

4.1-2 Fluctuation of Intake and River Water Level

Tidal movement influences water level of the Halda River. It fluctuates with short time in accordance with tidal movement. Intake flow of the Mohara WTP through pumps is also influenced by change of river water level. Intake flow during 24 hours from 22nd to 23rd February 2000 was measured at exposed conveyance pipe in a chamber of malfunctioning flowmeter.

Measuring results, river water level, and operational status of pumps are presented in Table 4.1-2-1. This table implies intake amount fluctuates in accordance with fluctuation of river water level repeating every 5 to 7 hours. As shown in Figure 4.1-2-1, intake amount increases when river water level rise, and range of fluctuation is about 20%.

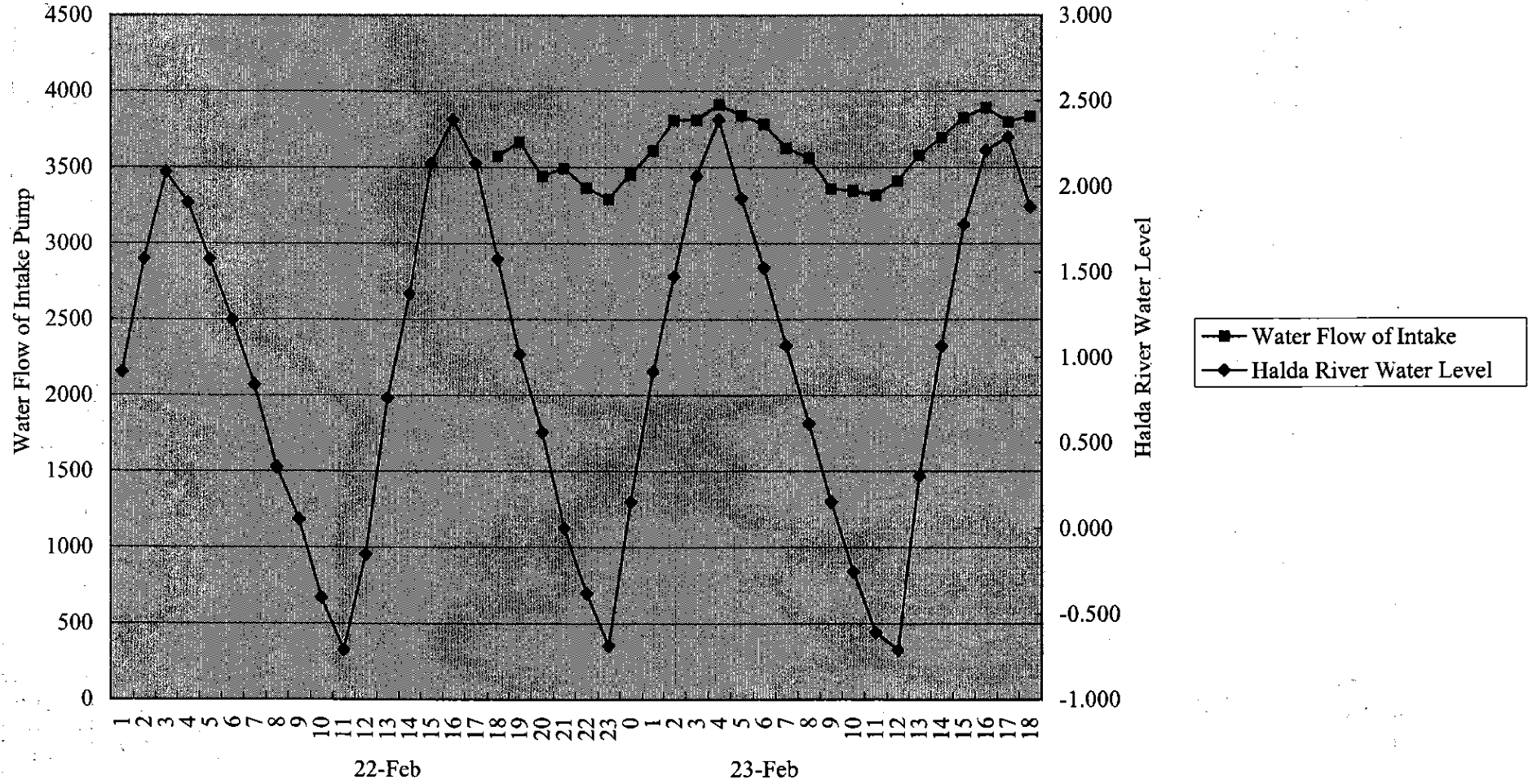
This high fluctuation in short time of about 5 hours give serious adverse effect on stable operation of treatment plant. Because of this reason, existing plant introduced an inverter control pump for four intake pumps in total. However, it is out of use presently, and control by manual valve operation at delivery pipes of pumps has been carried out. However, it is quite difficult to control properly by such manual control against continuously changing river water level. In the proposed project, two pumps with respective inverter control device will be introduced to keep stable intake amount for proper water treatment. Q-H curve of an existing intake pump is presented in Figure 4.1-2-2.

Table 4.1-2-1 Intake Pump in Mohara Water Treatment Plant and River Water Level

Date	Time	River W.L.(m)	Pump (A)				Pump Pressure (kg/cm ²)				Voltage (V)	Flow (m ³ /h)	Difference of River water Level (m)	Difference of Intake Pump Flow		
			N0.1	N0.2	N0.3	N0.4	N0.1	N0.2	N0.3	N0.4				(m ³ /h)	(%)	
22-Feb	1:00	0.914			190	240			0.80	1.32	390					
	2:00	1.575			195	245			0.82	1.35	385					
	3:00	2.083			195	245			0.82	1.35	385		2.79			
	4:00	1.905			195	245			0.82	1.35	385					
	5:00	1.575			195	245			0.80	1.35	385					
	6:00	1.219			195	245			0.80	1.32	385					
	7:00	0.838			195	245			0.80	1.32	385					
	8:00	0.356			195	245			0.80	1.30	385					
	9:00	0.051			200	240			0.80	1.30	380					
	10:00	-0.406			200	240			0.78	1.25	380					
	11:00	-0.711			200	240			0.75	1.25	380		3.10			
	12:00	-0.152			200	240			0.80	1.25	380					
	13:00	0.762			190	235			0.80	1.30	390					
	14:00	1.372			190	235			0.80	1.30	390					
	15:00	2.134		205	205				0.95	0.80		375				
	16:00	2.388		200	200				0.95	0.80		375		3.07		
	17:00	2.134		200	200				0.95	0.80		375				
	18:00	1.575		200	200				0.92	0.78		370	3573			
	19:00	1.016			190	235			0.70	1.32	380	3667				
	20:00	0.559			190	235			0.70	1.30	380	3442				
	21:00	0.000			190	235			0.70	1.30	380	3493				
	22:00	-0.381			190	235			0.70	1.30	380	3365			minimum flow	
	23:00	-0.686			190	235			0.70	1.28	390	3291		3.07	3291	
23-Feb	0:00	0.152			190	240			0.72	1.30	390	3454				
	1:00	0.914			190	240			0.72	1.35	390	3609				
	2:00	1.473			195	240			0.75	1.38	395	3808				
	3:00	2.057			195	240			0.78	1.38	395	3811			maximum flow	max/min
	4:00	2.388			195	240			0.80	1.38	395	3911		3.10	3911	119%
	5:00	1.930			190	240			0.75	1.35	395	3839				
	6:00	1.524			190	240			0.75	1.35	395	3783				
	7:00	1.067			190	240			0.70	1.30	398	3626				
	8:00	0.610			190	240			0.70	1.30	398	3562				
	9:00	0.152			190	240			0.65	1.25	398	3359				
	10:00	-0.254			190	240			0.65	1.20	398	3346				
	11:00	-0.610			185	235			0.62	1.20	390	3317				
	12:00	-0.711			190	235			0.62	1.25	385	3411		3.00		
	13:00	0.305			190	235			0.65	1.30	385	3578				
	14:00	1.067			190	235			0.80	1.30	385	3695				
	15:00	1.778			200	240			0.88	1.38	385	3825				
	16:00	2.210			200	240			0.90	1.40	385	3891				
	17:00	2.286			200	240			0.90	1.40	385	3797				
18:00	1.880										3836					

4.1-2-2

Figure 4.1-2-1 Halda River Water Level and Water Flow of Intake Pump



4.1-2-3

4.1-24

✓ ESTIMATED
TEST RESULT

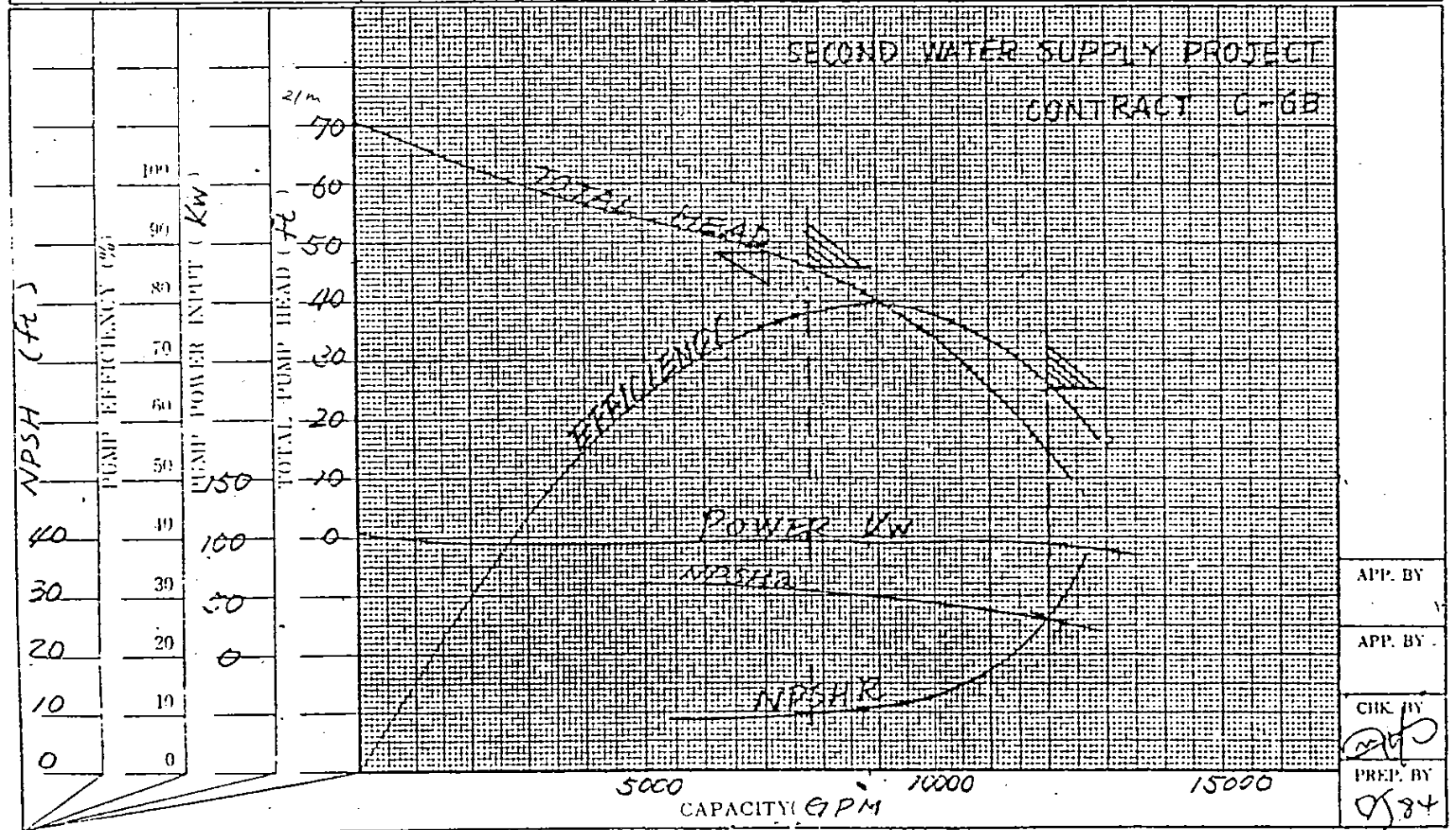
Figure 4.1-2-2

Intake Pump Performance Curve in Mohara W T P

CURVE NO : 8401 - 02

DATE : 1984 6 15

FOR MESSRS.	BANGLADESH CHITTAGONG WATER.				ITEM NO.	P601A/B/C		SERVICE	SECOND WATER SUPPLY	
PUMP	MODEL	Q GPM	HR FD	(RPM)	BHP (KW)	P. EFF (%)	SER. NO.			
	VERTICAL MIXED FLOW	8800	11.5	725	91.7	80				
MOTOR	TYPE	(VOLT)	(HZ)	(P)	(POLE)	(KW)	M. EFF (%)	LIQUID	WATER SP. GR. - Ambient TEMP. -	
	TEFC-V	400	50	3	8	132	90			



4.1-24

Table 4.1-2-2

Intake Pump Data Sheet in Mohara W T P

CONTRACT NO. C-68 PUMP DATA SHEET
(APPLICABLE FOR: PROPOSAL MFG)

DOC. NO.: P401-01 REV. 0
ITEM NO.: P601 ALBIC
W.O.NO.: _____
DATE: 1984.6.15

FOR GOLDEN BELL TRADING CO, LTD SITE BANGLADESH
SERVICE CHITTAGONG WATER SUPPLY NO. REQ'D. 3 SET
PUMP MFR BONG MYUNG SIZE AND MODEL BPV 500 SER. NO. _____
MOTOR MFR BY BONG MYUNG MTD. BY BONG MYUNG

OPERATION CONDITION EACH PUMP	PERFORMANCE
LIQUID: <u>WATER</u> ^{GPM} M ³ /MIN AT PT: NOR <u>8800</u> RATED: _____	PROPOSAL CURVE NO: <u>ABE406001</u>
PT. @ NOR <u>52°E</u> MAX <u>100°F</u> DISCH PRESS, KGF/CM ² : _____	RPM: <u>725</u> NPSH(WATER), # <u>22</u>
SP. GR. AT PT: _____ SUCT PRESS, KGF/CM ² : _____	EFF. %: <u>80</u> BHP RATED, KW: <u>91.7</u>
VIS. AT PT: CST _____ CP _____ DIFF PRESS, KGF/CM ² : _____	MAX BHP RATED IMP, KW: <u>105</u>
VAP PRESS AT PT, KGF/CM ² : _____ DIFF HEAD, # <u>11.5</u>	MAX HEAD RATED IMP, # <u>71</u>
NPSHA, M: _____ HYD. KW: <u>82.6</u>	MIN CONTINUOUS M ³ /MIN: <u>7800</u>
CORR/EROS CAUSED BY _____	ROTATION FACING CPLG END: <u>CW</u>
	NO OF STAGE: <u>1</u>
	WATER COOLING, KG/CM ² : <u>2</u>
	BEARING, #/MIN: <u>100</u>
	STUFF BOX, #/MIN: _____
	#/MIN: _____
	TOTAL, #/MIN: _____
	FLUSHING FLUID: _____
	#/MIN: _____ KGF/CM ² : _____
	PLAN NO: _____

CONSTRUCTION

CASE - MOUNT: CENTERLINE FOOT BRACKET VERT
 SPLIT AXIAL RADIAL
 - VOLUTE TYPE: SCL DDL DIFFUSER
 - CONNECT: VENT 3/4 B DRAIN 3/4 B GAGE 3/8 B
 - NOZZLE

	SIZE	RATING	FACING	POSITION
SUCTION	<u>3/4 B</u>	<u>ANSTIGS CLASS 50</u>	<u>RF</u>	<u>SIDE (BOTTOM)</u>
DISCHARGE	<u>3/4 B</u>	<u>"</u>	<u>RF</u>	<u>SIDE</u>

- MAX ALLOW, KG/CM²: _____ (HYDRO TEST, KG/CM²: _____)
 IMPELLER DIA, MM: RATED _____ MAX _____ TYPE CLOSE
 MOUNT: BETWEEN BRGS OVERHUNG
 BRG TYPE: RADIAL RUBBER THRUST ROLLER THRUST
 LUB: OIL GREASE WATER
 COUPLING: MFR BONG MYUNG TYPE U JOINT
 PACKING: TYPE ASBESTOS SIZE/TURN 3/4" x 5
 MECH SEAL: MFR _____ TYPE _____

AUX PIPING

COOLING WATER: TUBING PIPING
 SEAL FLUSH: TUBING PIPING

TEST

NO WIT PERF WIT PERF
 NO WIT HYDRO WIT HYDRO
 NPSH DISMANT & INSP
 OTHER _____

FOR VERTICAL PUMP

PIT DEPTH, M: _____
 MIN SUBMERGE REQ'D, M: _____
 FLOW SW: YES NO
 THRUST UP DOWN, KGF: _____

MATERIAL

CASING: CAST IRON IMPELLER: CAST IRON
 SHAFT: STAINLESS WEAR RING: STAINLESS
 BELLEVE: STAINLESS BASEPLATE: STEEL
 DISCH BEND: CAST IRON COLUMN: CAST IRON

MOTOR

KW: 72.5 RPM: 725 VOLT/PH/Hz: 400/30/50
 FRAME: _____ BRG: BALL LUB: Grease
 TYPE BSTE INSUL: F ENCL: TEFC-V
 TEMP RISE, °C: _____ VERT THRUST CAP, KGF: _____

APPR. WEIGHT

PUMP AND BASE, KG: 7500
 MOTOR KG: 1800

REMARKS: MOTOR Reference: AC, DCSPC PREP. BY [Signature] CHK. BY [Signature] APP. BY _____ | APP. BY _____

4.1-3 Operational Status of Transmission Pumps of Mohara WTP

Transmission Pumps of the Mohara WTP is planned to send water to the Battali Hill Reservoir. This plan can be accomplished by 4-pump operation out of installed 5 pumps. Presently, however, the Battali Hill reservoir has not been used due to technical reason at the reservoir, and pups has been operated with low pump head. Therefore, number of pumps in duty is controlled at 2 in daytime and 3 in nighttime. In addition, an effective capacity of existing clearwater reservoir at the Mohara WTP is 6,716 m³ with a detention time of 1.77 hours. It is not sufficient for use as a distribution reservoir for 20 MGD. Measurement of transmission flow was conducted at exposed transmission pipe in a chamber of transmission flowmeter for 24 hours from 21st to 22nd February 2000.

Table 4.1-3-1 and Figure 4.1-3-1 presents operational status of transmission pumps and delivery pressure. As indicated in the table and the figure, 3 pumps are operated from 0100 to 0800 hours, and 2 pumps for other hours. Average flow during 2-pump operation is about 3,300 m³/h with a pressure of more than 5 kg/cm², while flow of 4,500 m³/h and pressure of 6 kg/cm² during 3-pump operation.

Table 4.1-3-2 and Figure 4.1-3-2 presents flow measurement results in 1990 and 1996, and the results measured at existing transmission pipe at river crossing with a diameter of 900 mm for 24 hours from 13th to 14th March 2000. These data implies number of pumps for operation in nighttime is 3. Q-H curve of an existing transmission pump is presented in Figure 4.1-2-2.

Table 4.1-3-1 Water Flow and Water Pressure of Transmission Pump in Mohara Treatment Plant

Date	Time	Pump (A)					Pump Pressure (ft)					Total Pump Pressure		transmission Pressure(psi)		Voltage (V)		Flow (m3/h)
		N0.1	N0.2	N0.3	N0.4	N0.5	N0.1	N0.2	N0.3	N0.4	N0.5	(ft)	(kg/cm2)	High	Low	High	Low	
21-Feb	1:00	62		64		64	180		200		185	200	6.1	84	84	3,250	380	
	2:00	62		60		64	180		200		185	200	6.1	84	84	3,250	380	
	3:00	62		60		64	180		200		185	200	6.1	84	84	3,250	380	
	4:00	62		60		64	180		200		185	200	6.1	84	84	3,250	380	
	5:00	65		60		64	180		200		185	200	6.1	84	84	3,250	380	
	6:00	65		60		64	180		200		185	200	6.1	84	84	3,250	380	
	7:00	64		55		64	170		185		185	180	5.5	80	80	3,250	380	
	8:00	64		55		64	170		185		185	180	5.5	80	80	3,200	375	
	9:00			59		66			160		160	108	3.3	50	50	3,150	370	
	10:00			59		66			160		160	108	3.3	50	50	3,150	370	
	11:00			57		65			160		160	100	3.0	48	48	3,150	370	
	12:00			60		66			160		160	100	3.0	48	48	3,150	370	
	13:00			60		64			160		160	110	3.4	52	52	3,150	370	
	14:00			60		64			160		160	112	3.4	52	52	3,150	370	
	15:00			60		65			160		160	120	3.7	54	54	3,150	370	
	16:00			60		65			165		165	125	3.8	56	56	3,150	370	3,207
	17:00			60		65			165		165	125	3.8	56	56	3,150	370	3,085
	18:00			64		67			165		165	125	3.8	56	56	3,150	370	3,330
	19:00			65		68			165		165	125	3.8	56	56	3,150	370	3,382
	20:00			62		64			165		165	115	3.5	54	54	3,200	375	3,331
	21:00			63		65			165		165	115	3.5	54	54	3,200	375	3,163
	22:00			63		65			160		160	115	3.5	54	54	3,150	370	3,389
	23:00			62		65			160		160	115	3.5	54	54	3,250	370	3,394
22-Feb	0:00			62		65				160	115	3.5	54	54	3,150	370	4,755	
	1:00		66	63		66	190	190		190	205	6.2	90	90	3,150	370	4,638	
	2:00		65	63		66	190	190		190	205	6.2	90	90	3,150	370	4,668	
	3:00		65	63		66	190	190		190	205	6.2	90	90	3,150	370	4,641	
	4:00		65	63		66	190	190		190	200	6.1	90	90	3,150	370	4,423	
	5:00		65	63		66	190	190		190	200	6.1	90	90	3,150	370	4,476	
	6:00		65	63		66	190	190		190	200	6.1	90	90	3,150	370	4,529	
	7:00		62	55		64	180	180		180	170	5.2	86	86	3,250	380	4,534	
	8:00		63	57		68	160	160		165	165	5.0	76	76	3,150	380	4,480	
	9:00		64			67	160			160	105	3.2	50	50	3,150	370	2,947	
	10:00		65			68	160			160	105	3.2	50	50	3,050	360	2,971	
	11:00		65			68	160			160	110	3.4	52	52	3,050	360	3,217	
	12:00		65			68	160			160	110	3.4	52	52	3,050	360	2,980	
	13:00		63			66	165			165	125	3.8	56	56	3,150	370	3,241	
	14:00		65			68	165			165	125	3.8	56	56	3,150	370	2,967	
	15:00		65			68	160			165	125	3.8	56	56	3,150	370	2,949	
	16:00		66			67	165			165	130	4.0	56	56	3,150	370	3,208	
	17:00		66			67	165			165	130	4.0	56	56	3,100	365	3,428	
	18:00		68			70	165			165	130	4.0	56	56	3,000	355		
	19:00		66			68	165			165	120	3.7	54	54	3,100	360		
	20:00		65			66	165			165	120	3.7	54	54	3,150	370		
	21:00		65			65	165			165	120	3.7	54	54	3,150	370		
	22:00		64			65	165			165	120	3.7	54	54	3,150	370		
23:00		63			65	160			160	115	3.5	52	52	3,150	370			
23-Feb	0:00				64				160	80	2.4	32	32	3,250	380			

