

**LOWER RIO GRANDE PUBLIC WATER WORKS AUTHORITY**  
**MINUTES - SPECIAL BOARD OF DIRECTORS MEETING**

**9:30 a.m. Monday, October 31, 2011 at the Vado Office, 325 Holguin Road**

NOTE: Minutes are a DRAFT until approved and signed by the Board of Directors

- I. **Sign in, establish quorum, call meeting to order:** Sign-in sheet, Agenda and Selection Committee Tally Report are attached. President Roberto Nieto called the meeting to order at 9:33 a.m. Directors present were Mr. Nieto, Vice-president John Holguin and Secretary Santos Ruiz. Director Blanca Martinez had called to say she was running late and arrived after item II. Staff members present were General Manager Martin Lopez and Projects Manager Karen Nichols.
- II. **Approval of agenda:** Mr. Holguin made a motion to approve the agenda, Mr. Ruiz seconded, and it carried unanimously.
- III. **RFP 2012-1 – Selection Committee Recommendations & Engineering Firm Interviews:**  
Handouts from the Interviewees are attached.
- 9:30 a.m. – Molzen Corbin:** Jerry Paz and Clayton Teneyck were interviewed. {32:14}
- 10:00 a.m. – Bohannan Huston:** Rob Richardson, Matt Thompson and Robert Fundie were interviewed. {1:05:07}
- 10:30 a.m. – Parkhill, Smith & Cooper:** Brian Stephens, Keith Rutherford, Gilbert Andujo and Matt Dyer were interviewed. {1:39:13}
- The audio recording was paused at 11:13 a.m. and resumed at 11:25 for a bio-break.
- IV. **Selection of an engineering firm for the Surface Water Treatment Plant Project:** Ms. Martinez made a motion to select Bohannan Huston, Inc., Mr. Ruiz seconded, and there was some discussion. Consensus from the discussion was that all three firms made a very positive impression, and BHI in their partnership with CDM expressed the most thorough grasp of the project requirements. The motion carried on a vote of 4-0.
- V. **Adjourn:** Mr. Holguin made a motion to adjourn, Mr. Ruiz seconded, and it carried unanimously. Mr. Nieto declared the meeting adjourned at 11:30 a.m.

**Date Minutes Approved:** \_\_\_\_\_

**Directors Present:**

\_\_\_\_\_  
**Chairman Roberto M. Nieto**

\_\_\_\_\_  
**Director Blanca Martinez**

\_\_\_\_\_  
**Vice- Chairman John Holguin**

\_\_\_\_\_  
**Secretary Santos Ruiz**

\_\_\_\_\_  
**ABSENT**  
**Director Rosaura Pargas**

# Lower Rio Grande Public Waterworks Authority

## Sign In Sheet

Date: 10/31/11 Time: 9:30 AM Place: Vado Office Meeting Type: Special

Name, Title - Print Sign	Company or Agency Represented	Mailing Address	Telephone	Email
Jerry Page	Molzen Corbin	1155 Commerce, STE F Los Cruces, NM	575 522-0049	jpage@molzencorbin.com
Clayton TenEyck	Molzen Corbin	2701 Miles Rd SE, Albuquerque, NM 87106	505-242-5700	cteneycck@ molzencorbin.com
Robert M. Wood	LRG	325 Holguin RD, 48072	575 621-9697	
Santos Reyna	LRG	P.O. Box 106 Benito New	505 882 5937	
Johs Holguin	LRG	325 H. Guin Rd LNM, NM	299-4959	jholguin@corbin
MARTIN LOPEZ	LRG STAFF	525 Holguin Box C VADO, NM 88072	575 571-3628	martin_lopez@ lrgauthority.org
BRUNA MORA	Molzen	1600 San Jose Alameda, NM 88044	575 642-3551	brunam@molzen.com
Robert Fowler	COM	6000 Upton Bldg HQA, NM 87110	505-243-5200	Robert.fowler@com.lrg
<del>Matthew Dyer</del> Matt Dyer	PSL	425 S 70th St Las Cruces, NM 88001	575 582-8570	prohredson@psl.com MFLA.com
GILBERT ANONSO	PSL	115 W. Griggs Las Cruces, NM 88001	575-523-0915	mlpere@team-psl.com
KEVIN BUTTNERPARD	PSL	810 E. Rowlett B2 PASO, TX 79902	915-533-6811	gabourd@team-psl.com

**LOWER RIO GRANDE PUBLIC WATER WORKS AUTHORITY**  
**SPECIAL MEETING NOTICE & AGENDA - SPECIAL BOARD OF DIRECTORS MEETING**  
**9:30 a.m. Monday, October 31, 2011 at the Vado Office, 325 Holguin Road**

Agendas are final 24 hours prior to the meeting and may be obtained at any LRGPWWA Office – call 575-233-3947 for information

- I. Sign in, establish quorum, call meeting to order
- II. Approval of agenda
- III. RFP 2012-1 – Selection Committee Recommendations & Engineering Firm Interviews  
9:30 – Molzen Corbin  
10:00 – Bohannon Huston  
10:30 – Parkhill, Smith & Cooper
- IV. Selection of an engineering firm for the Surface Water Treatment Plant Project
- V. Adjourn

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aide or service to attend or participate in the hearing or meeting, please contact the LRG PWWA office at 575-233-3947, 325 Holguin Rd, Vado NM 88072 at least one week prior to the meeting or as soon as possible. Public documents, including the agenda and minutes, can be provided in various accessible formats. Please contact the LRGPWWA office if a summary or other type of accessible format is needed.

*Si es un individuo con una incapacidad esta en necesidad de un lector, amplificador, lenguaje por senas, o cualquier otra forma de asistencia o servicio para atender o participar en las juntas, por favor llame a la oficina LRG PWWA office at 575-233-3947, 325 Holguin Rd, Vado NM 88072 una semana antes de la junta o en cuanto posible. Documentos públicos, incluyendo la agenda y minutos, están disponibles en varios formatos. Por favor opóngase en contacto con la oficina LRGPWWA si un resumen o otro tipo de forma accesible es necesario.*

## NOTICE OF POTENTIAL QUORUM

**A quorum of the Board of Directors of the Lower Rio Grande Public Water Works Authority may be present at the New Mexico Infrastructure Finance Conference in Albuquerque during October 25-27, 2011. No board meetings will be convened, no board business will be discussed, and no board action will be taken during this conference.**





Firm		Planning & Design Services Criteria								*	Fed.	NM		
Gannett		1	2	3	4	5	6	7	8	Subtotal	Subtotal	10/20/2011	3:15	
1	ml	25	24	17	8	0	5	-5	4	78	83			
2	rn	24	24	14	9	0	5	-5	5	76	81			
3	om	21	20	10	10	0	3	-3	5	66	68			
4	kj	10	10	5	5	0	2	-2	5	35	37			
5	JJ	10	21	10	9	0	3	-3	3	53	56			
6	SR	22	22	15	6	0	2	-2	5	70	72			
7										0	0			
		112	121	71	47	0	20	-20	27	378	398			
Column 7 should be minus the number of points awarded in Column 6														
Firm		Planning & Design Services Criteria								*	Fed.	NM		
Wilson		1	2	3	4	5	6	7	8	Subtotal	Subtotal	10/20/2011	3:21	
1	ml	27	26	10	8	5	4	-4	5	81	85			
2	rn	25	25	16	9	5	5	-5	5	85	90			
3	om	20	20	10	10	5	3	-3	2	67	70			
4	kj	12	12	12	0	5	5	-5	3	44	49			
5	JJ	11	11	10	10	5	3	-3	4	51	54			
6	SR	27	25	16	3	5	4	-4	3	79	83			
7										0	0			
		122	119	74	40	30	24	-24	22	407	431			
Column 7 should be minus the number of points awarded in Column 6														



