2	915.70	837.34	177.10	143.15	60.001	.206
P22C	.000	U21-2	915.70	837.34	177.10	143.15	60.001	.206
P22C	1.000	UNIT21	915.72	837.40	180.15	146.21	60.001	.325
P23	.000	3WYEE	916.45	841.51	111.13	78.65	59.986	.225
P23	1.000	2WYEE	916.37	840.97	181.73	149.05	59.966	.241
P24	.000	2WYEE	916.37	840.97	181.73	149.05	59.966	.241
P24	1.000	U22-1	916.09	839.51	181.60	148.42	59.993	.202
P25A	.000	U22-1	916.09	839.51	181.60	148.42	59.993	.202
P25A	1.000	VAL22	916.04	839.32	181.58	148.34	59.986	.206
P25B	.000	VAL22	915.73	837.52	181.45	147.56	59.986	.206
P25B	1.000	U22-2	915.71	837.45	181.44	147.53	59.986	.210
P25C	.000	U22-2	915.71	837.45	181.44	147.53	59.986	.210
P25C	1.000	UNIT22	915.72	837.50	181.44	147.55	59.982	.332
P26	.000	2WYEE	916.37	840.97	181.73	149.05	59.966	.241
P26	1.000	1WYEE	916.26	840.39	181.68	148.80	59.986	.260
P27	.000	1WYEE	916.26	840.39	181.68	148.80	59.986	.260
P27	1.000	U23-1	916.09	839.71	181.60	148.51	59.993	.202
P28A	.000	U23-1	916.09	839.71	181.60	148.51	59.993	.202
P28A	1.000	VAL23	916.05	839.58	180.29	147.15	60.001	.206
P28B	.000	VAL23	915.74	838.00	180.16	146.47	60.001	.206
P28B	1.000	U23-2	915.72	837.94	169.31	135.61	59.986	.210
P28C	.000	U23-2	915.72	837.94	169.31	135.61	59.986	.210
P28C	1.000	UNIT23	915.74	838.01	181.45	147.77	59.982	.332
P29	.000	JUNCT1	876.37	866.03	53.29	48.81	59.317	.195
P29	1.000	JUNCT12	881.45	859.49	166.60	157.08	5.511	.539
P30	.000	JUNCT12	881.45	859.49	166.60	157.08	5.511	.539
P30	1.000	JUNCT13	886.95	857.07	168.98	156.03	59.986	.886
P31	.000	JUNCT13	886.95	857.07	168.98	156.03	59.986	.886
P31	1.000	JUNCT14	891.94	854.81	169.84	153.75	59.986	1.226
P32	.000	JUNCT14	891.94	854.81	169.84	153.75	59.986	1.226
P32	1.000	JUNCT15	897.28	851.86	163.49	143.81	59.554	1.574
P33	.000	JUNCT15	897.28	851.86	163.49	143.81	59.554	1.574
P33	1.000	JUNCT16	902.74	849.97	175.82	152.95	59.936	1.914
P34	.000	JUNCT16	902.74	849.97	175.82	152.95	59.936	1.914
P34	1.000	JUNCT17	908.14	847.49	178.16	151.88	59.989	2.250
P35	.000	JUNCT17	908.14	847.49	178.16	151.88	59.989	2.250
P35	1.000	JUNCT18	913.19	845.55	180.35	151.04	59.997	.588
P36	.000	JUNCT18	913.19	845.55	180.35	151.04	59.997	.588
P36	1.000	JUNCT19	916.61	843.67	180.53	148.92	59.997	.222
P37	.000	MAINWYEE	916.59	842.33	97.76	65.58	60.001	.229
P37	1.000	JUNCT19	916.61	843.67	180.53	148.92	59.997	.222
P38	.000	U21-2	915.70	837.34	177.10	143.15	60.001	.206
P38	1.000	VAL28	901.68	835.73	174.06	145.48	60.001	.210
P39	.000	U22-2	915.71	837.45	181.44	147.53	59.986	.210
P39	1.000	VAL27	901.68	836.72	174.06	145.91	60.001	.015
P40	.000	U23-2	915.72	837.94	169.31	135.61	59.986	.210
P40	1.000	VAL26	901.69	837.19	174.06	146.12	60.001	.015

MAXIMUM LEVEL IN TANK AT NODE STANK IS 916.6 AT T = 60.0 SECONDS
MINIMUM LEVEL IN TANK AT NODE STANK IS 844.8 AT T = .0 SECONDS

Gorge G2 - Predicted Output at 7,440 cfs, Link 3, 18 foot diameter Second Tunnel

Predicted Unit Output - Link 3, 18 ft diameter - 7,440 cfs						c87440
Intake Water Level	875	ft	Full Pond			
Tailrace Water level	494.5	ft	Assumed			
Gross Head	380.5	ft				
	Unit 21	Unit 22	Unit 23	Unit 24	Total	
Flow in CFS (ATURB Output)	1347	1331	1249	3534	7461	Total Flow CFS
Steady State HGL at Scroll Case (ATURB Output)	838.6	838.7	839.2	834.9		
Velocity (ATURB Output)	17.15	16.95	15.9	28.79		
Velocity Head (Spreadsheet Calculation)	4.6	4.5	3.9	12.9		
Head Loss in ft (Spreadsheet Calculation)	36.4	36.3	35.8	40.1	37.2	Average Headloss in ft
Net Head in ft	344.1	344.2	344.7	340.4		
Density Water lb/ft3	62.31	62.31	62.31	62.31		
Estimated Turbine Efficiency	0.941	0.941	0.9405	0.938		Turbine efficiencies per 1993 & 2006 field tests
Estimated Turbine Output in hp	49,413	48,840	45,873	127,836		
Estimated Turbine Output in kw	36,847	36,420	34,208	95,327		
Estimated Generator Efficiency	0.986	0.986	0.986	0.986		Generator efficiencies per 1993 field test
Generator PF	0.97	0.97	0.97	0.95		Power Factors per Wing Cheng 10/15/09
Generator Output at Generator Leads kw	35,241	34,833	32,717	89,293		
Generator Output at Generator Leads MW	35.2	34.8	32.7	89.3	192.1	Total at Generator
Adjusted to 7440 cfs					191.5	Total Station Output MW