4.1-3-2

4.1-3-3

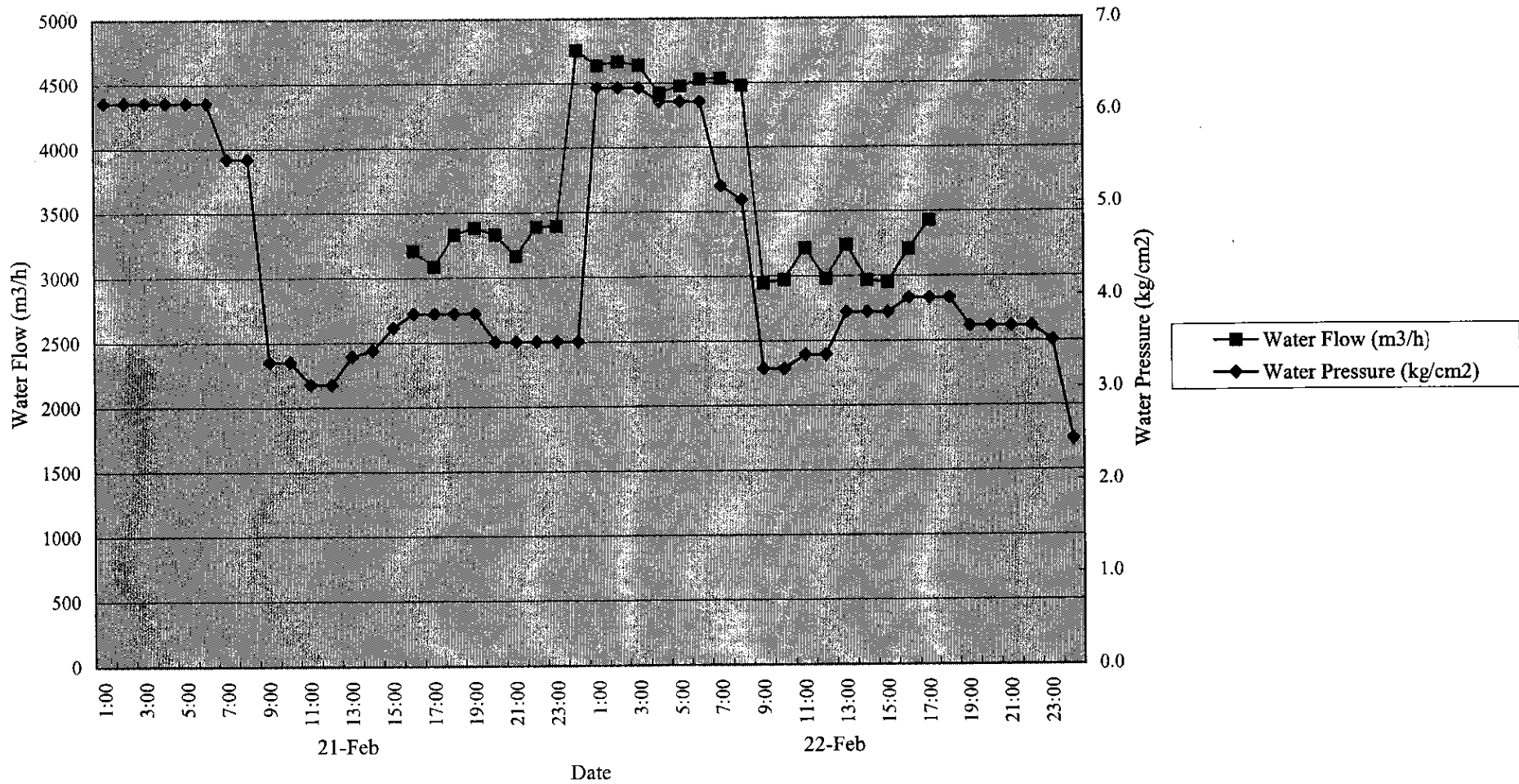


Figure 4.1-3-1 Water Flow and Water Pressure of Transmission Pump in Mohara Water Treatment Plant

Table 4.1-3-2 Transmission Pump in Mohara Treatment Plant

Date	Time	Total Pump Pressure		transmission Pressure(psi)		Flow Rate(1)		Flow Rate(2)		Flow Rate(3)		1996.2.21-22		1990.2.21-22		Date	Time	Flow Rate(4)		2000.3.13-14
		(ft)	(kg/cm2)	High	Low	(m3/h)	Pump	(m3/h)	Pump	(m3/h)	Pump	Totalizer Reading x 10(m3)	Totalizer Reading x 10(m3)	(m3/h)	Pump			Total Reading (m3)		
21-Feb	1:00	200	6.1	84	84											13-Mar				
	2:00	200	6.1	84	84			6,560	3	3,890	2	24,396,127	6,302,330		0:30			2		
	3:00	200	6.1	84	84					3,890	2	24,396,783	6,302,719		1:30			2		
	4:00	200	6.1	84	84					3,890	2		6,303,108		2:30			2		
	5:00	200	6.1	84	84					3,130	2		6,303,497		3:30			2		
	6:00	200	6.1	84	84					1,760	2		6,303,810		4:30			2		
	7:00	180	5.5	80	80					2,410	2		6,303,986		5:30			2		
	8:00	180	5.5	80	80					3,970	3		6,304,227		6:30			2		
	9:00	108	3.3	50	50			5,160	3	4,680	3	24,404,150	6,304,624		7:30			3		
	10:00	108	3.3	50	50			5,220	3	3,860	3	24,404,666	6,305,090		8:30			3		
	11:00	100	3.0	48	48			5,920	2	4,440	3	24,405,188	6,305,478		9:30			3		
	12:00	100	3.0	48	48			3,120	2	4,050	3	24,405,780	6,305,920		10:30			3		
	13:00	110	3.4	52	52			3,370	2	3,740	2	24,406,092	6,306,325		11:30			3		
	14:00	112	3.4	52	52			3,590	2	4,010	2	24,406,429	6,306,699		12:30			2		
	15:00	120	3.7	54	54			3,540	2	3,070	2	24,406,788	6,307,100		13:30			2		
	16:00	125	3.8	56	56			3,207	2	2,370	2	24,407,142	6,307,407		14:30			2		
	17:00	125	3.8	56	56			3,085	2	3,710	2	24,407,379	6,307,805		15:30			2	9,189	
	18:00	125	3.8	56	56			3,330	2	3,690	2	24,407,750	6,308,112		16:30		3,202	2	12,391	
	19:00	125	3.8	56	56			3,382	2	3,640	2	24,408,119	6,308,474		17:30		3,248	2	15,639	
	20:00	115	3.5	54	54			3,331	2	3,640	2	24,408,483	6,308,835		18:30		3,246	2	18,885	
	21:00	115	3.5	54	54			3,183	2	3,670	2	24,408,847	6,309,165		19:30		3,208	2	22,093	
	22:00	115	3.5	54	54			3,389	2	3,100	2	24,409,211	6,309,516		20:30		3,249	2	25,342	
	23:00	115	3.5	54	54			3,394	2			24,409,578	6,309,956		21:30		3,302	2	28,644	
0:00	115	3.5	54	54			4,755	2			24,409,888	6,310,392		22:30	3,347	2	31,991			
1:00	205	6.2	90	90			4,638	3				6,310,822		23:30	4,199	3	36,190			
2:00	205	6.2	90	90			4,668	3				6,311,264		0:30	4,773	3	40,963			
3:00	205	6.2	90	90			4,641	3				6,311,679		1:30	4,700	3	45,663			
4:00	200	6.1	90	90			4,423	3				6,312,114		2:30	4,725	3	50,388			
5:00	200	6.1	90	90			4,476	3				6,312,561		3:30	4,678	3	55,066			
6:00	200	6.1	90	90			4,529	3				6,312,983		4:30	4,623	3	59,689			
7:00	170	5.2	86	86			4,534	3				6,313,412		5:30	4,573	3	64,262			
8:00	165	5.0	76	76			4,480	3				6,313,820		6:30	4,586	3	68,848			
9:00	105	3.2	50	50			2,947	2	3,660	2	24,413,724	6,314,276		7:30	4,489	3	73,337			
10:00	106	3.2	50	50			2,971	2	3,720	2	24,414,090	6,314,696		8:30	3,677	3	77,014			
11:00	110	3.4	52	52			3,217	2	3,670	2	24,414,462	6,315,116		9:30	3,136	2	80,150			
12:00	110	3.4	52	52			2,980	2	3,710	2	24,414,829	6,315,438		10:30	3,050	2	83,200			
13:00	125	3.8	56	56			3,241	2	3,770	2	24,415,200	6,315,812		11:30	3,111	2	86,311			
14:00	125	3.8	56	56			2,967	2	4,630	2	24,415,577	6,316,169		12:30	3,147	2	89,458			
15:00	125	3.8	56	56			2,949	2	2,600	2	24,416,040	6,316,511		13:30	3,143	2	92,601			
16:00	130	4.0	56	56			3,208	2	4,200	3	24,416,300	6,316,877		14:30	3,267	2	95,868			
17:00	130	4.0	56	56			3,428	2	4,200	3	24,416,720	6,317,219		15:30	3,329	2	99,197			
18:00	130	4.0	56	56					4,170	2	24,417,140	6,317,572		16:30		2				
19:00	120	3.7	54	54					4,180	2	24,417,557	6,317,935		17:30		2				
20:00	120	3.7	54	54					4,240	2	24,417,975	6,318,300		18:30		2				
21:00	120	3.7	54	54					2		24,418,399	6,318,668		19:30		2				
22:00	120	3.7	54	54					2			6,319,031		20:30		2				
23:00	115	3.5	52	52					2			6,319,396		21:30		2				
23-Feb	0:00	80	2.4	32	32				2			6,319,758		22:30		2				
									2			6,320,096		23:30		2				
Total	(Pump 2)					58,944		81,710		109,280				Total	(Pump 2)	44,965				
	(Pump 3)					36,389		25,340		68,380					(Pump 3)	45,023				
Total						95,333		107,050		177,660				Total		90,008				
Average	(Pump 2)					3,275		3,714		3,525				Average	(Pump 2)	3,213				
	(Pump 3)					4,549		5,068		4,274					(Pump 3)	4,502				
Total Average						3,667		3,965		3,780				Total Average		3,824				
Total (m3/d)						88,000		95,156		90,720						91,785				
Total (MGD)						19.4		20.9		20.0			24,422,874			20.2				

Note: Flow rate (1)は2000年2月21日から22日にかけての24時間の現地流量測定結果である。測定箇所は流出管の流量室内の流量計上流側である。
 Flow rate (2)は1996年2月21日から22日にかけての流量計の測定記録である。これ以降の年には、故障のため、記録はない。
 Flow rate (3)は1990年2月21日から22日にかけての流量計の測定記録である。毎時間ごとの記録がなされている。
 Flow rate (4)は2000年3月13日から14日にかけての24時間の現地流量測定結果である。測定箇所は浄水場外の水管橋地点であるが、途中、分岐管は無く、浄水場からの流出量と同じ値を示す。

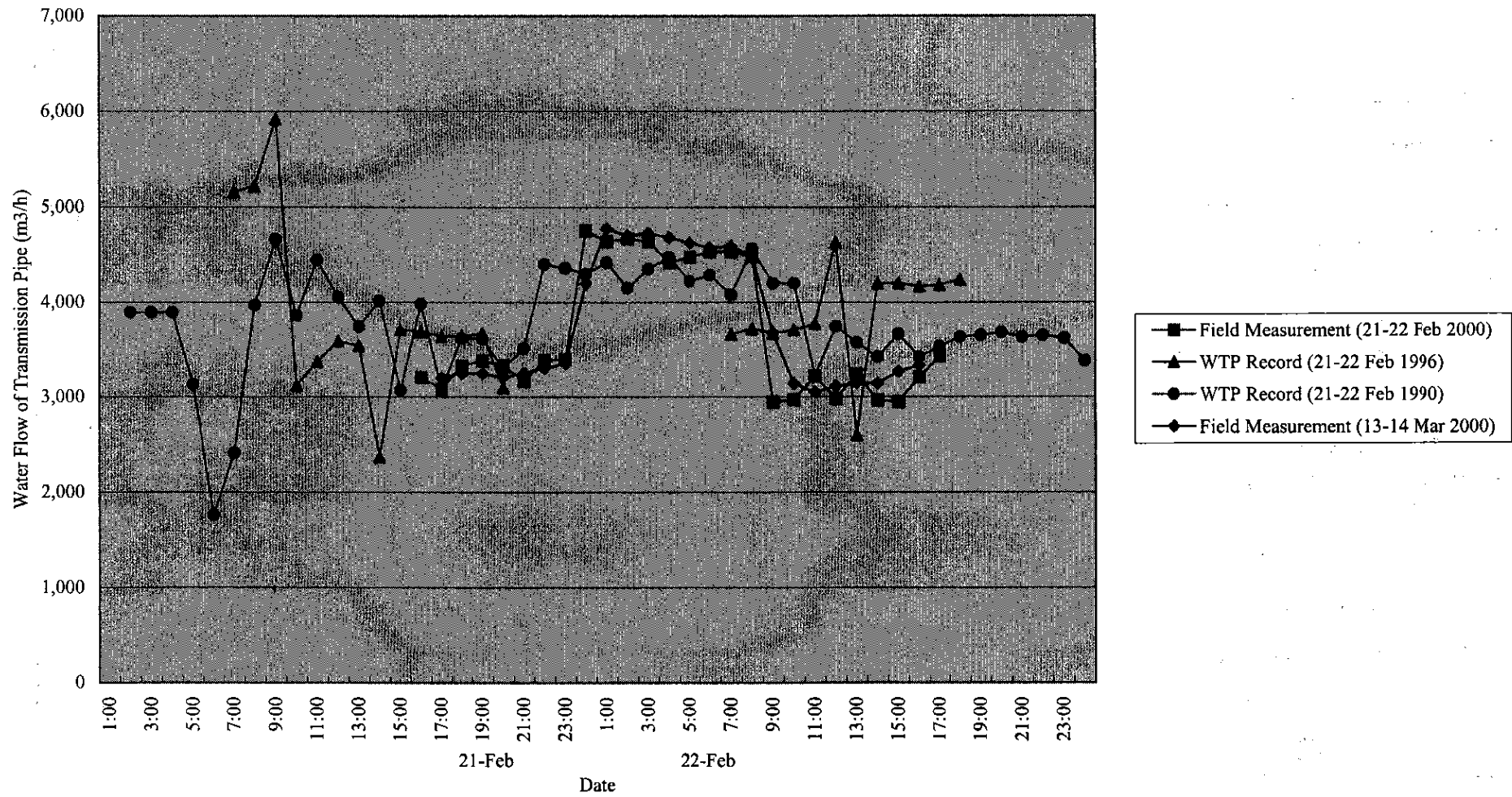


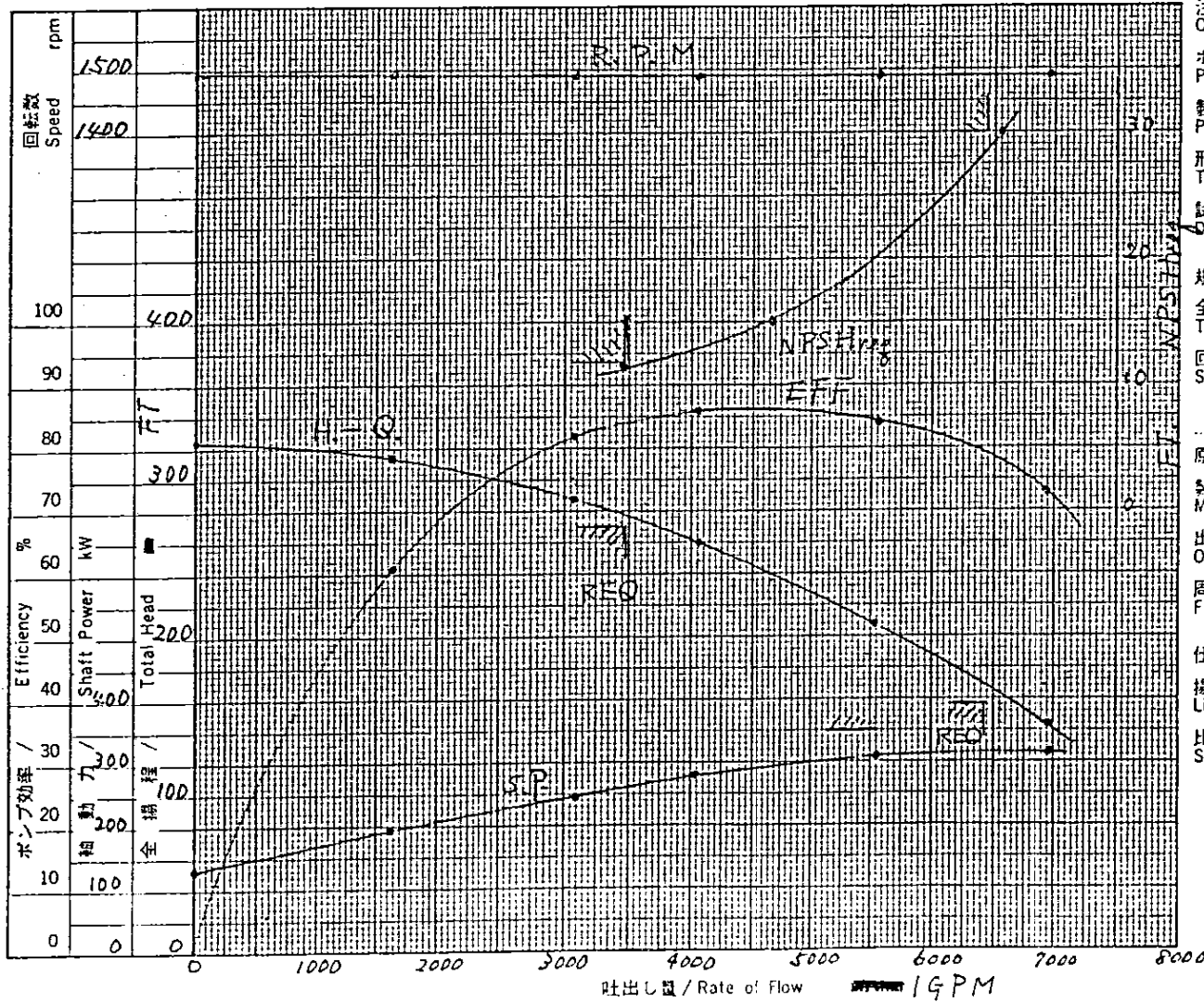
Figure 4.1-3-2 Water Flow of Transmission Pump

Figure 4.1.3-3 Transmission Pump Performance Curve in Mohara W T P

ポンプ性能曲線図 (常温清水試験成績)

PERFORMANCE CURVE

(This curve shows the clean water performance at ordinary temperature.)



注 番 Order No. _____ 貨機番号 Item No. _____

ポンプ名称 Pump Name HIGH LIFT PUMP

製 番 Product No. P-446807 No. 5-2

形 式 Type 400x300-CDMV

試験日 Date Dec. 3, 1984

規定要目 / Specified Items
 全揚程 Total Head 271 FT 吐出量 Rate of Flow 3475 IGPM
 回転数 Speed 1470 rpm 原動機容量 Mover Capacity 350 kW

原動機要目 / Items of Mover
 製造者 Maker SHINKO 形式 Type ITQ2-G -600LA
 出力 Output 350 kW 極数 Poles 4 P
 周波数 Frequency 50 Hz 同期回転数 Synchro. Speed 1500 rpm

仕様揚液 / Liquid at Site
 揚液 Liquid TREATED WATER 温度 Temp. NORMAL °C
 比重 S. G. 1.0 粘度 Visco. _____

株式会社 西島製作所
 TORISHIMA PUMP MFG. CO., LTD.
 TORISHIMA 西島 OSAKA JAPAN

御立会者 Witnessed by _____ 照査 Checked by J. Sato 試験係 Tested by M. Inoue

4.1-3-6

4.1-4 Sludge Removal Efficiency of Desilting Basin in Mohara WTP

Efficiency of sludge removal in the Desilting Basins is presented in Table 4.1-4-1. It is affected by chemical dosing at the inlet of basins. According to the table, in case of alum dosing with 7.5 to 12 mg/l for raw water with turbidity of 100 to 400 NTU, removal ratio was about 60%. In case PAC dosing together with alum, it increased to 74% to 77% for raw water of 300 to 500 NTU. When chemical dosing was not conducted, the ration decreased to 23%.

When chemical dosing was conducted, the rate is of course highly increased. However, existing desilting basins does not have sufficient sludge drainage facility, and settled sludge shall be removed manually after water drain and drying. In addition, if volume of settled sludge is large, it hasten flow velocity in the basins and settling efficiency is decreased. Therefore, chemical dosing at the basins shall not be implemented and turbidity shall be removed in clarifiers, unless turbidity rapidly increases so high that operation of clarifiers is affected.