Firm		Planning & Design Services Criteria							*		Fed.	NM		
PSC		1	2	3	4	5	6	7	8	Subtotal	Subtotal	10/20/2011	4:30	
1 ml		28	30	19	10	5	5	-5	5	97	102			
2 rn		28	28	18	10	5	5	-5	5	94	99			
3 om		25	28	20	10	5	5	-5	5	93	98			
4 kj		30	30	20	10	5	5	-5	5	100	105			
5 JJ		28	28	18	9	5	5	-5	5	93	98			
6 SR		26	26	10	9	5	5	-5	5	81	86			
7										0	0			
		165	170	105	58	30	30	-30	30	558	588			

Column 7 should be minus the number of points awarded in Column 6

Firm		Planning & Design Services Criteria							*		Fed.	NM		
Zia		1	2	3	4	5	6	7	8	Subtotal	Subtotal	10/20/2011	5:00	
1 ml		25	29	20	10	0	5	-5	3	87	92			
2 rn		25	24	16	8	0	5	-5	5	78	83			
3 om		22	21	18	10	0	5	-5	5	76	81			
4 kj		25	25	19	10	0	3	-3	0	79	82			
5 JJ		25	26	16	8	0	3	-3	3	78	81			
6 SR		25	15	15	2	0	4	-4	4	61	65			
7										0	0			
		147	140	104	48	0	25	-25	20	459	484			

Column 7 should be minus the number of points awarded in Column 6





ENGINEERS | ARCHITECTS | PLANNERS  
**MOLZENCORBIN**

**SURFACE WATER TREATMENT  
FACILITY INTERVIEW**

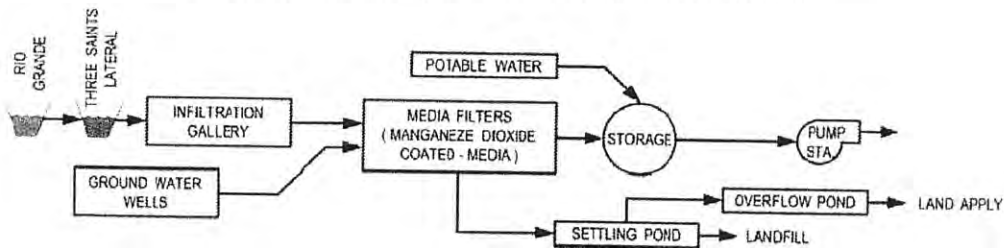
**LOWER RIO GRANDE PWWA**

**MOLZENCORBIN**  
ENGINEERS | ARCHITECTS | PLANNERS

# Current PER Deficiencies

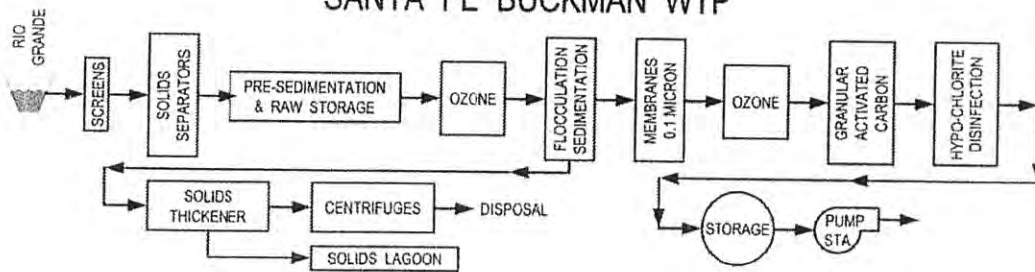
- **Missing Operational Methodology (Run time, EBID service, Seasonal...).** Need baseline histogram to document process.
- **No Disinfection Included.**
- **High organic carbon was shown in water analysis.** This requires advanced oxidation to control disinfection byproducts.
- **Infiltration gallery is inadequate to remove fine sediment.** Need sedimentation and flocculation/clarification prior to media filters to prevent clogging.
- **Missing Integration with Existing Infrastructure.**
- **Need Computations for Blending, Filtration, and Process.**
- **The one alternate considered was ruled out based on complexity and not treatment effectiveness**

PROCESS SCHEMATIC - LRGPWWA PER

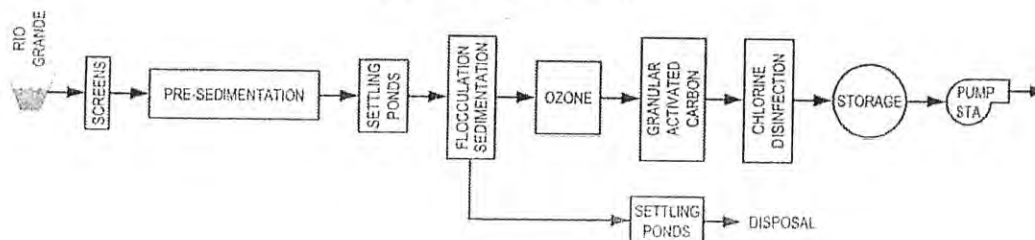


## Need Alternative Comparison

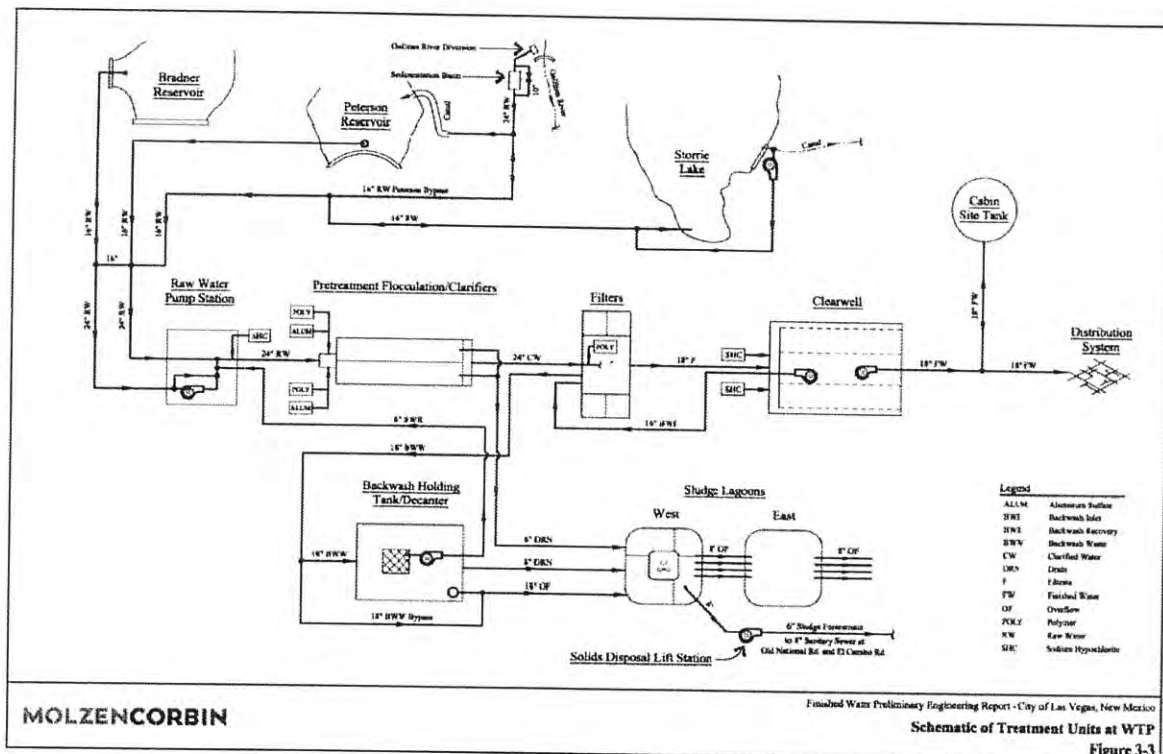
SANTA FE BUCKMAN WTP



ALBUQUERQUE WTP



# Need Alternative Comparison



## Useful Information in PER

- Data and Test Reports
- Demographics and Population Projections
- Environmental Document, as long as footprint remains the same
- All of the data regarding the existing systems and system assets
- The site selection is useable, the parcel size may need to be re-examined