Table 4.1-4-1 Turbidity Removal Ratio of Existing Desilting Basin

Date	Time	Desilting Basin Turbidity(NTU)				Average Ratio	River Level		Chemical Dosing Rate		Remarks	
		Inlet	Outlet	Removal	Removal Ratio		(ft-in)	(m)	Alum	PAC		
Aug-1	10	220	140				0' - 10"	0.254	7.49	-	With Alum before Basin	
	12	180	100	120	0.55		7' - 6"	2.286	7.49	-	- ditto -	
	14	130	94	86	0.48		11' - 6"	3.505	7.49	-	- ditto -	
	16	110	50	80	0.62		11' - 2"	3.404	7.49	-	- ditto -	
	18	120	38	72	0.65		8' - 0"	2.438	7.49	-	- ditto -	
	20	184	42	78	0.65		4' - 8"	1.422	7.49	-	- ditto -	
	22	230	90	94	0.51		1' - 8"	0.508	7.49	-	- ditto -	
Aug-2	24	200	110	120	0.52		2' - 8"	0.813	7.49	-	- ditto -	
	2	160	88	112	0.56		6' - 0"	1.829	7.49	-	- ditto -	
	4	120	60	100	0.63		10' - 8"	3.251	7.49	-	- ditto -	
	6	140	64	56	0.47		8' - 4"	2.540	7.49	-	- ditto -	
	8	250	72	68	0.49		4' - 6"	1.372	8.39	-	- ditto -	
	10	410	135	115	0.46		2' - 6"	0.762	8.39	-	- ditto -	
	12	320	67	343	0.84		5' - 0"	1.524	8.39	-	- ditto -	
	14	134	48	272	0.85		11' - 2"	3.404	8.39	-	- ditto -	
	16	110	42	92	0.69		12' - 0"	3.658	8.39	-	- ditto -	
	18	140	50	60	0.55		9' - 3"	2.819	8.39	-	- ditto -	
	20	180	68	72	0.51		5' - 10"	1.778	8.39	-	- ditto -	
	22	300	74	106	0.59		2' - 4"	0.711	8.39	-	- ditto -	
	Aug-3	24	410	120	180	0.60		4' - 0"	1.219	8.39	-	- ditto -
		2										
	4											
	6	380	150				9' - 0"	2.743	8.39	-	- ditto -	
	8	350	146	234	0.62	59%	5' - 6"	1.676	12.62	0.04	- ditto -	
	10	430	180	170	0.49		2' - 4"	0.711	12.62	0.04	With Alum before Basin & PAC at inlet of Basin	
	12	360	110	320	0.74		4' - 8"	1.422	12.62	0.04	- ditto -	
	14	250	84	276	0.77		10' - 4"	3.150	12.62	0.04	- ditto -	
	16	320	60	190	0.76		12' - 6"	3.810	12.62	0.04	- ditto -	
	18	280	72	248	0.78		10' - 2"	3.099	12.62	0.04	- ditto -	
	20	370	64	216	0.77		6' - 6"	1.981	12.62	0.04	- ditto -	
	22	400	80	290	0.78		4' - 3"	1.295	12.62	0.04	- ditto -	
Aug-4	24	410	84	316	0.79		1' - 8"	0.508	12.62	0.04	- ditto -	
	2											
	4											
	6		280				10' - 0"	3.048	12.62	0.04	- ditto -	
	8	350	68				6' - 8"	2.032	13.02	0.04	- ditto -	
	10	490	74	276	0.79		3' - 10"	1.168	13.02	0.04	- ditto -	
	12	480	110	380	0.78	74%	1' - 0"	0.305	13.02	0.04	- ditto -	
	14	240	98	382	0.80		6' - 0"	1.829	13.02	0.04	With Alum before Basin	
	16	270	54	186	0.78		11' - 6"	3.505	13.02	0.04	- ditto -	
	18	240	90	180	0.67	75%	11' - 0"	3.353	13.02	0.04	- ditto -	
	20	410	84	156	0.65		7' - 10"	2.388	13.02	0.04	With Alum before Basin & PAC at inlet of Basin	
	22	450	112	298	0.73		4' - 6"	1.372	13.02	0.04	- ditto -	
Aug-5	24	490	102	348	0.77		2' - 4"	0.711	13.02	0.04	- ditto -	
	2											
	4											
	6	460	100				11' - 6"	3.505	13.02	0.04	- ditto -	
	8	400	84	376	0.82		8' - 0"	2.438	12.79	0.04	- ditto -	
	10	480	80	320	0.80		4' - 8"	1.422	12.79	0.04	- ditto -	
	12	420	84	396	0.83	77%	2' - 10"	0.864	12.79	0.04	- ditto -	
	14	360	78	342	0.81		3' - 0"	0.914	12.79	0.04	With Alum before Basin	
	16	380	76	284	0.79		9' - 8"	2.946	12.79	0.04	- ditto -	
	18	240	98	282	0.74		10' - 2"	3.099	12.79	0.04	- ditto -	
	20	320	94	146	0.61		8' - 0"	2.438	12.79	0.04	- ditto -	
	22	366	140	180	0.56		6' - 4"	1.930	12.79	0.04	- ditto -	
Aug-6	24	390	160	206	0.56		5' - 0"	1.524	12.79	0.04	- ditto -	
	2											
	4											
	6	200	80						12.79	0.04	- ditto -	
	8	150	62	138	0.69		8' - 10"	2.692	13.01	-	- ditto -	
	10								13.01	-	- ditto -	
	12	250	100				2' - 10"	0.864	13.01	-	- ditto -	
	14	420	110	140	0.56		1' - 4"	0.406	13.01	-	- ditto -	
	16	200	150	270	0.64		7' - 0"	2.134	13.01	-	- ditto -	
	18	170	84	116	0.58		10' - 3"	3.124	13.01	-	- ditto -	
	20	160	70	100	0.59		9' - 6"	2.896	13.01	-	- ditto -	
	22	220	72	88	0.55		5' - 6"	1.676	13.01	-	- ditto -	
Aug-7	24	260	78	142	0.65		3' - 0"	0.914	13.01	-	- ditto -	
	2											
	4											
	6	170	70				10' - 0"	3.048	13.01	-	- ditto -	
	8	150	64	106	0.62		9' - 6"	2.896	11.91	-	- ditto -	
	10	170	60	90	0.60		6' - 6"	1.981	11.91	-	- ditto -	
	12	180	66	104	0.61		3' - 6"	1.067	11.91	-	- ditto -	
	14	290	92	88	0.49		1' - 2"	0.356	11.91	-	- ditto -	
	16	250	126	164	0.57		3' - 4"	1.016	11.91	-	- ditto -	
	18	234	116	134	0.54		6' - 0"	1.829	11.91	-	- ditto -	

Date	Time	Desilting Basin Turbidity(NTU)				Average Ratio	River Level		Chemical Dosing Rate		Remarks
		Inlet	Outlet	Removal	Removal Ratio		(ft-in)	(m)	Alum	PAC	
	20	200	118	116	0.50		9' - 8"	2.946	11.91	-	- ditto -
	22	230	92	108	0.54		6' - 0"	1.829	11.91	-	- ditto -
Aug-8	24	260	112	118	0.51		4' - 0"	1.219	11.91	-	- ditto -
	2										
	4										
	6	160	142			60%	8' - 8"	2.642	11.91	-	- ditto -
	8	120	126	34	0.21		9' - 3"	2.819	-	-	Without Alum & PAC before Basin
	10	130	98	22	0.18		8' - 0"	2.438	-	-	- ditto -
	12	110	104	26	0.20		5' - 0"	1.524	-	-	- ditto -
	14	138	90	20	0.18		1' - 2"	0.356	-	-	- ditto -
	16	150	108	30	0.22		0' - 6"	0.152	-	-	- ditto -
	18	112	116	34	0.23		5' - 6"	1.676	-	-	- ditto -
	20	120	94	18	0.16		8' - 0"	2.438	-	-	- ditto -
	22	128	108	12	0.10		7' - 6"	2.286	-	-	- ditto -
Aug-9	24	140	104	24	0.19		5' - 0"	1.524	-	-	- ditto -
	2										
	4										
	6	126	118				4' - 8"	1.422	-	-	- ditto -
	8	140	100	26	0.21				-	-	- ditto -
	10										
Aug-23	10	118	92				6' - 8"	2.032	-	-	Without Alum & PAC before Basin
	12	130	90	28	0.24		4' - 2"	1.270	-	-	- ditto -
	14	136	98	32	0.25		2' - 4"	0.711	-	-	- ditto -
	16	140	100	36	0.26		3' - 4"	1.016	-	-	- ditto -
	18	120	103	37	0.26		8' - 6"	2.591	-	-	- ditto -
	20	110	92	28	0.23		10' - 0"	3.048	-	-	- ditto -
	22	116	86	24	0.22		7' - 6"	2.286	-	-	- ditto -
Aug-24	24	130	90	26	0.22		4' - 8"	1.422	-	-	- ditto -
	2										
	4										
	6										
	8	110	89				10' - 2"	3.099	-	-	- ditto -
	10	122	87	23	0.21		9' - 4"	2.845	-	-	- ditto -
	12	130	94	28	0.23		6' - 6"	1.981	-	-	- ditto -
	14	140	96	34	0.26		4' - 6"	1.372	-	-	- ditto -
	16	150	106	34	0.24		3' - 0"	0.914	-	-	- ditto -
	18	134	112	38	0.25		5' - 4"	1.626	-	-	- ditto -
	20	120	101	33	0.25		9' - 6"	2.896	-	-	- ditto -
	22	126	91	29	0.24		8' - 8"	2.642	-	-	- ditto -
Aug-25	24	130	96	30	0.24		8' - 0"	2.438	-	-	- ditto -
	2										
	4										
	6										
	8	120	98				9' - 2"	2.794	-	-	- ditto -
	10	112	93	27	0.23		10' - 10"	3.302	-	-	- ditto -
	12	130	87	25	0.22		8' - 6"	2.591	-	-	- ditto -
	14	136	97	33	0.25		6' - 6"	1.981	-	-	- ditto -
	16	140	98	38	0.28		3' - 6"	1.067	-	-	- ditto -
	18	140	104	36	0.26		2' - 6"	0.762	-	-	- ditto -
	20	130	102	38	0.27		6' - 4"	1.930	-	-	- ditto -
	22	114	96	34	0.26		9' - 0"	2.743	-	-	- ditto -
Aug-26	24	110	90	24	0.21		8' - 6"	2.591	-	-	- ditto -
	2										
	4										
	6										
	8	120	90				6' - 0"	1.829	-	-	- ditto -
	10	116	91	29	0.24		11' - 0"	3.353	-	-	- ditto -
	12	110	89	27	0.23		11' - 6"	3.505	-	-	- ditto -
	14	118	88	22	0.20		9' - 4"	2.845	-	-	- ditto -
	16	120	90	28	0.24		6' - 0"	1.829	-	-	- ditto -
	18	132	93	27	0.23		4' - 0"	1.219	-	-	- ditto -
	20	140	98	34	0.26		4' - 0"	1.219	-	-	- ditto -
	22	130	103	37	0.26		9' - 6"	2.896	-	-	- ditto -
Aug-27	24	110	97	33	0.25		11' - 4"	3.454	-	-	- ditto -
	2										
	4										
	6										
	8	120	89				4' - 0"	1.219	-	-	- ditto -
	10	114	91	29	0.24		9' - 6"	2.896	-	-	- ditto -
	12	110	90	24	0.21		12' - 6"	3.810	-	-	- ditto -
	14	116	87	23	0.21		10' - 0"	3.048	-	-	- ditto -
	16	120	91	25	0.22		7' - 10"	2.388	-	-	- ditto -
	18	135	92	28	0.23		5' - 10"	1.778	-	-	- ditto -
	20	140	102	33	0.24		3' - 5"	1.041	-	-	- ditto -
	22	130	105	35	0.25		6' - 6"	1.981	-	-	- ditto -
Aug-28	24	116	96	34	0.26	23%	10' - 4"	3.150	-	-	- ditto -

4.1-5 Concentration of Sludge discharged from Each Facility in Mohara WTP

Water contents drainage from existing desilting basins, clarifiers, and filters in the Mohara WTP measures in September 2000 are presented in Table 4.1-5-1. The measurement was conducted when raw water turbidity was about 100 NTU.

(1) Desilting Basin

The bottom of desilting basin is about 116 m long and about 13 m wide with slight slopes to 4 drainage pipes installed at the bottom of desilting basin to drain settled sludge. Respective operation gate of said drainage pipe is open for 2 to 3 minutes a day. Since the measurement was done 6 months after completion of manual cleaning in March, it was expected that sludge was settled on the bottom to some extent. However, drainage pipes are effective for sludge only settled around the pipe opening. After short time drainage with sludge, drain water is almost equal to raw water. Therefore, sludge concentration was about 0.1%. Efficiency of sludge drainage is poor.

(2) Clarifiers

Frequency of sludge drainage from clarifiers is once a day or less in the period of low turbid raw water. Drain is carried out for about 3 minutes per one time. Sludge concentration was about 0.5%.

(3) Filters

Backwashing frequency of filters in last two years was 72 hours in average as shown in Table 4.1-6-2. Backwashing is carried out for 8 to 10 minutes and surface washing is executed for 4 to 5 minutes. According to the measurement results, sludge concentration is 0.14% during backwashing for 10 minutes.

Table 4.1-5-1 Drain Water Contents for Desilting Basin, Clarifier & Filter

Basin		Sampling Time	Drain Water (g)	Dry Solid (g)	Water Contents (%)	Raw water turbidity	Sampling Date	Remark
1. Desilting Basin (East)	gate No.1 (Upstream)	start	69.18	0	0.000	70-110 NTU	28 Sep. 2000	
		in-between	67.47	0	0.000			
		final	65.33	0.018	0.028			
		Average			0.009			
	gate No.2	start	93.49	0.037	0.040	70-110 NTU	28 Sep. 2000	
		in-between	109.85	0.08	0.073			
		final	68.26	0.03	0.044			
		Average			0.052			
	gate No.3	start	110.18	0.015	0.014	70-110 NTU	28 Sep. 2000	
		in-between	63.76	0.356	0.558			
		final	69.08	0.03	0.043			
		Average			0.205			
	gate No.4	start	115.73	0	0.000	70-110 NTU	28 Sep. 2000	
		in-between	102.15	0.357	0.349			
		final	112.85	0.078	0.069			
		Average			0.140			
Total Average								0.101
2. Clarifier	No.1 Basin	after 30 sec.	137.39	0.572	0.416	70-110 NTU	28 Sep. 2000	
		after 1 min.	57.54	0.436	0.758			
		after 3 min.	109.40	0.46	0.420			
		Average			0.532			
	No.9 Basin	after 30 sec.	165.68	0.696	0.420	70-110 NTU	28 Sep. 2000	
		after 1 min.	73.93	0.315	0.426			
		after 3 min.	71.83	0.302	0.420			
		Average			0.422			
	No.24 Basin	after 30 sec.	83.38	0.533	0.639	70-110 NTU	28 Sep. 2000	
		after 1 min.	159.69	0.869	0.544			
		after 3 min.	137.21	0.801	0.584			
		Average			0.589			
Total Average								0.514
3. Filter	No.3 Basin	after 1 min.	194.28	0.505	0.260	110-150 NTU	20 Sep. 2000	
		after 3 min.	196.92	0.561	0.285			
		after 6 min.	194.68	0.02	0.010			
		after 10 min.	196.25	0.069	0.035			
		Average			0.148			
	No.8 Basin	after 1 min.	102.27	0.334	0.327	70-100 NTU	27 Sep. 2000	
		after 3 min.	102.39	0.203	0.198			
		after 6 min.	104.73	0.035	0.033			
		after 10 min.	111.78	0	0.000			
		Average			0.140			
Total Average								0.144

4.1-6 Filtration Run Time of Mohara WTP

Average filtration run time in last two years was 72 hours as presented in table 4.1-6-2. It, however, is not stable through a year. Frequency of filter washing increases from December to March, and filtration continues about 24 hours. Cases, in which such situation continues more than 3 days, are counted at 31 times for 8 filters. The longest continuation was 8 days. Reasons for such situation is not identified, but discharge of algae grown in Kaptai Dam Lake due to sunny days is suspected.

Filter media in existing filters has been flown out due to backwashing and thickness of filter layer become low as shown in Figure 4.1-7-1. Filter media has not been supplemented, and therefore, backwashing is not effective and washing effect is not satisfactory. Consequently, filtration continuity period become short and filtration effect is poor.

The proposed project includes washing of filter media in existing filters, verification and rehabilitation of grain size distribution, supplement of filter media, purchase of reserve filter media and sand washing machine.

Table 4.1-6-1 Frequency of Filter Backwashing per Month

Year	Month	Days	Filter Washing Times per Month							
			No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
1998	May	31	10	10	9	9	9	10	11	11
	June	30	5	6	5	4	5	5	5	6
	July	31	7	7	6	8	8	10	6	7
	August	31	5	5	4	7	4	6	5	7
	September	30	8	8	6	7	6	10	8	10
	October	31	7	10	7	6	8	11	8	9
	November	30	8	8	10	8	7	8	10	9
	December	31	15	13	11	13	12	17	15	18
1999	January	31	14	19	14	14	15	17	16	16
	February	28	11	13	12	11	12	16	11	12
	March	31	15	15	14	12	12	17	15	17
	April	30	13	12	11	13	13	14	13	14
	May	31	12	12	11	12	11	15	14	14
	June	30	12	13	10	12	9	12	11	16
	July	31	10	12	10	12	11	12	12	12
	August	31	13	12	13	13	13	12	12	12
	September	30	10	12	9	11	11	10	10	12
	October	31	12	10	11	13	11	13	12	11
	November	30	13	14	13	14	12	16	15	15
	December	31	16	16	13	16	15	17	16	18
2000	January	31	18	19	16	16	17	21	18	16
	February	29	11	12	13	10	12	15	13	11
	March	31	17	15	12	14	13	18	17	16
	April	30	14	14	13	12	14	19	16	17
	May	31	12	14	12	12	12	16	13	13
	June	30	9	12	10	9	9	10	10	10
	July	31	10	9	11	8	8	11	9	11
	August	31	9	9	11	9	9	7	8	11
	September	30	8	9	10	10	9	9	7	8
Total			324	340	307	315	307	374	336	359
Average (times/month)			11.172	11.724	10.586	10.862	10.586	12.897	11.586	12.379
Maximum (times/month)			18	19	16	16	17	21	18	18
Minimum (times/month)			5	5	4	4	4	5	5	6

Table 4.1-6-2 Filter Operation Cycle (hours)

Year	Month	Days	Monthly Average Filter Operation Cycle (hours)							
			No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
1998	May	31	74	74	83	83	83	74	68	68
	June	30	149	124	149	186	149	149	149	124
	July	31	106	106	124	93	93	74	124	106
	August	31	149	149	186	106	186	124	149	106
	September	30	93	93	124	106	124	74	93	74
	October	31	106	74	106	124	93	68	93	83
	November	30	93	93	74	93	106	93	74	83
	December	31	50	57	68	57	62	44	50	41
1999	January	31	53	39	53	53	50	44	47	47
	February	28	68	57	62	68	62	47	68	62
	March	31	50	50	53	62	62	44	50	44
	April	30	57	62	68	57	57	53	57	53
	May	31	62	62	68	62	68	50	53	53
	June	30	62	57	74	62	83	62	68	47
	July	31	74	62	74	62	68	62	62	62
	August	31	57	62	57	57	57	62	62	62
	September	30	74	62	83	68	68	74	74	62
	October	31	62	74	68	57	68	57	62	68
	November	30	57	53	57	53	62	47	50	50
	December	31	47	47	57	47	50	44	47	41
2000	January	31	41	39	47	47	44	35	41	47
	February	29	68	62	57	74	62	50	57	68
	March	31	44	50	62	53	57	41	44	47
	April	30	53	53	57	62	53	39	47	44
	May	31	62	53	62	62	62	47	57	57
	June	30	83	62	74	83	83	74	74	74
	July	31	74	83	68	93	93	68	83	68
	August	31	83	83	68	83	83	106	93	68
	September	30	93	83	74	74	83	83	106	93
Average (hours/month)			74	70	78	75	78	65	72	65
Maximum (hours/month)			149	149	186	186	186	149	149	124
Minimum (hours/month)			41	39	47	47	44	35	41	41

Table 4.1-6-3 Duration of days for 24 hours Filter Operation Cycle

Year	Month	Days	Duration of days for 24 hours Filter Operation Cycle							
			No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
1998	May	31								
	June	30								
	July	31								
	August	31								
	September	30								
	October	31								
	November	30							3days*1	
	December	31	3days*1				3days*1	3days*1	3days*1	3days*1
1999	January	31	3days*1	4days*1			4days*1	4days*1		4days*1
	February	28					3days*1			
	March	31						4days*1		
	April	30								
	May	31								
	June	30								
	July	31								
	August	31								
	September	30								
	October	31								
	November	30						3days*1		
	December	31					3days*1			5days*1
2000	January	31		6days*1				3days*2 5days*1	3days*2	3days*1
	February	29			3days*1					
	March	31		3days*1			4days*1			
	April	30		3days*1				8days*1	5days*1	5days*1
	May	31		3days*1						
	June	30								
	July	31								
	August	31								
	September	30								

Item	Times		Days	Remark
3days*1	15	19	45	
3days*2	2	-	12	
4days*1	6	6	24	
5days*1	4	4	20	
6days*1	1	1	6	
7days*1	0	0	0	
8days*1	1	1	8	
Total	-	31	115	Total 8 basins
Ratio	-	-	2.0%	731 days in two years

September/2000

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.96	11:30 P.M - 7:30 A.M = 8 hr.		110-140	23.93			8 P.M	12 A.M		5 A.M			
2	19.97	11 P.M - 7 A.M = 8 hr.		110-140	24.03	12 A.M		5 A.M		8 P.M				
3	19.98	11 P.M - 7:30 A.M = 8 1/2 hr.		120-140	24.06		12 A.M		1 A.M			1 P.M	6 P.M	
4	19.98	10:30 P.M - 7 A.M = 8 1/2 hr.		120-210	28.33	2 A.M					5 P.M			
5	19.99	11 P.M - 8 A.M = 9 hr.		170-250	25.10		1 A.M		4 P.M					
6	19.96	10 P.M - 6:10 A.M = 8 hr 10 min 6:50 A.M - 8 A.M = 1 hr 10 min Total = 9 hr 20 min	6:10 A.M - 6:50 A.M = 40 min	120-160	23.66	1 P.M		3 P.M		1 A.M		6 P.M		
7	19.95	11 P.M - 7 A.M = 8 hr.		120-150	24.39		12 A.M			5 A.M				
8	19.97	11 P.M - 8 A.M = 9 hr.	6:30 P.M - 6:05 P.M = 25 min	110-150	24.09						4 P.M		10 A.M	
9	19.98	11 P.M - 7:30 A.M = 8 1/2 hr.		110-140	23.96			5 P.M	12 A.M					
10	19.97	11:50 P.M - 7:30 A.M = 8 hr.		100-140	24.07	5 P.M						12 A.M		
11	19.99	11 P.M - 8 A.M = 9 hr.		110-130	24.0		11 A.M		7 A.M	9 A.M		12 A.M	4 P.M	
12	19.97	12 P.M - 8 A.M = 8 hr.		110-130	23.98			7 P.M	10 A.M	4 P.M				
13	19.96	11 P.M - 7 A.M = 8 hr.		110-140	24.03			10 A.M	7 P.M	5 P.M				
14	19.97	11 P.M - 7 A.M = 8 hr.		110-140	24.0							10 A.M	6 P.M	
15	19.98	12 P.M - 8 A.M = 8 hr.		110-140	24.16	7 P.M	5 P.M		9 A.M					
16	19.97	11 P.M - 8 A.M = 9 hr.		150-140	23.78					9 A.M	7 P.M			
17	19.99	11 P.M - 8 P.M = 9 hr.		120-140	26.18			10 A.M					5 P.M	
18	19.97		5:15 A.M - 5:25 A.M = 10 min	120-140	25.15							9 A.M		
19	19.98	11 P.M - 8 A.M = 9 hr.	6:10 A.M - 6:25 A.M = 15 min	110-140	24.20	10 A.M	8 A.M	8 P.M	6 P.M					
20	19.98	11 P.M - 7 A.M = 8 hr.		110-140	23.95		7 P.M			3 P.M	10 A.M		5 P.M	
21	19.98	11 P.M - 7 A.M = 8 hr.		110-150	24.04			12 A.M				6 P.M		
22	19.97	11 P.M - 7 A.M = 8 hr.		120-160	25.01	4 P.M	11 A.M							
23	19.98	11 P.M - 7 A.M = 8 hr.		120-150	24.66						1 P.M		6 P.M	
24	19.97	11:50 P.M - 7:50 P.M = 8 hr.		110-150	26.53			4 P.M	1 P.M					
25	19.96	11 P.M - 7 A.M = 8 hr.		100-130	23.0					3 P.M				
26	19.97	12 P.M - 8 A.M = 8 hr.		70-100	21.63	9:00 P.M	12:00 P.M							
27	19.96	11 P.M - 7 A.M = 8 hr.		70-110	21.52						4 P.M		11:00 P.M	
28	19.97	11 P.M - 7:15 A.M = 8 hr 15 min		70-120	24.15			12:00 P.M	6 P.M					
29	19.96	12 P.M - 8 A.M = 8 hr.		80-140	23.21					5 P.M				
30														
31														
						6	9	10	10	9	9	7	8	

4.1-6-5

AUG-2000

8AM-8AM.