## **Where LRGPWWA Goes from Here**

- **Negotiate with LRGPWWA and NMED Scope Changes**
- **Review New Alternates**
- **PER Amendment**
- **Supplemental Report**
- **Amended EID**
- **4 to 6 months**

## **Why Molzen Corbin**

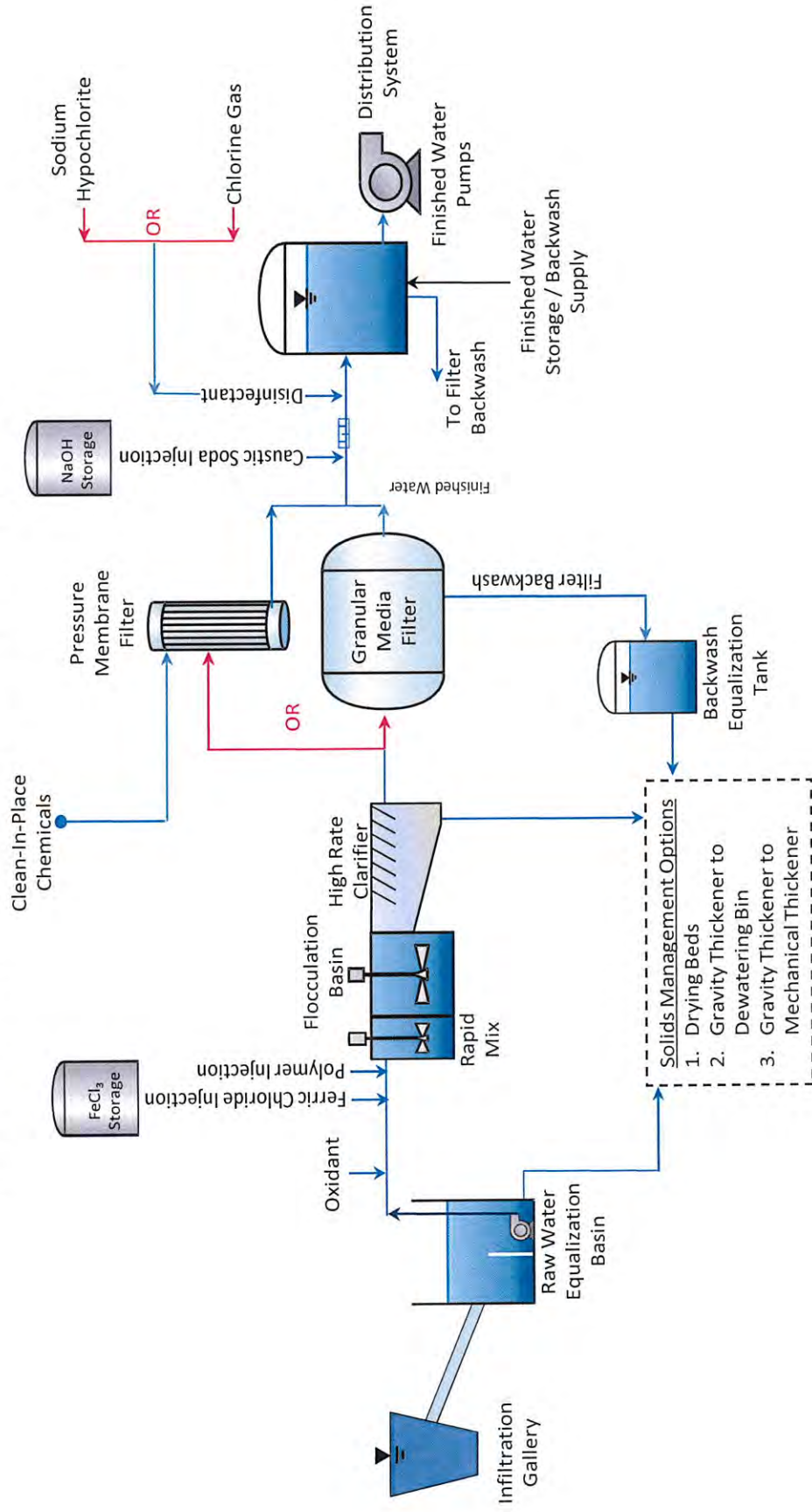
- **Extensive Experience in all phases of water treatment**
- **Specific knowledge of surface water treatment techniques**
- **New Mexico Based**
- **Working knowledge of NMED requirements**
- **Proven Track Record of projects that work!**

## **LRGPWWA**

### **Surface Water Treatment Rules**

- Surface Water Treatment Rule (SWTR) and Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) apply.
- SWTR and LT1ESWTR applies to all public water systems using surface water or groundwater under the influence of surface water
- Purpose is to control microbial contaminants particularly viruses, cryptosporidium, and Giardia
- Filtration and disinfection achieving 99.9 percent removal and/or inactivation of Giardia and 99.99 percent removal and/or inactivation of viruses, and 99.9 percent removal/inactivation of Cryptosporidium
- Achieve a turbidity performance standard of less than or equal to 0.3 NTU.
- Zero total coliforms
- Cryptosporidium must be removed in filtration
- To meet the Disinfection By-Products (DBPs) Rule, it will be essential to remove Total Organic Carbon (TOC) so that DBPs are not formed in the system
- SWTR specifies monitoring and reporting requirements for turbidity, and disinfection
- A level 4 operator will most likely be required to operate the plant.

# LRGPWWA Surface Water Treatment Process Flow Diagram Granular Media and Membrane Filtration





## 2.2 MGD Pressure Membrane Filtration Plant

Item No.	Item Description	Quantity	Units	Unit Cost	Total Cost
1	Site Work: Grading	1	EA	\$ 75,000	\$ 75,000
2	Piping: Yard	100	LF	\$ 150	\$ 15,000
3	Piping: Facility	300	LF	\$ 200	\$ 60,000
4	Chemical Feed Pumps	3	EA	\$ 45,000	\$ 135,000
5	Chemical Storage Tanks	2	EA	\$ 30,000	\$ 60,000
6	Chemical Storage Area	1	EA	\$ 40,000	\$ 40,000
7	Coagulation / Floc	1	EA	\$ 37,500	\$ 37,500
8	Pressure Membranes	1	LS	\$ 2,527,500	\$ 2,527,500
9	Disinfection	1	EA	\$ 76,979	\$ 76,979
10	Building	1	LS	\$ 300,000	\$ 300,000
11	Backwash Vault + Pumps	1	LS	\$ 60,000	\$ 60,000
12	Backwash Tank	1	EA	\$ 82,500	\$ 82,500
13	Backwash Recycle Pumps	2	EA	\$ 37,500	\$ 75,000
14	Electrical	1	LS	\$ 300,000	\$ 300,000

**2.2 MGD Pressure Membrane Filtration Plant Subtotal** **\$ 3,844,479**

## Pajarito Booster Station No. 1

Item #	Item Description	Quantity	Unit	Unit Price	Total
<b>General Construction Costs</b>					
15	Construction Staking and As-Builts Documentation	1	%	1.40%	\$ -
16	Construction Mobilization	1	%	5.00%	\$ -
17	Construction Demobilization	1	%	1.00%	\$ -
18	Construction Traffic Control and Barricading	1	%	8.00%	\$ -
19	Storm and Nuisance Flow Control	1	%	1.00%	\$ -
<b>Subtotal</b>					<b>\$ -</b>
<b>Electrical, Controls and HVAC</b>					
20	Fused Main Switch	1	EA	\$ 10,000	\$ 10,000
21	Feeder Switches	1	EA	\$ 10,000	\$ 10,000
22	Capacitors	3	EA	\$ 4,500	\$ 13,500
23	2.5 kV Primary Service Entrance	1	EA	\$ 8,000	\$ 8,000
24	2.5 kV Padmounted Primary Metering Enclosure	1	EA	\$ 4,500	\$ 4,500
25	2.5 kV Padmounted Manual Transfer Switch	1	EA	\$ 8,000	\$ 8,000
26	2.5 kV - 5 kV Padmounted Transformer	1	EA	\$ 30,000	\$ 30,000
27	5kV - 120/208V Padmounted Transformer	1	EA	\$ 8,000	\$ 8,000
28	5kV Motor Feeder	3	EA	\$ 4,500	\$ 13,500
29	Instrumentation and Controls	1	EA	\$ 55,000	\$ 55,000
30	All other Electrical Equipment (incl Meter)	1	EA	\$ 55,000	\$ 55,000
31	MCC	1	LS	\$ 107,200	\$ 107,200
32	RTU and Integration Costs	1	EA	\$ 28,000	\$ 28,000
33	HVAC	1	LS	\$ 50,000	\$ 50,000
34	Installation, Startup, Testing, Documentation, Etc.	1	LS	\$ 130,000	\$ 130,000
<b>Subtotal</b>					<b>\$ 530,700</b>



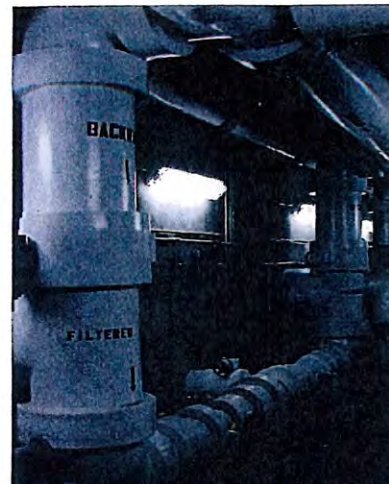
**Pajarito Booster Station No. 1 (CONTINUED)**

Item #	Item Description	Quantity	Unit	Unit Price	Total
<b>Pump Station Piping and Appurtenances</b>					
35	Site Clearing and Grubbing, compl.	2	AC	\$ 1,290	\$ 2,580
36	Seeding, Class "A", native, cip.	2	AC	\$ 1,640	\$ 3,280
37	Pump (1,500 gpm. 250 ft TDH, 90 HP) incl. "T" Head, Suction Can and Motor Shroud	3	EA	\$ 90,000	\$ 270,000
38	12" Waterline Pipe incl. fittings (std. spec Sec 801), incl. trench, all depths	8,055	LF	\$ 65	\$ 523,575
39	Backfill Material, Select, incl. compaction, cip.	18,135	CY	\$ 11	\$ 199,485
40	Non-pressurized Connection, existing waterline, all sizes, incl. fittings, compl.	1	EA	\$ 9,000	\$ 9,000
41	Bore and casing, 24 inch carrier pipe incl., cip.	100	LF	\$ 212	\$ 21,200
42	12" Gate Valve, cip. SD 2333	4	EA	\$ 5,000	\$ 20,000
43	Surge Attenuation System	1	LS	\$ 125,000	\$ 125,000
44	1" or 2" Combination Air Release Valve and Vault	4	EA	\$ 20,000	\$ 80,000
<b>Subtotal</b>					<b>\$ 1,254,120</b>
<b>Structural Vaults and Building</b>					
45	Surge Vessel Vault (beneath ground surface)	100	CY	\$ 700	\$ 70,000
46	Pump Station Vault with Piping and Appurtenances	1	LS	\$ 120,000	\$ 120,000
47	Metering Vault	15	CY	\$ 700	\$ 10,500
<b>Subtotal</b>					<b>\$ 200,500</b>
<b>Allowances</b>					
48	Utility Relocation Allowance	1	LS	\$ 25,000	\$ 25,000
<b>Subtotal</b>					<b>\$ 25,000</b>
<b>Pajarito Booster Station No. 1</b>					<b>\$ 2,010,320</b>

# RINCON VALLEY SURFACE WATER TREATMENT PLANT DESIGN STUDY

MARCH 2005

Prepared For:  
Village of Hatch  
Lower Rio Grande Water Users Association



Prepared By:

**Bohannon** ▲ **Huston**  
425 S. Telshor Blvd. Ste. C-103  
Las Cruces, NM 88011

AEGEAN CONSULTING, LLC  
5925 San Augustin Dr  
Las Cruces, NM 88012

 **PARSONS**  
2449 Calle de Vista  
Las Cruces, NM 88007



## 10 Preliminary Opinions of Cost

### 10.1 Cost Estimating Methodology

The costs presented in this report are based on the Year 2004 prices. The methodology used in the capital cost estimates presented in this study is summarized below:

- The equipment costs were based on quotes obtained from the equipment manufacturers. The prices supplied by the manufacturers were increased by 30 percent in order to accommodate contractor mark-up and installation costs. Actual contractor mark-up and installation costs will vary based on the type and complexity of the equipment installed, but the average value should not exceed 30 percent.
- The structural costs were based on the estimated amount of concrete and excavation / backfill / compaction required for each unit. A unit concrete cost of \$500 per cubic yard and a unit excavation / backfill / compaction cost of \$15 per cubic yard were used. Costs associated with metal fabrications (gratings, handrails etc) for each unit and buildings were also added to the structural costs on a lump sum basis for each structure.
- The excavation costs for the presedimentation basins were estimated using \$4 per cubic yard.
- Building costs were estimated at \$100 per square foot, not including the equipment.
- The estimated cost numbers were rounded up to the nearest \$1000 for every unit.

The methodology used in estimating the yearly operating and maintenance costs (O&M) is summarized below:

- Personnel labor costs include salaries, overhead, and benefits for the plant operators.
- Power costs were based on the total power consumption (kwh per day) obtained from the equipment manufacturers. The cost of electricity was assumed at \$0.10 per kWh.
- Equipment replacement costs include expenses for the replacement of old pumps, valves, aeration equipment, and other mechanical equipment within the 20-year life of the facility. It was assumed that the equipment be replaced will be purchased directly from the suppliers and installation is performed by the operators. Hence, no contractor mark-ups and installation costs were added for equipment replacement.
- Chemical costs were based on approximate chemical usage as obtained from the manufacturers.
- Compliance testing costs include costs associated with testing and sampling of the treated effluent to meet the regulatory requirements.
- Telephone and utility costs include costs associated with telephone; gas, solid waste, etc at the plant site.
- Vehicle fuel and maintenance costs include expenses for the vehicles used around the facility.
- In accordance with the industry standards, a contingency fund is included in order to allow for any other expenses that may be identified during the preliminary and final design of the plant.

### 10.2 Preliminary Opinion of Construction Costs

#### 10.2.1 Preliminary Opinion of Construction Costs for the Treatment Facility

A preliminary cost estimate for the proposed membrane treatment facility is presented in Table 22. The total construction cost for the 1.5 MGD membrane treatment facility is estimated as \$6,676,000 not including the

Table 22. Preliminary Construction Cost Estimate for the Rincon Valley WTP\*

Description	Phase 1 Cost for 1.5 MGD	Additional Cost for Ultimate Phase
<b>INTAKE STRUCTURE &amp; PUMPS</b>		
Coarse bar screen	\$ 5,000	\$ 5,000
Travelling water screen	\$ 130,000	\$ 130,000
Low lift pumps	\$ 73,000	\$ 20,000
Intake structure (concrete, valves etc)	\$ 125,000	\$ -
Electrical installation	\$ 51,000	\$ 38,000
SUBTOTAL	\$ 384,000	\$ 193,000
<b>CONTACT BASIN 1 / DISTRIBUTION BOX</b>		
Equipment (mixers)	\$ 20,000	\$ 20,000
Structure (concrete, excavation)	\$ 45,000	\$ 45,000
Electrical installation	\$ 5,000	\$ 5,000
SUBTOTAL	\$ 70,000	\$ 70,000
<b>PRESEDIMENTATION BASINS</b>		
Presedimentation basins	\$ 250,000	\$ 250,000
Electrical installation	\$ -	\$ -
SUBTOTAL	\$ 250,000	\$ 250,000
<b>MEMBRANES</b>		
Membrane equipment*	\$ 1,600,000	\$ 850,000
Membrane tanks	\$ 50,000	\$ -
Electrical installation	\$ 400,000	\$ 213,000
SUBTOTAL	\$ 2,050,000	\$ 1,063,000
<b>CONTACT BASIN 2</b>		
Equipment (mixers)	\$ 20,000	\$ 20,000
Structure (concrete, excavation)	\$ 45,000	\$ 45,000
Electrical installation	\$ 5,000	\$ 5,000
SUBTOTAL	\$ 70,000	\$ 70,000
<b>DISINFECTION &amp; STORAGE</b>		
Sodium hypochlorite system	\$ 50,000	\$ -
Clearwells	\$ 950,000	\$ -
High pressure pumps and flowmeters***	\$ 230,000	\$ 30,000
Pump station structure	\$ 400,000	\$ -
Electrical installation	\$ 70,000	\$ 8,000
SUBTOTAL	\$ 1,700,000	\$ 38,000
<b>POWDERED ACTIVATED CARBON SYSTEM</b>		
Equipment (pumps, tanks)	\$ 100,000	\$ -
Electrical installation	\$ 10,000	\$ -
SUBTOTAL	\$ 110,000	\$ -
<b>COAGULANT SYSTEM</b>		
Potassium permanganate system	\$ 40,000	\$ -
Aluminum chloride system	\$ 40,000	\$ -
Electrical installation	\$ 10,000	\$ -
SUBTOTAL	\$ 90,000	\$ -