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.97	11 P.M - 7 AM = 8hrs	—————	110-250	29.99	11 AM				7 PM			5 PM	* old line.
2	19.96	11 P.M - 7 AM = 8hrs	—————	250-910	35.56				10 AM	2 PM	1 PM			" "
3	19.97	11 P.M - 7 AM = 8hrs	—————	320-410	42.07			11 AM					5 PM	1 PM
4	19.97	11 P.M - 7 AM = 8hrs	—————	350-490	45.79		11 AM						4 PM	" "
5	19.96	11 P.M - 7 AM = 8hrs	—————	320-420	42.64	3 PM		5 PM	11 AM					" "
6	19.95	11 P.M - 7 AM = 8hrs	—————	150-420	45.58					6 PM	10 AM			" "
7	19.98	11 P.M - 7 AM = 8hrs	—————	150-500	39.69			5 PM	7 PM				11 AM	" "
8	19.99	11 P.M - 8 AM = 8hrs	—————	110-150	29.91	10 AM	5 PM						12 PM	" "
9	19.96	11 P.M - 7 AM = 8hrs	—————	100-150	29.76			4 PM		12 PM	10 AM			" "
10	19.97	11 PM - 7:30 AM = 7hrs 30min	—————	440-570	46.85	11 AM			6 PM				10 AM	" "
11	19.97	11 PM - 7 AM = 8hrs	—————	48-610	54.78			11 AM		5 PM				" "
12	19.96	11 P.M - 7 AM = 8hrs	—————	400-550	44.61	9 AM			11 AM				5 PM	12 AM
13	19.98	11 P.M - 7 AM = 8hrs	—————	140-200	33.90		5 PM		1 AM		11 AM			" "
14	19.98	11 P.M - 7 AM = 8hrs	—————	130-180	28.72								11 PM	" "
15	19.96	11 P.M - 7 AM = 8hrs	—————	150-210	29.70			9 AM	4 PM	5 PM				" "
16	19.94	11 P.M - 7 AM = 8hrs	—————	180-240	29.42	5 PM	4 PM			11 AM			9 AM	" "
17	19.97	11 P.M - 7 AM = 8hrs	—————	200-440	52.90						5 PM	10 AM		" "
18	19.96	11 P.M - 7 AM = 8hrs	—————	220-460	42.43				10 PM					" "
19	19.97	11 P.M - 7 AM = 8hrs	—————	190-240	41.28		4 PM		9 AM					" "
20	19.95	11 P.M - 6:00 AM = 7hrs	—————	130-210	31.01	5 PM				1 PM			9 AM	" "
21	19.95	11 P.M - 6 AM = 7hrs	—————	120-170	28.07					12 PM	4 PM	9 AM		" "
22	19.98	11 P.M - 7:30 AM = 8hrs 30min	—————	110-150	24.18			1 PM					6 PM	" "
23	19.97	11 P.M - 7 AM = 8hrs	—————	110-140	24.01			11 AM						" "
24	19.97	11 P.M - 6 AM = 7hrs	—————	110-180	21.93	5 PM								" "
25	19.95	11 P.M - 6:00 AM = 7hrs	—————	110-140	24.11									" "
26	19.97	11 P.M - 7 AM = 8hrs	—————	110-140	24.01			4 PM		3 PM			11 AM	" "
27	19.96	11 PM - 7 AM = 8hrs	—————	110-140	24.10		9 AM		4 PM					" "
28	19.97	12 PM - 8 AM = 8hrs	—————	120-140	24.18		7 AM		7 PM				12 PM	" "
29	19.99	11 PM - 8 AM = 9hrs	—————	110-140	25.87	9 AM						2 PM		" "
30	19.91	11 PM - 7:50 AM = 8hrs 50min	1 hr md 35 min md 5	120-140	27.95		3 PM	11 AM		12 AM		5 PM		" "
31	19.98	11 PM - 7:30 AM = 8hrs 30min	—————	120-140	25.96			1 AM					4 PM	" "

4.1-6-6

JULY-2000

8AM-8PM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.94	3.6M-5PM / 11PM-5AM = 8hrs	1-4PM-1-50PM = 10 min	170-220	21.06						2PM				
2	19.98	11PM - 7AM = 8hrs		160-210	21.05	12N			5PM						
3	19.92	11PM - 7AM = 8hrs		150-200	21.05				10AM	12N	4PM				*
4	19.96	11PM - 7AM = 8hrs		150-200	21.10	11PM		4PM					12N		
5	19.95	11PM-5AM / 7AM-9AM = 7hrs	11P	150-210	21.06						5PM		12N		
6	19.98	11PM - 7AM = 8hrs		150-200	20.96	12N		6PM							
7	19.97	11PM - 7AM = 8hrs		150-200	21.05				7PM	12N					
8	19.98	11PM - 7AM = 8hrs		140-200	20.79		3PM				9AM	5PM			
9	19.96	3PM-5PM / 11PM-5AM / 8:30PM	4-6PM - 1-20PM = 10 min	150-210	21.26			4PM			6PM		11AM		
10	19.94	11PM-7AM = 8hrs	4-5PM-4-55PM / 6-6PM-6-45PM / 50	140-210	21.25	12N							6PM		* Line change
11	19.95	12MN - 7AM = 7hrs		190-200	21.7			10AM	5PM	12PM					* Ad line
12	19.96	11:50PM - 7:45AM = 8hrs 15 min	11:55AM - 11:55AM / 4:00PM - 2:05PM = 15 min	120-200	21.12		4PM						11AM		* add line
13	19.97	12MN - 8AM = 8hrs	9-50 AM - 10 AM = 10 min	190-190	21.0						7PM	11AM			* new installed line
14	19.98	11PM - 7AM = 8hrs		120-120	20.86	3PM			6PM						* new line
15	19.97	12MN - 8AM = 8hrs		140-200	21.17		7:20PM-3:00PM			10PM			9PM		* new line
16	19.96	12MN - 8AM = 8hrs		140-220	20.91				4PM		10PM	6PM			* new line
17	19.99	11PM - 8AM = 9hrs	5-50PM - 5:30PM = 10 min	150-220	28.52	11AM		6PM					6PM		* new line
18	19.95	11PM - 7AM = 8hrs	5-0 PM - 8-15 PM = 15 min	180-450	34.46		4PM			10PM					* new line
19	19.98	11PM - 8AM = 9hrs		150-600	54.0			4PM			9PM	5PM			* new line
20	19.96	11PM - 7AM = 8hrs		480-600	54.66	16PM			5PM				10AM		* new line
21	19.98	11PM - 7AM = 8hrs		400-500	45.29			5PM		11AM					* new line
22	19.95	11PM - 7AM = 8hrs	8-50AM - 8:45AM = 15 min	300-400	42.53				10AM				6:30PM		* Ad line from 8:45 AM
23	19.99	11PM - 8AM = 9hrs		150-200	37.46	12N		4PM					6PM		Ad
24	19.98	11PM - 8AM = 9hrs		140-220	34.20					10PM		4PM			Ad
25	19.97	11PM - 8AM = 9hrs	3-0 AM - 3-10 AM = 10 min	170-250	34.39	12N				10PM	5PM				Ad
26	19.95	11PM - 8AM = 9hrs	11-45AM-12N / 12:50PM-1:55PM / 8PM-8:45PM	250-320	40.66			12N	4PM				10AM		* new line from 12N
27	19.98	11PM - 8AM = 9hrs	5-50PM - 5:35 PM = 5 min	290-300	41.82	1PM							11AM		
28	19.97	11PM - 7:50 AM = 8hrs 15 min		200-280	41.47			4PM		12N			10AM		
29	19.98	11PM - 7:50 AM = 8hrs 15 min		200-280	42.77					4PM	12N				
30	19.96	11PM - 7:15 AM	7:05 AM - 7:50 AM = 15 min	150-200	30.14				4PM				12N		
31	19.98	11PM - 8AM = 9hrs	10-45 AM - 10:40 AM = 15 min	130-190	32.97					12PM			5PM		* old line

4.1-6-7

10 9 11 8 8 11 9 11

JUNE 2000

8AM - 8PM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.93	11PM - 5:30AM = 6hrs 30min		300-450	42.71		10AM							1PM	
2	19.95	11PM - 8AM = 9hrs	4:30AM - 7:40AM / 1:35PM - 1:45PM / 4:50PM - 5:50PM / 11PM - 12:01AM / 4:55PM	280-440	42.17	5PM					12N		10AM		
3	19.81	11PM - 6AM = 7hrs	10:45PM - 11PM = 15min	280-420	41.90		11PM	11PM	10AM						
4	19.69	11PM - 6AM = 7hrs	10:40AM - 10:45AM / 9:45PM - 9:55PM / 10:55PM - 10:58PM = 3min	300-450	44.85	4PM				6PM				3PM	
5	19.76	11PM - 6:15AM = 7hrs	10AM - 8:50AM / 8:45AM - 8:50AM / 5:50PM - 6:20PM	280-430	43.10		4PM	2PM				12N			
6	19.81	12AM - 7AM = 7hrs	7:55AM - 7:55AM = 0min	300-420	44.59				4PM					10PM	
7	19.95	12AM - 7AM = 7hrs	8:45AM - 8:45AM / 6PM - 6:50PM / 9PM	350-420	42.57	12AM					5PM				
8	19.90	11PM - 6AM = 7hrs		300-450	43.94		10PM	4PM	12M						
9	19.95	12AM - 8AM = 8hrs	12:15PM - 12:50PM / 2:05PM - 2:15PM / 5:45PM - 5:55PM	290-440	42.97	10PM					12N			11AM	
10	19.71	12AM - 7AM = 7hrs	2:45PM - 2:50PM / 6:05PM - 6:10PM / 3:10PM - 3:15PM / 4:55PM	300-420	44.54						12M		2PM		
11	19.95	11PM - 8AM = 9hrs	8:15PM - 8:25PM / 8:30AM - 6:30AM = 5min	300-450	42.52		8PM	6PM		10AM					
12	19.96	11PM - 8AM = 9hrs	6:00AM - 6:15AM = 15min	320-400	44.05	10PM			7PM		12PM			6PM	
13	19.95	11PM - 7AM = 8hrs	2:10PM - 2:20PM = 10min	300-420	42.28		10PM								
14	19.97	11:30PM - 7:00AM = 8hrs		320-450	44.12			9PM						11AM	
15	19.96	12AM - 8AM = 8hrs	2:15PM - 2:20PM = 5min	300-410	42.28						4PM		10AM	1PM	6AM
16	19.81	12AM - 5:45AM = 5hrs 45min		340-420	43.76	4PM	10AM		1PM						
17	19.95	12AM - 8AM = 8hrs		320-430	43.18			9AM						7PM	
18	19.81	12AM - 5:30AM = 5hrs 30min		350-410	42.82					5PM	7AM			12N	
19	19.69	12AM - 6AM = 6hrs		340-450			3PM							11AM	
20	19.90	12AM - 8AM = 8hrs	8:45PM - 1:50PM / 4:15PM - 4:55PM / 5:45PM - 5:55PM	350-460	44.63	11AM		10AM	5PM						
21	19.81	12AM - 5:40AM = 5hrs 40min		400-550	45.76			12N						7PM	
22	19.97	11PM - 5:30AM = 6hrs 30min	6:05AM - 6:45AM = 15min	340-460	42.53					6PM	11AM			9AM	
23	19.95	12AM - 8AM = 8hrs	5:45PM - 6:10PM = 15min	300-420	42.52			10AM	6PM						
24	19.81	5AM - 5AM / 11PM - 5AM = 8hrs	1:15PM - 2:15PM / 5:00PM - 5:05PM / 11PM	400-550		11AM								5PM	* New installed line nearby
25	19.95	11PM - 6AM = 7hrs							11AM	6PM	8PM	10AM			
26	19.95	11PM - 8AM = 9hrs	4:15PM - 4:05PM = 50min	290-380	37.50		10AM	7PM							* Generator Run
27	19.94	11PM - 6AM = 7hrs		250-300	26.27	12N					10M	4PM	5PM		
28	19.95	11PM - 6:30AM = 7hrs 30min		200-280	28.01				11AM	4PM					
29	19.97	12AM - 8AM = 8hrs		180-240	25.77		12N	5PM							
30	19.96	11PM - 7AM = 8hrs		160-220	23.89				8AM	1PM	5PM	11AM			
31															

4.1.6-8

9 12 10 9 9 10 10 10

April - 2000

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MGT	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.96	11 PM - 7 AM = 8 hrs		30-50	16.78	3 PM	5 PM				10 AM		1 AM		
2	19.95	11 PM - 8 AM = 9 hrs	11-40 AM - 12N = 20 min	30-50	16.97				2 PM	5 PM	6 PM	10 AM			* New installed line running
3	19.97	11 PM - 7 AM = 8 hrs		30-50	16.84	2 AM	4 PM	11 AM		2 PM	7 PM		10 AM		
4	19.95	11 PM - 7:30 AM = 8 hrs 30 min	6-45 PM - 7:0 = 15 min	30-60	17.0	6 PM	4 PM	11 AM			2 PM	1 AM	9 AM		
5	19.96	11 PM - 7:30 AM = 8 hrs 30 min	6-0 PM - 6:15 = 15 min	30-50	16.47		5 PM		3 PM	11 AM	7 PM	9 AM	12N		
6	19.95	11:45 AM - 8 AM = 8 hrs 15 min	11:50 AM - 11:55 AM / 11 AM - 11 AM / 12:00 AM - 12:00 AM	30-50	16.85			10 AM		2 PM	4 PM	12N	11 AM		
7	19.95	11 PM - 7 AM = 8 hrs	8-5 AM - 9 AM = 10 min	30-50	16.55	11:40 AM			10:30 AM		9 PM	7 PM	4 PM		
8	19.91	12 AM - 8 AM = 8 hrs	5-20 PM - 5:45 = 45 min / 6:30 PM - 6:45 PM = 15 min	30-60	17.01	9 PM	4 PM	12N		8 PM	7 AM	2 PM			* New installed line running
9	19.96	11 PM - 7 AM = 8 hrs	9-20 AM - 9:20 AM / 12:30 PM - 12:30 PM	30-60	16.87			11 AM					1 PM		* old line running
10	19.97	11 PM - 7 AM = 8 hrs		30-60	16.95			11 PM		5 PM	9 AM	11 AM			
11	19.96	11 PM - 8 AM = 9 hrs	8-10 AM - 8:00 AM = 20 min	30-60	17.07	10 AM	6 AM						12N		
12	19.97	11 PM - 7 AM = 8 hrs		30-60	16.87			1 AM			10 AM	8 PM			
13	19.96	12 AM - 7:30 AM = 7 1/2 hrs		30-69	16.95	5 PM	2 PM			11 AM					
14	19.97	12:45 AM - 8 AM = 7 hrs 45 min	8-50 PM - 12:45 AM = 30 min	48-60	17.15		12N				3 PM	7 PM	10 AM		* generator run
15	19.90	11 PM - 8 AM = 9 hrs	7:45 PM - 8:15 PM = 1 hr	28-60	16.47			7 PM	11 AM						* generator run
16	19.97	12 AM - 8 AM = 8 hrs		30-60	16.71	12N				9 AM	4 PM	7 PM	1 PM		
17	19.96	11 PM - 7:30 AM = 8 hrs 30 min	10-55 AM - 10:45 AM = 10 min	36-60	17.02		10 AM	12 PM	4 PM						
18	19.97	11:30 PM - 8 AM = 8 hrs 30 min		36-60	16.94	6 PM				4 PM	9 AM		11 AM		
19	19.96	11:30 PM - 7:30 AM = 8 hrs		39-58	16.89		2 PM	1 PM	5 PM				11 AM		
20	18.84	11 PM - 6:25 AM = 7 hrs 25 min	11:30 PM - 12:00 AM - 6:45 PM - 6:45 PM = 2 hrs 15 min	35-60	17.19	2 PM					12N		4 PM		* generator run
21	19.87	5 PM - 5 PM / 11 AM - 7:45 AM = 10 hrs 45 min	8 AM - 11 AM / 7:45 AM - 8 AM = 15 min	35-55	16.91			7 PM		8 AM		6 PM			* generator run
22	19.97	11 PM - 7:30 AM = 8 hrs 30 min		30-58	16.59		5 PM		12N		9 AM		2 PM		
23	19.95	11 PM - 7:30 AM = 8 hrs 30 min	8:50 AM - 8:45 AM = 15 min	30-55	16.44	9 AM		5 PM		11 AM		3 PM			
24	19.97	11 PM - 7 AM = 8 hrs		48-65	17.28				5 PM		10 AM		3 PM		
25	19.96	11 PM - 7 AM = 8 hrs		50-70	21.86	5 PM	9 AM			12:15		7 PM			
26	19.97	5 PM - 5 PM / 11 PM - 8 AM = 11 hrs	10:05 AM - 10:50 AM / 6:40 AM - 6:40 AM = 5 min	58-120	24.56			12N		7 PM		10 AM		5 PM	
27	19.96	11 PM - 7 AM = 8 hrs		100-280	35.28	5 PM	10 AM			12N		3 PM			
28	19.97	11 PM - 7 AM = 8 hrs		260-350	49.40			11 AM	5 PM		10 AM		3 PM		
29	16.23			11 PM - 8 AM = 9 hrs	41.11	5 PM	11 AM			1 PM		3 PM			* generator run
30	19.91	1 PM - 1:45 PM = 45 min 11 PM - 5 PM = 2 hrs 15 min 11 PM - 8 AM = 9 hrs	8 AM - 10 AM = 2 hrs 11:45 AM - 2:45 PM = 1 hr 30 min	120-240				5 PM			9 AM		3 PM		* PDB line fault * generator run
31								14	11	13	12	14	19	16	17

4.1-6-10

MAR 2nd

8AM - 8PM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT 10M MG	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.97	11AM - 7AM = 8hrs		25-40	18.16	5PM	1PM		4PM		10AM	3PM	9AM	
2	19.95	11AM - 7AM = 8hrs	11AM - 11-10AM = 10min	30-45	19.09	7PM	5PM	10PM		8AM	9AM	3PM	11PM	
3	19.97	11AM - 7-30AM = 8hrs 30min		30-40	19.26		6PM	12N	8PM					
4	19.98	11PM - 7-30AM = 8hrs 30min		25-40	19.17	9AM				11AM	10AM	7AM		
5	19.95	11PM - 8AM = 9hrs	8-3AM - 8-45AM / 1-50AM - 1-00PM / 1-00PM	30-40	19.29			4PM	11AM			3PM	10PM	
6	19.97	11PM - 7AM = 8hrs		25-40	18.34	9AM				11AM	10AM		6PM	
7	19.98	11PM - 7-30AM = 8hrs 30min		30-40	18.12		4PM		10AM			9AM		
8	19.97	11PM - 7AM = 8hrs		30-45	19.20	9AM		5PM		10AM	10AM	7PM	4PM	
9	19.91	12MN - 8PM = 8hrs		30-45	19.29		10AM		10AM			9AM		
10	19.95	12MN - 8PM = 8hrs		30-45	19.39	10PM		3PM				7AM	5PM	9AM
11	19.98	11PM - 7AM = 8hrs		30-45	19.08	8PM	10AM		11AM				7AM	
12	19.97	11PM - 7AM = 8hrs		30-45	19.40		5PM	4PM		11AM	8AM	9AM		
13	19.98	11PM - 8AM = 9hrs		38-50	19.58	9AM			8PM	5PM				
14	19.93	11PM - 6AM = 7hrs		35-50	19.25		9AM	10AM				3PM		1PM
15	19.97	11PM - 8AM = 8hrs		40-60	21.60	9AM			1PM			4PM	10AM	
16	19.96	12MN - 8AM = 8hrs		70-110	21.71	7PM	12MN				8PM	5PM	10AM	
17	19.94	12MN - 8AM = 8hrs		120-180	26.92				7AM	11AM	7AM		8PM	
18	19.95	12MN - 7-30AM = 7.5hrs		210-280	38.38	8PM	7PM	9PM				4PM		
19	19.96	11PM - 7AM = 8hrs		220-300	42.02					9AM	12N		5PM	
20	19.97	11PM - 7AM = 8hrs		180-250	37.05	3PM		6PM	9AM			1PM		
21	19.95	12MN - 8PM = 8hrs	6-15AM - 6-45AM = 10min	110-180	32.34		9AM					3PM		7PM
22	19.90	12:00AM - 8AM = 7.5hrs		100-140	28.92	4PM				12N				
23	19.97	12MN - 8AM = 8hrs		100-140	28.84		3PM	12PM				5PM	12PM	
24	19.95	11PM - 7AM = 8hrs		100-150	28.70	5PM			4PM					11-20AM
25	19.98	11PM - 8AM = 9hrs		110-190	29.01		4PM			11AM	5PM	12N		
26	19.97	11PM - 7AM = 8hrs		100-150	25.25	5PM		11AM						12N
27	19.95	11PM - 7AM = 8hrs		80-120	24.21				11AM	5PM	4PM	12N		
28	19.92	11PM - 7-15AM = 8hrs 15min		70-110	20.67	3PM	11AM							9AM
29	19.99	11PM - 8AM = 9hrs		60-90	19.40				12PM	5PM	3PM	10PM		
30	19.98	11PM - 8AM = 9hrs		50-80	17.45	10AM	3PM					4PM		9AM
31	19.99	11PM - 8AM = 9hrs		40-70	17.45			12N	5PM	6PM		11AM		