Table 22. Preliminary Construction Cost Estimate for the Rincon Valley WTP\*

Description	Phase 1 Cost for 1.5 MGD	Additional Cost for Ultimate Phase
<b>WASTE WASHWATER EQUALIZATION TANK</b>		
Structure	\$ 25,000	\$ -
Equipment (pumps and controllers)	\$ 40,000	\$ -
Electrical installation	\$ 10,000	\$ -
SUBTOTAL	\$ 75,000	\$ -
<b>BUILDING</b>		
Structure incl. mechanical & electrical	\$ 800,000	\$ -
Electrical installation	\$ -	\$ -
SUBTOTAL	\$ 800,000	\$ -
<b>SITE WORKS</b>		
Site grading	\$ 25,000	\$ -
Primary/auxiliary electrical systems	\$ 100,000	\$ -
Site access, paving, landscaping	\$ 50,000	\$ 10,000
Emergency generator	\$ 150,000	\$ -
Yard piping	\$ 80,000	\$ 20,000
Chain link fencing	\$ 65,000	\$ -
SUBTOTAL	\$ 470,000	\$ 30,000
<b>TOTAL OF TREATMENT FACILITY</b>		
SUBTOTAL	\$ 6,069,000	\$ 1,714,000
Contingency 10%	\$ 607,000	\$ 172,000
CONSTRUCTION SUBTOTAL	\$ 6,676,000	\$ 1,886,000
Engineering and Construction Admin 15%	\$ 1,002,000	\$ 283,000
New Mexico Gross Receipts Tax 6.4%	\$ 492,000	\$ 139,000
TOTAL OF TREATMENT FACILITY	\$ 8,170,000	\$ 2,308,000
AMORTIZED COSTS AT 5% FOR 20 YRS	\$ 656,000	\$ 186,000
<b>TOTAL COST PER TREATED GALLON</b>		
CONSTRUCTION COST PER TREATED GALLON	\$ 4.45	\$ 1.90
TOTAL COST PER TREATED GALLON	\$ 5.45	\$ 2.33

\* All costs are presented as lump sum.

\*\* Includes filtrate and backwash pumps, valves, air supply system, blowers, maintenance wash system, CIP system, controls, SCADA, freight, installation, and start-up services.

\*\*\* Costs for connection to distribution system are included in Table 23.



engineering costs and NM Gross Receipts Tax. The total of all the phases is estimated around \$8,562,000. The costs associated with the first phase are higher than the other phases since many units including the controllers, coagulant systems, and carbon system, must be installed during the first phase.

### 10.2.2 Preliminary Opinion of Construction Costs for the Distribution System Connections

The preliminary construction cost estimates for the distribution system connections is shown in Table 23. The high pressure pump station will be located at the WTP site next to the storage reservoirs (see Table 22 for costs). Pumping of water to Salem/Garfield from Hatch, and pumping of water to Spaceport from Rincon are not included in this cost estimate.

Table 23. Preliminary Construction Cost Estimate for the Distribution System Connections

Description	Unit	Quantity	Total Cost
10" DI	LF	2,000	\$ 40,000
12" DI	LF	14,000	\$ 350,000
16" DI	LF	30,000	\$ 1,050,000
Connection to existing system	EA	7	\$ 21,000
SUBTOTAL			\$ 1,461,000
Contingency	20%		\$ 293,000
<b>CONSTRUCTION SUBTOTAL</b>			<b>\$ 1,754,000</b>
Engineering & Construction Admin	15%		\$ 264,000
New Mexico Gross Receipts Tax	6.4%		\$ 130,000
<b>TOTAL OF DISTRIBUTION SYSTEM CONNECTIONS</b>			<b>\$ 2,148,000</b>
<b>AMORTIZED COSTS AT 5% FOR 20 YRS</b>			<b>\$ 173,000</b>

\* ROW and easement costs are not included.

Transmission lines to Salem/Garfield from Hatch and to the Spaceport from Rincon are not included.

### 10.3 Preliminary Opinion of Operating and Maintenance Costs

The estimated operating and maintenance (O&M) requirements for the Rincon Valley WTP include the following:

- Power consumption for the membranes, blowers, pumps, and other mechanical equipment
- Periodic disposal of screening materials and solids accumulated in the presedimentation / storage basins
- Equipment replacement costs including membranes, blowers, pumps, and miscellaneous valves
- Labor

For the first phase of the facility, two part time operators is assumed. For ultimate phase, two full time operators can be employed. In general, a membrane plant does not need full-time (around-the-clock) attention. Two

operators should be able to operate and maintain the plant adequately. The O&M costs estimated for the 1.5 MGD and 4.5 MGD facility are summarized in Table 24. The details of the estimates are provided in Appendix H. The estimates provided in Table 24 include treatment as well as pumping to distribution system costs.

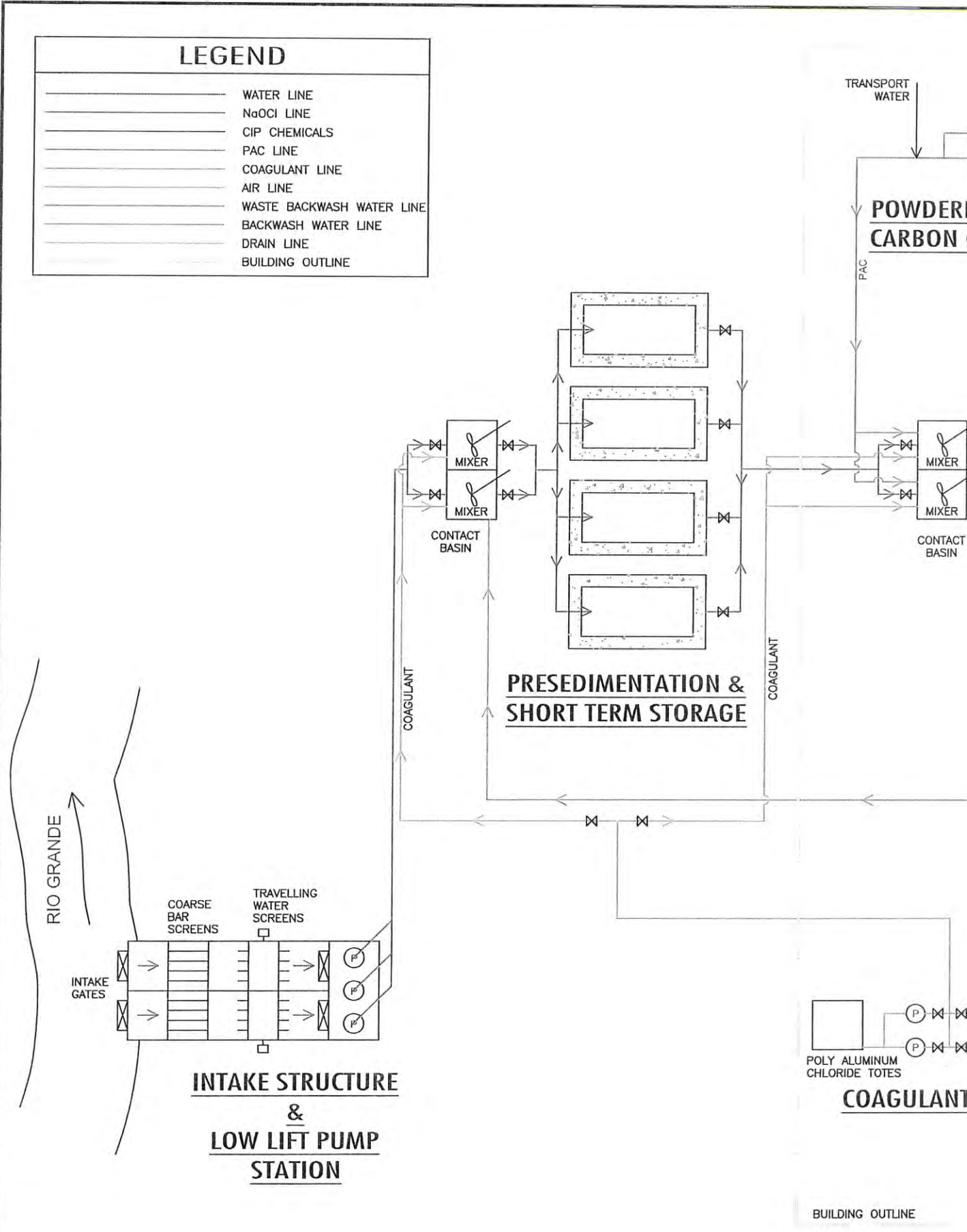
Table 24. Preliminary Operating & Maintenance Cost Estimate for the Facility