4.1-6-11

FEB - 2002

8AM-8PM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT 10N MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.98	11PM-7AM = 8hrs	---	40-70	21.58										
2	19.95	11PM-3AM = 8hrs	1PM-2PM = 1hr	50-70	21.74		12N					9AM			
3	19.97	12NN-7-30AM = 7hrs 30min	---	40-60	21.05			11AM						9AM	
4	19.98	11-30PM-7-30AM = 7hrs 30min	---	30-50	19.26	3PM	11AM			5PM	9AM				
5	19.97	12NN-8PM = 8hrs	---	30-50	19.29			12N	5PM			3PM	9AM		
6	19.95	12-40AM-8PM = 7hrs 40min	---	30-40	19.27					5PM		7PM			
7	19.98	12NN-8PM = 8hrs	---	30-40	19.15		6PM	12N	5PM					10AM	
8	19.95	12NN-8PM = 8hrs	3-05PM-6-20PM = 3hrs 15min	30-40	19.54	11AM					1PM	9AM			
9	19.97	12NN-8PM = 8hrs	---	30-40	19.16		8PM	10AM	3PM		6PM				
10	19.98	12NN-8PM = 8hrs	---	30-40	17.87	9AM	9PM			11PM		11AM	2PM		
11	19.91	11-30PM-7AM = 7hrs 30min	8-20AM-8-30AM / 1-30PM-4-00PM / 1-30PM-2-10PM = 4hrs 10min	25-40	18.37			12N			10AM				*
12	19.96	12NN-7-30AM = 7hrs 30min	---	25-40	18.42			10AM			3PM		8AM	12N	
13	19.98	11PM-7AM = 8hrs	7-05AM-7-40AM = 35min	35-50	19.14	1PM		11AM	3PM		9AM				
14	19.97	11PM-8AM = 8hrs	---	35-45	18.79		11AM			1PM	7PM	9AM	5PM		
15	19.94	12NN-7-45AM = 7hrs 45min	8-45AM-9-05AM = 20min	25-40	18.18	10AM		1AM	5PM			7PM			* NEW INKAL 93KV line running
16	19.91	12NN-7-30AM = 7hrs 30min	6-10PM-6-25PM = 15min												
17	19.81	12NN-8PM = 8hrs	---	25-35	19.87	10AM		12N	5PM	8AM	6PM	1PM			
18	19.93	11PM-8PM = 9hrs	9-30AM-10AM = 30min	25-35	18.54		11AM				5PM		9AM		* NEW INKAL 93KV line running
19	19.97	11PM-8PM = 9hrs	---	25-35	18.73	10AM				8PM					
20	19.98	11PM-8PM = 9hrs	---	25-45	18.69		12N	5PM			11AM		9AM		
21	19.95	12NN-8PM = 8hrs	---	20-40	19.26	11AM			8PM	1AM	6PM	10AM			
22	19.57	1-30AM-8PM = 8 1/2 hrs	---	30-45	19.19				5PM		10AM	12N			
23	19.95	12NN-7-30AM = 7hrs 30min	12-50PM-12-55PM = 5min	30-45	19.35		3PM	1PM				5PM	12N		
24	19.96	12-30AM-7-30AM = 7hrs	---	30-45	18.16			6PM			5PM		3PM		
25	19.97	11-30PM-8PM = 8hrs	6-15-6-20PM-7-15AM-7-30AM = 10min	25-40	18.43				12N	10AM					
26	19.98	12NN-8PM = 8hrs	---	25-40	18.52	12N	11AM								
27	19.97	12-00AM-7-30AM = 7hrs	---	25-35	18.44					10AM		8PM			
28	19.98	11PM-7-30AM = 8hrs	---	25-40	18.61	9AM		11AM			6PM	5PM			
29	19.95	11-15PM-7-15PM = 8hrs	2-17PM-2-20PM = 13min	20-35	17.80	5PM	12N	6PM	9AM	10AM	3PM	4PM	8PM		
30															
31															

41-6-12

11 12 13 10 12 15 13 11

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8PM - 8PM -

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT 10N MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.69	12MN - 8PM = 8hrs.		80-100	29.59	8PM	12N		8PM	8PM				
2	19.97	12MN - 7:30AM = 7hrs 30min		80-120	29.11			12N		10AM	9AM			
3	19.99	12MN - 8PM = 8hrs.		80-120	29.05	9AM	5PM	3PM	8PM	9PM	10AM	12N	11AM	
4	19.97	12MN - 7:30AM = 7hrs 30min		80-120	29.08	11AM			6PM		2PM	3PM		
5	19.94	12MN - 8PM = 8hrs.		70-100	29.49		10AM	4PM		9AM			2PM	
6	19.99	11PM - 8AM = 9hrs.		60-90	29.56	2PM			8PM		10AM	7AM	5PM	
7	19.93	12MN - 6AM = 6hrs.		60-90	29.26		10AM	4PM		9AM	6PM			
8	19.98	12MN - 8AM = 8hrs.		60-80	29.29	5PM			2PM				9AM	10AM
9	19.99	11PM - 7:30AM = 8hrs 30min		60-80	29.91		11AM			12N	8PM	3PM	5PM	
10	19.94	11PM - 8PM = 9hrs.	8PM - 8:30PM / 8:30AM - 8:30AM / 6:30AM - 6:30AM	60-80	29.92	9AM		10AM	5PM		5PM	9AM		
11	19.99	11AM - 8PM = 9hrs.		60-80	19.13		11AM	6PM		1PM			9AM	
12	19.97	12MN - 8PM = 8hrs.		50-80	19.52	8PM	2PM			1PM			11AM	4PM
13	19.69	12MN - 7AM = 8hrs.		50-70	19.41	7PM	2PM			11AM	10AM	7PM	11PM	
14	19.97	12MN - 8PM = 8hrs.		40-70	19.24		8PM		10AM	7PM	5PM			
15	19.96	11PM - 7AM = 8hrs.		40-60	19.55	3PM	7AM	10AM	8PM			9PM	12N	
16	19.94	1AM - 8PM = 7hrs.		40-60	19.29		2PM	7PM		10AM	6PM		4PM	
17	19.97	12MN - 7AM = 7hrs.		40-60	19.19	12N			5PM		6PM	10AM		
18	19.96	12MN - 6:30AM = 6hrs 30min		40-60	19.17		12N	9AM		9PM			10AM	
19	19.95	11PM - 7AM = 8hrs.	2:15AM - 2:30AM = 15min	40-60	19.24	11AM			5PM		3PM	8AM		
20	19.98	11PM - 7AM = 8hrs.		40-60	19.21			11AM	9PM		2PM		10AM	
21	19.95	11PM - 6AM = 7hrs.		40-50	19.51	10AM				8PM		8AM	3AM	
22	19.89	11PM - 7:30AM = 6hrs 30min	5:40AM - 6:00AM = 20min	40-60	19.24			10AM	6PM		11AM		3AM	
23	19.95	11PM - 6AM = 7hrs.		40-60	19.24	12N			6PM		10AM	3PM		
24	19.98	12MN - 8PM = 8hrs.		50-100	29.93		9AM	6PM		10PM			8PM	
25	19.96	12MN - 7:30AM = 7hrs 30min		60-100	29.01	12N			6PM		10AM	3PM		
26	19.98	12MN - 8PM = 8hrs.		50-90	29.13		10AM	5PM		11AM	6PM		5PM	
27	19.97	12MN - 8PM = 8hrs.		60-100	29.03	10AM				3PM			5PM	
28	19.98	12MN - 8PM = 8hrs.		60-90	29.78		3PM	6PM	10AM		12N		5PM	
29	19.96	11PM - 6:45AM = 7hrs 45min		60-80	29.71			11AM		8PM			5PM	
30	19.98	12MN - 8PM = 8hrs.		60-70	29.65	5PM	10AM	4PM	1PM		9AM		3PM	
31	19.95	11PM - 6:10AM = 7hrs 10min	6:10AM - 6:30AM = 20min	50-70	29.5		6PM			1PM	3PM	10AM		

18 19 16 16 17 21 18 16

4.1-6-13

8AM - 8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

December/99

4.1-6-14

DATE	WATER PRODUCT IONS Mg/l	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.97	11 PM - 8 AM = 9 hrs	7-30 AM - 7-35 AM = 5 min	60-100	21.54			9 AM						10 AM	
2	19.99	11 PM - 8 AM = 9 hrs		50-100	21.50	9 AM	6 PM		11 AM	10 AM	7 PM	12 PM	4 PM		
3	19.97	11 PM - 8 AM = 9 hrs	1-30 AM - 1-40 AM = 10 min	60-100	21.86			8 AM	8 PM	12 PM				10 AM	
4	19.96	11-30 PM - 8 AM = 8 hrs 30 min		60-100	21.67	8 PM		3 PM		5 PM	10 AM	8 AM	1 PM		
5	19.97	11-0 PM - 8 AM = 9 hrs	11 AM - 11:05 AM / 12-20 PM - 12:40 PM = 15 min	60-100	21.60		9 PM		11 PM		8 AM	4 PM	8 PM		
6	19.98	3 PM - 5 PM / 11 PM - 8 AM = 10 hrs		60-110	21.72										
7	19.97	12 PM - 8 AM = 8 hrs		60-100	21.51	4 PM	2 PM		8 AM	6 PM	1 PM		11 PM		
8	19.98	11 AM - 8 PM = 9 hrs	11-50 AM - 11-0 AM / 6-20 AM - 6-50 AM = 10 min	60-110	21.67		7 PM	10 PM			5 PM	11 PM	4 PM		
9	19.97	11 PM - 8 AM = 9 hrs	5-20 PM - 5-20 PM = 20 min	70-110	21.68	9 AM			8 AM						
10	19.97	12 PM - 8 AM = 8 hrs	5-50 AM - 5-55 AM = 5 min	70-120	21.60	11 AM	9 AM	10 AM	4 PM	5 PM			3 PM		
11	19.99	11-20 PM - 8 AM = 8 hrs 20 min		100-150	25.17		11 AM			9 AM				11 AM	
12	19.97	12 PM - 8 AM = 8 hrs	10-30 AM - 10-40 AM = 10 min	100-150	27.28	10 AM			3 PM	8 AM	4 PM			5 PM	
13	19.98	11-30 PM - 8 AM = 8 hrs 30 min	4 PM - 4-50 AM = 5 min	100-140	21.69		10 AM	9 PM			5 PM	8 AM			
14	19.95	12-30 AM - 8 AM = 7 hrs 30 min		100-150	21.55	8 AM			3 PM	11 AM			4 PM	10 AM	
15	19.92	11 AM - 8 PM = 9 hrs	4-30 PM - 6-30 PM = 1 hr 30 min	100-160	22.70		11 AM	4 PM			10 PM				
16	19.95	12 PM - 8 AM = 8 hrs		90-120	21.67	8 AM				9 PM			10 AM	2 PM	
17	19.95	12 PM - 7-30 AM = 7 hrs 30 min	8-20 AM - 8-30 AM / 1-20 PM - 1-40 PM = 15 min	80-120	21.72		11 AM	3 PM	10 AM		8 AM				
18	19.96	12 PM - 7-30 AM = 7 hrs 30 min		90-120	22.28	12 PM	5 PM		4 PM	10 AM	3 PM	2 PM	8 AM		
19	19.95	12 PM - 7 AM = 7 hrs	11-25 AM - 11-30 AM = 5 min	70-100	20.87	4 PM		8 PM				12 PM	6 PM		
20	19.96	12-45 AM - 5 AM = 4 hrs 15 min	12-5 AM - 12-45 AM = 10 min	70-100	22.18		11 AM		4 PM	1 PM	10 AM				
21	19.93	12 PM - 6 AM = 6 hrs		60-90	21.67	12 PM		4 PM					10 AM	2 PM	
22	19.97	12 PM - 7 AM = 7 hrs					2 PM		4 PM	2 PM	11 AM				
23	19.81	1 AM - 7 AM = 6 hrs	8-10 AM - 8-15 AM = 5 min	70-110	21.70	3 PM							11 AM	5 PM	
24	19.95	12 PM - 6-30 AM = 6 hrs 30 min		80-100	21.70		3 PM	10 AM		5 PM	8 AM				
25	19.90	12 PM - 6-30 AM = 6 hrs 30 min	8-0 AM - 8-10 AM = 10 min	70-90	21.55	8 PM			11 AM				3 PM	1 AM	
26	19.97	12 PM - 8 AM = 8 hrs		70-110	21.87		12 PM	5 PM		11 AM					
27	19.81	12 PM - 5-30 AM = 5 hrs 30 min		80-110	21.63	11 AM			4 PM				12 PM	10 AM	
28	19.92	12 PM - 1 AM = 1 hr		90-120	22.14		5 PM				11 AM				
29	19.93	12 PM - 7 AM = 7 hrs		80-120	21.85	12 PM			3 PM	8 AM			10 AM	9 PM	
30	19.95	12 PM - 7 AM = 7 hrs					2 PM		9 PM		11 AM				
31	19.95	12 PM - 6 AM = 6 hrs		80-120	27.08	9 AM		4 PM		8 AM	6 PM	3 PM			

16 16 13 16 15 17 16 18

November/99

8AM - 8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MGT	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS		
						1	2	3	4	5	6	7	8			
1	17.69															
2	19.98	11:30AM - 8AM = 8hrs 30min	10AM - 4:30PM = 6hrs 30min	NI	70-100	21.60	5PM	10PM	5PM	9AM		11AM				
3	20.0	11PM - 8AM = 9hrs	NI	NI	70-100	21.70		12N			10AM		5PM	3PM		
4	19.99	11:30AM - 8AM = 8hrs 30min	NI	NI	60-100	21.52			9.4			6AM				
5	20.0	11PM - 8AM = 9hrs	NI	NI	60-100	21.61	6PM				11AM			4PM		
6	19.95	11PM - 7AM = 8hrs	9:55PM - 10:00PM = 5min	NI	65-100	19.22		5PM			3PM		9AM			
7	20.0	11PM - 8AM = 9hrs	NI	NI	40-100	19.20			12N			10AM		7PM		
8	19.99	11PM - 8AM = 9hrs	NI	NI	40-80	19.22	5PM			10AM			12N			
9	19.98	12MN - 8AM = 8hrs	NI	NI	40-80	19.20		6PM			10AM	11AM		9PM		
10	19.81	5PM - 5PM / 11PM - 8AM = 11hrs	8AM - 8:10AM / 9:55AM - 11AM = 1hrs	NI	40-90	18.61			5PM					6PM		
11	19.96	11PM - 8AM = 9hrs	NI	NI	40-80	19.19	5PM			11AM		12N		5PM		# for generator Repair
12	19.99	11PM - 8AM = 9hrs	NI	NI	40-80	19.25		10AM			10AM		3PM			
13	20.0	11PM - 8AM = 9hrs	NI	NI	40-60	19.16			11AM	5PM		12N		3PM		
14	19.98	11PM - 8AM = 9hrs	NI	NI	40-20	19.24	10AM	5PM			5PM		9AM			
15	19.97	11PM - 7:20AM = 8hrs 20min	7:10AM - 7:15AM = 5min	NI	40-70	19.24				4:00PM		10AM		9AM		
16	19.98	11PM - 8AM = 9hrs	7:00AM - 7:10AM = 10min	NI	40-70	19.14	11PM	5PM			6PM		10PM			
17	16.55	11PM - 8AM = 9hrs	9:55PM - 7:05PM = 9hrs 10min	NI	40-70	23.53			10AM			9AM		7PM		for new 3K line installation
18	19.99	11PM - 8AM = 9hrs	NI	NI	40-70	18.32	5PM	7PM		10AM	12N	8PM	8AM			
19	19.96	11:30PM - 7AM = 7hrs 30min	NI	NI	40-70					11AM			5PM	10PM		
20	19.95	12:30AM - 8AM = 7hrs 30min	5:00AM - 5:15PM / 5:15PM - 5:55PM = 40min	NI	40-60	17.86	11PM	3PM		12N	4PM	8PM		10PM		
21	19.99	11PM - 8AM = 9hrs	NI	NI	40-60	17.16			7AM	5PM			11AM			
22	19.98	11PM - 8AM = 9hrs	NI	NI	40-60	12.58	2PM	10PM				6PM		5PM		
23	19.95	11PM - 6:45AM = 7hrs 45min	6:45AM - 6:50PM = 5min	NI	40-70	17.29		9PM	10AM	12N		5PM				
24	19.22	11PM - 8AM = 9hrs	12:50PM - 1:35PM / 3:55PM - 5:55PM = 2hrs	NI	40-70	19.64	12N			3PM	8:45AM	4PM	10AM	8AM		# for sub-station repair
25	19.96	11PM - 7:30AM = 8hrs 30min	6:30AM - 6:40AM = 10min	NI	40-80	18.26		10AM	10AM		6PM		3PM			for 66KV line work and testing of bus
26	19.94	11PM - 7AM = 8hrs	7:15AM - 7:15AM = 1min	NI	60-110	18.81	12N		4PM	11AM		7AM		8AM		for 66KV
27	19.97	11:30PM - 8AM = 8hrs 30min	NI	NI	70-110	21.25			11AM			3PM		10AM		
28	19.98	11PM - 8AM = 9hrs	5PM - 5:20PM / 5:55PM - 5:40PM = 15min	NI	90-120	24.01	11AM			12N	2PM		4PM	6PM	10AM	# for 66KV line work
29	19.99	11PM - 8AM = 9hrs	2:15PM - 3:30PM = 1:15min	NI	90-110	22.95			11AM	6PM				9PM		
30	19.98	11PM - 8AM = 9hrs	NI	NI	90-120	26.52	10N			1PM	11AM	11AM	10AM			
31																

4.1-6-15

15 14 13 14 12 12 15 15

OCTOBER '99

8AM-8PM.

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING MG/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.99	11 PM - 8 AM = 9 hrs.	---	80-110	21.45	10:20								6 PM	
2	19.99	11 PM - 8 AM = 9 hrs.	---	80-100	21.62	6 PM			7 PM		11 AM				
3	20.0	9 PM - 5 PM / 11 PM - 7 AM = 10 hrs	---	80-160	22.44	7 PM				11 AM			6:50 PM		
4	19.98	11 PM - 8 AM = 9 hrs.	---	90-150	22.54			10 AM	9 PM		11:30 AM			4 PM	
5	20.0	5 PM - 5 PM / 11:30 PM - 7:30 AM = 10 hrs.	---	100-110	22.68	12N	3 PM				11 AM			5 PM	
6	19.98	11 PM - 8 AM = 9 hrs.	---	90-120	22.52			10 AM	10:30 PM						
7	19.99	11 PM - 8 AM = 9 hrs.	6:30 AM - 6:50 AM = 20 min.	90-120	22.25	6 PM						10 AM	12N	5 PM	
8	20.0	5 PM - 5 PM / 11 PM - 7 AM = 10 hrs.	---	100-120	22.64		1 PM		4 PM	11 AM					
9	19.95	5 PM - 5 PM / 11 PM - 7 AM = 9 hrs.	10:15 AM - 11:40 AM = 1 hr 25 min.	90-120	22.55	9 PM		10 AM					5 PM		
10	19.98	11 PM - 8 AM = 9 hrs.	---	90-120	22.74		5 PM		9 AM					7 PM	11 AM
11	19.97	11:50 PM - 8 AM = 8 hrs 50 min.	---	90-120	22.64				11 AM		10 AM		6 PM		
12	8.44	4:30 PM - 6:30 PM / 11 PM - 7:30 AM = 10 hrs.	10:30 AM - 4:00 PM = 6 hrs.	90-120	24.42	10 PM		2 PM			8 PM				* 10:30 AM filter backwash
13	19.99	11:30 PM - 8 AM = 8 hrs 30 min.	---	80-120	22.25									6 PM	12N
14	19.97	12 MN - 8 AM = 8 hrs.	---	70-110	21.60			7 PM		11 AM		10 AM			* 10:30 AM filter backwash
15	19.99	11 PM - 8 AM = 9 hrs.	---	70-120	22.58	11 PM		7 PM			8 PM				8 PM
16	19.98	11 PM - 7 AM = 8 hrs.	---	70-110	22.45									7 PM	10 AM
17	19.98	12 MN - 8 AM = 8 hrs.	---	60-110	21.44				9 PM		10 AM				
18	19.99	11 PM - 8 AM = 9 hrs.	---	70-110	21.66	9 AM	11 AM	5 PM		3 PM				2:00 PM	
19	19.98	11 PM - 7:30 AM = 8 hrs 30 min.	---	70-120	21.67					5 PM		11 AM	9 AM		
20	19.98	11 PM - 7 AM = 8 hrs.	---	70-120	21.58	5 PM		6 PM						10 AM	
21	8.44	12:30 PM - 8 PM = 7 hrs 30 min.	8:10 PM - 10:50 PM = 2 hrs 40 min.	100-120	22.72			8 PM			1 AM	5 PM	11:30 AM		* 10:30 AM filter backwash
22	19.98	12 MN - 8 AM = 8 hrs.	---	70-110	21.52					12 AM					
23	19.95	11 PM - 6:30 AM = 7 hrs 30 min.	---	70-110	21.74	1 PM	4 PM	11 AM						6 PM	
24	19.99	11 PM - 8 AM = 9 hrs.	---	70-110	21.57						6 PM	11 AM			
25	19.96	12 MN - 7 AM = 7 hrs.	---	70-110	21.62			4 PM		6 PM					12N
26	19.98	11 PM - 8 AM = 9 hrs.	3:05 AM - 8:15 AM = 10 AM	---	---	5 PM						6 PM	11 AM		
27	15.74	11 PM - 12:00 AM / 12:00 AM - 1 AM = 2 hrs	6:15 PM - 8:00 PM / 12:00 AM - 2:00 AM = 4 hrs	80-120	26.47				12N	10 AM	5 PM				* 10:30 AM filter backwash
28	19.95	11:00 PM - 11:50 PM / 11:50 PM - 3 AM / 11 PM - 7 AM = 10 hrs.	8 AM - 10 AM / 11-11 AM - 11:50 AM = 2 hrs 35 min.	80-110	22.06							5 PM		3 PM	
29	19.97	11:50 PM - 7:30 AM = 8 hrs.	12N - 12:05 PM = 5 min.	70-110	21.87			5 PM	6 PM	12N				10 AM	
30	19.98	12 MN - 8 AM = 8 hrs.	NU	70-110	21.51	9:30 AM				12N	4 PM				
31	20.0	11 PM - 8 AM = 9 hrs.	NU	70-110	21.60					11 PM				1 AM	10 AM

4.1-6-16

* 10:30 AM filter backwash
 2:00 PM filter backwash
 3:00 PM filter backwash
 8 PM

* 10:30 AM filter backwash
 11:45 AM filter backwash
 12:05 PM filter backwash

* 10:30 AM filter backwash
 12:05 PM filter backwash
 12:05 PM filter backwash

12 10 11 13 11 13 12 11

8AM-8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

SEPTEMBER 99.