Item	Phase 1 (1.5 MGD)	Ultimate Phase (4.5 MGD)
Labor	\$63,000	\$125,000
Power	\$201,000	\$307,000
Equipment replacement	\$49,000	\$69,000
Chemical consumption	\$48,000	\$143,000
Residuals disposal	\$30,000	\$90,000
Compliance testing	\$5,000	\$5,000
Telephone	\$3,000	\$3,000
Vehicle fuel and maintenance	\$3,000	\$3,000
Contingency fund	\$3,000	\$5,000
<b>TOTAL ANNUAL O&amp;M COSTS</b>	<b>\$405,000</b>	<b>\$750,000</b>
<b>O&amp;M COST PER 1000 GALLON</b>	<b>\$0.74</b>	<b>\$0.46</b>

The O&M cost per 1000 gallon of finished water was estimated at \$0.44 in the previous Siting Study, 2000. The costs presented in this study are comparable to the results of the previous studies. It should be noted that, however, due to the limited data available for the total organic carbon, color and odor causing contaminants, iron and manganese as well as seasonal turbidity fluctuations, the actual chemical consumption values may be lower or higher than presented in Table 24.

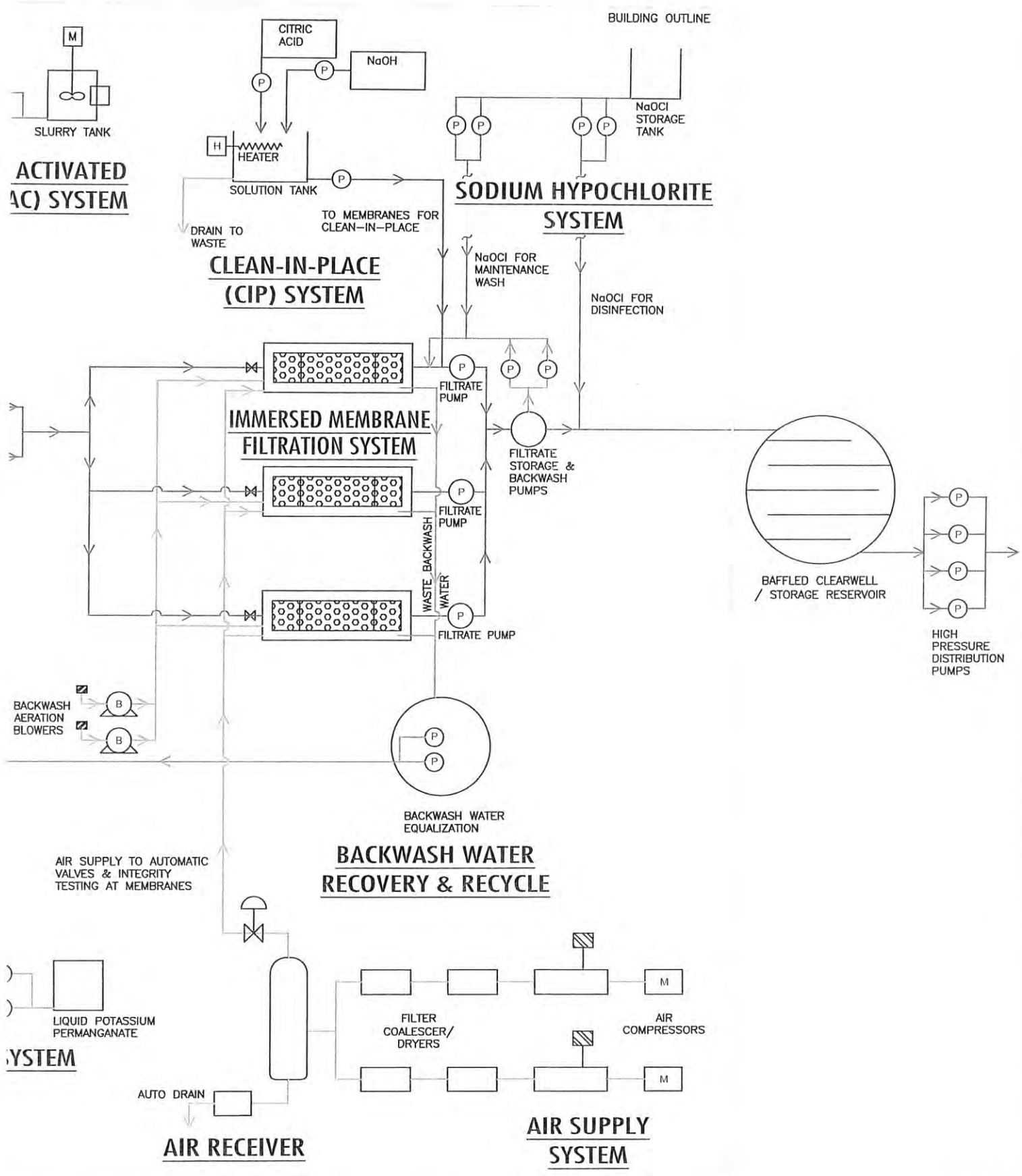
# LEGEND

	WATER LINE
	NaOCl LINE
	CIP CHEMICALS
	PAC LINE
	COAGULANT LINE
	AIR LINE
	WASTE BACKWASH WATER LINE
	BACKWASH WATER LINE
	DRAIN LINE
	BUILDING OUTLINE



H:\PHI - Las Cruces\040200 LRGW00\_Hitch Surface Water Feas Study\Surface Water Feas Study and Report\FIG2 Process Diagram.dwg  
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LRGWJO HATCH WATER SURFACE FEASIBILITY STUDY  
 MEMBRANE TREATMENT FACILITY PROCESS FLOW DIAGRAM  
 FIGURE 2

# SURFACE WATER TREATMENT PLANT

Design

Professional  
Services

REP No. 2012-01

October 2011

**Brian Stephens** | Firm Principal  
**Matt Dyer** | Client Manager  
**Keith Rutherford** | Project Manager  
**Gilbert Andujo** | Funding

## PSC Recommendations

Recommend Authority Re-Evaluate size of plant  
Current Population of 11,000 - Projected Population in 2050 of over 30,000  
Average Usage of 100 gpcd (2007-09 Records)  
1.2 MGD needed— Proposed 1.0 MGD plant is undersized for current demands  
Recommend 2.0 MGD SWTP—provides for 25% growth, allows for more plant for cost

## Recommend Type of plant best suitable to run 6 months of the year

Traditional SWTP (coagulation/clarifier/filter)  
UF/MF SWTP (membranes)  
Filter SWTP (coagulation/filters)

## PER did not include

Sedimentation Basin - to aid plant in handling NTU variations  
Solids Handling - for removal of settled sludge  
Chlorination - for disinfection of treated water / coordinate with GW system

## Costs

Recommend \$1.75/Gallon for 1.0 MGD and \$1.50 for 2.0 MGD

## Funding

USDA Contacts / Standard Procedures  
NM Trust Board Contacts / Standard Procedures

## Project Next Steps

Update PER to include all needed project components  
Submit updated project cost to NM Trust Board/USDA RD for funding  
Prepare and procure pilot equipment for evaluation  
Surface Water Right evaluation  
SWTP Permitting  
Preliminary Design of SWTP  
Final Design of SWTP  
Bidding of Project  
Construction Phase







# FORT STOCKTON REVERSE OSMOSIS DESALINATION PLANT

## The First Municipal R.O. System in Texas



**UV Disinfection** - Ultraviolet lights housed in these stainless steel shells kill living organisms that may be present in the raw water in order to prevent them from attaching to and growing on the membranes.



**Micron Filtration** - These filter remove the particles that are 5 microns or larger including sand, silt and other particles.



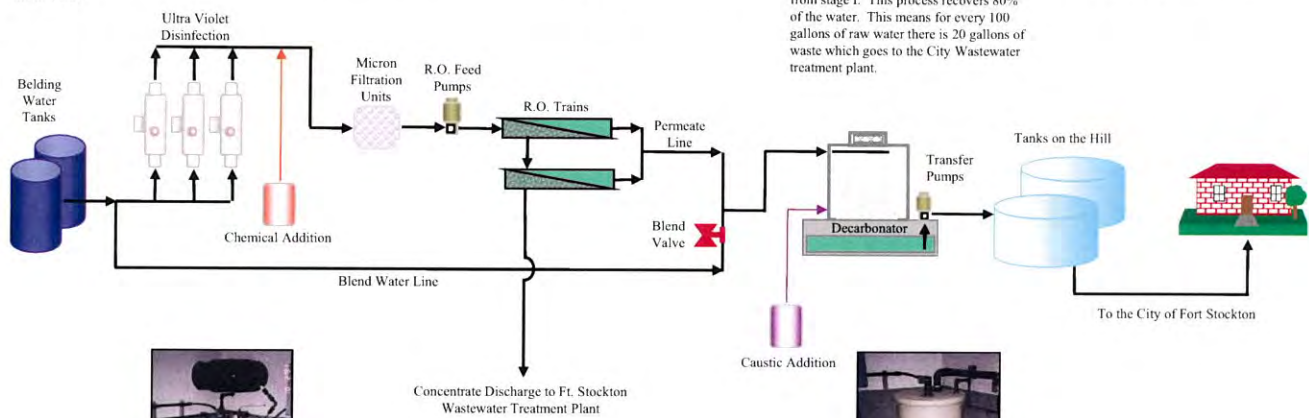
**R.O. Feed Pumps** - These pumps boost the pressure of the feed water in order to overcome the osmotic pressure of the membranes. The feed pressures range from 175 to 200 psi.



**R.O. Train** - The plant has three 1 million gallon per day trains. The trains have 18 tubes for stage I and 9 tubes for stage II. Stage I processes the raw water while stage II processes the concentrate from stage I. This process recovers 80% of the water. This means for every 100 gallons of raw water there is 20 gallons of waste which goes to the City Wastewater treatment plant.



**Decarbonator and Transfer Pumping** - The Decarbonator blows air through the water as it trickles down through the box. The air strips the CO<sub>2</sub> from the water and raises the pH of the blended water.



**Chemical Addition** - Acid and Anti Scalant are added after the disinfection in order to prevent scale build up on the membranes and reduce the pH of the water for optimum filtration.



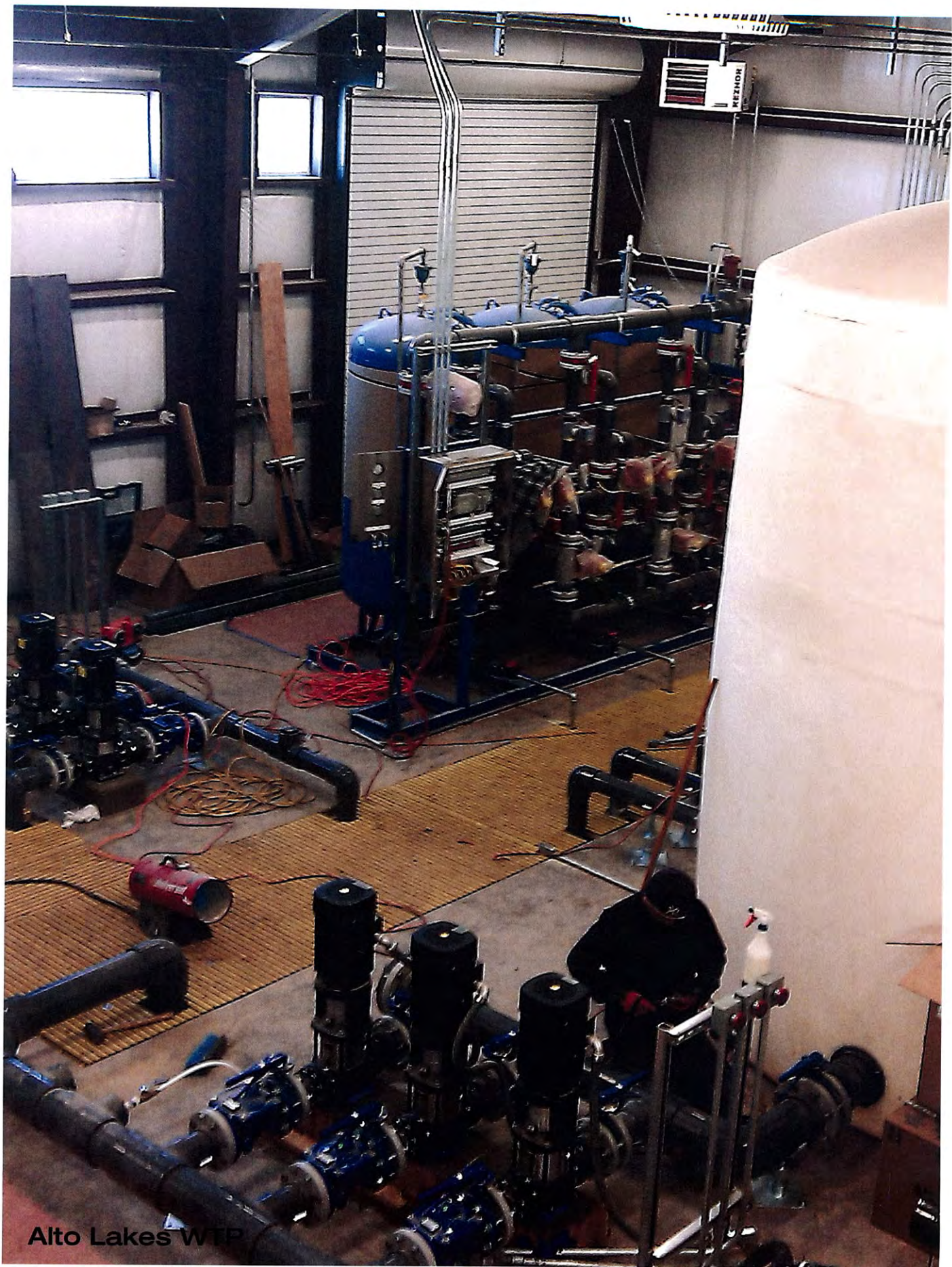
**Caustic Addition** - Caustic soda is used in conjunction with the Decarbonator to raise the pH of the water back up to the range of the raw water. This assures that the water is not aggressive and will not corrode pipes.