DATE	WATER PRODUCT 10M MG	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.98	11PM-7AM = 8hrs		120-260	25.76					5PM	10AM		1PM	
2	19.97	12MN-8AM = 8hrs		160-250	25.41	10AM	4PM						11AM	
3	19.99	10.00PM-8AM = 9hrs 30min	3-45PM-5.20PM = 1hr 45min	150-170	22.56			11AM	1PM	5PM			4PM	
4	19.99	11PM-8AM = 9hrs		120-180	22.42	11AM	3PM					5PM	10AM	
5	19.98	11PM-8AM = 9hrs						3PM	5PM	11AM				
6	19.99	12MN-7AM = 7hrs		100-160	21.60	11AM	5AM						6PM	1PM
7	19.95	11PM-8AM = 9hrs		100-150	21.54							10AM	6PM	
8	18.07	5PM-7PM / 11PM-7.30AM = 10hrs 30min	10.20AM-4.50PM = 4hrs 30min	120-190	25.09		7AM			10AM	1PM			* 100% filter supply
9	19.96	12MN-8AM = 8hrs		100-170	22.02	1PM		6PM					11AM	7AM
10	19.98	5PM-7.00PM / 12MN-8AM = 9hrs 30min	2.05PM-2.40PM = 1hr 15min	200-220	28.88		11AM		7PM	5PM				* 100% filter supply
11	19.98	11PM-7.15AM = 8hrs 15min		260-350	30.54			10AM					8PM	
12	19.97	11PM-7AM = 8hrs		200-220	24.87		4PM					5PM	11AM	9AM
13	19.98	5PM-5PM / 12MN-8AM = 10hrs		240-300	28.21	10AM				6PM				
14	19.99	5PM-5PM / 12MN-8AM = 10hrs		160-240	27.58				10AM				6PM	
15	19.97	11PM-7AM = 8hrs		100-280	24.17			5PM					10AM	8PM
16	19.98	12MN-6AM = 6hrs		90-180	24.19	5PM						11AM		8-30AM
17	19.97	12MN-7.00AM = 7hrs 30min		110-150	25.03		AM	7AM					6PM	
18	18.45	4.15PM-6.15PM / 12MN-8AM = 10hrs 30min	10.45AM-4.15PM = 6hrs	120-160	28.25	10AM								* 66% filter supply
19	19.98	12MN-8AM = 8hrs		150-190	28.78		12MN						6PM	9AM
20	19.97	11PM-8AM = 9hrs		160-280	35.06			11AM	5PM	6PM	12PM			* 100% filter supply
21	19.98	5PM-5.00PM / 12MN-8AM = 10hrs 30min	1.00PM-1.45PM = 1hr 15min	210-250	35.70	11AM							7PM	10AM
22	19.97	12MN-8AM = 8hrs						5PM						
23	19.98	11PM-7AM = 8hrs		200-260	35.02							12MN		3.00PM
24	19.98	11PM-7.00AM = 8hrs 30min		120-200	29.92			4PM	1PM					
25	19.99	3PM-5PM / 11PM-7.00AM = 10hrs 30min		100-140	24.77							7PM	5PM	
26	19.98	11PM-8AM = 9hrs		90-150	23.98	10AM						10AM		6PM
27	19.97	11PM-7.00AM = 8hrs 30min		90-150	24.03		11AM		4PM					
28	19.98	11PM-8AM = 9hrs		90-120	24.00									12N
29	19.98	11PM-8AM = 9hrs		90-120	24.10	6PM		7AM				10AM	5PM	
30	18.45	12MN-8AM = 8hrs	4-40PM-8-40PM = 4hrs	90-110	25.97		1PM		10AM	11PM				* P.D. Transmission Line + 100% filter supply
31														

4.1-6-17

August/99

8AM - 8PM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MGT	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.99	11 AM - 7:50 AM = 8 hrs 0 min.	---	170-220	30.01			6 PM	12 N	4 P.M	11 AM			
2	19.98	11 AM - 7 AM = 8 hrs.	---	150-200	26.55	1 PM	3 PM							10 AM
3	19.98	11 AM - 7:00 AM = 8 hrs 0 min	---	160-270	26.26			9 AM			5:30 PM	12 N		
4	19.98	12 PM - 8 AM = 8 hrs.	---	140-200	26.08	10 AM					12 N			6 PM
5	19.98	11 P.M - 7 AM = 8 hrs	---	120-200	25.45		5 PM		11 AM					12 N
6	19.98	11 P.M - 7 AM = 8 hrs	---	100-180	27.85	3:50 PM		11 AM		5 P.M	12 AM			
7	19.99	11 P.M - 8 AM = 9 hrs.	---	90-160	22.22									8 AM 11 AM
8	19.98	11 P.M - 7 AM = 8 hrs.	---	100-160	22.92	8 PM			6 PM		11 AM			
9	19.98	11 P.M - 7 AM = 8 hrs	---	110-260	25.80					6 P.M				12 AM
10	19.95	12 PM - 7 AM = 7 hrs	---	280-380	24.28	12 N		9 AM			6 PM			
11	19.95	11 P.M - 6 AM = 7 hrs.	---	350-540	36.96		3 PM		5 PM					8 AM
12	19.95	12 P.M - 4 PM = 4 hrs.	1:50 PM - 1:55 PM = 5 min	350-800	49.15				12 N		10 AM	6 P.M		8 AM
13	19.92	12 PM - 6 AM = 6 hrs.	3:10 PM - 5:15 PM = 25 min.	680-850	58.70	6 PM								4 PM
14	19.94	11 P.M - 6 AM = 7 hrs.	---	600-750	57.26		9 AM	9 AM	6 PM	10 AM				
15	19.98	11 P.M - 7 AM = 8 hrs.	---	450-600	57.77	12 N					10:50 AM	5:00 PM		
16	19.98	3 PM - 5 PM / 11 P.M - 7 AM = 10 hrs.	---	520-650	39.22		10 AM			6 PM	10 AM			9 AM
17	19.97	11 P.M - 7 AM = 8 hrs.	---	150-380	26.50	5 PM			6 PM					4 PM
18	19.98	11 P.M - 8 AM = 9 hrs.	---	120-180	24.66		5:50 PM		9 PM					12 N 9:50 AM
19	19.98	11 P.M - 7 AM = 8 hrs.	---	120-160	25.92			11:0 AM		10 AM				7:00 AM
20	19.98	11 P.M - 7 AM = 8 hrs.	---	120-160	24.52	6 PM			10 AM					
21	19.99	11 P.M - 7:50 AM = 8 hrs 50 min.	---	120-150	21.59			12 N		10 AM		4 P.M	10 AM	3 AM
22	19.98	11 P.M - 7:00 AM = 8 hrs.	---	120-190	24.02	4 PM			8 P.M	12 N				
23	19.98	11 P.M - 7:00 AM = 8 hrs	6:45 PM - 6:45 AM = 5 min / 7 AM	110-140	25.99			1 P.M			5 P.M		11 AM	4 PM
24	19.99	11 P.M - 8:00 AM = 9 hrs	---	90-180	24.91			1 P.M		3 PM		5 PM		
25	19.99	12:40 PM - 5 PM / 12 PM - 8 AM = 10 hrs 20 min.	10-20 AM - 1 AM = 2 hrs 40 min.	110-140	25.67	7 PM							11 AM	1 P.M * 60 mg/l alum added
26	19.95	11 AM - 7 AM = 8 hrs.	1-40 PM - 2:40 PM = 80 min.	90-150	25.87			12 N	10 AM		1 P.M	2 PM		10 AM 4 PM * 60 mg/l alum added
27	19.98	12 PM - 5 PM / 12 PM - 8 AM = 10 hrs.	---	130-380	32.59				1 P.M		1 P.M		10 AM	4 PM
28	19.98	4 PM - 5 PM / 12 PM - 7 AM = 9 hrs.	---	250-360	36.27	1 P.M	4 P.M			11 AM	9 AM			
29	15.97	12 PM - 8 AM = 8 hrs.	10:45 AM - 7:15 PM / 7:45 AM - 10:05 AM = 10 hrs 20 min.	240-250	42.84			9 AM	4 PM					11 AM * 60 mg/l alum added
30	19.94	11:00 AM - 8 AM = 8 hrs 50 min.	9 AM - 9:30 AM / 5 PM - 5:10 PM = 5 min.	200-280	30.69	6 PM				10 AM				4 PM * 60 mg/l alum added
31	19.97	11 AM - 7 AM = 8 hrs.	---	180-230	26.86			10 AM	7 PM	5 PM				

4.1-6-18

front
* 60 mg/l alum added
* 60 mg/l alum added
* 60 mg/l alum added
* 60 mg/l alum added
* 60 mg/l alum added

JULY/99

8PM-9AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.98	11PM - 7AM = 8hrs	---	250-300	30.21		10AM		12N						
2	19.98	11PM - 8AM = 7hrs	---	240-250	28.52	10AM				12N		5PM			
3	19.98	11PM - 8AM = 9hrs	10PM - 11PM = 1hr	250-280	27.22			3PM			6PM				
4	19.98	11-50PM - 8AM = 8hrs 50min	---	180-250	27.19		5PM		11AM				6PM		
5	19.97	11PM - 8AM = 9hrs	12:35PM - 12:45PM = 10min	160-240	28.08	11AM		2PM			4PM				
6	19.98	11PM - 7:00AM = 8hrs 50min	---	160-210	28.17		4PM				10AM		1PM		
7	19.96	12MN - 8AM = 8hrs	---	190-250	29.42	12M			12AM				6PM		
8	19.97	11-50PM - 7-30AM = 8hrs	---	160-230	28.32		4PM			11PM			12PM		
9	19.97	11PM - 8AM = 9hrs	1-10PM - 1-05PM / 2-55PM - 2-50PM = 10min	160-220	28.11				11AM		6PM		1PM		
10	19.97	11PM - 8AM = 9hrs	---	170-240	28.28	10AM					5PM		11AM	* Filtered water to storage tank 20 feet 25 mts, 85 mts	
11	19.97	11PM - 8AM = 9hrs	---	250-560	30.25		10AM		6PM		5PM		8AM	* 6hrs 50 min water	
12	18.55	2-6A =	---	650-780	54.19					10AM					
13	19.69	12MN - 5-45AM = 5hrs 45min	5-45AM - 5-50AM = 5min	450-590	48.68	4PM	9AM	5PM					7PM	11AM	
14	19.93	11PM - 7AM = 8hrs	4-15PM - 4-16PM = 5min	340-450	38.28						10AM				
15	19.21	8AM - 8AM = 5hrs	---	320-460	40.81				12N	7AM	9AM		2PM		
16	19.81	8AM - 10:30AM / 2-25PM - 4-45PM / 11:30AM - 11:30AM	11-25AM - 2-25PM = 3hrs	130-440	36.24	7AM	12N				6PM		10AM		
17	19.98	3PM - 5PM / 11PM - 7:30AM = 10hrs 30min	---	190-340	27.26				4PM				11AM		
18	19.97	11PM - 7AM = 8hrs	---	190-210	29.27			7AM			10AM		6PM		
19	19.95	11PM - 6-00AM = 7hrs 30min	---	150-220	28.79	7PM	9AM			6PM			11AM		
20	18.66	3-55PM - 5PM / 11PM - 6AM = 8hrs 50min	11-05AM - 3-55PM = 4hrs	180-470	39.68						6PM		10AM	* Filtered water to storage tank 25 feet 25 mts	
21	19.93	12MN - 6-30AM = 6hrs 30min	---	290-410	39.98	5:30PM	12N	7AM					11AM		
22	19.96	11PM - 6-30AM = 7hrs 30min	---	160-340	27.54						12N		11AM		
23	19.95	11PM - 6AM = 7hrs	---	180-250	32.06					6PM			7:30AM		
24	19.25	4PM - 6PM / 11PM - 8AM = 11 hrs	11-50PM - 4PM = 1hrs 10min	150-220	31.22		10AM	10AM					11AM	* 7:30AM 20 mts water to storage tank 25 feet 25 mts	
25	19.98	11PM - 8AM = 9hrs	---	190-280	33.62	6PM				7PM		11AM	10AM	* P.D.B. 11/11/98	
26	19.93	11PM - 8AM = 9hrs	8:55PM - 10-15 AM = 1hr 20min	180-490	38.89				10AM						
27	19.95	11PM - 6-30AM = 7hrs 30min	---	180-260	31.65		7PM					11AM	6PM	10AM	
28	19.97	11PM - 7AM = 8hrs	---	160-230	28.69				11AM		5PM	12N			
29	19.98	12MN - 8AM = 8hrs	---			5PM							8PM	10AM	
30	19.95	1PM - 8PM = 7hrs	---	150-230	30.89			7PM		11AM					
31	19.98	11PM - 7AM = 8hrs	---	150-230	30.07			5PM			12N		9-10AM		

10 12 10 12 11 11 12

4.1-6-19

JUNE '99.

8 AM - 8 AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.98	11 AM - 8 AM = 9 hrs	---	180 - 250	27.25	7 AM	5 PM			5 PM	11 AM	1 PM	4 PM	
2	19.98	3 PM - 5:30 PM / 11 AM - 8 AM = 11 hrs 30 min	10-11 AM - 12-50 PM = 2 hrs 50 min / 2-35 PM - 2:50 PM = 15 min	100 - 150	21.60		4 PM	12 PM		5 PM			9-20 AM	
3	19.98	11 AM - 7 AM = 8 hrs	---	100 - 150	27.02	10 AM			7 AM	5 PM			5 PM	8 PM
4	19.95	11 AM - 7:30 AM = 8 hrs 30 min	12-45 PM - 12-55 PM = 10 min	150 - 150	27.06				7 AM				5 PM	8 PM
5	19.98	11 AM - 8 AM = 9 hrs	---	100 - 150	27.06					6 PM				
6	19.98	3 PM - 5 PM / 11-50 AM - 10 AM = 9 hrs	---	190 - 280	28.97	5 PM		9 AM	7 PM	12 PM				
7	19.98	11-50 PM - 7 AM = 7 hrs 30 min	---	290 - 380	26.28			12 PM				10 AM	8 PM	
8	19.99	---	6-15 AM - 6-25 AM = 10 min	300 - 400	29.60	9 AM		5 PM						
9	19.98	3 PM - 5 PM / 11 AM - 6 AM = 9 hrs	---	290 - 380	40.17				6 PM	12 PM	5 PM	1 PM	10 AM	
10	19.97	11 AM - 7 AM = 8 hrs	---	250 - 340	35.29		10 AM							
11	18.61	3:05 PM - 11 PM - 8 AM = 11-47 AM - 5-05 PM = 8 hrs 38 min	---	260 - 280	31.28	9 AM		7 AM			12 PM	8 PM	11 AM	
12	19.98	11 AM - 8 AM = 9 hrs	---	280 - 260	35.55		7 PM		10 AM	5 PM				
13	19.97	12 PM - 8 AM = 8 hrs	---	280 - 250	35.29			5 PM					4 PM	
14	19.98	11 AM - 7 AM = 8 hrs	---	260 - 350	35.15		10 AM			12 PM		3 PM	9 AM	5 PM
15	19.99	11 AM - 7:30 AM = 8 hrs 30 min	---	240 - 260	35.57	12 PM				10 AM				
16	19.98	11 AM - 7 AM = 8 hrs	---	200 - 350	32.77			2 PM	7 PM		10 AM	5 PM	1 PM	
17	19.95	3 PM - 5 PM / 11 AM - 7 AM = 10 hrs	12-40 AM - 1-25 PM = 55 min	220 - 280	34.16	4 PM	11 AM							
18	19.98	11 AM - 7 AM = 8 hrs	---	200 - 270	29.90				7 PM	5 PM	10 AM	6 PM	12 PM	
19	19.99	11 AM - 7:00 AM = 8 hrs 30 min	---	200 - 250	28.88	11 AM	9 AM	4 PM						
20	19.99	11 AM - 7:30 AM = 8 hrs 30 min	---	150 - 220	27.93				11 AM	1 PM			2 PM	
21	19.95	11 AM - 8 AM = 9 hrs	11 PM / 11 PM / 4-10 PM - 4-45 PM = 30 min	180 - 250	27.15		5 PM			5 PM			2 PM	
22	19.95	5 PM - 6 PM / 11 AM - 8 AM = 10 hrs	3-35 PM - 4-25 PM / 10-55 PM - 10-55 PM = 10 min	280 - 550	26.87	12 PM		2 PM					2 PM	
23	19.97	12 PM - 8 AM = 8 hrs	---	500 - 660	45.05		10 AM		4 PM		9 AM	11:00 AM	11 AM	
24	19.97	11 AM - 7 AM = 8 hrs	10-05 AM to 10-40 AM = 35 min	450 - 640	51.25	9 AM		9 PM		10:00 AM				
25	19.95	11 AM - 7 AM = 8 hrs	---	500 - 650	50.97		11 AM				10 AM		4 PM	
26	19.93	11 AM - 7 AM = 8 hrs	2-07 PM to 2-15 PM = 8 min	460 - 640	46.81	5 PM			2 PM			10 AM		
27	19.96	11 AM - 7 AM = 8 hrs	---	450 - 600	47.24		11 AM			5 PM	10 AM		5 PM	
28	19.94	11 AM - 8 AM = 9 hrs	6-05 AM - 6-15	400 - 580	43.44				5 PM			7 PM		
29	19.97	11 AM - 7:30 AM = 8 hrs 30 min	---	320 - 500	25.70	10 AM			9 PM				3 PM	
30	19.98	11 AM - 7:30 AM = 8 hrs 30 min	---	250 - 400	50.56		4 PM				10 AM			
31														

4.1-6-20

8AM-8PM

MOHARA WTI MONTHLY PLANT SUMMARY RECORD FORM

MAY-92

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.97	11 PM - 7 AM = 8hrs		70-120	19.22						9 AM	12 N		
2	19.96	11 PM - 7 AM = 8hrs	5-20 PM - 5-10 PM = 10min	80-170	19.35	11 PM	4 PM			5 PM			8 PM	
3	19.98	11 PM - 7-15 AM = 8hrs 15 min	6-10 AM - 6-10 AM = 5 min	60-110	19.11				5 PM	12 N		10 AM	2 PM	
4	19.98	11-3 PM - 7-30 AM = 8hrs		60-110	19.72	12 N	4-20 PM							10 AM
5	19.99	5 PM - 8 PM / 11 PM - 7 AM = 10hrs	12-50 AM - 1 AM = 10 min	60-100	19.20					11-30 AM	9 AM		2 PM	
6	19.97	5 PM - 6 PM / 11 PM - 7 AM = 9 hrs	12 N - 12-15 PM = 15 min	70-100	19.28	3 PM		5 PM	12 N					10 AM
7	19.99	0-25 PM - 4-10 PM / 10-30 PM - 7-30 AM = 9 hrs	5-10 AM / 3-4 PM = 2 min	120-250	23.89		10 AM				9 AM			
8	19.99	5 PM - 5 PM / 11 PM - 7 AM = 10 hrs	8 PM - 8-15 AM = 15 min	150-250	24.50					4 PM		10 AM	11-30 AM	
9	19.98	5 PM - 4 PM / 11 PM - 7 AM = 9 hrs		200-250	23.51	3 PM		9 PM	11 AM		9 AM			
10	19.97	11 PM - 7-20 AM = 8 hrs 20 min		220-300	23.99			12 N			7 PM	4 PM		
11	19.98	11 PM - 7-0 AM = 8 hrs		200-280	28.82	6 PM			5 PM	9 AM				12 N
12	19.97	11 PM - 7-0 AM = 8 hrs		150-200	26.07		3-10 PM	6 PM			12-20 PM			
13	19.97	11 PM - 7-0 AM = 8 hrs		150-180	24.50				5 PM	2 PM			9 AM	
14	19.95	11 PM - 8 AM = 9 hrs	2-05 PM - 2-55 PM = 50 min	170-180	24.71	12 N						2 PM		10 AM
15	19.98	11 PM - 8 AM = 9 hrs	6-45 AM - 6-55 AM = 10 min	180-170	24.62			10 AM	9 AM				11 AM	
16	19.97	11 PM - 7 AM = 8 hrs		150-160	23.25				2 PM	2 PM	12 N			10 AM
17	19.98	11 PM - 7 AM = 8 hrs				11 AM		6 PM				12 N		
18	19.97	11-30 PM - 7-30 AM = 8 hrs		210-250	30.32				7 PM	4 PM	12 N			
19	19.98	11 PM - 7-30 AM = 8 hrs 30 min		150-220	24.29	5 PM	11 AM							7 AM
20	19.98	11 PM - 7 AM = 8 hrs		80-170	18.30			6 PM			4 PM	11 AM		
21	19.96	11 PM - 7-0 AM = 8 hrs 0 min	12-45 PM - 1-0 PM = 15 min	80-190	18.27				10 AM	3 PM				12 N
22	19.98	11 PM - 7 AM = 8 hrs		80-110	17.08	12 N	10 AM				4 PM			
23	19.96	11 PM - 7-30 AM = 8 hrs 30 min	10-25 PM - 10-25 PM = 10 min	120-280	19.96			4 PM	5 PM			12 N		10 AM
24	19.97	11 PM - 7-30 AM = 8 hrs 30 min	11-00 PM - 11-35 PM = 15 min	200-350	38.76		5 PM			8 PM	9-30 AM			8 PM
25	19.96	11 PM - 8 AM = 9 hrs	11 AM - 11-2 AM / 3 PM - 5-10 PM = 30 min	200-280	25.71				9 AM				4 PM	
26	19.97	11 PM - 7 AM = 8 hrs		200-280	29.01			4 PM	10-30 AM			10 AM		5 PM
27	19.98	11-30 PM - 8 AM = 8 hrs 30 min		160-250	26.15	4 PM				9 AM	8 PM	12-20 PM		
28	19.98	11-0 PM - 7-30 AM = 8 hrs 30 min	11-30 AM - 11-55 AM = 5 min	100-190	25.72			4 PM		10-20 AM				8 PM
29	19.97	11-30 PM - 8 AM = 8 hrs 30 min		120-180	25.89				12 N		4 PM		2 PM	
30	19.95	11 PM - 7-55 AM = 8 hrs 55 min	6-55 AM - 7-10 AM = 15 min	350-450	43.57	8 AM				3 PM				10 AM
31	19.98	11 PM - 8 AM = 9 hrs						11 AM	11 AM					9 AM

4.1-6-21

12 11 11 12 11 12 11 11

APRIL 99.

8AM-8AM. MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MSB	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.97	11PM-8AM = 9hrs.	12.45PM-1.20PM/9.45PM-5.20PM = 1hr 15min	30-50	15.60		10N					8-50PM	9AM	
2	19.96	11PM-6AM = 7hrs		30-60	16.04	5PM			8PM	12N	9AM			
3	19.97	11-15PM-7-15AM = 8hrs		40-70	13.01		4.55PM	11AM				3-8M	7PM	
4	19.97	11PM-7AM = 8hrs		50-60	15.87	11AM				5PM	10AM		7PM	
5	19.98	11PM-7AM = 8hrs		40-60	16.21		9AM	6PM	11AM				4PM	
6	19.97	11-15PM-7-15AM = 8hrs		40-60	16.55	12N					10AM		3-30PM	
7	19.98	12MN-8AM = 8hrs.		30-90	19.08		11AM		6PM	9AM				
8	19.98	11PM-7AM = 8hrs.		30-60	15.99	12N			5PM			10AM		
9	19.97	11PM-7AM = 8hrs.	4-05PM-5-10PM = 1hr 5min	40-60	16.04		9AM			12N		7.50PM	6PM	
10	19.97	11PM-7AM = 8hrs		30-60	15.75						8AM			6PM
11	19.97	11PM-7AM = 8hrs.		40-70	16.94		10AM	9.50PM		9AM			5.30PM	
12	19.98	11-50PM-7-50AM = 8hrs		30-70	15.92	12N						6PM	10AM	
13	19.95	8-50PM-6-20PM/11PM-7-50AM = 9hr 50min	4PM-5PM = 1hr	30-70	15.78				6PM		11AM		9AM	+ For cutting grass..
14	19.99	11PM-8AM = 9hrs.		40-70	16.37	4.50PM				6.50PM		11AM	7-30AM	
15	19.97	12MN-8AM = 8hrs.	1-30AM-1-25AM = 5min	40-70	16.29		12N				1PM		9.50AM	
16	19.98	11PM-8AM = 9hrs		40-70	17.76	12N			6PM	4.45PM		7-50PM	9-0AM	
17	19.98	11PM-7AM = 8hrs		80-125	24.69			11.50PM			5PM	6-50PM	9.50AM	
18	19.97	11PM-7-50AM = 8hr 50min		120-160	25.69	5.50PM				6-50PM				12N
19	19.97	11PM-7AM = 8hrs	9-50AM-10.05AM = 15min.	150-180	25.71						7PM	3-50PM		
20	19.98	11PM-7-50AM = 8hr 50min		160-200	26.49	4PM			1PM			7-50PM	10AM	
21	19.97	11PM-7AM = 8hrs		180-250	27.29			10AM		12N			7PM	
22	19.96	11-30PM-7-50AM = 8hrs		140-250	28.49						5-50PM		3PM	
23	19.98	11-0PM-7AM = 8hrs.		140-200	27.01	11AM			9AM			8PM	4PM	
24	19.98	11PM-7AM = 8hrs.		150-200	27.78			7AM		7PM			10AM	
25	19.97	8PM-4PM/11-50PM-7-50AM = 9hrs.	9-10AM-9-40AM = 20min.	150-200	27.53	5PM					10AM	12N	7AM	
26	19.98	11PM-7AM = 8hrs		150-210	27.18				11AM	6PM	5PM		10AM	
27	19.96	11-50PM-7-30AM = 8hr		160-220	28.69	6PM							5PM	
28	19.97	11PM-7-50AM = 8hr 50min		120-180	29.68			7PM	5PM	4PM		12N		
29	19.98	12MN-8AM = 8hrs.		100-150	21.47						12N		9AM	
30	19.98	12MN-8AM = 8hrs		100-150	21.51	11AM	12N		7PM	5PM				8-50AM
31														

4.1-6-22

13 12 11 13 13 14 13 14

MARCH '99.

SAM-8AM MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.98	4-50AM-6-45PM/12MN-7AM=9hr	11-35AM-11-45AM/12-40PM-12-50PM	20-60	14.14			2-45PM	4PM			10AM	11AM	
2	19.97	11-50AM-7:00AM=7hr 50min	11-05AM-11-41AM=3hr 36min	20-50		10AM	2:50PM					12N		
3	19.98	11PM-7AM=8hr		30-60	14.26					11AM		10AM	13PM	
4	19.96	12-50AM-7-50AM=7hr		40-60	14.21	3PM	7PM	11-45AM	9AM		11-50AM			
5	19.97	11AM-7AM=8hr	8-45AM-9-05AM=20min	50-80	18.58							10AM	11AM	
6	19.96	12MN-7AM=7hr		40-70	17.27			10AM			5PM	6AM		
7	19.95	11PM-6=7hr	6-0AM-6-05AM=5min					10AM		4PM			1PM	6PM
8	19.97	12MN-7AM=7hr		20-50	14.93	7PM		5PM			2-50PM	11AM		
9	19.98	11PM-7AM=8hr		30-80	18.40			11AM		12N			10AM	4PM
10	19.96	11-50PM-7AM=7hr 50min		50-80	18.26	7PM		7PM					10PM	
11	16.40	3-50AM-8AM=4hr 50min	6-45PM-2-50AM=7hr 45min	30-70	18.11			12N			9AM	5PM		11AM
12	19.98	6AM-10AM/5PM-5PM/11AM-8AM/1hr		30-60	14.05	12N		7PM		2PM				
13	19.95	12MN-8AM=8hr		20-50	15.70			1PM			7PM	11AM	6-50PM	9AM
14	19.97	11PM-7-30AM=8hr 30min		30-50	14.15	10AM		6PM				12N		7PM
15	19.97	3-50AM-5PM/10AM-7-50AM=9hr 50min		30-50	14.18			9-10AM		12N	6PM			3AM
16	19.98	12MN-7AM=7hr		30-50	14.4	11AM		9-45AM		12-45PM			6-50PM	3PM
17	19.99	11PM-7AM=8hr		30-60	14.40					10AM	1PM	6PM	7-45PM	7AM
18	19.98	11PM-7AM=8hr		30-80	16.97	3-00		4PM		5PM				7-45AM
19	18.48	11-15PM-7-15AM=8hr	3-45PM-10-10AM=6hr 55min	30-60	19.46							10-50AM		9AM
20	19.94	12-30AM-8PM=7hr 30min		40-80	18.88	6-20PM		7-30PM		1PM	11AM			
21	19.96	1AM-8PM=7hr		40-90	19.27					7PM		9AM	5-50PM	12N
22	19.95	12MN-7AM=7hr		50-90	19.53	6PM								
23	19.98	10-50PM-7PM=3hr 50min		50-80	17.26			5PM			3-25PM	10-50AM	9AM	9AM
24	19.97	11PM-7AM=8hr		40-70	15.99	7PM				5PM				
25	19.96	12-30PM-7-50AM=7hr		30-70	15.70			5PM				9-50AM	7AM	8AM
26	19.98	11PM-7-50AM=8hr 50min	3-20PM-5-30PM/5-50PM-5-50PM	30-70	13.32	8-50PM		12N			11AM	9AM		
27	19.97	10PM-8AM=10hr	11-55AM-12-50PM/1-20PM-4-45PM	30-50	16.87					3PM			1PM	10AM
28	19.95	10PM-4AM=6hr		30-60	16.08	3PM		11AM			6PM	12N	10PM	3AM
29	19.99	8-30AM-1PM/11PM-8AM=15hr 30min		50-60	16.87					6PM				
30	19.98	12MN-8AM=8hr		40-60	16.67	10AM		6PM			7PM	9AM		11-50AM
31	19.99	11PM-8AM=9hr				9AM				6-50PM	12N	4PM	9AM	

4.1-6-23

15 17 18 12 12 14 15 17

FLB 199...

8 AM - 8 AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION Mg/l	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/l	FILTER BACK WASH TIME								REMARKS			
						1	2	3	4	5	6	7	8				
1	19.95	4:45 AM - 7:10 AM / 12:30 AM - 8 AM / 1:15 AM	2:00 AM - 4:40 PM / 6:40 AM - 7 AM = 3hr						9 AM	10 AM	9 AM	12 AM					
2	19.98	11 AM - 7 AM = 7hr							9 AM	12 AM				10 AM	9 AM		
3	19.96	1 AM - 8 AM = 7hr									11 AM			1 AM			
4	19.98	1 - 8 AM = 7hr	4.55P Trip	190-150	25.95					6P	2:30P	9 AM	4:30P	8:15P	11 AM		
5	19.97	12 MN - 7:30 AM = 7:30hr		120-150	26.27	7 AM	2 AM						9P		5:30P		
6	19.98	11P - 7A = 8hr		110-150	25.52					1P	4:30P	10 AM			3:30P		
7	19.95	11P - 7A = 8hr	10:15 AM - 10:40 AM = 25 min	110-140	24.21	8 AM	1 AM						10 AM		11:20 AM		
8	19.98	11 AM - 7 AM = 8hr		80-120	22.68					3:30 AM			10 AM	6 AM	11 AM		
9	19.96	11 AM - 7 AM = 8hr		70-110	20.04	3:30 AM	11:30 AM			9:30 AM						9:15 AM	
10	19.95	11 AM - 6-10 AM = 7:10hr	... Trip	60-90	17.02					7:20 AM		2:30 AM	10 AM	11:45 AM			
11	19.97	11 AM - 7 AM = 8hr		50-80	15.96	7 AM	12 AM			5 AM						10 AM	
12	19.95	11 AM - 7 AM = 8hr		30-70	14.57					8 AM	4 AM			11 AM	12 AM		
13	19.96	12 MN - 8 AM = 8hr	2:05 PM 2-20 PM = 15 min	30-60	14.95	8 AM	5 AM					12 AM	7 AM				
14	19.98	12 MN - 8 AM = 8hr	2:35 PM 2:40 PM / 3:30 PM 7:15 PM = 14.55	30-60	14.57							12:20 AM			11 AM		
15	19.95	11 AM - 7 AM = 8hr	9 AM - 9:30 AM / Trip	30-50	14.24					11:50 AM	9 AM					10:50 AM	
16	19.97	11 AM - 7 AM = 8hr	Trip	20-50	15.69	1 AM							4 AM	9 AM			
17	19.98	11 AM - 7 AM = 8hr		20-40	13.66					5:20 AM			10 AM		12 AM		
18	19.96	11 AM - 6 AM = 7hr		20-40	13.85	1 AM				6 AM						12 AM	
19	19.97	11 AM - 7 AM = 7hr		20-50	14.14									11 AM		9 AM	
20	19.95	12 PM - 6 AM = 6hr		20-70	13.82					12 AM		8 AM	9 AM			7:50 AM	
21	19.98	11 AM - 6 AM = 7hr		20-50	14.31	12:45 AM					6 AM			10 AM	7 AM		
22	19.98	11:50 AM - 7 AM = 7hr 30 min		40-80	18.10					4 AM							
23	19.95	1 AM - 7:00 AM = 6hr 30 min		40-70	18.69	9 AM						5 AM	8:30 AM			10 AM	
24	19.97	11 AM - 7:00 AM = 8hr		50-80	18.82					9 AM	4 AM	11:00 AM			9:30 AM		
25	19.98	11 AM - 7:00 AM = 8hr		40-80	16.57	5 AM								9:45 AM		11:30 AM	
26	19.97	11 AM - 7 AM = 8hr		50-60	14.26					11:50 AM		4:50 AM	9 AM	7 AM			
27	19.98	11 AM - 7 AM = 8hr		30-60	14.30						8:30 AM				11 AM	10 AM	
28	19.97	11:30 AM - 7 AM = 7hr 30 min		20-40	14.05					9 AM				11 AM	4:50 AM		
29																	
30																	
31																	

4.1-6-24

11 13 12 11 12 11 11 12

JAN 1999

8 A.M - 8 A.M

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION Mg/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.95	11P - 7AM = 8hr	---	40-55	15.61	9AM	5PM		11AM		2PM			
2	19.97	11P - 7AM = 8hr	---	40-60	15.55		9AM			1:30PM	5:40PM	11AM		
3	19.96	11P - 7AM = 8hr	---	40-60	15.38			4:20PM	10:00AM		6PM		12N	
4	19.97	11P - 7AM = 8hr	---	50-80	19.10	2PM	1PM			4:10PM	10:30AM			
5	19.98	11P - 7AM = 8hr	---	60-110	21.20			5PM	1PM			2:30PM		
6	19.97	11P - 7AM = 8hr	---	60-120	22.31	3PM	12N			5PM	10AM		7PM	
7	19.95	1A - 8A = 7hr	7AM TRIP	70-120	22.66			10:30AM	9A		4P	8:30A	2P	
8	19.98	11P - 7A = 8hr	---	100-120	22.87	11A	9:30A			2:30P		5P	12:10AM	
9	19.95	11P - 6A = 7hr	---	70-120	21.22		11A		9A	12:10AM	8A		6AM	
10	19.95	11P - 6A = 7hr	---	70-120	22.18		10AM		9A	12N		3:30PM		
11	19.98	11P - 6A = 7hr	---	70-110	20.72	8AM	6PM	12N		2:12PM		7PM	1:30PM	
12	19.99	11P - 7A = 8hr	---	80-110	20.53	7PM		2PM	10AM		9PM			
13	17.51	12:45AM - 11AM - 12:45AM / 6AM - 8PM / 12:45AM - 5:50AM = 5hrs 05min	---	80-120	25.41		8:30AM			3:30PM			2PM	
14	18.98	12MN - 7:30AM = 7-8hr	1-05PM - 1-15PM = 10min	80-110	22.21		3PM				6PM			
15	19.94	11AM - 5:30AM = 2hr 30min	---	80-100	19.90				11:20AM			9PM	5:30AM	
16	19.97	11P - 7A = 8hr	9:20AM - 10:00AM = 40min / 6:55PM - 7:00PM = 5min	90-150	26.07	8:40AM	1PM	8:20PM		1:30PM	4:40PM	2:10PM		
17	19.99	11P - 8A = 9hr	---	80-110	26.03				8PM	4:40PM			11PM	
18	19.99	11AM - 2AM / 5AM - 8AM = 8hr	2PM - 2:12PM = 12min	60-150	19.67	10:30AM	4:45PM	9:20AM			3:10PM	12:30PM		
19	19.98	11AM - 7AM = 8hr	---	70-150	20.10				11AM		6PM		9:20AM	
20	19.95	12MN - 7:45AM = 7hr 45min	8-9:50AM TRIP	80-110	20.26	1PM	9AM	5PM		9:20AM		4PM		
21	19.97	11AM - 7AM = 8hr	---	70-100	19.87		2PM					2:30PM		
22	19.95	12:30AM - 8:30AM = 7hr 30min	---	80-110	21.80		2	9:20AM		8PM	10AM		12N	
23	19.97	12MN - 7:30AM = 7hr 30min	---	100-120	22.59		12N		11AM			8PM		
24	19.98	11AM - 7AM = 8hr	---	100-120	22.59	10AM			11AM			12N	9AM	
25	19.97	11AM - 7AM = 8hr	---	110-130	23.97		4PM		11AM		1:10PM		3PM	
26	19.96	11AM - 6:30AM = 7hr 30min	---	110-130	25.25	9AM			10AM				11:40AM	
27	19.91	12MN - 7:00AM = 7hr	---	110-150	26.12		9AM		8:45AM		3:15PM			
28	19.96	1AM - 8AM = 7hr	---	120-150	26.24	2:15PM		5PM		1	12N	2:30PM	9AM	
29	19.97	12MN - 7:30AM = 7hr 30min	---	120-150	26.08	7AM	2PM			10:30AM		4PM		
30	19.98	11P - 7:45AM = 7hr 45min	---	110-150	21.87	10PM		2PM	12N		10AM		10:40AM	
31	19.97	11:30PM - 7:30AM = 8hr	---	120-150	21.95			9:30AM		6:30AM		10AM	10AM	

4.1-6-25

14 19 9 15 17 16 16

Dec/98

8AM - 8AM, MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.95	5PM-5PM / 1AM-6PM = 7hr	6:07 AM - 6:20 AM = 13 min	70-120	20.26	11 AM					5:30 PM		8 AM	
2	19.99	6PM-5PM / 11AM-6AM = 9hr		70-100	18.55		9 AM		6 PM	5 PM		10:30 AM		
3	19.98	1:00-5PM / 11PM-6AM = 10:30hr		60-90	17.16	4 PM		10 AM			6 PM	10:30 AM		8 AM
4	19.99	2:54 / 11PM-6AM = 10hr		70-90	17.15				9:40 PM	2:10 AM			9 PM	8 AM
5	19.98	2:45-6PM / 11PM-6AM = 9hrs-30min		80-100	19.22				12:40 PM					
6	19.99	2:58 PM / 11PM-6AM = 9hr		80-110	19.75			11:30 AM		12N				
7	19.98	3:56 PM / 11PM-6AM = 9hrs		80-100	19.25				4 PM	11 AM	6 PM			
8	19.95	11 AM - 7 AM = 8hr	9:28 AM - 9:53 AM = 25 min	80-100	19.36	12N						10 AM	5:30 PM	
9	19.94	11 PM - 6 AM = 7hr	5:55 PM - 4 PM / 7:10 AM - 7:15 PM = 5 min	70-100	19.29		10 AM	6:30 PM	11 AM		4:30 PM			
10	19.97	11 PM - 6 AM = 7hr		70-90	19.61	4:30 PM					6 PM		11 AM	
11	19.97	11 PM - 6:30 AM = 7hr		60-90	19.08					3:30 PM		5:30 PM		
12	19.96	11 AM - 6:30 AM = 7:30hr	7:40 AM - 7:15 AM = 5 min	80-100	21.04	2 PM		11 AM				5:30 AM	9 AM	
13	19.95	11 PM - 6 AM = 7hr		80-120	22.0			12:30 PM			3 PM	9:10 AM		6 PM
14	19.96	12 PM - 7 AM = 7hr		80-130	23.60	10:40 AM				6:30 AM	5 PM	5 PM		
15	19.97	12:30 AM - 7:30 AM = 7hr		80-110	20.07	8 PM		9 AM		4:15 PM				12N
16	19.98	11:10 AM - 6:30 AM = 7hr 20min		70-100	17.29	7 PM	5 PM		9 AM		11 AM			3 PM
17	19.94	11 AM - 7 AM = 8hr	4 AM - 4:30 AM = 30 min	80-110	21.40			8 AM		9 AM	3:15 PM	5 PM	1 PM	
18	19.97	1 AM - 7:30 AM = 6hr 30min		80-120	22.69	12N			8 AM					8:30 AM
19	19.96	1 AM - 8 AM = 7hr		90-130	22.40			3 PM				5 PM	1 PM	
20	19.98	11 AM - 7 AM = 8hr		80-130	22.16	1 PM			5 PM	3 PM				10:40 AM
21	19.97	11 PM - 7 AM = 8hr		100-140	22.88				11 AM			12N	5 PM	
22	19.99	11 PM - 7 AM = 8hr		110-150	23.30	5 PM	12N				6 PM			9:30 AM
23	19.96	11 PM - 7 AM = 8hr		100-140	22.96				7 PM	8 PM		9 AM	4 PM	
24	19.95	11 PM - 7 AM = 8hr		100-130	23.17	12N	3 PM				4 PM			9:30 AM
25	19.96	11 PM - 7 AM = 8hr		110-150	23.46				3 PM	4 PM		8 AM	10 AM	
26	19.97	11 PM - 7 AM = 8hr		110-140	23.47	11 AM	4 PM							9 AM
27	16.17	3 PM - 5 PM / 11 AM - 2:15 AM = 5:15hr	9:55 AM - 10:55 AM / 2:15 AM - 7:55 AM = 6 hrs	80-120	22.18				4 PM		8 AM		9:30 AM	8 PM
28	19.99	2:55 AM - 11:45 PM / 5 PM - 5 PM / 11 PM - 7:30 AM = 5hr		70-100	17.48	6 PM	12N					4 PM		
29	19.98	11 AM - 8 AM = 9hr		60-80	13.82					12:15 PM		4 PM	10:15 AM	8:30 AM
30	19.99	3 PM - 5 PM / 11 PM - 8 AM = 11hr		50-80	14.17	12:45 PM	9 AM	4 PM	12:30 PM				3 PM	2 PM
31	19.97	11 PM - 8 AM = 9hr		40-60	14.80			3 PM			12N	9 AM	5 PM	4 PM

4.1-6-26

15 17 19

8AM - 8AM.

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

NOV./98.