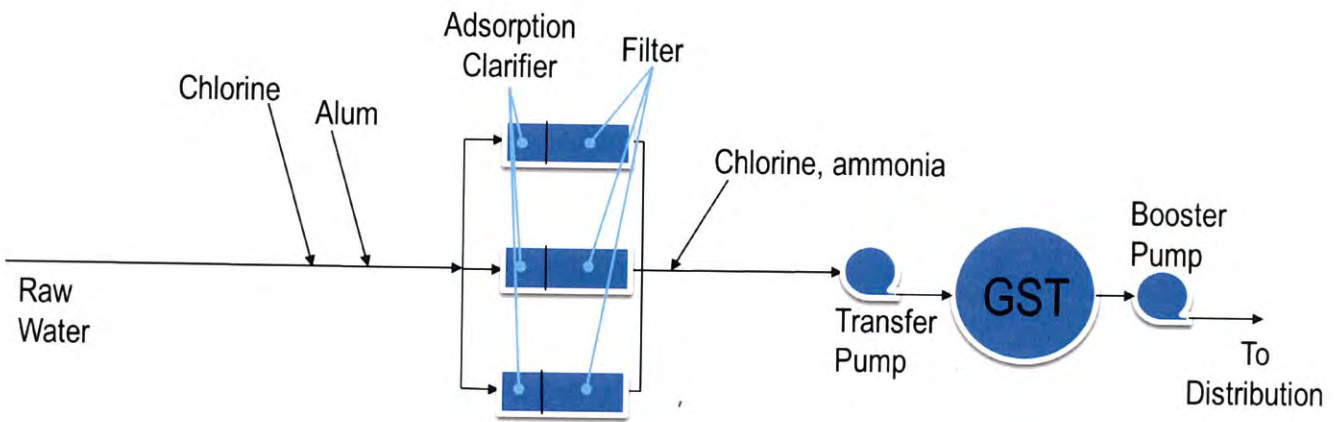
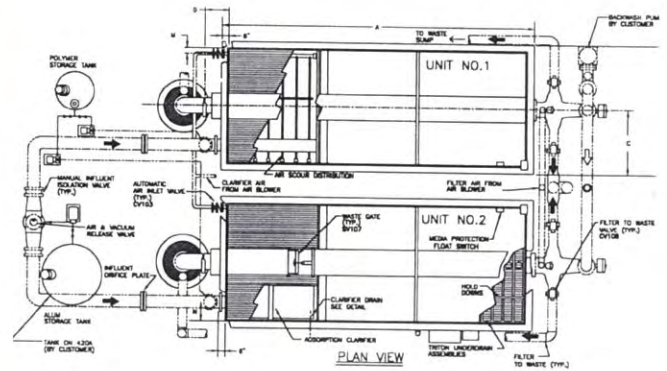
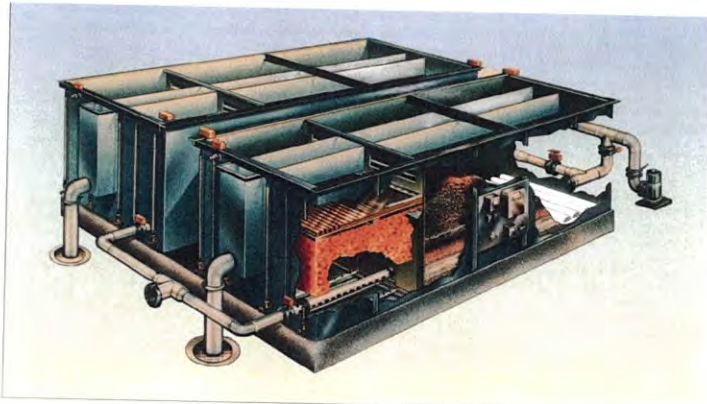
Jonathan Rogers WTP



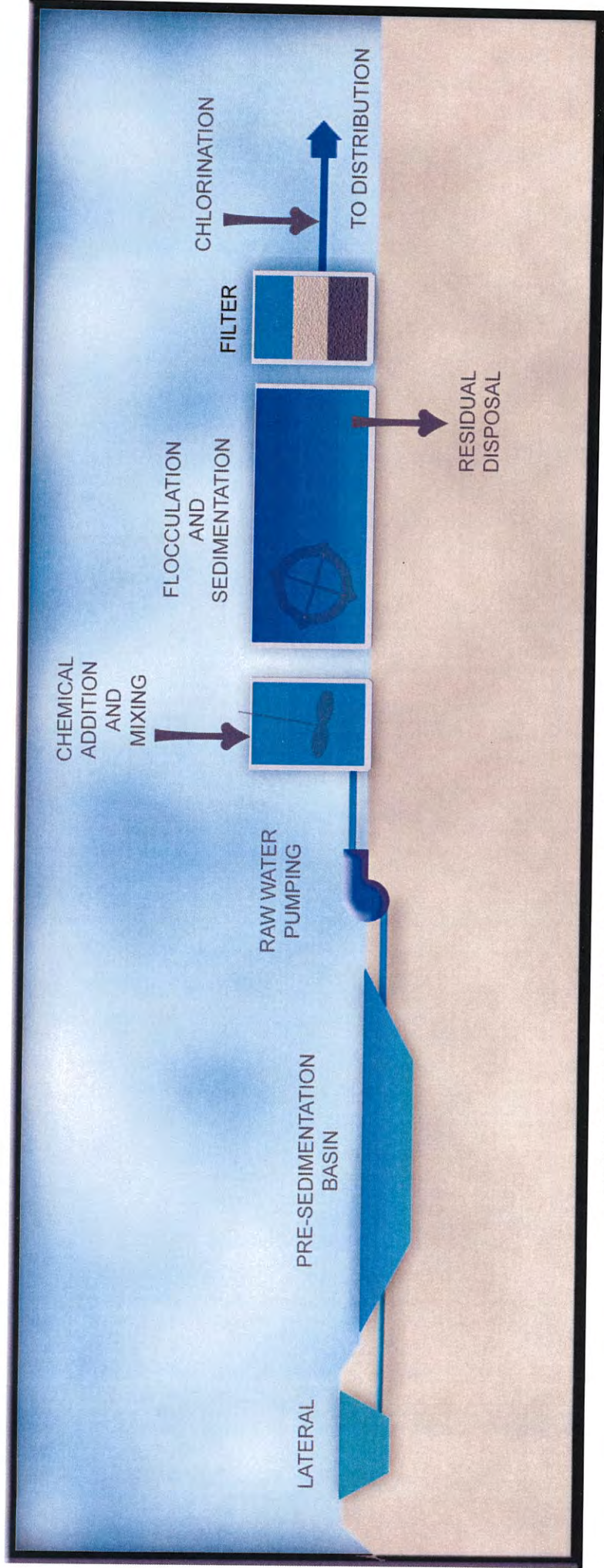


Alto Lakes WTP









POTENTIAL USE OF PLANT FOR BOTH SURFACE WATER AND GROUND WATER

1. PRE-SEDIMENTATION SHOULD BE A MINIMUM OF ONE DAYS SUPPLY. ALLOWS SUPPLY FROM LATERAL TO BE SHUT OFF DURING TIME WHEN WATER QUALITY IS BAD AND STILL TREAT WATER.
2. RESIDUALS TO BE DISPOSED OF ON DRYING BEDS OR IN SLUDGE PONDS SUPPLEMENTAL THICKENING CAN BE ACCOMPLISHED WITH A GRAVITY THICKENER.
3. FILTER MEDIA CAN BE TAYLORED TO DESIRED TREATMENT GOALS
4. CHLORINATION FOR DISINFECTION PRIOR TO SENDING TO DISTRIBUTION.
5. FINISHED WATER COULD BE STORED ON SITE OR PUMPED TO DISTRIBUTION IMMEDIATELY.