DATE	WATER PRODUCT 10M MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.93	12MN-7A = 7hr.	---	110-140	21.71	8P				9A					
2	19.94	1-7.30A = 6.30hr.	---	100-130	21.02				5P		8P			9A	
3	19.98	3P-5P/11.30PM-7AM =	9-15AM-9.40AM = 25min	80-120	19.28	11.30PM		8PM					8.20PM		
4	19.95	11-7P = 7hr.	---	150-150	19.64			12N		5PM	10AM				
5	19.97	3-5P/1.1AM-7AM = 8hr	---	120-170	21.15			4.30PM						3AM	
6	19.95	12MN-7AM = 7hr	---	220-296	30.90	6.15PM				3.30PM		12N			
7	19.94	3-5P-5PM/1.1AM-6.30AM = 7hr	---	250-400	39.72		5.30PM				11PM				
8	19.96	12MN-7AM = 7hr.	---	240-370	38.95				5PM					1.1AM	
9	19.98	3P-4.30P/1AM-7AM = 7.00hr	---	150-240	26.67				10AM						
10	19.96	4.05P-5P/12MN-7AM = 8hr.	3.55PM-4.05PM = 10min.	120-140	21.90								12N		
11	19.97	2P-4P/11PM-6AM = 9hr.	---	80-140	19.54	4PM						10AM			
12	19.96	3P-5P/1AM-7AM = 8hr	---	70-120	16.57		10PM			1.20AM				5.30PM	
13	19.94	11P-5.30AM = 6.30hr	---	70-90	15.51			11AM							
14	19.95	11.50P-7.30AM = 8hrs	6-6.30PM-8.15PM = 1hr.55min	60-90	16.01				5.00PM				9.1AM		
15	19.95	1AM-8AM = 7hrs	---	50-90	15.28	11.30AM	5PM				9AM				
16	19.97	11AM-6AM = 7hrs	---	60-90	15.59					5.20PM				8AM	
17	19.94	1AM-8AM = 7hrs.	---	50-90	15.52			2PM					4PM		
18	19.96	1AM-8AM = 7hrs.	---	50-80	15.42				5PM			1PM			
19	19.95	1AM-7AM = 6hr	---	70-100	16.51	4PM	3PM	5PM						10.30AM	
20	19.94	12MN-7AM = 7hrs	9.30AM-9.55AM = 25min.	80-100	18.29					5.25PM			1.1AM		
21	19.69	11PM-6AM = 7hrs.	9.15AM-10.1AM = 55min low voltage	100-140	28.92				4PM			9AM			
22	19.95	11PM-7AM = 8hrs	8.50AM-9.10AM/5.30PM-5.55PM = 35min	120-180	28.41			6PM	8.20PM					4PM	
23	19.98	4PM-5PM/11PM-6AM = 8hr	---	160-240	27.95	3.1PM							9.30AM		
24	19.95	3PM-4.55PM/12MN-6.30AM = 8hr	2.15PM-2.25PM/4.55PM-5.05PM = 35min	100-150	19.82					9.30AM					
25	19.97	3PM-5PM/11PM-5AM = 8hr.	---	70-100				11.20AM	4PM	8.30AM					
26	19.96	11PM-6AM = 7hrs.	---	60-90	15.54								10.1AM		
27	19.97	11PM-7AM = 8hrs.	---	70-90	15.29			4PM				10AM	6PM	8AM	
28	19.98	4PM-5PM/11PM-6.30AM = 8.30hr	---	50-80	17.26					8.30AM			11AM		
29	19.95	2PM-4PM/12MN-6AM = 7hrs	---	60-90	17.03	8.20AM	5PM					3.20PM		11.25AM	
30	19.98	11AM-7AM = 8hrs.	---	70-100	19.70				8.20AM						
31															

8 2 10 8 7 8 10 9

4.1-6-27

8AM to 8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

Oct/98

DATE	WATER PRODUCT 10N MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.97	5AM-8AM=2hr 11A-6A=2hr	---	100-140			8:30AM		6:0M		10:AM				
2	19.95	3AM-5PM=2hr 11AM-6:30AM=5hr	2:AM-2:30AM=30min	110-150		10AM						6:20M	8:30AM		
3	19.98	7AM-5PM=8hr	---	100-140			3PM					6PM			
4	19.97	11P-7A=8hr	---					4:30P		11A					
5	19.98	11P-7A=8hr	---	110-140	21.72	6PM			10:00M				9AM		
6	19.99	4-5P/12MN-7:30A=8:30hr	---	100-140								6:PM	11AM		
7	19.98	4-5P/12MN-8A=9hr	---	100-130	21.52		9A								
8	19.95	3-5P/11P-5A=8hr	5A-8A=3hr	100-170	22.74			5:30P		10A					Gen. operated - diller
9	19.93	10:30A-12:30A/11P-7A=10hr	8A-10A=2hr	90-130	20.69	6P							12:00M	9A	
10	19.97	3-6P/12:30MN-6:30A=8hr	---	90-140	21.63		6P			11A					
11	19.98	3P-4:30P/12MN-7AM=8:30hr	---	100-140	21.7					11:30M	6:5M				
12	19.96	3P-4:30P/12:30MN-6:30A=7:30hr	---	100-130	21.59				10A				6:20P		
13	19.95	11P-6A=7hr	1P-11:00M=10min	100-140	21.62	6P								10A	
14	19.99	3P-5P/11P-7AM=10hr	9-10AM-9:40AM-7:20M	100-140	21.49					12:00M		4:30PM			
15	19.95	10P-8AM=10hr	12:40PM-7:56M-7:4-2min	110-150	22.52			9:50PM							
16	19.98	9P-5P/11:5P-7:30AM=9:15M	---	90-150	22.28					4-456P		1AM			
17	19.99	3-5P/12MN-7A=9hr	---	90-140	21.58							6PM			
18	19.99	3-5P/11P-7A=10hr	---	100-140	21.59			11:15A					4:30P		
19	19.98	11PM-7:30AM=8:30hr	---	100-140	21.73					9:25M					
20	19.97	10P-8AM=10hr	4-20PM-7:26M-5hr	110-160	21.80							6:PM		3PM Gen. operated	
21	19.98	11P-7AM=8hr	---	90-140	21.41	4PM									
22	19.95	3-5P/12MN-6AM=8hr	1:15AM-1:20AM=5min	90-130	21.56			12:45P		5PM			4:PM		
23	19.97	11P-7AM=8hr	---	100-130	21.68				10:AM			6PM		5PM	
24	19.99	3-5P/12MN-7AM=9hr	---	90-130	21.47			6:PM							
25	19.95	2-5P/12MN-7AM=9hr	---	100-150	21.69			11:20M			5PM		12:18M		
26	19.97	2-5P/12MN-6AM=7hr	---	100-140	21.74							12:20M		5PM	
27	19.94	12MN-5:30AM=5:30hr	---	90-140	21.84			6:AM	10:AM						
28	19.98	11PM-8:AM=9hr	---	100-130	21.56					11AM	6PM		12M		
29	19.97	9P-5P/10AM-7AM	---	100-130	21.67	1PM					10AM				
30	19.95	11AM-6:PM=7hr	12:45PM-7:12:55PM=5hr	100-130	21.69			5PM	10:AM					7AM	
31	19.91	12MN-7AM=7hr	---	100-140	21.70					1PM		11AM	6PM		

4.1-6-28

BAM TO BAM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

SEP/98

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.99	3-5P/12:30-6A=8.00hrs		250-280		12 Noon								9:30A	
2	19.96	3-5P/1-7A = 8 hr.		130-200			10A				5P				
3	19.98	3-5P/12-MN-6A = 8 hr.	-						5:50P				9A		
4	19.95	3-5P/12:30MN-6:30A=8hr.	-	130-180		6:50P								12 Noon	
5	19.93	3-5P/2-7A = 7hr.	-	140-180			11A			12 Noon	9:45P				
6	19.98	4-5P/12-7:30A = 8:30hrs	9:45A trip/5:30A trip	120-180	23.88		10A							6:40P	
7	19.97	3-5P/2-8A = 8hr.	-	120-170					5:40P					10A	
8	19.95	12MN-7A = 7hr.	-	110-140	22.38	1P		6P		3:25P	10:30A				
9	19.93	4P-4:40P/1-7:20A = 7hr.	10-10:20A/9:40P trip	100-130	21.64									5P	11:30A
10	19.98	11:30P-7:30A = 8 hrs.	-				9:30A								
11	19.81	1-6:30A = 5:30hrs.	-	110-140	21.77								10A		
12	19.95	12:30MN-8A = 7:30hr.	12:30MN trip	100-140	21.71	7P				11:30A				5:30P	
13	19.98	11P-7:30A = 8:30hrs.	-	90-150	21.58			12 Noon		7:30P			10A		
14	19.96	1-8A = 7hr.	-	110-150	22.25		10A					4P			
15	19.95	1:30-8A = 6:30 hrs.	10:50P trip	110-150	22.25										11A
16	19.93	3-4:30P/1-5:30A = 6hr.	-	120-150	23.03				3P					7P	
17	19.81	1-7:15A = 6:15hrs.	-	120-160	23.4	7:15P	3:15P						8:30P		
18	19.97	12MN-8A = 8hr.	-	120-150	22.6			12 Noon		7P					3P
19	19.98	12MN-8A = 8hr.	-	110-160	22.71				10:30A					6P	
20	19.83	12-6A = 6 hrs.	-	100-180									12 Noon		4P
21	19.69	2-7A = 5 hr.	-	180-250		5P	12 Noon								
22	19.95	12MN-7A = 7hr.	-	230-340	36.93			10A		12 Noon				4P	
23	19.57	11PM-5A = 6 hrs.	7:15-8P Voltage erratic	150-280	34.37					5P			12 Noon		10A
24	19.95	12MN-8:30A = 8:30hrs.	-	140-230	28.25	7P	10A								
25	19.98	1-8A = 7hr.	-	240-300	34.34								4P		10A
26	19.93	1-7A = 6hr.	-	240-280	31.21			9:30A			6P				5P
27	19.75	1-8A = 5hr.	-	200-250	27.38		4P		11A						
28	19.95	1-8A = 7hr.	8:45-9:15A = 30min	110-190	23.09	10:45A							5:30P		Generator operated
29	19.97	12MN-7:30A = 7:30hrs.	-	110-150											
30	19.98		-	110-140											
31															

4.1-6-29

30 min

Generator operated

8AM TO

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

AUGUST/98

DATE	WATER PRODUCT ION MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.97	11P-6:30A = 7:30hs	1:40-1:55P	150-200	20.17		8A							9A	
2	19.98			140-180	23.98			8A	10A						
3	19.96	3:40-5P/12MN-5:45A/8:30A	3:20-3:40P/5:45-6:05A	230-380	40.09						6P	11A			
4	19.95	12MN-7A = 7hs.	2:55P trip	250-390	37.09					5:20P				9A	
5	19.93	1A-7A = 6hs.		240-300	29.53										
6	19.97			200-280	28.92				9A						
7	19.97	1A-7:10A = 6:10hs.		100-150	24.03			4P				12MN			
8	19.85	11P-6A = 7hs.		100-150	24.0		7P							8:30A	
9	19.98	11P-6:30A = 7:30hs.		100-130	21.6	11A				7:30P					
10	19.97	12:30-8A = 7:30hs.		100-130	21.64				10:30A		6:30P				
11	18.1	3-5P/11P-2:20A = 5:30hs.	5:55P trip/2:20A	110-150	23.35							5:30P	11A		Power fault at 2:20A Generator Operated single
12	15.36	11P-6A = 7hs.	--- upto 6:15P = 16hs.	140-400	38.05			8:30A							--- 6:15P Gen. operated
13	18.48	1A-6A = 5hs.	2:40P trip/6:40P-10:45P	390-600	48.38	1:30P	10:45A		8P	5P	6P				
14	19.87	12MN-7:30A = 7:30hs.		280-440	34.43								5P	1P	
15	19.96	12:30MN-7:15A = 6:45hs.	9:30A trip	200-280	30.06										
16	19.94	12:30MN-7:30A = 7hs.		200-260	29.96			6P							Gen. tested on load 1/2 hr.
17	19.95	1A-7:30A = 6:30hs.		190-270								5P			
18	19.97	1A-8A = 7hs.	2:30P trip	130-220	25.37	3:40P	11:30MN			6:30P					
19	19.98	12MN-7:30A = 7:30hr.		120-180	23.99									12:30P	
20	19.95	11P-6A = 7hs.		100-150	21.83								5P		
21	19.98	3:30P-5P/12MN-7A = 8:30A		100-140	21.62										
22	19.94	11P-6A = 7hs.		100-130	21.5								1P		
23	19.96	1A-8A = 7hs.		130-180	25.13		10A		12MN						
24	19.98	3P-5P/11P-6A = 9hs.	11:15-11:45A	150-220		10A				3P	9A		6P		
25	19.98	11P-6A = 7hs.		110-150											
26	19.99	3P-5P/12MN-7:30A = 9:30hs.		130-280	29.37	5P			7P						
27	19.98	3-5P/11P-6A = 9hs.		170-220											
28	19.97	3-5P/12MN-6A = 8hs.		180-220											
29	19.95	3-5P/12MN-6A = 8hs.	1:30P trip	180-330											
30	19.85	1-6A/7-8A = 8hs.	2:40P trip	300-460											
31	19.98			300-400											

4.1-6-30

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8AM TO 8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM JULY/98

DATE	WATER PRODUCT 10A MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS	
						1	2	3	4	5	6	7	8		
1	19.84	12MN-5:30A = 5.30 hrs.	—	240-370	38.31				4P						
2		12:15MN-7:15A = 7 hrs.	—	250-340	35.43					9:50P					
3	19.95	3-4:30P/11:30P-6A = 8 hrs	—	250-350	35.97								11A		
4	19.93	11:30P-6:15A = 6.45 hrs.	—	270-380	37.90	7P									
5	19.92	12MN-7A = 7 hrs.	—	280-550	46.25		10A					9P			
6	19.90	1A-6A = 5 hrs.	—	500-620	54.28			8:30A		12:00M	5:10P				
7	19.93	11:30P-7A = 7.30 hrs.	3PM tripped	450-610	57.65									10A	6:40P
8	18.52	4P-8P/12MN-8A = 12 hrs	11A-4P = 5 hrs.	300-440	45.02	10A						2:45P	Not needed as overflowing so		generator operated
9	19.95	12MN-7A = 7 hrs.	—	250-300	27.01		9:30A		5:20P						
10	19.81	1A-8A = 7 hrs.	10/20-11/10A	140-230	25.16					9:30A			6P		
11	19.98	11:30P-8A = 8.30 hrs.	1:25P tripped	120-180	23.95			9:30A				5P			
12	19.96	12:30MN-8A = 7.30 hrs.	—	140-300	26.93		6P							11A	
13	19.94	11:30P-6:30A = 7 hrs.	—	340-450	43.43	11:15A			7:10P						
14	19.95	11P-6A = 7 hrs.	7:30-7:40A	420-600	43.3						10:15A				
15	19.81	12MN-7:30A = 7.30 hrs.	tripped at 11A not in Log Book	500-630	49.44			6P			12:00M				
16	19.93	11P-6A = 7 hrs.	—	480-600	46.13			9:50A						6P	
17	19.97	2:45-5P/12MN-7A = 9.15 hrs.	—	450-600	46.52	11:45A			7P						
18	19.96	3-5P/11P-5:30A = 8.30 hrs	—	390-500	41.63					9:50A			6P		
19	19.95	11:30P-7:15A = 7.45 hrs.	—	250-390	37.37			7:20P			12:00M				
20	19.97	4-5P/12MN-8A = 9 hrs.	tripped at 5P	280-320				10:40A						6:30P	
21	19.94	4-5P/11P-6A = 8 hrs.	—	180-260	27.36	1P			5:30P						
22	19.98	12MN-7:30A = 7.30 hrs.	tripped 9-10AM	150-220	26.98					12:00M	4:30P				
23	19.95	3P-5P/1A-7A = 8 hrs.	—	180-420	31.46			5P					11A		
24	19.94	11P-6A = 7 hrs.	—	450-680	46.30			12:00M		7:30P					
25	19.93	12MN-7A = 7 hrs.	—	450-620	48.95						6:30P			12:40M	
26	19.97	11P-7A = 8 hrs.	—	340-470	37.70	1P				6P	4P				
27	19.98	12MN-8A = 8 hrs.	—	240-370	30.42			6:30P							
28	19.97	3P-5P/11P-6A = 9 hrs.	10:05-10:25A/6:50P tripped/6:25P	220-290	29.71				12:00M		8P				generator 7:55P
29	19.96	3-5P/12MN-6A = 8 hrs.	—	230-280	28.97				8P					11A	
30	19.93	12MN-8A = 8 hrs.	—	280-490	24.3								7P		
31	19.98	11:30P-7:30A = 8 hrs.	—	180-250	22.07	3P				9:15A	6P				
			6 hrs 55 mins												

4.1-6-31

8AM TO 8AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

JUNE/98

DATE	WATER PRODUCT 10N MG/L	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	18.72	1-6AM = 5hr.	10-10:15A	530-640	54.52	No Filter backwash due to shortage of water & high turbidity								1:15-5:10P one pump H-1
2	19.21	12MN-6AM = 6hr.	2:25 P trip	510-600	49.73									10:11:05A / 11:15-12:35A / 2:45-12MN one H-LP
3	19.24	12MN-6AM = 6hr.	-	510-600	56.8	6:50P								
4	19.45	1-5A = 4hr.	-	450-600	45.63	12:30								11A
5	19.51	1-6A = 5hr.	10:25AM triped	450-600	44.73	12Nmi								8:30A
6	19.64	1-6A = 5hr.	-	440-590	43.1	11:30A								
7	19.81	11:30P-6A = 6:30hr.	1:40P trip / 4:10P trip	350-580	42.76									1PM
8	19.81	2-5A = 3hr.	1:30-1:35Low / 2:05trip	400-600	46.98	1:10P								
9	19.57	11:40P-6A = 6:20hr.	-	520-680	58.87	8:20P 7:25P								one pump
10	19.62	12:15P-6:15A = 6hr.	-	400-620	-	6:45P 10:10A								
11	19.72	1-6:30A = 5:30hr.	-	400-550	42.84	6P								11A
12	19.67	1:15-7:15A = 6hr.	-	360-550	43.02									6:30P
13	19.57	2-7 = 5hr.	-	450-580	50.45	5P								
14	19.62	1:30-7AM = 5:30hr.	6:40-9AM	400-600	50.19	7P								
15	19.22	2-6AM = 4hr.	-	440-600	46.38	12:25								
16	19.34	12MN-5AM = 5hr.	-	460-590	46.88	10A								7P
17	19.45	1:20-1:35P-1-6 = 5hr.	1:20-1:25	450-580	46.23	11:50A								
18	19.52	1-5:30AM = 4:30hr.	-	400-570	43.28	12Nmi								11A
19	19.72	11P-5:40A	-	320-560	43.6	9:45A								
20	18.37	1-7A = 6hr.	7:15-9:0P / 10-11:45P = 3:30hr.	300-450	44.0	10A								generally operated
21	19.81	11:30P-5:30A = 6hr.	9:20-9:30A	240-370	43.19	10:30A								
22	19.92	12MN-6:30A = 6:30hr.	-	250-350	38.79	5:30P								
23	19.9	12MN-6A = 6hr.	2:25PM triped 6:20A triped	240-370	38.95	7:15P								
24	19.95	12MN-7A = 7hr.	6:20A triped	250-400	39.55	10:30A								8P
25	19.93	12MN-7A = 7hr.	-	260-400	-	6:10A								3P
26	19.86	12MN-7A = 7hr.	9:30-10:05A	280-400	40.80	12Nmi								
27	19.91	12MN-7A = 7hr.	-	270-390	39.68	10A								
28	19.94	12MN-8A = 8hr.	10:10-10:20A	230-390	40.08	6:30P								
29	19.76	11:30P-6A = 6:30hr.	-	240-370	38.92	1P								7P
30	19.95	11:30P-7A = 7:30hr.	-	220-350	36.26	9P								12:30Nmi
31			5 hrs 15:00											

4.1-6-32

8 AM to 8 AM

MOHARA WTP MONTHLY PLANT SUMMARY RECORD FORM

MAY/98

DATE	WATER PRODUCT ION MS	THREE PUMP OPERATION TIME	POWER FAILURE TIME	RAW WATER TURBIDITY NTU	ALUM DOSING mg/L	FILTER BACK WASH TIME								REMARKS
						1	2	3	4	5	6	7	8	
1	19.97	11 PM - 6 AM / 3-5 PM	-	40-60	15.3								12 Noon	
2	19.94	11 PM - 6 AM = 7hr.	-	40-70	15.64		12 Noon		5 PM	10 AM				3 PM
3	19.90	11 PM - 7.10 AM = 8.10 hr	8:25-8:50 AM / 3:25-3:55 PM = 45 min	50-70	15.23	6:25		10:30 AM			4 PM			
4	19.92	11 PM - 6 AM = 7hr.	-	50-70	16.22					5 PM			12 Noon	
5	19.96	3 PM - 5 PM / 11 PM - 6 AM = 9hr.	11:50-12:40 Noon	40-60	15.41		12 Noon		5 PM					3 PM
6	19.93	11 PM - 6 AM = 7hr.	-	40-70	15.63	6 PM		4 PM			10 AM			
7	19.91	12 MN - 6:30 AM = 6.30 hr.	-	50-70	15.87		5 PM						12 Noon	7 PM
8	19.95	11 PM - 6:30 AM = 7.30 hr.	-	50-70	15.82				7 PM	11:05				
9	19.94	11:30 PM - 7 AM = 7.30 hr.	-	50-70	15.51	5:10 PM		7:15 PM			10:55			
10	19.93	11 PM - 6 AM = 7hr.	-	40-70	15.92		7:30 PM						9:30 AM	11:15 AM
11	19.92	3-5 PM / 12 MN - 6 AM = 8hr.	-	40-70	15.52				9:20 AM		6 PM			
12	19.96	12:30 Noon - 7:30 AM = 7hr.	-	50-70	16.03	4:50 PM		6:20 PM		10:50 AM				
13	19.97	11 PM - 7 AM = 8hr.	-	50-70	15.68		5:20 PM						4:10 PM	9:30 AM
14	19.96	12 MN - 7:30 AM = 7.30 hr.	-	40-70	15.74				5:15 PM		10:30 AM			
15	19.95	12 MN - 7 AM = 7hr.	-	40-70	15.43	6 P			11:30 AM		6 PM		8 PM	9:50 AM
16	19.93	11:30 PM - 7 AM = 7.30 hr.	8:40-9 AM	40-70	15.51				9:50 AM		6 P			
17	19.97	11 PM - 6 AM = 7hr.	-	40-60	15.41				9:50 AM		6 P		11:45 AM	
18	19.94	11:30 P - 6:20 A = 6.50 hr.	-	40-70	15.51	7:00 P							9:20 A	
19	17.39	10 P - 3:10 A / 3:20 - 3:35 A	5:10-5:40 P / 5:45-7:50 P / 3:10 A - 3:20 A / 3:35 A - 3:45 P	50-140	22.15				1 P		6 P		11 A	5:35-7:50 P / 3:45 A - 8 A
20	13.52	11 P - 6 A = 7hr.	8 A - 5:35 P	200-450	39.45				9:30 P		10 P		8 P	8 A - 9:30 A / 11-11:15 A
21	19.33	2 A - 6 A = 4hr.	7:10 A - 7:25 A = 15 min.	450-550	43.21	5 P							9:20 P	9 A
22	19.45	2 A - 6 A = 4hr.	-	50-740	61.81					8 A		10:20 A	12:30 A	
23	19.35	11 P - 6 A = 7hr.	5 P - 6:45 P = 1:45 min	550-680	52.27				8 P					12 N
24	19.90	12 MN - 1:15 A / 1:30 - 7 A = 6.45 hr.	1:15 - 1:30 AM = 15 min	540-600	51.2				12 N			8:20 PM		No 4 due but not done
25	19.70	2 A - 8 A = 6hr.	-	510-600	48.89					4 P	7:10 P	1 P		
26	19.62	2 A - 6:30 A = 4:30 hr	-	740-620	48.72								12:20 AM	3:30 P
27	19.75	2 A - 8 A = 6hr.	9:45-9:30 A / 12:45-1:50 P / 1:20-1:40 P / 1:45-2:10 P	520-640	50.4				1 PM				6 PM	
28	19.82	10 P - 5:00 A / 3:30 A - 3:45 P	10:45-11:10 A = 25 min.	580-660	55.0				10:50 A		1 P		7 P	
29	19.82	11 P - 3:40 A / 6:30 A - 8 A = 6.05 hr	1:40-1:45 P / 3:40-3:45 P / 7:10-7:15 P	500-588	47.02					9:30 A			4:30 P	12 Noon
30	19.88	2-8 AM = 6 hr	-	500-600	48.5				12 Noon			7 PM		
31	19.51	2-6 A = 4hr.	-	550-620	53.05	8:30 P								

31 MAY 15 1998

[Signature]

4.1-6-33